The Quality of Graduate Student and Post-Doctoral Supervision at the University of Alberta

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Executive Summary

In a world in which so many people make significant sacrifices to obtain an advanced degree, it is a privilege to attend graduate school, and it is a privilege to hold a professor position and supervise graduate students and post-doctoral scholars. The University of Alberta is one of the top-rated Universities in Canada, with 170 graduate programs, 6,130 full-time graduate students and 1,300 part-time graduate students as of 2013 (AAUC 2014). As a research-intensive higher education institution, we have both an ethical and a leadership role in molding excellence in graduate student supervision.

This report is written to inform the Provost's office of best practices and different problems associated with graduate student and post-doctoral supervision at the University of Alberta. The report is also intended to help professors, graduate students, post-doctoral scholars, University administrators, and other key professionals in higher education to examine multiple ways to foster a supportive environment for excellence in graduate student and post-doctoral scholar supervision. Overall, the University of Alberta has many programs and practices in place to cultivate an excellent culture of graduate student supervision. Faculty members and graduate coordinators reported strong interest and commitment to improved learning experiences for graduate students at the University of Alberta.

The key recommendations in this report are mainly addressed to departments, faculties, and the Faculty of Graduate Studies. The main areas calling for attention include: 1) Provide earlier guidance to graduate students to improve graduate success. This includes recommendations to supervisors to develop written agreed-upon expectations of graduate students and themselves. Departments can enforce regularly scheduled reviews of graduate students for satisfactory progress, with consequences to students with unsatisfactory reviews, and employ more careful procedures to admit graduate students in individual programs; 2) Increase accountability of supervisors and departments for good supervision. Chairs need to conduct exit interviews and periodic reports on trends in graduate student supervision and to discuss each graduate student's progress at the annual report meeting with supervisors. Departments should establish a process to address and follow up on poor graduate student supervision, and require faculty to write a graduate student mentorship philosophy for their tenure and promotion packages; 3) Provide training and mentorship to supervisors and graduate coordinators to raise standards of supervision and mentorship. Effort needs to be directed toward granting more opportunities to graduate coordinators to develop mentorship programs, mentorship awards, and other learning opportunities unique to their department or discipline, as part of the collective mentorship of graduate students in their department. Graduate coordinators would benefit from more training on how to address supervisory deficiencies in a fair, consistent and transparent manner; 4) Improve the culture of mentorship by continuing to provide, and provide more, forms of guidance to graduate students; 5) Specific to post-doctoral fellows, the academy should better integrate post-doctoral (PD) scholars into departmental culture, provide more training on PD scholar supervision, and offer more PD scholar professional development training opportunities. Above all, the top priority should be to enhance the culture and accountability of supervisors and departments for good supervision. While problems with poor supervision and poor student-supervisor relations are the exception, these cases are very costly in terms of time, resources, morale and institutional reputation. High quality supervision and mentorship is central to an institution committed to seeing their graduate students flourish in their careers and in the contributions they make to the public good. A commitment to, and practice of, high quality graduate student and post-doctoral supervision is part of our University's legacy and reputation.

The Quality of Graduate Student and Trainee Supervision

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Introduction

In a world in which so many people make significant sacrifices to obtain an advanced degree, this report is written from the perspective of a University of Alberta professor who has observed these sacrifices among many of her students. As such, the report articulates that it is a privilege to attend graduate school, and it is a privilege to supervise graduate students and post-doctoral trainees. The University of Alberta is one of the top rated Universities in Canada, with more than 170 graduate programs, 6,130 full-time graduate students and 1,300 part-time graduate students as of 2012 (AAUC 2014). As a key U15 research-intensive higher education institution, we have both an ethical and leadership role in modeling excellence in graduate student supervision. While this report is written to inform the Provost of different problems and best practices associated with graduate student and post-doctoral supervision at the University of Alberta, this report is also intended to help professors, graduate students, post-doctoral trainees, University administrators, and other key professionals in higher education to examine the multiple ways in which a supportive environment for excellence in graduate student and post-doctoral trainee supervision can be fostered.

This report was prompted by concerns expressed by the Graduate Student Association about the quality of graduate student supervision to the Provost, Vice Provost, Dean of Faculty of Graduate Studies (FGSR) and the Committee on the Learning Environment (CLE). In 2011 General Faculties Council requested to have an advisory committee struck to address graduate student supervision issues. This request led the Provost to appoint a Provost's fellow to address the quality of graduate student supervision in thesis-based programs, as well as the quality of post-doctoral trainee supervision.

The report begins with a description of some trends that bear on graduate students and post-doctoral trainee University experience. Best practices and policy recommendations are offered to improve the

context of supervision and the supervisor-student relationship. The material drawn upon for this report includes a literature review, interviews with University of Alberta graduate students, post-doctoral trainees, faculty, leadership and support personnel, focus group consultations with faculty, graduate students and post-doctoral trainees, University documents, and other grey literature on graduate student supervision. An advisory group consisting of three elected members of the Graduate Student Association, a graduate coordinator, a Vice-Provost, Dean of Faculty of Graduate Studies and Research, and a research assistant met with the author four times over the academic year 2012-13 to discuss key issues in graduate student and post-doctoral trainee supervision and later provide advice on this report.

The Larger Context of Graduate Student and Post-Doctoral Supervision

More interest among public in earning graduate degrees

Following the US trend (NRC 1996), graduate programs expanded across Canada when in the 1960s higher education and university expansion of graduate programs became a provincial and national priority (Williams 2005). Based on CAUT (2002; 2013) records of national enrollments in Master's and PhD students in Canada, the number of full-time enrollments nearly doubled. Further, the number of full-time workers holding an advanced degree doubled over a 20-year period, from 55,000 full-time workers in 1990 to 1.1 million in 2009 (AAUC 2008), and those with a graduate degree assumed higher proportions of employment gains (Cennerelli 2013). Overall, funding support in Canada has also improved for graduate students since the 1980s (Cennerelli 2013).

Increased educational attainment across many developing and medium-developed countries has also resulted in a greater number of the world's population able to gain entry into Universities. In particular, Canada is considered a desirable country for international students seeking a graduate education. Correspondingly, the number of graduate students in Canadian Universities has increased dramatically. According to Statistics Canada (Stats Can 2011) and AUCC estimates, Baron (2012) reports that Canada's international graduate student enrollment has tripled since 1980. Between the 1999-2000 school year and the 2009-2010 school year international student full-time equivalent graduate program enrollment more than doubled in Canada and this is higher if part-time enrollments are included (CAUT, 2012). For 2011-12, 25% of master's students and 40% of doctoral students were international students. Sixty percent of Alberta's international students state an intention to seek work in Alberta after completing their studies (University of Alberta, 2013, p. 25). According to Lisa Collins, our

University of Alberta registrar, 34% of our graduate students are international students, and half of our doctoral students are from outside of Canada.

Professor-graduate student and post-doctoral trainee relationship more as co-learners than 30 years ago

One of the privileges professors hold is to work with talented and motivated graduate students and post-doctoral trainees from all over the world. In fact, some Universities regard supervision as an honor that must be earned, and abuses and trust in the supervisory relationship may be considered grounds to take away the right to supervise (Lovitts, 2001). Our graduate students often bring to the University culture a richness of possible inquiries that are grounded in their lifelong learning and profound personal experiences. In addition to the richness that graduate students bring to the very nature of inquiry at the University, the knowledge with which we have to draw on has grown exponentially (Adair and Vhora 2003). Students and faculty have improved access to new data sets, archival records, translated publications, and various forms of knowledge (e.g., videos, meta-data sets, traditional knowledge, new oral traditions, and geographic information). The explosion of opportunity and knowledge makes it unrealistic for most professors to fully stay abreast of the developments in their field (Moghaddam, 1997). Therefore, graduate students and post-doctoral trainees often become colleagues, partners, or leaders in methodological experimentation, new analytic methods, creative works, and knowledge discovery, to a much greater extent than 15- 30 years ago when most full professors were trained. This requires flexibility in framing a research project for both graduate students and professors, where professors must confront the limits of their knowledge and graduate students must be confident about co-learning with their professors and take more self-directed responsibility for knowledge discovery. Graduate students' learning journeys, for some Master's level students, and many PhD students and especially post-docs, is generally without a clear set of "how to" guidelines to carry out their creative works and theses. While research procedures may be more clearly laid out in laboratory-based work, students have more discretionary decision-making in their research given the pace of new methods, problem-solving options, options to display information, and innovative discoveries upon which to build (Dolan and Johnson, 2010). This co-learning model may be even more relevant as the University of Alberta offers more on-line graduate degrees, as is already available in Library Studies, and proper University guidance for good supervision for these types of degrees is needed. For the remainder of this report, "students" includes graduate students and post-doctoral trainees.

Pressures on faculty and graduate students increased

From the outset, we must recognize that student supervision takes place in the changing context of higher education. Performance expectations of faculty have increased, especially for numbers and impact of refereed articles to earn tenure, and in the case of students, to acquire a tenure-track position. At the University of Alberta, published research articles, reports, and other outputs are required for merit increments and promotions. University expectations regarding professors' success at obtaining and managing research grants have changed. Grant-writing abilities and research budget management are required skills for professors in many departments (e.g. Engineering, Agriculture, Biology, Psychology). While funding has increased for graduate students in Canada since the 1980s, Abu-Laban and Rule (1988) showed that "from the early 1970s on, except for a short period in the early 1980s, SSHRC funding has deteriorated" (p.11). Baron (2012) noted that national support from Canada's research councils decreased by about 25% in 2011 suggesting there is not enough money nationally to maintain traditional levels of funding for an expanded number of graduate students. Williams (2005) reports that the Canadian government's shift to increase the production of new knowledge and the training of highly qualified personnel in the late 1990s manifested itself in funds directed toward areas of national economic interest, more transfer of knowledge outside of academe, requirements for matching funding from other sources, and higher levels of accountability on research productivity. Each of these trends may have increased pressures on faculty members to develop research programs in particular areas, with particular partners, to obtain research funding to support their scholarship and graduate students.

Funding agencies have increased expectations for effective dissemination of research findings, and varied forms of dissemination are encouraged, including refereed journal articles, refereed reports, radio programs, newspaper and magazine articles, newsletter summaries, small video productions, presentations to various audiences with a stake in the research, workshop leadership and University showcase events. Tri-council funding, particularly the National Science and Engineering Research Council (NSERC) has placed more emphasis on "highly qualified personnel" and thus the training quality and numbers of graduate students and post-doctoral trainees is given greater emphasis in grant evaluation. Graduate students and post-doctoral trainees are increasingly expected to be supportive and integral to research publications, obtaining grants, managing projects, building and maintaining partnerships, and leading or contributing to various forms of research dissemination. *The expectations for faculty are reflected back to graduate students and post-doctoral trainees*. Graduate students and

post-docs are often watching their supervisors closely and seek greater guidance on how to professionally carry out all of a professor's duties and meet University expectations, as well as maintain a healthy work-life balance.

The number of professors hired has not kept pace with the number of graduate students admitted to U15 Universities (Cennerelli 2012; CAUT, 2012). The ratio of undergraduate students to professors has doubled over the last few decades, with a Canadian University average of 12 to one in the late 1970s to over 22 to one today (Cennerelli 2012). While teaching loads vary among faculty, class sizes tend to increase as more students are admitted into the University, and professor expectations to update their course material and use available classroom technologies, electronic sites, and other innovative teaching methods adds to the time commitment required of professors to continuously enrich their teaching and the learning in their classrooms. This time requirement must be negotiated with other time required to responsibly and effectively supervise graduate students.

The practice of research has become global and collaborative, and often involves crossing boundaries with other universities and civic and government institutions (Rose 2012). Professors are frequently required to reach out to more community partners, speak to the press about their work, and collaborate with appropriate government departments, foundations, First Nations, and so on. This greater engagement makes University professors more connected to the rest of the world, but may also require sustained commitment of professors to build relationships and invest in various styles of communication appropriate for varied audiences. Skills to build relationships and partnerships with other Universities and other organizations are also expected of graduate students and post-doctoral trainees who obtain their education at the University of Alberta. Professors are increasingly called on to be role models to graduate students. Professors demonstrate to their graduate students how to initiate and negotiate research projects with partners, actively listen and integrate ideas across multiple agendas and disciplines, compromise, and be respectfully responsive throughout the duration of a project. These skills are likely required of MSc/MA and PhD students upon completion of their degrees for the suite of positions they may obtain. One study suggested that faculty can be so heavily engaged in research activities that it detracts from the time they have for their graduate students (AAU 1990). The context of the contemporary university is one of increasing demands on faculty, students, and post-doctoral trainees to incorporate various research activities into their work and still complete their degrees in a timely manner. Despite the added pressure, there is evidence that those students who

are actively engaged in research activities early in their program, and those who publish, are more likely to complete their degrees and experience career success (Larivière 2012).

Stress levels and mental health issues increased for both faculty and graduate students

While the position of University Professor was recently listed as one of the most desirable, and least stressful jobs in the world in a popular survey by CareerCast.com (Kensing, 2013), there are a number of studies that suggest that faculty have felt greater stress in recent years in their positions at research intensive universities (CAUT 2007). A workplace workload/work life study done at the University of Alberta (AASUA and the University of Alberta 2009) found that of the 74% of University of Alberta academic staff who responded to the on-line survey reported experiencing work-related stress "very" or "fairly" frequently. It was self-reported in the on-line survey sample that work-related stress has resulted in psychological health problems for 38% of academic staff and physical health problems for 61% of academic staff. A key finding in this study is that much of the stress was related to professional and non-professional administrative tasks, i.e., administrative obligations. When faculty members are under stress and distracted with administrative tasks, this can affect the quality and quantity of time they have to mentor graduate students. If graduate students see their professors visibly stressed and know they are unavailable to them due to other job duties, this also sends a message to graduate students that they are less important and the University is a stressful workplace. In some cases, those students assigned to supervise other students in laboratory settings may feel saddled with responsibilities to which their supervisors cannot attend. Graduate students may also feel discouraged about earning a PhD if the professor position appears unduly difficult. *Professors' workloads, and workplace wellness, can reflect back to their graduate students and post-doctoral trainees.*

Similarly, graduate students may face mental and physical health issues related to their experiences in graduate school. A number of factors may contribute to graduate student depression. Contributors include the intense workload, the "imposter syndrome" or a sense that one could be "found out" for not having the intellect required to earn the degree or publish their work, and the sense of dependency on the supervisor while at the same time the expectation to develop a professional identity. Particularly at the thesis-writing stage, many students experience a sense of stress over what they can ask of their professors, and they might feel quite isolated in the writing process (especially in the humanities and social sciences). Science graduate students also experience a significant transition in the nature of their work, often going from a field or laboratory environment, with its structure, schedule and camaraderie,

to the solitude of writing at a computer.

Additionally, the competition for a good supervisor, funding, and a degree-appropriate job after graduation can be intimidating and depressing for some students (Fullick, 2011). In my interviews, and described by Fullick's (2011) in a *University Affairs* article, graduate students often feel that the definition of success for how one employs their PhD after they finish has narrowed to having a research-focused position. Even though a small proportion of students will obtain permanent faculty positions, professors may treat all graduate students as headed for research-oriented academic careers. There is growing concern that universities must consider non-academic career paths for students and post-doctoral trainees (McCook, 2011 Scaffidi and Berman, 2011; Lovitts, 2001), for business, government, non-profit and charitable sectors. While some students may not feel particularly stressed or depressed, these same factors can contribute to disillusionment with graduate school and slow progress. For some students, the uncertainty of what they have to offer for different employment sectors and where they will obtain employment results in their discontinuation of their graduate program.

At a 2008 Meeting for the Canadian Association of Graduate Schools in Edmonton, Lisa Brandes, Assistant Dean for Student Affairs at Yale University, provided an overview of studies on Graduate student mental health. In this overview she cited a University of California Student Mental Health Committee report that stated, "Graduate students as a group have been identified as a population at higher risk for mental health concerns. The level of stress for graduate students is magnified by their relative isolation from the broader components of campus life, the intense academic pressures of their advanced studies, and the increased presence of family and financial obligations." Brandes (2008) warned that the consequences of this stress have been associated with suffering and depression, delays in progress to earn the degree, reduced productivity in teaching and research, and in rare cases, student suicide and self-harm (Lovitts 2001).

Recent budget cuts have intensified fears among some faculty about job security and workplace satisfaction. Faculty worry about increased workload with fewer support staff, larger and more classes, higher expectations to fund research and graduate students, and their ability to maintain work-life balance. Given the provincial government reductions in higher education funding in Alberta, this will be an important period to assure that graduate student and post-doctoral trainee supervision remains a high priority to the leadership at the University of Alberta, and that support is provided for both professors and graduate students to work well together even as shifts are made in University resources

and various decision-making structures.

Costs of graduate school

Graduate education tuition costs increased steadily between the 1980's and early 2000's at which point it plateaued (CAUT, 2012). While the cost of graduate education is average at the University of Alberta compared to other U15 University graduate programs in Canada, Alberta has a higher cost of living than many other University cities and towns in Canada. Between 2012 and 2013 the consumer price index increased by 2.3% in Alberta, and only 0.5% in Ontario, 0.7% in Quebec, and decreased by 0.6% in BC (Statistics Canada, 2012). Some graduate students do not have adequate funding to cover their housing, food, transportation, and other household costs over the duration of their programs.

Doctoral candidates in Canada, according to Williams (2005), rely, in descending order, on the university, their own resources, the federal government and then the province. A "Survey of Earned Doctorates: A Profile of Doctoral Degree Recipients" report from Statistics Canada indicates that in 2003-2004 nearly 64% of recent graduate students had University teaching assistantships, 58% University scholarships and another 30% from university research assistantships. Thirty-nine percent of all doctoral students relied on personal savings, 33% on personal earnings, 31.5% on family earnings, and 27.3% on loans (Statistics Canada 2013b). A larger proportion of graduate students have student loans, and graduate student indebtedness increased in the early 2000s (Human Resources and Social Development Canada 2006).

Some graduate students seek outside work when their stipends are inadequate to cover their costs, their funding runs out, or their expenses are too high. Full-time, good standing, international students may work on-campus but must obtain a permit to work off-campus, and depending on the country of citizenship, may also need to obtain a resident visa (pers comm. Santiago, Immigration Advisor, November 4, 2013). When graduate students work on alternative projects to earn money, most find their thesis progress slows (NRC, 2005). Many professors at the University of Alberta have observed this is especially the case when full-time students switch to a full-time job and cannot devote the hours necessary to write their theses. Living in Alberta, more so than other provinces, may entice students into paid employment in which they can earn good incomes in the current job market, particularly for domestic students, where our April 2013 unemployment rate of 4.4% was the second lowest in Canada (Statistics Canada, 2013b). Thus opportunity to step into a full time position may be even easier in the

Alberta context, before one completes their degree. Even service industry jobs are plentiful in Alberta, and while useful for providing supplementary funding to a student trying to financially support themselves to the end of their graduate studies, service industries also require time and commitment that can subtract from the student's energy to work on their research or final project. Sleep and other types of restorative activities may diminish if students are trying to write a thesis and work part- or full-time, adding to stress, and by association, distraction (Mullainathan, and Shafir 2013).

While it may seem as though a student's financial standing is a private matter, supervisors would be wise to openly discuss with their students the limits of the funding available, the expectation of what a full-time student and part-time student accomplishes as associated with different levels of funding, and the student's approach to supplemental employment, especially as the funding for the graduate degree or post-doctoral position declines or stops. In some cases tensions have risen between supervisors and graduate students in regards to the graduate students' amount of outside paid employment while they work towards completing their degree, and in regards to graduate student unmet expectations for continued funding. In other cases, when graduate students are funded to certain levels by a large scholarship, or many scholarships, they are not supposed to take additional paid work, as the funding is for full-time devotion to one's studies. Secure, guaranteed amounts of funding for a set number of years (e.g. 2.5 years for Master's, 5 for PhD) may alleviate much of the problem of graduate students seeking outside employment as their degree is underway. Larivière (2013) in fact found that students who received scholarship funding from provincial and federal research councils were more likely to graduate and publish, and the amount of funding had no impact on the number of articles they published (as described in Tamburri, 2013:18).

According to a recent study by Larivière (2013: 27) who uses data from the province of Quebec to examine the relationship among excellence scholarships, research productivity, scientific impact, and degree completion, he found that: " funded students publish more papers than their unfunded colleagues, but that there is only a slight difference between funded and unfunded PhD students in terms of scientific impact. Funded students, especially those funded by the federal government, are also more likely to graduate. Finally, although funding is clearly linked to higher degree completion for students who did not publish, this is not true of those who managed to publish at least one paper during the course of their PhD." This suggests that students who are socialized early in their program to publish may be less daunted by financial hardships given their focus and dedication to complete their degrees in a timely manner and gain the professional markers of success in their field.

Demographic Features of Graduate Students

While students in the past may have typically gone straight from a Bachelor's degree into a Master's degree program, the median time gap between a Bachelor's and Master's student is currently approximately seven years in Canada (Statistics Canada 2013). The age breakdown of full-time master's and PhD students has shifted during the last 30 years. Master's and PhD students were generally older in 2010 than they were in 1980, but younger than they were in the early 1990s. In 1980, 26 percent of full-time Master's students were 30 years of age or older, increasing to a 30-year high of almost 36 percent in 1994, and then decreasing to 31 percent in 2010. The trend was similar for PhD students. In 1980, 46 percent of PhD students were 30 years or older, increasing to 62% in 1992, and then decreasing to 56% in 2010.

Thus, the age at which an individual will earn an MSc or a PhD varies widely (NRC 2005). Students may be older when they return to graduate school than the average was perhaps twenty years ago. Part-time PhD students in particular are almost always older and include more women (AUCC 2002). Williams (2005, p. 11) reports, "Students tend to be oldest in education (46 years old on average) and younger in the sciences (31 years old in chemistry)." Many more graduate students are women (NRC 1996; 66), combining graduate school with slowly changing roles as wives and mothers. Thirty years ago, many more male graduate students were being supported by their wives who were holding a paid job. Many more graduate students today are international students (Williams 2005) and people of color. Williams (2005) reports that in Canada, 75% of international students are male and that foreign students represent 45.6% of all students in the sciences and engineering, 25.4% in the social sciences and humanities, and 24.1% in the health sciences. These trends are worth noting in that most contemporary graduate students are being supervised by professors who obtained their doctorates in a very different environment (far less diversity), where graduate school was perhaps done earlier in one's adulthood and could more easily be a full-time pursuit.

Completion Times & Attrition

In a twelve-year period (2000-2011) at the University of Alberta, University of Alberta Faculty of Graduate Studies data for MA/MSc students reveals that students generally complete their degrees in three years. Completion times for PhDs for the same time period have gone from gone from 5.5 years to 6.1, effectively adding one or two semesters to the students' degree program. Twenty-two percent of

our doctoral students for the period 2000-2011 left the program without any credential, about 8% left with a Master's degree, and 70% earned their PhD. While it makes no sense to compare across campus programs, it does make sense to compare with similar programs at other schools, and we are near the median in time to completion with other U15 Universities (Shirvani, pers comm. 2013). Students in Science lab and team based programs have a higher completion rate, and this is often attributed to the social support and accountability students have to a group-driven schedule to complete steps of a project. Alternatively, Social Sciences and Humanities students are often working independently, and the isolation and less frequent contact with their supervisor and cohort appears to be associated with a slower completion of their thesis, and higher withdrawal rate from graduate school (Nerad and Cerny 1991; Lovitts, 2001). Kenneth Gibbs, a fellow with the American Association for the Advancement of Science (AAAS), argued in a recent presentation for the Careers and Opportunities in Science committee meeting that I attended at the 2013 AAAS annual meeting, that the elongation of PhDs and post-docs periods tends to work against minorities and women, who tend to negotiate greater family obligations during their degrees.

A Canadian Association Graduate Studies Survey (2005) found a 45% completion rate in the Social Sciences and Humanities and 75% for other disciplines. According to a National Research Council (1996) report, attrition rates have risen at many US institutions as well. Some institutions place graduate attrition rates for selected fields in the sciences and humanities at 50%; others have reported attrition levels at over 65% for some programs. The report asserts that the rates reported at institutions that have tracked attrition consider these high because attrition rates were only 20-40% in 1960 (Berelson, 1960; National Science Foundation, 1996, p. 1). Programs that have a more selective screening process, such as medical and law schools, have a much lower attrition rate. There is also a lower attrition rate in the Sciences than there are in the Social Sciences and Humanities.

Recommendations for Best Practices in Graduate Student and Post-Doctoral Supervision

The following section is written to highlight best practices for graduate student supervision, from the wisdom of professors, graduate students, and professionals at the University of Alberta, and literature on graduate student supervision. This section concurrently addresses some of the common problems with supervision and various levels of University organization that may assist in developing approaches and practices to address these problems.

1. Provide earlier guidance to graduate students to improve student success.

1.1 *Make expectations clear between supervisor and student at the beginning of the program, and periodically updated thereafter*

Throughout interviews with successful supervisors and in written guides for supervisors from several Universities is the advice to encourage supervisors and students to make expectations clear from start to finish of the degree, starting early in the graduate student's program. The University of Alberta's FGSR promotes such discussions by providing a document on their website devoted to resources for supervisors that includes a checklist of topics to discuss at the first meeting, and provides websites for various offices and services on campus available to graduate students, and policies important for graduate students. This list of expectations below is a more supervisor and student-focused list of expectations to discuss at the beginning and midway point of the program. This list is borrowed from guidelines offered by the University of British Columbia, with a few other expectations added. In written form, the supervisor could, for example, make these commitments to the student in writing.

As your supervisor, you can expect me to:

- Demonstrate commitment to your research and educational program, and offer stimulation, respectful support, constructive criticism, and consistent encouragement.
- Assist with identification of a research topic that is suitable for you and manageable within the scope of your degree.
- Have sufficient familiarity with your field of research to provide guidance as a supervisor, or assure you that we will include highly knowledgeable professors on your supervisory committee to assist the development of your research.
- Assist you in gaining access to required facilities or research materials for your projects.
- Discuss your financial support issues and assist with scholarship applications and/or provide advice on academic employment opportunities.
- Act in accordance with the University of Alberta's Collective Agreement with the Graduate Student Association.
- Provide guidance in the ethical conduct of research and model research integrity.
- Discuss with you the implications of engaging with activities/work unrelated to your thesis topic.
- Provide information about my availability for meetings and expectations about preparation for meetings.
- Assist you in planning your research program, setting a time frame, and adhering as much as possible to the schedule.
- Encourage you to finish when it would not be in your best interest to stay longer.

- Be accessible for consultation and discussion of your academic progress and research at a minimum of once a term. [On average, our meetings will be held _____.]
- Minimize my expectations for activities/work that may interfere with your thesis completion.
- Institute a supervisory committee (with appropriate input from you) and prepare for committee meetings, which will occur on a regular basis (at least once a year) to review your progress and provide guidance for your future work. I will arrange committee meetings.
- Involve the supervisory committee further when there are areas of confusion or disagreement between us on your appropriate research directions.
- Support you in your preparation for the comprehensive examination and admission to candidacy, which will be completed within 36 months of program initiation.
- Act as a resource about managing program requirements, deadlines, etc.
- Attend your presentations in appropriate venues and join in associated discussion.
- Submit recommendations for external examiners and university examiners (for the doctoral dissertation) within the time frames required by the Faculty of Graduate Studies.
- Acknowledge your contributions, when appropriate, in published material and oral presentations [Discuss policy regarding authorship, etc. of papers] in accordance with good scholarly practice and the University's scholarly integrity policies.
- Provide reasonable expectations about workday hours and vacation time in accordance with University policies.
- Clarify my preferred style of communication with students about areas, such as student independence, approaches to conflict, direct questioning, and mentoring.
- Explain my expectations for mode of address, professional behavior (e.g. punctuality), when to seek assistance, responses to constructive criticism, and academic performance expectations.
- Assist you in overcoming any cultural difficulties with norms and expectations.
- Respond thoroughly (with constructive suggestions for improvement) and in a timely fashion to submitted, written work. I will generally try to return written work within three weeks, and indicate otherwise if I cannot meet this deadline.
- Promote a research environment that is safe and free from harassment.
- Assure you are aware of field safety procedures and where possible, obtain appropriate training.
- Assist in managing conflict or differences among members of the supervisory committee.
- Make arrangements to ensure adequate supervision if I am absent for extended periods, e.g. more than a month.
- Encourage you to present your research results within and outside the University. [Approximately how often? _____.]
- Provide mentoring in academic writing.
- Provide advice and mentorship with respect to career opportunities, which may be assisted by resources, skills, professional development, and other avenues.

Similarly, here are agreement guidelines for student expectations with their supervisor:

As your student, you can expect me to:

- Take responsibility for my progress towards my degree completion.

- Demonstrate commitment and dedicated effort in gaining the necessary background knowledge and skills to carry out the thesis.
- At all times, demonstrate research integrity and safety precautions, and conduct research in an ethical manner in accordance with University's policies and the policies or other requirements of any organizations funding my research.
- In conjunction with you, develop a plan and a timetable for completion of each stage of the thesis project.
- As applicable, apply to the University or granting agencies for financial awards or other necessary resources for the research.
- Meet standards and deadlines of the funding organization for a scholarship or grant.
- Adhere to negotiated schedules and meet appropriate deadlines.
- Provide you and the Faculty of Graduate Studies my contact information when I change addresses.
- Meet and correspond with you when requested within specified time frames.
- Report fully and regularly on my progress and results.
- Maintain my registration and ensure any required permits or authorizations are kept up to date until the program is completed.
- Be thoughtful and reasonably frugal in using resources.
- Behave in a respectful manner with peers and colleagues.
- Conform to the University and departmental/school requirements for my program.
- Meet at regular intervals with my supervisory committee (no less than yearly).
- Progress to my candidacy defense (including completion of my comprehensive exam) within 36 months of the initiation of my program.
- Go to you first with my concerns about graduate student supervision or research steps, to try and work out difficulties before taking it to higher authorities.
- Keep orderly records of my research activities and be able to send copies of specific joint items easily to supervisor or research team, when requested.
- Develop a clear understanding concerning ownership of intellectual property and scholarly integrity (Policy websites can be listed).
- Attend any required training programs that are discussed and agreed.
- Work at least regular workday hours on my research project after course-work has been completed.
- Discuss two months in advance with you, my plans for vacation, and how that fits with the research project schedule.
- Discuss with you the policy on use of computers and equipment.
- Complete my thesis and course work within timelines specified by the Faculty of Graduate Studies and suitable for my discipline.
- Finish my work and clear up my workspace when program requirements have been completed.
- Return any borrowed materials on project completion or when requested.
- Explain to you my comfort with modes of communication (e.g. formal or informal, use of questioning) and independent activities.
- Make it clear to you when I do not understand what is expected of me. Ask for more help when needed.
- Describe my comfort with approaches to our academic relationship, e.g. professional versus personal.

- Contribute to a safe workplace where each individual shows tolerance and respect for the rights of others.
- Respond respectfully to advice and criticisms (indicating acceptance or rationale for rejection) received from you and members of my supervisory committee.
- Inform you in a timely manner about any of my presentations to facilitate attendance and project record keeping.
- Discuss, with you, my career plan and hopes for professional growth and development.
- Request in a timely manner (two weeks in advance for example), letters of reference for scholarships or other juried opportunities to which I would like to apply.

1.2 *Refine the Selection of Students Admitted into our Programs*

Many professors held that more supervisory problems occur with students who are not a good fit for that discipline, well-prepared, or performing well in graduate school. As the student falters in course work, passing a program-required exam, or in delivering appropriately written thesis chapter drafts, stress is increased particularly for that student, but is frequently felt by the supervisor as well. The supervisor may ask the student to increase their effort and time toward studying, preparation, or practice. More guidance and mentorship is needed for students who are unclear or unsure about how to perform better, and more time is required by the professor and student to communicate and prepare for the next milestone of the student's program. This is especially the case when a student has failed a comprehensive or candidacy exam, as their confidence may be significantly diminished. This added attention and time competes with professor's other work expectations, and is often not planned for in the suite of commitments a professor has already made. Hence, students who need more attention clearly can be a drain on professor productivity. This added attention and time from the supervisor is what the student often needs to succeed, and it is part of the supervisory responsibility of the professor. When a professor does not step up with additional time or attention, many students will feel adrift and unsupported, which can further erode their confidence. These feelings can lead to delays in the student completing the program, student attrition, or even grievance proceedings against their professors.

Graduate student admissions processes could change to consider the strategy of "broad-based admissions" to more carefully screen and select students for admission, beyond using grades and letters of reference as criteria. For example, at the University of British Columbia undergraduates are required to describe the challenges they have faced as well as their leadership and teamwork skills as part of their application (Drolet 2013). Departments could develop their own "broad-based admissions"

application requirements, potentially informed by their own analysis on the relationship among incoming graduate students' grades, standardized exam scores, letters of reference, writing samples, research and work experience, and student success. While interviews have become one way to more carefully choose student applicants, there is some evidence that it is less reliable as a check on the likelihood of future performance than might be expected (Kahneman 2011; Monahan, 2013). Evidence of the student having adequate undergraduate-level knowledge in a particular area, completing tasks in a timely manner, having a strong work ethic, working well with others on project-based and intellectual pursuits, and demonstrating writing ability could be more carefully assessed at the application stage to more carefully admit incoming graduate students. Each department may be able to identify trends among those students who have not done well in their programs, or dropped out, and tailor their increased scrutiny around the desired knowledge areas, skills, and work orientations that they see among those who tend to succeed.

A recent informal survey at the University of New Brunswick identified these best practices among successful graduate students: 1) Were goal driven and highly organized; 2) Focused on their well-being; 3) Proactively managed their supervisors and supporting individuals, and; 4) Applied specific writing techniques (Gupta 2013). Similarly, Lovitts (2005) found that those students who did well in completing their degree beyond coursework had a high degree of discipline concerning their work, an ability to delay gratification, perseverance in the face of frustration, a high degree of autonomy, a strong internal locus of control, a high level of self-initiative, were task-oriented and strove for excellence. Departments may want to consider what "broad-based criteria" they may want to require for applications to their specific departments in relation to these best practices and personality trends of those students who tend to do well.

1.3 *Require graduate students to be reviewed for satisfactory progress to continue in the program after Year 1, for the Masters of Arts or Sciences degree, and in Year II, for the Doctoral degree, with consequences for unsatisfactory review.*

Many professors held that students who did not make satisfactory progress in their courses and completing other exams (preliminary, qualifying, specialization exams) were allowed second chances that were sometimes followed by a weak performance, just "at, or above the bar" that allowed the student to stay in the program, and suggested that the remainder of the program for those students was often a struggle. Supervisors are often reluctant to be so critical as to suggest the program of study may

not be suitable for the student, and the student may not be aware of the significant improvements necessary to be competent and competitive alongside their peers in the field.

It is at these junctures of difficulty when a supervisor's observational and mentoring skills are most important, in that they must work more closely with the student, in most cases, to guide them through the remaining stages, be it passing the candidacy or rewriting part of written work to satisfy the supervisory committee or research team. Supervisors who have a "sink or swim" attitude toward the student, or who are not committed to providing more attention and advice to students who are struggling at particular junctures, may end up with a student who takes a very long time to complete their degree, and who ultimately is not a strong competitor for positions in their area once the degree is earned.

Aside from more training to supervisors *about how to provide constructive, honest advice* on their assessment of students' critical thinking, research synthesis, writing, methodological, and presentation skills as required by the standards of their field, departments could put in place a set of guidelines to address a failed course, exam, or prolonged period to complete a research proposal or other assignment that is part of the graduate degree. When student falters at any stage, a plan should be put in place between the supervisor and the student about the steps that will be taken to move toward the next goal. While it may be unknown how long it will take for a student to be at a stage where the student is ready for the next milestone, such as an exam (for example, qualifying or candidacy), a time line to place targets is warranted. There is evidence that progress monitoring is quite effective in hastening students' progress (Mullainathan and Shafir 2013).

Departments could play a stronger role in setting up such plans when a student fails an exam, or does not have satisfactory progress at stages of review. A student might also be asked, "What would support your success?" to allow flexibility in the kinds of mentorship and support the student might access, through various programs on campus. Under-utilized programs, such as the programming targeted at graduate students through the Student Success Centre (on topics such as thesis writing and referencing), Faculty of Graduate Studies seminars tailored to graduate students, and University Teaching and Learning Centre programming should be recommended to our students, especially at important junctures where they are seeking information about how to succeed. For example, when a student fails a course or takes longer than the recommended time to meet a particular milestone (finishing courses, proposal defense), a meeting could be required that involves a graduate coordinator,

supervisor and the student to openly discuss the factors that are contributing to the poor or slow performance, and what kind of support the student would find most useful.

If departments had tracking information on the relationship among failed courses, stalled progress, and the likelihood of the student finishing in various time frames, this kind of information could be used to inform the student about where they stand relative to others in that program, and it may allow the student to reconsider their suitability as a student in that program, and the likely time it will take them to complete their degree. The best response may not always be, "try again" if graduate coordinator and supervisor do not see the determination and aptitude, for example, that they believe will be required to achieve reasonable progress to complete the degree. On the other hand, if the student is committed and determined, the department and supervisor need to provide the supports they can to help the student succeed, overcome barriers to success, and move forward with confidence.

2. Increase accountability of supervisors and departments for good supervision.

It is a privilege to attend graduate school, and for professors, it is a privilege to supervise graduate students. The supervisory privilege gives the professor more power than that which is accorded to the graduate student, and with that power comes responsibility. Most professors at the University of Alberta appear to take the responsibility seriously, and I heard far more reports of good supervision than poor supervision. Assessments from students about their experiences with supervision, the good and the bad, are not systematically collected at the University of Alberta, and thus it is a complaint-based system that disproportionately highlights poor supervision.

2.1 Encourage or require chairs to hold exit interviews to gain information about graduate student experience and supervision.

One way to better monitor how University of Alberta supervisors are received by those they supervise is to encourage, or require, department chairs to hold exit interviews with each graduating student to gain information about graduate student experience and supervision. These exit interviews could inform Chairs of the more nuanced good practices and less effective practices of supervision among their faculty, allow discussion of the departmental mentorship environment, and point to areas of guidance, training and even reprimand, that could cultivate better supervision. Ideally, such exit interviews would be repeated one year later, to obtain more reflective, perhaps circumspect information

on the graduates' supervisory experience, and to gain information about the employment of the graduate and their assessment of the usefulness of their graduate training for their particular occupation.

Summary reports, every five years for example, could characterize the positive, negative and changing experiences that graduate students report for supervisors, as a whole, in that department. Additional information of interest, from the post-year-later interviews could include a description of potential additional training may help graduates succeed in their careers. This could provide fodder to department chairs and graduate coordinators (generic term used that includes Associate Chairs and Associate Deans of Graduate Studies) about the kinds of investments they may wish to make in professor and graduate student training, and engage the topic of supervision and related student career success alongside discussions about the departmental quality of teaching and research.

2.2 Require chairs to follow-up on progress of each graduate student with supervisors during their annual review meeting to understand delays in progress and plans to address problems.

Many professors are aware of the significant contributions that good supervision can make to a thriving learning environment, students' in school and career success, and their own learning and productivity. It is perhaps a gap then that this important part of the professor job is rarely addressed in annual reports beyond students who are listed as supervised, students who have completed their degrees, and in numbers of co-authored presentations and publications with the student. One way to address this gap is to require department Chairs to review the progress of each graduate student listed under those supervised, or co-supervised by that professor. Questions along the lines of "This MSc student has been in our program four years. What are they working on now? Why have they not completed their thesis? What is their plan to finish?" This will also allow the Chair to evaluate, in a qualitative sense, the attentiveness of supervisors to the stages and rates of progress of their students, and to add language in the summary assessment about supervisory trends for that professor for the past year. It would also allow department chairs to potentially identify patterns among their faculty members in regards to student progress and completion, thereby being able to address supervisory problems such as a professor with recurring poor communication with some of their graduate students, or unreasonable additional work required of their students to earn post-graduate degrees. Similarly, a review of each professor's graduate student progress can provide an opportunity for the Department Chair to say, "It looks like you are a good graduate supervisor. Your students are productive and engaged in the

department and professional activities. Thank you for adding to the culture in our department of good supervision. Please share with our new professors in the department what seems to have worked best for you." Recognizing good supervision may be as important as recognizing poor supervision in elevating the importance of supervision at the University of Alberta. Given most professors are highly sensitive to the norms of their profession and department, creating a culture where good supervision is lauded and discussed can enrich the culture of supervision.

2.3 Require departments, or Faculties, to establish a process to correct recurring poor supervisory performance.

When poor supervision occurs, few departments at the University of Alberta have a routine process or established policy to address the problem. Blatant forms of poor supervision consist of cases where there is recurring neglect, excessive micro-management, verbal abuse, work exploitation or sexual harassment, and demands made of the student beyond what is reasonable for that discipline, program, set of research or teaching responsibilities, or thesis standards of "pass".

To increase accountability by departments for poor supervision, a procedure could be put in place to address recurring student complaints about a supervisor. Graduate coordinators are critical facilitators in graduate student-supervisor relationships. Unfortunately, they are often in an awkward position of hearing graduate student complaints, and are often sworn to secrecy by the student. The graduate coordinator must often explain to the student that it is only with the student's permission they will take the complaint forward to the attention of the supervisor. In most cases, the student is seeking an informed opinion about their supervisory problem and is looking for non-adversarial options to resolve the problem. A student may not want their complaint to reach the supervisor, for fear supervisor reprisal. In some cases graduate coordinators, concerned about the situation, inform Department Chairs about the complaints they hear about, and in other cases they hold that information in confidence. Some graduate coordinators feel awkward about being in a position to deliver a complaint to a departmental colleague.

In one department, the Department Chair informally asked the graduate coordinator to annually make comments on the quality of supervision, from the coordinators' vantage point, for each of the professors in that department. The graduate coordinator's impression of supervisory quality was taken into account in the Department Chair's annual evaluation for each professor. These capricious (because

of turn-over among department chairs and graduate coordinators), non-transparent practices are not advisable, as it reduces the clarity around how graduate student supervision is evaluated as part of the Professor's duties.

Established procedures for graduate coordinators to address serious or recurring complaints about a professor's supervisory practices should be established, as many graduate coordinators feel like administrators with no real authority, and can find their decision about how to take things forward overturned by the department chair. For example, graduate coordinators do not generally know if they should ask students for detailed letters of complaint to document a problem, how to store these letters or register these letters with the department, their duty to inform the professor who is criticized, if it is ever appropriate to warn prospective students about the poor track record of relations between a particular supervisor and his or her students, or when it is appropriate to take the issues to a higher level. Ultimately, problems of a serious nature (verbal abuse, threats, issues of safety of any kind) should be reassigned to a higher level of authority, as graduate coordinators are not trained or equipped to address the more serious issues, some of which could have legal ramifications (e.g. a professor seeking redress for wrongful treatment in response to reported student complaints), and are embedded in a department in which they generally seek to maintain long term positive relationships with their colleagues. Someone not tied to the department, who is fully aware of the legal responsibilities for the University to protect students and treat professors fairly, and who has the authority to investigate what has happened, would be in a better position to address the more serious problems. Department chairs may also need training in regards to how to address "the recurring professor with supervisory problems", as some tend to bide their time to see if the problem will resolve itself or diffuse, and others proactively seek longer term solutions. Departments would benefit from an established protocol for switching supervisors, i.e., develop a process that respects the graduate student and the supervisors involved.

Supervisors with poor track records of supervision could be required to co-supervise with other successful graduate student supervisors and mentors, to gain the peer-to-peer learning about what is often entailed in "good" supervision. When recurring problems occur for a supervisor, some departments have required a hiatus for the professor who has, for example, had many of his or her students leave the program due to a conflict with those students. This hiatus can allow the professor time to re-evaluate their history with dissatisfied students, reflect on ways to improve their relationships with their graduate students, and provide time for additional supervisory training. While

some professors may find it crippling to their research program to be without graduate students, it behooves them to develop the managerial skills needed to work effectively with graduate students, just as what would be required in other work settings.

Some universities require a trial period for assistant professors to co-supervise with tenured professors first, and then achieve certain markers, e.g., student completion, of graduate student success before they are allowed to supervise on their own. Other pro-active ways to demonstrate the privilege of supervision could be for a certain number of training courses to be completed before a professor is allowed to supervise, given the lack of exposure many new professors have to different supervisory styles and skills available to them. Indeed, an opportune time for providing training could begin with the new professor orientation led by the Centre for Teaching and Learning. One of the professionals at the University of Alberta who works closely with graduate students mused that recent hires at the University of Alberta disproportionately represent a highly accomplished set of professors, and that with that can come an inflexibility in supervision given the productivity to which these new professors are accustomed, and the standards of productivity they may superimpose on their own graduate students. How to supervise in a way that respects diversity of student ability, speed and work style may be important in the context of increased requirements for assistant professors, for example, to supervise students to completion as they accomplish other markers of productivity to earn tenure. One graduate coordinator noted how the stages of a professor's career and the pressures placed on graduate students can be intricately intertwined, especially as a professor is concerned about an adequate publication record to earn tenure.

2.4 Require graduate student mentorship/supervisory philosophy statement for tenure and promotion to recognize its importance in professor performance and University priorities.

Graduate student supervision has obtained increasing attention from higher educational institutions as fundamental to student success, and yet it is rarely directly addressed in tenure and promotion packages and reviews. Faculties could require that professors write a graduate supervision and mentorship philosophy statement as part of their tenure packet for promotion to Associate and Full professor. By virtue of stating one's philosophy one also is given cause to reflect and develop such a philosophy, just as professors can now, unlike fifteen years ago, articulate their teaching philosophy. One issue to address in the philosophy statement is the number of graduate students a professor can supervise and supervise well, as there are cases where the graduate supervisory load has been too high, which can

dilute the attention a professor has available to all of their students. Other matters worthy of attention in such a philosophy statement is the style in which a professor guides and interacts with his/her graduate students, and their observations about their approach to helping graduate students succeed, and dealing with particular challenges graduate students have faced while studying with them. While annual reports vary across campus, professors who have had problems with supervision could state goals and plans to improve their supervision in their annual report, just as some faculties require stating goals and plans to improve teaching or research productivity in their annual report. Professors' mentorship/supervisory philosophy statements could be placed on their University web pages, thereby allowing potential graduate students to consider the match between them and that supervisor.

3. Provide training and mentorship to supervisors to raise standards of supervision and mentorship.

3.1 Continue and expand training for supervisors to raise standards of supervision:

The team of three FGSR Associate Deans were put in place by the Dean of FGSR for the very purpose of helping secure both quality and standards, and they regularly present on supervision of graduate students at Faculty and departmental retreats, and orientations for new faculty members. In addition, FGSR Council has provided guidance on supervisor and departmental roles to promote good supervision in section 1 of the Graduate Program Manual (http://www.gradstudies.ualberta.ca/gpm/Section1.aspx). FGSR Council is the decision-making body comprised of all the representatives of the various graduate programs and the graduate students and meets once per month. The Associate Dean team has also used FGSR Council as a forum for spreading best practices, and they regularly include presentations at FGSR Council on current issues, for example, on student academic and disciplinary cases (pers comm. Joanna Harrington).

"Best practices of graduate student supervision" training, preferably through interactive workshops, could continue to be offered through the Faculty of Graduate Studies and additionally the Centre for Teaching and Learning. Such training could address a multitude of issues. Foremost, best practices training would address the expectations that graduate students and supervisors may have of each other (as described under section1.1). Other topics, and this is not an exhaustive list, could include how to guide proposal development, goal setting and tips to cultivate discipline to complete tasks, the effectiveness of various forms of communication and meetings (group-, one-on-one, student-to-student,

quick check-ins) that are associated with a cooperative and productive relationship, demonstrating and promoting self care, guiding students in writing throughout their program, working through tensions and conflicts in supervisor-student relationships, ways to provide more tailored assistance to international graduate students, the etiquette and ethics of authorship, respecting and benefitting from cross-cultural differences, directing healthy and respectful laboratory environments, the varied roles of the supervisory committee to help guide the student, preparing students for candidacy exams and defenses, helping students recover from failure (of a course, an exam), identifying mental health and financial difficulties in graduate students and directing them to appropriate resources, and common problems to avoid associated with the Collective Agreement (e.g., appropriate pay scales and numbers of hours a student should be expected to work) and the Student Code of Conduct (especially in regards to plagiarism).

A peer-to-peer mentorship program for new supervisors, or supervisors who are experiencing problems, could be put in place to link them with more experienced supervisors. University of Alberta's has had such a mentorship program available in the past, but it is no longer in operation, and was not focused on mentorship for supervision. Professors would ideally have the option to choose someone in their own faculty, in a field similar to their own, or outside the faculty, to have a greater sense of privacy in what they share. The three FGSR Associate Deans also make themselves available two days a week to meet with supervisors, graduate students and graduate coordinators, who regularly come to them for advice (pers com. Joanna Harrington).

3.2 Provide graduate coordinator training to foster a culture of mentorship

Graduate coordinators are central to the culture of departmental mentorship and resolving supervisor-student problems. They may also be in a key position to develop department-specific programming for specific skills workshops, and career information sessions, for that particular discipline. Graduate coordinators may also be able to organize a student-to-student mentorship program to help students easily access advice about working well with their supervisor, writing proposals, passing exams, and so on. FGSR organizes workshops for graduate coordinators on operating a graduate program and has a section on the FGSR website for graduate coordinators where they post guidance that might assist them with current common issues. Graduate coordinators could work with the department to develop more awards for good graduate student supervision, and make those awards available to post-doctoral trainees where appropriate, as well. FGSR could also provide more guidance to graduate coordinators

in their role as mediator to resolve graduate student-supervisor problems (as discussed under 2.3), and when to take matters to higher levels, to augment what is already available.

Graduate coordinators are in a key position to share with graduate students the resources available at the University of Alberta. The University of Alberta has an Ombudservice office that can help supervisors and graduate students resolve problems and provide advice. Other places graduate coordinators may refer students includes the Office of Safe Disclosure and Human Rights, for issues of very private nature, and group and individual counseling sessions are available through the Graduate Student Assistance Program as contracted with Homewood Human Solutions.

4. *Continue to provide to provide various forms of guidance and mentorship to students to improve the culture of mentorship*

There is a multitude of services and professionals on campus that create a culture of graduate student mentorship at the University. Mentorship involves recognizing the whole person, and the broader goals the student may have for their learning journey and career preparation at the University of Alberta. The opportunities at the University of Alberta are extensive, so mentorship and training need not be exclusive by any means between the supervisor and the student.

Graduate students can learn a great deal about the services available to them through the Graduate Students Association's orientation program that is held at the beginning of each academic year. When departments admit a student with a letter of acceptance, they could invite the student at that time to the orientation, as attendance could be much higher than it currently is to this orientation.

FGSR also provides professional development seminars on communication, career development, graduate teaching and learning, and professional practice. A vast number of tip sheets are available on many topics, such as pregnancy and graduate school, surviving the candidacy examination, and preparing for one's defense on the FGSR website. Specific teaching tips are provided on topics such as teaching with an accent, developing your teaching philosophy, and guidelines for electronic communication with students. In regards to writing, the Faculty of Graduate Studies holds various training sessions on how to write a successful tri-council proposal and other scholarship applications.

The Student Success Centre offers workshops tailored to the needs of graduate students available on a cost-recovery basis (cost is $40-$130) such as workshops on thesis-writing strategies, writing a

literature review, crafting a thesis or dissertation proposal, writing a scholarly abstract, writing an effective funding proposal, and for non-native users of English, developing one's academic English with writing strategies. There are communications workshops as well, on how to create engaging presentations, prepare for an oral defense, carry out impromptu presentations, and present scientific data. The Student Success Centre also has individualized coaching to assist graduate students with disabilities to use their strengths to move around areas of challenge created either by the impacts of disability or by inaccessible/less inclusive environments that are particularly valuable to graduate students.

The University of Alberta's Career Centre, CAPS, holds numerous seminars and career forums to help students, both undergraduate and graduate, plan their careers. Career advising consultations are available, as are one-on-one consultations for resume, CV and cover letter advice. Students can book one-hour appointments for mock interviews, and be linked up to a mentor in the employment positions they hold interest. CAPS additionally holds creative presentations and dialogues on topics such as: "Are PhDs too smart or slow for government; Myths about careers in the public sector"; and "How to write personal statements for graduate school applications."

The Centre for Writers provides writing tutors for drop-in and pre-planned appointments, as well as free writing workshops. The Learning Shop of the University of Alberta also offers dozens of other workshops and seminars to learn about teaching, research, managing, E-learning, computers and technology, personal development and health, wellness and fitness. There are also learning opportunities offered by Community Service Learning on experiential learning, presenting works-in-progress, and how to effectively collaborate on research. The Centre for Teaching and Learning (CTL) offers Teaching and Learning, and Educational Technology Sessions to graduate students, faculty, and sessional instructors on campus. This past year 2013-14, four specific workshops were offered around best practices for graduate student supervision, how to guide graduate students in writing throughout their program, how to resolve conflict between supervisor and student, and the various purposes of a graduate supervisory committee. Graduate students who have specific eLearning problems/issues or those who have teaching responsibilities needing assistance or advice with course design can also make use of the consultation services available through CTL.

Additionally, the University Wellness Centre provides events that can help students from everything from solving sleep problems, to "increasing motivation when you are down", to healthy eating habits and how to deal with cross-cultural relationships with one's supervisor. Tailor made programs to

enhance student mental health are continually being developed in our Student Services office as well. An "international college" is being considered that would serve to better bridge undergraduate and graduate students with the culture and expectations at the University of Alberta.

It appears that the University of Alberta actually has a great to deal to offer to support the mentorship of graduate students. Where we can improve is by making these services widely known among our professoriate (including department chairs, graduate coordinators and professors) and graduate students. In some cases, professors are in a position to pay for graduate students to obtain added professional training as part of their grant obligations to contribute to highly trained professionals (e.g. as is found in most NSERC grants).

A particular need for supervisory training may be in the area of recognizing the increasing number of students not planning on working in an academic job, and steering that student to other career related skills and knowledge learning opportunities. Fewer than 30% of doctoral students, for example, are expected to obtain academic jobs (Rose 2012). To address this need, FGSR has recently struck Graduate Student Professional Development Advisory Council to develop an innovative program on professional development, specifically for graduate students and post-doctoral trainees. In addition to teaching and research skills, programming around professional and career-related skills will be developed. Transferable or workplace readiness skills might include personal and interpersonal skills such as communicating with different audiences, across cultures, with media, project and time management, and leadership and team management. Career-related skills could include such topics as career paths outside of academia, networking, and self-assessment (Rose 2012).

5. *Better integrate PD scholars into department culture; provide more training on PD scholar supervision, and more PD scholar professional development training opportunities.*

The training mentioned above is also of importance to post-doctoral trainees who are specifically interested in improving their chances of employment across a wide range of PhD level positions. Post-docs in particular in Canada reportedly want more training that will put them in good stead for the next step of their career (Standford et al 2010). While the University of Alberta has a Postdoctoral Fellows (PDF) Office, there are currently no professional development activities, other than website advice about how to develop an independent development plan. Other support activities are not offered. Only a few of the 600 post-docs at the University of Alberta engage with the Postdoctoral Fellows Office.

The Faculty of Graduate Studies' new Graduate Student Professional Development Advisory Council could develop a set of best practices for PDF training.

A 2010 Canadian Association of Postdoctoral Scholars (CAPS) survey suggests that post-doctoral trainees, most of who are in their 30s, are subjected to low pay and few job benefits. They are concerned about lengthening their post-doc terms (Stanford et al. 2010), where on average they are earning $38,000-$50,000 a year (Thon 2012). In Canada PDFs may not apply for and hold grants, although in some cases they are allowed to be co-applicants with their PDF mentor (Standford, 2010). Many PDFs are envious of the Australian PDFs' arrangement where they may apply for and hold grants and are treated as research-focused faculty members, where annual pay raises and other faculty-level opportunities for recognition are provided.

There is no guidance at the University of Alberta about "best practices for supervising PDFs" and this is apparent in the varied experiences PDFs described in their supervision at the University of Alberta. Some PDFs work closely with a supervisor, who directly funds their position, and are given significant responsibilities, for example, to run a research laboratory. These PDFs may have a very productive relationship with their supervisor and with other graduate students over which they help supervise. There is also the risk that the PDF is sufficiently pre-occupied with running the professor's research lab or program that she or he is not making progress on writing and submitting research articles, thereby diminishing his or her opportunity to obtain an academic job after their post-doctoral position ends. Others are bringing in their own post-doctoral funding to study in an area complimentary to a professor's research focus. The latter group is more at risk of being neglected, and left to their own devices on writing and publishing articles. Few of the PDFs plot out goals with their supervisor for the year or two they will stay at the University of Alberta, and many of those with whom I spoke did not feel they received much guidance on writing articles, and thought they would benefit from a closer working relationships on papers with their supervisors. It appears that when professors agree to supervise a post-doctoral trainees, few figure in the additional mentorship time and effort that would be appropriate to truly enrich their PDFs learning from their supervisor and in their particular department. There appears to be little to no discussion at the University of Alberta about scaffolding, or the various forms of guidance and mentorship that would be most effectively provided at the Masters, vs. PhD, vs. Postdoctoral stage of a person's professional development. At the minimum, FGSR, graduate coordinators, and department chairs should encourage professors who hire PDFs to draw up written expectations between the supervisor and the PDF for the committed period in which they will be

working together. The expectations could be similar to those provided in section 1.1 of this report, but additionally recognize the laddering of PhD skills, where the supervisor agrees to guide the PDF in leading proposal development, writing and revising refereed articles, developing creative works, teaching, supervision of students, engaging with the press and other interested audiences, and so on.

Additionally, many post-doctoral trainees in Canada reportedly feel as though their "significant contribution to the academic enterprise is underappreciated and their concerns are largely ignored" (Standford, 2010:19). Each department who has post-doctoral trainees could do a number of things to better integrate PDFs into the department, including allowing them to attend and possibly vote (depending on the terms of reference in that department) at department council meetings, present a seminar in the department, guest lecture in some of the courses in which the PDF can most appropriately contribute, invite PDFs to departmental social events, and allow a certain amount of funding in the department to be allocated to PDF training and travel, should that not be available through the funding they hold for the PDF. Some PDFs would like the opportunity to teach their own course, and in some cases this could be negotiated with their supervisor and the department chair. I was struck by the isolation that many post-doctoral trainees reported feeling, where there was little intellectual conversation built into their workdays. This daily sense of intellectual connection and sense of belonging in the hosting department is not something supervisors can do alone, nor can it be provided by the University's Postdoctoral fellow's office. Departments vary in culture, and developing a supportive environment for PDFs may be best left to graduate coordinators through specific efforts they make to see what works best given the number and kinds of PDFs they currently have in their department, and the formal and informal department opportunities PDFs could have to interact with other graduate students and faculty.

Summary Recommendations and Potential Delegation of Responsibility

Professors, graduate students and post-doctoral trainees are more likely to address the quality of supervision as part of their professional training, ethos and desired behavior if it is built into the institution's monitoring and professionalism practices, and reward system. Toward that end, the top priority to improve the quality of graduate student supervision is to *increase accountability of supervisors and departments to promote good supervision* (#2 below). While there are good practices of supervision in common across disciplines, there is variation in departmental and disciplinary cultures, and mentorship for success in each particular department is likely best done at

that level. This will require substantially more reflection and discussion about the strengths and weakness of current graduate student supervision procedures, practices, and the very nature of mentorship, at department council meetings, and in focused discussions with graduate student and post-doctoral trainees in that particular department.

The following section reviews the recommendations above and provides more detail in regards the level at which implementation may be most effectively delivered.

Delegation of Responsibilities

1. Provide earlier guidance to students to improve student success

Recommendation	Potential responsible party for implementation
Require graduate students to be reviewed for satisfactory progress to continue in the program after Year I (MSc), Year II (PhD), with consequences for unsatisfactory review	Department
Add requirement for each graduate student and supervisor to submit written agreed-upon expectations of each other at the beginning of program.	Department Training on reasonable expectations provided by CTL or FGSR
Refine acceptance criteria to accept graduate students to choose those more likely to succeed	FGSR Department training on options to employ to more carefully select graduate students

2. Increase accountability of supervisors and departments for good supervision to address hidden weaknesses

Recommendation	Potential responsible party for implementation
Require chairs to organize exit interviews with students to gain information about graduate student experience and supervision.	Department Exit interviews can be held by arm's length person assigned by department chair
Require chairs to follow-up on progress of each graduate student with supervisors during their annual review meeting to	Department FEC, i.e., progress of graduate students recognized as important in annual report

understand delays in progress and plans to address problems.	and in FEC discussions
Require Departments/Faculties to establish a process to address poor supervisory performance, and improve student experience.	Department Chairs FGSR procedure for how to address serious and recurring supervisory problems
Require graduate student mentorship/supervisory philosophy statement for tenure and promotion to recognize its importance in professor performance and University priorities.	Faculty (FEC) Tenure and promotion documents changed to include mentorship philosophy statement as part of the consideration for advancement

3. Provide training and mentorship to supervisors to raise standards of supervision and mentorship

Recommendation	Potential responsible party for implementation
Offer training, and possibly require training for new faculty, in the following areas to raise standards of supervision. • Best practices of supervision • Understanding the challenges for international students and other support available for their success • Skills to avoid and resolve conflicts • Guidance on writing assistance throughout the student's program • Obligations in the Collective Agreement • Rule and violation processes for the Student Code of Conduct	FGSR CTL
Graduate coordinator training to foster a culture of mentorship	Department FGSR
Forms of recognition at departmental level, e.g., for excellence in supervision or in creating a culture of good supervision	Department Faculty (Nomination committee)

4. Provide various forms of guidance and mentorship to students to improve culture of mentorship

Recommendation	Potential responsible party for implementation
Graduate Student Areas of Interest for Training and Guidance: • Writing well, and routinely	FGSR CTL Departments, i.e., for specific areas of

• Proposal writing • Publishing, responding to reviews • Teaching effectiveness • Speaking and writing for different audiences • Managing work-life balance • Leadership • Grant and Project Management skills • Skills and competencies for employment options outside of academe	training and guidance

5. Better integrate post-doctoral (PD) trainees into department culture; provide more training on PD scholar supervision, and more PD scholar professional development training opportunities.

Recommendation	Potential responsible party for implementation
Provide professional development knowledge areas and skills training	Professional Development committee, FGSR Departments
Engage post-doctoral trainees in departmental scholarly and social events & guest lecturing	Departments

Conclusion

High quality supervision and mentorship is central to an institution committed to seeing their graduate students flourish in their careers and in the contributions they make to the public good. A commitment to high quality supervision and mentorship is also tied to the value we as educators have to the continued expression of human potential in creative and intellectual pursuits. More practically, the increasing number of graduate students at the University of Alberta, their central role in research productivity, and the challenges they face on the job market, make graduate student supervision and mentorship very important. The combination of nudge, shove and "changes in thinking" approaches that the University of Alberta provides to foster a superb culture for graduate student supervision deserves more attention, and needs to recognize the suite of demands professors and graduate students

already feel in the current circumstances. Supervisors are faced with a number of privileges and pressures as part of their professor duties, and fostering a culture of good supervision and mentorship is an institutional responsibility.

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Appendix

Consultations with the following (interviews, participation in focus group, email discussion):

Provost's Fellow Advisory Council

Provost Fellow, Chair, Naomi Krogman
Office of the Provost and Vice President (Academic), Murray Gray
President, GSA, or designate, Ashyln Bernier (2012), Brent Epperson (2013)
Vice-President Academic, GSA, Nathan Andrews (2012), Colin More (2013)
Vice-President Labor, GSA, Brent Epperson (2012), Simarjit "Monty" Bal (2013)
Dean, Faculty of Graduate Studies, Mazi Shirvani
Departmental Graduate Coordinator, Heather McDermid

Three Focus Groups (4-14 members in each):

- Post-doctoral trainees
- Two Professor groups of across areas of NSERC, SSHRC and CIHR focused areas.

Other groups meetings:

Informal meeting with a 4 GSA elected members.

Other individual meetings/discussions:

Health sciences, Medical school
Lili Liu, Dept Chair of Occupational Health
Lory Laing, former Dean of Public Health Sciences
Jeff Johnson, CRL Chair, Public Health
Debby Burshtyn, Department of Medical Microbiology and Immunology, Graduate Coordinator 2009-
Ruth Wolfe, Practicum Program Director and Capstone Course coordinator, Chair, Professional Degrees Committee of Public Health

Sciences, Engineering
Ellen McDonald, Associate Dean of Research (in 2012), ALES
Peter Blenis, Renewable Resources, former graduate coordinator, ALES
Heather McDermid, Biology

Social Sciences
Ken Caine, Sociology, Assistant Professor,
Harvey Krahn, Department Chair, Sociology

Business
David Deephouse, Associate Chair of Graduate Studies, oversees thesis-based Business MAs and PhDs

Physical Education and Recreation
Dean Kerry Mummery

Engineering
Michael Brett, Professor, Electrical and Computer Engineering

Resources for Graduate Students Experts

Jayson MacLean, Ombudsperson for graduate students.
Frank Robinson, Dean of Students
Robin Everall, Acting Dean of Students, former Provost's fellow on student mental health
Dr. Wendy Doughty, Director of Student Success Centre
Teddi Doupe, Associate Director of Specialized Support and Disability services, Student Success Centre
Keith Haimila, Peer Education Coordinator, CAPS
Agatha Beschell, social worker, Mental Health Centre
Sheree Kwong See, Interim Director, Centre for Teaching and Learning,
Joanne Harrington, Professor, Law and Associate Dean of Faculty of Graduate Studies and Research
Catherine Swindlehurt, Director, Office of the President
Tony Santiago, Immigration Advisor, International Student Services
Susan Buchsdrueker, Faculty Relations Officer, Office of the Provost and Vice-President (Academic)

Other Post-doctoral trainees

Anna Koop, Post-doctoral trainee, Computer Science
Ravi Gaikwad, Post-doctoral trainee, Chemical and Materials Engineering