
Skills Expected from Graduate Students in Search of Employment in Academic and Non- Academic Settings

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Making lists of soft skills and offering sessions to students may be the first step to getting graduate students to think about what they can offer future employers. Nicolas (2008) wrote that, "without an overall framework and without a link to the research project," we are wasting time and creating superficial knowledge in our graduate students. The Statement of the UK Research Councils' Training Requirements for Research Students provided an excellent framework to layout the expectations we have of doctoral students' research skills in their pursuit of an academic career, and to superimpose the requirements non-academic employers have for our graduate students.

The granting agencies NSERC, SSHRC, and CIHR, in collaboration with the Canadian Association of Graduate Studies and the Society for Teaching and Learning in Higher Education took initiative in 2007 to create their own Statement of Principles on Key Professional Skills for Researchers. In November 2008, the Canadian Association of Graduate Students published a summary of this work that stressed four areas that would have a strong connection in the university milieu: communication, management, teaching, and ethics.

This document was initially prepared as a tool to guide the direction of professional development programming for graduate students at the University of Alberta. A greater purpose would be to provide graduate students encouragement, support, and confidence to develop and realize their graduate program was an opportunity to gain valuable employable skills. We can better guide graduate students to prepare themselves for the current job market by using the structure presented by Bilodeau (2008)¹ that outlines common graduate student activities associated with these skills, and combining the most sought after skills by employers.

Nine of the ten skills noted below were considered important by Tri-Council and the tenth was added from the UK Research Council's Training Requirement for Research Students. The report will expand on each of these abilities, followed by suggestions, albeit not comprehensive, that graduate students can use to demonstrate their competencies. Also noted are the corresponding skills sought after by non-academic employers.

1. Communication and interpersonal skills
2. Critical and creative thinking
3. Personal effectiveness
4. Integrity and Ethical Conduct
5. Teaching Competence
6. Societal and Civic Responsibilities
7. Leadership
8. Research management
9. Knowledge mobilization and knowledge translation
10. Career Management *

¹ Prepared by Bilodeau in consultation with members of Tri-Council and STLHE. Permission was given to use the draft for the basis of this document.

1. Communication and interpersonal skills – researchers to be able to:

- communicate effectively, concisely, and correctly in written, spoken, and visual forms to a variety of audiences using a wide range of media
- use effective communication depending on a variety of interpersonal skills including listening, asserting, influencing, persuading, empathizing, and exercising sensitivity and diplomacy
- recognize the importance of other aspects of communication including body language and other forms of non-verbal communication
- listen to and receive feedback from peers, supervisors, and junior researchers
- give constructive feedback and respond perceptively to others
- experiment and apply their interpersonal skills through team building, consensus building, negotiation and conflict management
- develop and maintain cooperative networks and working relationships with supervisors, colleagues, and peers within the institution and the wider research community demonstrate self-understanding and a willingness to build their personal skills

Related Skill Sought in Non-Academic Sectors:

- Communication Skills
- Interpersonal Skills
- Computer/Technical Literacy Skills
- Teamwork skills

Graduate students can demonstrate these skills through:

- Public Speaking: research presentations at seminars, conferences, posters sessions, thesis defense, committee meetings, and lab meetings; artistic performances; interviewing test subjects for research purposes; asking/answering questions at seminars; general presentations to industry, public, or government; participating in debates and speech events; volunteering for community events
- Writing: submitting publications to journals and courses; journal editing/reviewing, designing research posters, writing grant and scholarship applications; providing progress reports, writing proposals and dissertation; writing letters, emails, blogs, and articles for general public
- Accepting a variety of roles: mentor, teacher, colleague, leader, student, committee member where one can be in a position to give and receive feedback, as well to respond to various situations requiring differing communication strategies
- Multi-Media: participating in blogs, wikis, twitter, video conferences; sharing data electronically; using technology in your presentations/teaching

2. Critical and creative thinking – researchers to be able to:

- gather their information from various senses, including oral and/or written expressions, reflection, observation, experience, and reasoning
- analyze and solve problems of various natures (disciplinary, professional, personal, social), to seek to think “outside the box” and maintain an open disposition, allowing them to imagine the impossible and nurture their creative thinking
- develop a high degree of innovation, original thinking, and risk taking

- conceive new ideas, goods, services, and practices with the intention of improving the current state of knowledge or applying it to a specific purpose in an innovative way
- make connections between disciplines and engage in meta-learning, enabling them to contribute novel ideas, assess the relevance and importance of ideas in various contexts, and critique and challenge current ideas, practices, and paradigms

Related Skill Sought in Non-Academic Sectors:

- Analytical/Research Skills
- Problem-Solving /Reasoning Skills
- Creativity Skills

Graduate students can demonstrate these skills through:

- Writing: proposal and thesis writing; journal submissions, patent submissions, thesis submission, course work, scholarship applications
- Research Activities: collaborative research; developing theoretical concepts; applying methodologies from one discipline to another; attending seminars related to discipline; participating in a journal club; bringing new methodology into research group; identify future research questions to develop from thesis
- Teaching

3. Personal effectiveness – researchers to be able to:

- engage in meaningful reflection about the historical development and present place of their discipline in the world and where and how they fit in it
- have a keen sense of self-awareness of their personal and intellectual strength
- reassess their positions, values, and future plans in light of their life experience and critical self-analysis
- achieve an appropriate life-work balance and to deal effectively with challenging situations and challenging people
- follow a flexible course of action that will lead to self-sufficiency and satisfying personal and professional achievements
- understand the importance of time and stress management to handle several assignments with conflicting deadlines simultaneously
- regularly access and manage up-to-date information regarding career opportunities, the work environment, and professional development

Related Skill Sought in Non-Academic Sectors:

- Planning/Organizational Skills
- Detail Oriented

Graduate students can demonstrate these skills through:

- Research Awareness: Prepare a literature review, give research/poster presentations

- Progress: have an annual meeting with committee to evaluate progress; develop research plan; update CV annually at minimum, identify successes
- Demonstrate multiple commitments: research, teaching, committees, volunteering, athletic pursuits, family, personal interests

4. Integrity and Ethical Conduct – researchers to be able to:

- be aware of and adhere to professional codes of conduct and standards in and beyond their disciplines
- be sensitive to ethical considerations in situations involving conflict of interest, appropriate authorship, and intellectual property attributions
- display impartiality and rigor when performing research and when analyzing and reporting research results
- be sensitive to the ethical aspects of multidisciplinary and multicultural situations, taking into account social and environmental considerations
- demonstrate responsible conduct in research and adhere to the standards for academic citation in writing in specific disciplines
- to handle competing obligations ethically and to negotiate and manage ethical dilemmas
- to engage in critical analysis of rules and standards to ensure that they are fair and equitable

Related Skill Sought in Non-Academic Sectors:

- Multicultural Sensitivity and Awareness

Graduate students can demonstrate these skills through:

- Ethics and integrity requirement: Graduate Ethics Training course, Institutional Animal User Training Program Certificate, Ethics Approval for use of Human Subjects;
- Acknowledgement: proper use of citations, references, copyrights and intellectual property
- Role Model: abiding to research and teaching contractual obligations, adhering to Code of Student Conduct and professional codes of conduct, awareness of human rights
- Teamwork activities

5. Teaching Competence – researchers to be able to:

- explain complex concepts related to the content, skills, and process of their discipline in various workplace contexts
- provide clear, explicit instructions that facilitate others' understanding and learning
- understand the importance of identifying the learning outcomes, first and foremost, to facilitate the selection of appropriate content (what to teach/learn), as well as the most effective teaching tools (how to teach/facilitate learning)

- inspire, motivate, mentor, and develop others
- adapt their instructional and mentoring activities to address different learning styles, recognizing different motivations, backgrounds, and experiences, in order to address learning needs in a systematic fashion

Related Skill Sought in Non-Academic Sectors:

- Communication Skills
- Interpersonal Skills
- Multicultural Sensitivity and Awareness
- Leadership Skills

Graduate students can demonstrate these skills through:

- Teaching: experience through sessional teaching, teaching assistantships and demonstratorships; presenting to elementary and secondary school students; mentoring and tutoring undergraduate and high school students; participating in teaching sessions and workshops; coaching and teaching in community organizations
- Administrative roles: leading discussion groups, chairing meetings, organizing conferences

6. Societal and Civic Responsibilities – researchers to be able to:

- contribute to society through their role as a member of various local, national, and global communities
- value civic responsibility, citizenship, and diversity, and they are able to communicate with members of other cultures in ways that are appropriate in their professional context
- demonstrate a broad understanding of the context, at the national and international levels, in which research takes place
- consider the interests of society by taking responsibility for the impact of their research activities on other researchers, stakeholders, customers, citizens, communities, and the environment, and by accepting the responsibility for communicating the nature and results of their research to the broader community

Related Skill Sought in Non-Academic Sectors:

- Leadership Skills
- Management Skills

Graduate students can demonstrate these skills through:

- Research Promotion: contact Public Affairs to communicate research relevance to community; participating in workshops and presentations for the community; publish research in academic and non-academic sources
- Community Engagement: serving as an expert or resource for industry, government, and community organizations

7. Leadership – researchers to be able to:

- influence, motivate, mentor, guide, and enable others to contribute to the effectiveness and success of an organization of which they are members, whether in a lab, in the field, in an institution, or in society
- acquire and apply other important skills such as communication, critical thinking, and problem-solving skills
- use effectively their knowledge and credibility to motivate and guide others
- articulate a vision, identify problems and solutions, empower and enable others, and facilitate teamwork
- adapt to challenging and changing environments and influence others to adapt as well
- manage others, including recognizing and rewarding the contributions of others

Related Skill Sought in Non-Academic Sectors:

- Leadership
- Planning/Organizational Skills
- Detail Oriented

Graduate students can demonstrate these skills through:

- Supervisory Roles: mentor, supervise, and delegate research responsibility to undergraduate - high school students in honors projects or summer internships; take on a chair/executive position in organization with responsibility of managing others
- Research Experience: establish research plan; problem solve; manage time; priority management
- Administrative Role: group facilitation; participate in team project/committee; reflect and document outcomes of conflict resolution

8. Research management– researchers to be able to:

- organize the environment in which research is being done for the purpose of seeking new knowledge and the adaptation of that knowledge for practical use
- possess suitable organizational skills and an appropriate knowledge of financial management, people management, and project management
- work efficiently in situations involving many projects with different objectives, different timelines, and different stakeholders
- apply effective project management through the setting of research goals and intermediate milestones and through the prioritization of activities
- plan, prepare, and manage budgets; set up, interpret, and maintain accounting records; and develop, evaluate, and negotiate contracts
- understand the concept of results-based management of research activities and utilize established practices to report to the appropriate officials in the institution, government, and/or industry

Related Skill Sought in Non-Academic Sectors:

- Management Skills
- Flexibility/adaptability
- Multi-tasking Skills
- Computer/Technical Literacy Skills

Graduate students can demonstrate these skills through:

- Research Experience: manage diverse and large amounts of information; review budget plan of supervisor's grant application; submit a grant application; provide annual progress report
- Life Balance: participate in committees, research, teaching, and personal pursuits
- Community Building: develop professional network; establish relationship with mentors

9. Knowledge mobilization and knowledge translation – researchers to be able to:

- translate research results into knowledge understandable to non-specialists in order to facilitate the uptake and use of knowledge and generate the best social and economic benefits to society
- identify, create, represent, and distribute knowledge for use by others through knowledge mobilization/translation
- raise awareness and learning through publication (oral and written), intellectual property protection (copyrights, patents, industrial designs, trade secrets), and technology transfer as activities of knowledge mobilization/translation
- be familiar with knowledge mobilization/translation as a process within the research cycle
- understand the value creation chain related to their specific discipline, and the ongoing relationship that links research and decision making
- acknowledge the need for long-term partnerships and communication between researchers and knowledge users

Related Skill Sought in Non-Academic Sectors:

- Communication Skills
- Analytical/Research Skills
- Problem-Solving /Reasoning Skills

Graduate students can demonstrate these skills through:

- Research Promotion: pParticipate in events for general public, government, or industry; develop ideas with TEC Edmonton; publish articles in non scientific forums; identify societal impact of research
- Prepare Research Philosophy

10. Career Management – graduate students to be able to:

- take ownership for and manage one's career progression, set realistic and achievable career goals, and identify and develop ways to improve employability

- appreciate the need for and show commitment to continued professional development
- demonstrate an insight into the transferable nature of research skills to other work environments and the range of career opportunities within and outside academia
- present one's skills, personal attributes and experiences through effective CVs, applications and interviews

Graduate students can demonstrate these skills through:

- Career planning: job applications, CV writing, interviewing, networking and self-marketing, attending professional development sessions/workshops, goal setting, grant writing

Moving Graduate Education into the Future

Graduate education is about creating individuals who have a capacity to ask interesting, demanding, and difficult questions. It is also about skill development that takes the student beyond cultivating a strong analytical mind. In the recent review of graduate education for the 21st century, Walker et al. (2008) make the following observation:

“Many are ill-prepared for the full range of rules they must play, be they [graduate students] in academe or beyond, and often the experience is marred by a mismatch between the opportunities available to students as they complete their work and their expectations and training along the way.”

Suggestions to lead graduate students in a direction that will leave them well prepared for the challenges they face in a global environment include a strong focus on professional development, mentorship by faculty, establishing milestones to mark achievement, integrating practice into research, and creating a connection to the community.

Recognize that while research skills are essential in an academic pursuit, there are many skills that graduate students can sharpen during this time. During any doctoral program, graduate students need to be aware that employers will evaluate candidates on the basis of how their diverse skill set can enhance their workplace, and how their personality will complement their new community.

References

Bilodeau, Pierre. 2008. Statement of Principles on Key Professional Skills Requirements for New Researchers. NSERC. Pp 1-6. Draft V. [http:// www.ucalgary.ca/proskills/files/proskills /NSERC%2520Draft%2520v5.0.doc+tri-agency+statement+of+principles+on+key+professional +skills+for+researchers&cd=3&hl=en&ct=clnk&gl=ca](http://www.ucalgary.ca/proskills/files/proskills/NSERC%2520Draft%2520v5.0.doc+tri-agency+statement+of+principles+on+key+professional+skills+for+researchers&cd=3&hl=en&ct=clnk&gl=ca)

Canadian Association for Graduate Students. 2008. Professional Skills Development for Graduate Students. [http://www.cags.ca/media/docs/cags-publication/Prof%20Skills%20 Dev%20for%20Grad%20Stud%20%20Final%2008%2011%2005.pdf](http://www.cags.ca/media/docs/cags-publication/Prof%20Skills%20Dev%20for%20Grad%20Stud%20%20Final%2008%2011%2005.pdf)

NACE 2008. National Association of Colleges and Employers' Job Outlook Graduating Student and Alumni Survey. National Association of Colleges and Employers, Bethlehem, PA <http://www.jobweb.org/studentarticles.aspx?id=2121>

Hansen, Randall, and Hansen Katharine. 2010. What do Employers Really Want? Top Skills and Values Employers Seek from Job-Seekers. Quintessential Careers. http://www.quintcareers.com/job_skills_values.html

Nicolas, Jean. 2008. Researchers for tomorrow. www.affairesuniversitaires.ca. February. Pp 9-13.

UK GRAD Programme. 2001. Joint Statement of the UK Research Councils' Training Requirements for Research Students. © UK GRAD Programme® <http://www.vitae.ac.uk/cms/files/RCUK-Joint-Skills-Statement-2001.pdf>

Walker, George E.; Golde, Chris M.; Jones, Laura; Conklin Bueschel, Andrea; Hutchings, Pat. 2008. The Formation of Scholars: Rethinking Doctoral Education for the Twenty-First Century, Jossey-Bass/Carnegie Foundation for the Advancement of Teaching. Pp 1- 232