Targeted Competencies in Graduate Programs

Report submitted by the Ad Hoc Working Group

Adopted by ADÉSAQ members

May 15, 2015

Updated on May 29, 2015

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Background:

In 2007, the Council of Ministers of Education, Canada (CMEC) issued a degree qualifications framework for assessing the quality of degree programs. This framework, entitled "*Ministerial Statement on Quality Assurance of Degree Education in Canada,*"[1] was specifically intended to provide assurance to the public, students, and postsecondary institutions that programs and institutions meet the highest quality standards and provide a context for identifying how degree credentials compare in level and standard, with a view to continuous improvement and international recognition of the quality of Canadian credentials. Furthermore, although the Conseil supérieur de l'éducation du Québec (Quebec Superior Council on Education) was in favour of the proposed framework, it stressed the importance of developing common tools that would take into account the specific character of university education in Quebec.

The CRÉPUQ[2] has reviewed the competency matrix included in the CMEC ministerial document.[3] However, as far as we know, this competency matrix has not been adopted by its official bodies, though it may have been used by some university institutions as a source of inspiration in the development of new programs at all levels or in the periodic assessment of their current programs. However, Quebec universities have defined the basic educational goals of graduate programs in their respective academic regulations.

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[1] http://www.cicic.ca/docs/cmec/QA-Statement-2007.en.pdf
Consulted on May 6, 2015.
[2] Conférence des recteurs et des principaux des universités du Québec (Conference of Rectors and Principles of Quebec Universities), which became the Bureau de coopération interuniversitaire (Office of Interuniversity Cooperation) in January 2014.
[3] See pages 3 to 8 of the *Ministerial Declaration…*, op. cit.

In 2007 and 2009, the ADÉSAQ[4] adopted two reports discussing the nature, structure and activities associated with the master's degree at Quebec universities. The **first report** concluded that the descriptions of master's degree programs did not provide a great deal of specific information about expected competencies, and even less information about their level. The ADÉSAQ also observed that expectations in the "CRÉPUQ matrix" (in reality, the CMEC matrix) were generally high, even too high for master's degree programs, as some seemed more applicable to doctoral degree programs.

The **second report,** which provided additional explanations, recommended that institutions clearly define the expected competency levels for each specific master's degree profile, in accordance with the disciplines.[5]

At its meeting on May 20, 2011, the ADÉSAQ mandated a working group[6] to identify the expected competencies of master's degree holders.[7] However, the group considered it impossible to define the expected competency levels in master's degree programs without defining the competency levels in doctoral degree programs as well. Therefore, it was decided that a framework for graduate degree programs would be developed.

Targeted Competencies in Graduate Programs: A Common Issue for All Universities

A review of publications discussing the targeted competencies in university education programs, which is attached as an annotated bibliography in Appendix 1, provides a fair share of the answers. The members of the working group chose the competency framework of VITAE, a British group, as their source of inspiration for the design of the first framework, but consultations and work carried out at several ADÉSAQ member universities led to a version that is better adapted to the learning culture in Quebec universities. Polytechnique Montréal used this version as the basis for creating its own institutional framework for its master's and doctoral degree programs in June 2014, which includes competencies, their components and the resources to be mobilized. Due to the quality of this framework, the working group used its structure as a starting point and expanded it to include all discipline areas.

The members of the working group distinguished between research master's programs and other types of master's programs offered at Quebec universities, which are most commonly known as "professional master's programs." The true distinction between these two types of master's programs is where their students apply skills and knowledge. Research master's programs educate individuals who work in research environments or who want to pursue a doctorate, while professional master's programs educate individuals who work in practice environments in the broader sense. As for doctoral programs, the committee considered only Ph.D. programs, i.e. doctorate programs with a dissertation, while keeping in mind that the completed framework would need to take into account professionally-oriented doctorates, which are now becoming more widespread.

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[4] Association des doyens des études supérieures au Québec (Quebec Association of Graduate Deans).

[5] Idem, page 22.

[6] Chaired by Marie Audette of Université Laval, and made up of the following members: André Beauchesne, Université de Sherbrooke, Jean Dansereau, École Polytechnique, and Norbert Morin, UQAM; Jean Lebel, Executive Director, was invited to join the group as a researcher, analyst and editor.

[7] Excerpt of the minutes of the ADÉSAQ meeting on May 20, 2011.

Added Value and Use of the Framework

This framework developed by the ADÉSAQ establishes all expected competencies[8] of anyone who has graduated from a master's or doctoral degree program, whether these competencies are essential or complementary to their education.

In this respect, the framework provides:

- students with a tool they can use to demonstrate their professional development, thereby promoting their employability;
- professors with a tool they can use to guide their students' education and supervision, and demonstrate their students' developed competencies in various situations (references for scholarship applications or jobs);
- university institutions with a guide or a basis for developing their own framework, since this type of tool can also be used to assist their program creation and assessment process;
- certain provincial bodies, such as the Bureau de coopération interuniversitaire (Office of Interuniversity Cooperation, BCI), the Ministère (ministry), the Fonds de recherche (Research Fund), etc., with inspiration they can use to formalize their requirements in line with their specific mission.

Framework Reading Guide

- The framework is structured as a table presenting the competencies, their components and the resources to be mobilized, i.e. knowledge, know-how (skills) and self-management (qualities) that can be developed or acquired within programs;
- In this table, the first four competencies are considered essential, i.e. minimum competencies to earn a degree, and the last competency is considered complementary to professional development and employability;[9]
- Competency components and required resources do not refer to a series of steps that must be taken or a specific hierarchy.

Colour Code Key

Knowledge area	knowledge
Know-how and intellectual skills area	skills
Self-management and personal qualities area	qualities

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[8] A competency is the **potential for action** by a person (ability to act); the action in question here concerns accomplishing complex **tasks** (problem-solving, decision-making, completing projects) by mobilizing appropriate **resources** (subject knowledge and strategies) in various **situations (**http://csrdn.qc.ca/discas/reforme/definitionCompetence.html. Consulted on May 6, 2015).

[9] The ADESAQ thinks that this complementary competency is a responsibility of students, but that university institutions should provide the means necessary to develop it.

Framework of Expected Competencies

for Graduates of Master's or Doctoral Degree Programs

1. Professional and Scientific Production (*essential*)

PROFESSIONAL MASTER'S DEGREE		RESEARCH MASTER'S DEGREE		DOCTORAL DEGREE	
Competency	Competency Components	Competency	Competency Components	Competency	Competency Components
Rigorously complete the steps of a study or project in connection with the practice environment and with the support of an expert	**1.** State the problem under study and document it based on the relevant literature. **2.** Use one or more rigorous methods to analyze, assess and understand developments or professional applications. **3.** Act as an agent of change and improvement in the practice environment. **4.** Set a feasible schedule.	**Rigorously complete the steps of a research project[10] under supervision**	**1.** State and tackle a research topic. **2.** Formulate research objectives. **3.** Apply and explain an appropriate research method for a project. **4.** Set a feasible schedule. **5.** Analyze and discuss the results in relation to a field of knowledge.	**Independently and expertly conduct a research project to make an original contribution to knowledge or scientific or technological development**	**1.** Explain a research problem supported by an exhaustive review of literature. **2.** Formulate original hypotheses or research objectives based on a theoretical framework. **3.** Choose, adapt or design one or more research methods or analytical approaches related to their field of research. **4.** Set a feasible schedule and conduct their project accordingly, while taking constraints and unforeseen events into consideration. **5.** Analyze, interpret, summarize and evaluate their own results and situate them within the scientific literature. **6.** Assess the impact and the benefits of their research activities. **7.** Incorporate innovation in the research approach.

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[10] Research design also encompasses research-creation.

PROFESSIONAL MASTER'S DEGREE	RESEARCH MASTER'S DEGREE	DOCTORAL DEGREE
Resources to be mobilized	**Resources to be mobilized**	**Resources to be mobilized**
Knowledge: A) Evidence-based information in support of their ideas. B) Key concepts and basic issues. C) Research methodology, relevant techniques and potential applications. Skills: D) Critical thinking about the approaches, methods and systems used. E) Summarization of information, data and ideas in connection with their project. F) Application of a method for tackling or solving problems that may involve relevant research methods. G) Search for necessary information using current tools and techniques. H) Access to adequate bibliographic resources or other relevant information sources; archiving these resources. I) Effective time management. Qualities: J) Stress management. K) Openness to criticism and the opinions of competent individuals.	Knowledge: A) Recent advances in their research topic. B) Key concepts and basic issues. C) Research methodology, relevant techniques and potential applications. Skills: D) Recognition of connections between research work and previous studies. E) Recognition of fundamental themes in their research project. F) Critical thinking about the approaches, methods and systems used. G) Effective time management. H) Contribution to the establishment of productive relations with research supervisors. Qualities: I) Stress management. J) Openness to criticism and the opinions of competent individuals, especially their research supervisor.	Knowledge: A) In-depth knowledge and recent developments in their field of research and related fields. Skills: B) Recognition of the existence of different interpretations or schools of thought in relation to the topic or field of study, including research methods. C) Generation of new ideas using creativity and innovation capabilities. D) Application of one or more methods of problem-solving. E) Establishment of connections between research work and relevant literature. F) Implementation of measures to validate research findings. G) Independent critical thinking. H) Constructive formulation of criticisms. I) Effective time management. Qualities: J) Open-mindedness. K) Openness to interdisciplinarity, interprofessional situations and the non-academic environment, including international perspectives. L) Tenacity, dedication and resilience. M) Stress management. N) Openness to criticism. O) Solicitation and consideration of the opinions of their supervisor, more advanced researchers or peers, from abroad and non-academic contexts.

2. Knowledge and Critical View (*essential*)

PROFESSIONAL MASTER'S DEGREE		RESEARCH MASTER'S DEGREE		DOCTORAL DEGREE	
Competency	**Competency Components**	**Competency**	**Competency Components**	**Competency**	**Competency Components**
Acquire advanced knowledge in order to perform more effectively in the practice environment	**1.** Be knowledgeable of recent advances in their field or discipline. **2.** Identify key information and concepts and the basic issues in their field or practice environment. **3.** Analyze and exercise informed judgment of scientific activity and produced knowledge in view of mobilizing them.	**Acquire advanced knowledge and process information and literature resources relevant to a research project**	**1.** Be knowledgeable of recent advances in their field or discipline. **2.** Retrieve information using adequate information technology. **3.** Ensure the security, retention and confidentiality of information and data. **4.** Verify the reliability, validity and relevance of sources.	**Acquire cutting-edge knowledge and take a critical view of information and literature resources relevant to the field of research**	**1.** Be knowledgeable of recent developments in their field or discipline. **2.** Make use of acquisition, information collection and monitoring systems with the assistance of information technology to ensure exhaustive information retrieval. **3.** Ensure the security, retention and confidentiality of information and data. **4.** Access adequate bibliographic resources and all other relevant information sources and archive them. **5.** Assess the reliability, reputation and relevance of sources and methods.

PROFESSIONAL MASTER'S DEGREE	RESEARCH MASTER'S DEGREE	DOCTORAL DEGREE
Resources to be mobilized	**Resources to be mobilized**	**Resources to be mobilized**
Knowledge: A) Field of application or theoretical or practical knowledge. B) Knowledge and personal skills. Skills: C) Ease in working in their field of practice. Qualities: D) Openness to the opinions of competent individuals in the field.	Knowledge: A) Evidence-based information in support of their work. Skills: B) Evaluation of the quality of information and primary and secondary research data. C) Synthesis of information, data and ideas in connection with their project. D) Strategic use of information. E) Effective use of current research tools and techniques. Qualities: F) Attention to the security and continuity of information and data. G) Openness to the advice of experts in information and data management.	Knowledge: A) Scientific foundations that support their work. Skills: B) Evaluation of the quality, integrity and authenticity of information and primary and secondary research data. C) Pursuit of directions resulting from the synthesis of information, data and ideas. D) Mastery of a range of available research tools. E) Astute, strategic use of information. Qualities: F) Knowledgeable of the latest developments. G) Sensitivity to the security and continuity of information and data. H) Openness to the advice of experts in information and data management.

3. Communication (*essential*)

PROFESSIONAL MASTER'S DEGREE		RESEARCH MASTER'S DEGREE		DOCTORAL DEGREE	
Competency	Competency Components	Competency	Competency Components	Competency	Competency Components
Clearly communicate the findings of a study, a development or a professional application in a practice environment	**1.** Master the language associated with their field, including technical or conceptual vocabulary. **2.** Write an essay or an activity report in a style adapted to the context for specialists. **3.** Prepare and give quality oral presentations and adapt their discourse depending on the situation.	**Clearly communicate the findings of scientific work**	**1.** Master the language associated with the field of research, including technical or conceptual vocabulary. **2.** Present the specific objectives and methodological aspects of their research project and explain them. **3.** Discuss the findings of their research project, draw conclusions and make recommendations. **4.** Write a structured scientific document on the scale of a thesis in a clear and precise style. **5.** Prepare and give quality scientific oral presentations and adapt their discourse depending on the situation.	**Clearly and effectively communicate knowledge in their field of study and research findings in various situations**	**1.** Demonstrate in-depth knowledge and solid mastery of language or languages that are relevant to their field of research, including specialized vocabulary. **2.** Write a well-structured and argued research proposal that highlights the innovativeness and impacts of their research. **3.** Discuss findings, draw conclusions, make recommendations and demonstrate the real or potential impacts of their research work. **4.** Rigorously defend the entire body of their research work. **5.** Write a doctoral dissertation and publish, where appropriate, research findings in a scientific style specific to the discipline. **6.** Communicate verbally and in writing in a style adapted to the objective and context for specialists and non-specialists.

PROFESSIONAL MASTER'S DEGREE		RESEARCH MASTER'S DEGREE		DOCTORAL DEGREE	
Resources to be mobilized		**Resources to be mobilized**		**Resources to be mobilized**	
	Knowledge: A) Sufficient level of knowledge to engage in dialogue and discussion with colleagues. Skills: B) Communication adapted to a professional context. C) Summarization of objectives and methodological aspects of their project. D) Appropriate selection of elements for written and oral communications. E) Clearly and concisely structured arguments. F) Thoughtful, critical use of communication tools. Qualities: G) Collaboration in improving the quality of professional practice.		Knowledge: A) Sufficient level of knowledge to engage in dialogue and discussion with colleagues. Skills: B) Communication adapted to academic and professional contexts. C) Summarization of the components of their research (problem, question, objectives or hypotheses, methodology, results and conclusion). D) Appropriate selection of elements for written and oral communications. E) Clearly and concisely structured arguments. F) Thoughtful, critical use of communication tools. Qualities: G) Collaboration in the communication of the research. H) Effective presentation of research findings.	EXTERNES	Knowledge: A) In-depth knowledge for engaging in dialogue and discussion. Skills: A) Ability to properly understand, interpret and communicate in an academic and professional context. B) Summarization of research components (problem, question, theoretical framework, objectives or hypotheses, methodology, results and conclusion). C) Preparation and delivery of effective oral and written communication using current technologies. D) Effectively articulated verbal and written arguments concerning the research. E) Participation in discussions and dialogue concerning knowledge in their field of research. Qualities: F) Effective presentation of research findings that maximizes their potential impact.

4. Normative Aspects and Integrity (*essential*)

PROFESSIONAL MASTER'S DEGREE		RESEARCH MASTER'S DEGREE		DOCTORAL DEGREE	
Competency	Competency Components	Competency	Competency Components	Competency	Competency Components
Know and apply standards, ethics and integrity rules, and recognized practices in the professional field	1. Determine their work's impact on and benefits for society and the environment. 2. Know and comply with codes of conduct, codes of ethics, and guidelines on applicable ethical and legal aspects. 3. Act responsibly and integrate in their working environment. 4. Demonstrate responsible work practices, especially in health and safety. 5. Where appropriate, comply with integrity, confidentiality, anonymity and intellectual property rules, including copyrights and patents.	**Know and apply standards, ethics and integrity rules, and recognized practices in the field of research**	1. Determine their research work's impact on and benefits for society or the environment. 2. Know and comply with codes of conduct, codes of ethics, and guidelines on applicable ethical and legal aspects. 3. Act responsibly and show integrity in conducting their research project. 4. Demonstrate responsible work practices, especially in health and safety. 5. Comply with integrity, confidentiality, anonymity and intellectual property rules, including copyrights and patents.	**Comply with standards, ethics and integrity rules, and recognized research practices**	1. Analyze and determine the impact of their research work and, where appropriate, the work of their research group on society and the environment. 2. Know and comply with codes of conduct, codes of ethics, and guidelines on ethical and legal aspects of research. 3. Act responsibly and show integrity in conducting research work. 4. Demonstrate responsible work practices, especially in health and safety. 5. Comply with integrity, confidentiality, anonymity and intellectual property rules, including copyrights and patents.

PROFESSIONAL MASTER'S DEGREE	RESEARCH MASTER'S DEGREE	DOCTORAL DEGREE
Resources to be mobilized	**Resources to be mobilized**	**Resources to be mobilized**
Knowledge: A) Ethical aspects of practice. B) Intellectual property and professional integrity concepts. C) Sustainable development principles and concepts. Skills: D) Self-criticism. E) Solicitation of expert advice on professional practice. Qualities: F) Honesty and integrity. G) Recognition of the contributions of colleagues. H) Respect for the rights of anyone affected by the project. I) Recognition of the risks involved in the project.	Knowledge: A) Ethical aspects of research. B) Intellectual property and research integrity concepts. C) Sustainable development principles and concepts. Skills: D) Self-criticism. E) Solicitation of expert advice on responsible research practices. Qualities: F) Honesty and integrity. G) Recognition of the contributions of colleagues or co-authors. H) Respect for the rights of anyone affected by the research project. I) Recognition of the risks involved in the research.	Knowledge: A) Ethical aspects of research. B) Intellectual property and research integrity concepts. C) Sustainable development principles and concepts. Skills D) Self-criticism. E) Contribution to expert advice on responsible research practices. F) Ability to apply rules, codes, norms and standards in the context of national and international collaboration. Qualities: G) Honesty and integrity. H) Recognition of the contributions of colleagues or co-authors. I) Respect for the rights of anyone affected by the research project. J) Recognition of the risks involved in the research.

5. Professional and Personal Development (*complementary*)

PROFESSIONAL MASTER'S DEGREE		RESEARCH MASTER'S DEGREE		DOCTORAL DEGREE	
Competency	**Competency Components**	**Competency**	**Competency Components**	**Competency**	**Competency Components**
Define and pursue professional development	1. Recognize the value and limits of their competencies and experiences. 2. Be aware of the necessity of updating knowledge and know-how to develop expertise and remain employable. 3. Create or expand a professional network. 4. Create a career plan by considering various employment sectors.	**Define and pursue professional development**	1. Recognize the value and limits of their competencies and experiences. 2. Be aware of the necessity of updating knowledge and know-how to develop expertise and remain employable. 3. Join a professional network. 4. Create a career plan by considering various employment sectors.	**Define and continue their development as a researcher or highly qualified professional**	1. Recognize the value and limits of their competencies and experiences. 2. Determine which of their competencies can be applied to a range of employment opportunities or a specific job category. 3. Develop and strengthen their professional network or their research network. 4. Create a career plan by considering various employment sectors and begin to implement it.

PROFESSIONAL MASTER'S DEGREE	RESEARCH MASTER'S DEGREE	DOCTORAL DEGREE
Resources to be mobilized	**Resources to be mobilized**	**Resources to be mobilized**
Knowledge: A) Training opportunities. B) Professional development resources. C) Employability in a wide range of environments. Skills: D) Reflection on their practice, experience and progress. E) Use of their strengths and improvement of their weaknesses. Qualities: F) Desire to learn and acquire knowledge. G) Flexibility and open-mindedness. H) Personal work-life balance. I) Appreciation for others' help with problems. J) Involvement in professional associations and public bodies. K) Openness to an international perspective and contact.	Knowledge: A) Training opportunities. B) Professional development resources. C) Employability in a wide range of environments. Skills: D) Reflection on their research practice, experience and progress. E) Use of their strengths and improvement of their weaknesses. Qualities: F) Desire to learn and acquire knowledge. G) Flexibility and open-mindedness. H) Personal work-life balance. I) Appreciation for others' help with problems. J) Involvement in learned societies and public bodies. K) Openness to an international perspective and contact.	Knowledge: A) Training opportunities. B) Professional development resources. C) Employability in a wide range of environments. D) Transferability of their knowledge and experience in the interest of sharing them. Skills E) Reflection on their research practice, experience and progress. F) Use of their strengths and improvement of their weaknesses. Qualities G) Desire to learn and acquire knowledge. H) Flexibility and open-mindedness. I) Personal work-life balance. J) Appreciation for others' help with problems. K) Involvement in learned societies and public bodies. L) Openness to an international perspective and contact.

Appendix 1: Annotated Bibliography

1. Australie

1.1. The Australian Qualifications Framework (AQF)

The Australian Qualifications Framework (AQF) is the national policy for regulated qualifications in Australian education and training. It incorporates the qualifications from each education and training sector into a single comprehensive national qualifications framework.

http://www.aqf.edu.au/Portals/0/Documents/Handbook/AustQuals%20FrmwrkFirstEditionJuly2011_FINAL.pdf

1.2. Shah, M. & Chenicheri, S. N. (2011). Employer satisfaction of university graduates: Key capabilities in early career graduates. In Developing student skills for the next decade. Proceedings of the 20th Annual Teaching Learning Forum, 1-2 February 2011. Perth: Edith Cowan University.

http://otl.curtin.edu.au/tlf/tlf2011/refereed/shah.html ou http://lsn.curtin.edu.au/tlf/tlf2011/refereed/shah.pdf

1.3. Employability skills

Australian Government, Department of Education, Employment and Workplace Relations

http://www.deewr.gov.au/Schooling/CareersandTransitions/EmployabilitySkills/Documents/EmpSkillsForTheFuture.pdf

1.4. Employer expectations and graduate skills

Deakin University, Institute of Teaching and Learning, Professional Development for Teaching and Learning

http://www.deakin.edu.au/itl/pd/tl-modules/teaching-approach/group-assignments/topic02.php

1.5. Employer satisfaction of university graduates: Key capabilities in early career graduate

Mahsood, Shah & Chenicheri, Sid. Nair, University of Camberra, Teaching and Learning Forum, 2011

http://lsn.curtin.edu.au/tlf/tlf2011/refereed/shah.pdf

2. Grande-Bretagne

2.1. Vitae: realising the potential of researchers

Vitae is the UK organisation championing the personal, professional and career development of doctoral researchers and research staff in higher education institutions and research institutes.

2.1.1. Postgraduate researcher symposium: Conversations about the doctoral experience

A report of proceedings and recommendations from the Postgraduate Researcher Symposium held at the British Library on 1 November 2011.

http://www.vitae.ac.uk/CMS/files/upload/1500-PGRSreport_2012.pdf

2.1.2. Researcher Development Framework

The Researcher Development Framework (RDF) is a major new approach to researcher development, to enhance our capacity to build the UK work force, develop world-class researchers and build our research base. The RDF is a professional development framework for planning, promoting and supporting the personal, professional and career development of researcher s in higher education. It articulates the knowledge, behaviours and attributes of successful researchers and encourages them to realise their potential.

http://www.vitae.ac.uk/CMS/files/upload/Vitae-Researcher-Development-Framework.pdf

Selon cette analyse, le développement de la carrière de chercheur se décline en quatre domaines :

- Le domaine A : les connaissances et les capacités intellectuelles
- Le domaine B : l'efficacité personnelle
- Le domaine C : la gestion de la recherche
- Le domaine D : l'engagement, l'influence et l'impact

Chaque domaine est divisé en trois sous-domaines et l'ensemble des douze sous-domaines comprend soixante et trois descripteurs. Pour chacun d'eux, le « Researcher Development Statement » identifie les habiletés correspondant à cinq niveaux de compétence.

Cet énoncé de politique pour le développement de la carrière des chercheurs par le groupe Vitae s'applique donc à la fois à la formation à la maîtrise, au doctorat, au stage postdoctoral, ainsi qu'à la poursuite d'une carrière en recherche. Ce document identifie de façon structurée les compétences à atteindre à chacun des niveaux dans la formation des chercheurs.

2.2. The Rugby Team: Employers' views of researchers' skills - A comprehensive review of the existing literature into employers' views of the skills of early career researchers – September 2007.

http://www.vitae.ac.uk/cms/files/Rugby-Team-Employers'-views-of-researchers'-skills-September-2007.pdf

http://www.strath.ac.uk/hr/learninganddevelopment/researcherdevelopment/ecr/identifyingskills/employersviewsofresearchersskills/

2.3. United Kingdom - Second Cycle Programmes

Master's degrees are at Level 7 of the Framework for Higher Education Qualifications in England, Wales and Northern Ireland (FHEQ).

https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/index.php/United-Kingdom-England:Second_Cycle_Programmes

2.4. **Southampton University**: Postgraduate Researcher (PGR) Careers Information

On this page you will find our store of postgraduate researcher career related documents. These include a selection of reports and guidelines from various organisations and government bodies.

2.4.1. AGCAS - Your PhD... what next? - What will the options be when you complete your doctoral programme. This publication from AGCAS (Association of Graduate Career Advisory Services) aims to help you look to the future and take action to get the best from your time as a research student before embarking on your career.

2.4.2. Joint Skills Statement, 2001 - The Research Councils' Joint Statement of Skills is an overview of the skills a researcher would be expected to develop during their course of their research programme.

2.4.3. CIHE - Talent Fishing: What Business Want from Postgraduates - Released by CIHE on 25th March 2010. This report explores the extent and nature of demand for postgraduates from businesses.

2.4.4. Empress Report, 2005 - Compiled by the University of Leeds this report focuses on employers' perceptions (mainly external to Higher Education) of recruiting research staff and students.

2.4.5. European Research Careers - A Pocket Guide, 2008 - Compiled by the European Commission. The EU's Marie Curie Actions help to fund all kinds of training and mobility opportunities for researchers throughout Europe. This guide is designed to help busy researchers understand the opportunities available to them.

2.4.6. One Step Beyond: Making the most of postgraduate education - A report compiled by the Department for Business Innovation & Skills and released in March 2010.

2.4.7. Recruiting Researchers: survey of employer practices 2009 - A report by Vitae into the recruitment practices of over 100 employers.

2.4.8. Research Careers in Europe Landscape and Horizons - A report by the European Science Foundation on Research Careers, released December 2009.

2.4.9. Researcher Development Framework Consultation, 2009 - A proposed evolution to the Joint Skills Statement 2001 likely to be adopted nationally as a new framework for the delivery of research programmes. The consultation welcomes feedback until December 11th 2009.

2.4.10. Research Information Network - Social Media: A guide for researchers - How to use social media to help your research and your career.

2.4.11. Rugby Team Employers' Views of Researchers' Skills, 2007 - A comprehensive review of the existing literature (Sept. 2007) into employers' views of the skills of early career researchers and organisations who employ postgraduate researchers.

2.4.12. Science Careers - "Step by Step, Your Career from Undergrad to Postdoc".

2.4.13. Science Careers - "The Informed Job Search - Advice for Scientists".

2.4.14. Science Careers - "Building Relationships - Mentoring, Collaborating, and Networking".

2.4.15. The Engaging Researcher, 2010 - This publication, compiled by Vitae, is designed to introduce and explain public engagement to researchers. The aim is to inspire and stimulate thoughts on why and how to engage people with your research and how to measure its impact.

2.5. **University of Manchester**: Drivers for a new culture in research training

http://www.graduateeducation.eps.manchester.ac.uk/graddev/staff/drivers/

The University of Manchester has developed a skills training strategy and implemented bespoke personal and professional development training programmes in line with government policy to support research students.

2.6. **Science & Technology Facilities Council:** Skills development and the STFC-Founded PhD

The Science and Technology Facilities Council is an independent, non-departmental public body of the Department for Business, Innovation and Skills (DBIS).

We are a science-driven organisation, making it possible for a broad range of scientists to do the highest quality research tackling some of the most fundamental scientific questions.

http://www.stfc.ac.uk/resources/pdf/skillsdev.pdf

2.7. **AGCAS – The Association of Graduate Careers Advisory Service**

University Researchers and the Job Market: A Preactical Career Development Resource for Research Staff, AGCAS Research Staff Task Group (April 2009)

http://www.agcas.org.uk/agcas_resources/115-University-Researchers-and-the-Job-Market

2.8. **Survey of employer attitudes to postgraduate researchers**

The University of Sheffiels, The Careers Service

http://www.careers.dept.shef.ac.uk/pdf/employersurvey.pdf

3. **France**

3.1. **Revalorisation de la formation doctorale** : impacts des programmes doctoraux sur le développement professionnel

http://www.unige.ch/formev/publications/formation/actes-AIPU08-Montpellier-REGECOLET.pdf

Nicole Rege Colet, Université de Genève, Formation & Évaluation. Acte AIPU Montpelier, 2008

3.2. École doctorale – Vie_Agro_Santé – Université de Rennes I et II

Compétences acquises

http://www.vas.univ-rennes1.fr/fr/Sorties/CompetencesAcquises/

Gourmandes, les entreprises ! À l'occasion d'un séminaire, elles ont dressé la liste de ce qu'elles souhaiteraient trouver chez leurs cadres. Nombre de ces compétences sont garanties à un haut niveau par le doctorat. D'autres le sont moins. Pire, le docteur (surtout formé en France) est a priori suspect d'individualisme et de déconnexion des contingences de l'activité économique. L'entretien d'embauche est souvent frustrant : trois mots au plus sur la thèse, cette Œuvre accouchée de trois années de souffrance : personne ne met en doute la formation ainsi acquise. Le gros morceau de l'entretien porte sur le reste, moins assuré par le diplôme : la communication, le leadership, l'équilibre personnel, le sens du collectif…

3.3. L'association française des docteurs : Les docteurs, des compétences sous-utilisées

http://www.andes.asso.fr/download/fiche-competences-docteurs.html

Alors que les besoins économiques et sociaux de transfert et d'appropriation de savoirs nouveaux augmentent, il est paradoxal de voir que les conditions d'embauche des docteurs se détériorent en France (fort chômage, faibles rémunérations et précarité des emplois). Par la pratique professionnelle de la recherche qu'il implique, le doctorat est pourtant une

formation d'excellence particulièrement adaptée pour répondre à ces demandes : de nombreux pays l'ont compris et offrent aux docteurs des perspectives de carrière nombreuses, diversifiées et rémunératrices.

3.4. La thèse en Physique : une véritable expérience professionnelle dans les métiers de la recherche

http://sfp.in2p3.fr/Debat/reforme_these/chomaz.html

Société Française de Physique
Propositions de la commission pour la réforme des thèses - Rapport Chomaz

Ce rapport ainsi que les recommandations auxquelles il aboutit, porte uniquement sur les thèses en physique. Toutefois, nombre de remarques, conclusions et propositions peuvent être étendues à d'autres disciplines. Il a été élaboré durant une année par une commission représentative de toutes les parties prenantes, puis il a été discuté, amendé et modifié par les différentes composantes de la Société Française de Physique (conseil, bureau national, sections locales). Enfin, il a été approuvé en décembre lors du séminaire annuel des instances dirigeantes de la SFP. C'est ce texte final qui est ici présenté.

3.5. **Les compétences développées au sein de la formation Licence et Master Génie des procédés de Grenoble**

http://gsi.ujf-grenoble.fr/p-Les-competences-developpees-au-sein-de-la-formation-Licence-et-Master-Genie-des-Systemes-Industriels---Genie-des-procedes-259.html

Notre fiche de compétence permet de synthétiser les compétences acquises pendant les 3 années de formation dans les différents domaines de connaissance.

3.6. **Le master français**

http://fr.wikipedia.org/wiki/Master_(France)

3.7. **Compétences et employabilité des docteurs**

Rapport d'enquête - projet Career, 31 janvier 2012, Barthélémy Durette, Marina Fournier et Matthieu Lafon

http://www.adoc-tm.com/rapport.pdf

3.8. **Bilan de compétence : valorisation professionnelle du doctorat**

Université Paris 1 Panthéon – Sorbonne

Étude réalisée pour le compte du Bureau d'aide à l'insertion professionnelle de l'Université Paris I Panthéon-Sorbonne au sein de l'École doctorale de science politique (UFR 11), par Sébastien Poulain, doctorant, mars 2011

http://www.collectif-papera.org/IMG/pdf/Etude_Bilan_de_competence_Sebastien_Poulain.pdf

4. **Suisse**

4.1. **Colloque Les compétences à l'université,** 24 avril 2009, par **Amaury Daele**

http://pedagogieuniversitaire.wordpress.com/2009/04/24/les-competences-a-luniversite/

5. **Pays-Bas**

5.1. **Netherlands - Second Cycle Programmes**

https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/index.php/Netherlands:Second_Cycle_Programmes

6. **Autriche**

6.1. **Austria: Second Cycle Programmes**

https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/index.php/Austria:Second_Cycle_Programmes

Universities and universities of applied sciences may set up and/or continue master's programmes, due to the performance agreements between the respective university and the federal authorities. The workload associated with master degree programmes at public universities shall amount to at least 120 ECTS credits (2-4 semesters).

7. **Europe (processus de Bologne)**

7.1. **Le processus de Bologne en quelques mots**

http://www.enseignement.be/index.php?page=25296&navi=2481&rank_page=25296

La déclaration de Bologne fut signée le 19 juin 1999 par 29 pays européens. Son principal objectif est d'harmoniser les études et diplômes dans l'enseignement supérieur.

7.2. **Le processus de Bologne**

http://fr.wikipedia.org/wiki/D%C3%A9claration_de_Bologne

7.3. **Focus sur l'enseignement supérieur en Europe 2010** : l'impact du processus de Bologne

Commission Européenne, février 2010

http://eacea.ec.europa.eu/education/eurydice/documents/thematic_reports/122FR.pdf

7.4. **Éducation, audiovisuel et culture**

L'enseignement supérieur en Europe 2009 : les avancées du processus de Bologne

http://eacea.ec.europa.eu/about/eurydice/documents/099FR_HE2009.pdf

7.5. **Survey of Master Degrees in Europe**

By Howard Davies – European University Association (EUA) Publications 2009

http://www.eua.be/Libraries/Policy_Positions/EUA_statement_on_ISCED_revision.sflb.ashx

7.6. **Topgradschool – The difference a Masters really makes: the employer's view**

http://graduateschool.topuniversities.com/articles/masters/difference-masters-really-makes-employers-view

7.7. **La modernisation de l'enseignement supérieur en Europe**

http://eacea.ec.europa.eu/education/eurydice./documents/thematic_reports/131FR.pdf

8. Canada

8.1. Council of Ontario University

Ensuring the Value of University Degrees in Ontario. A Guide to Learning Outcomes, Degrees Level Expectations and the Quality Assurance Process in Ontario.

http://www.cou.on.ca/issues-resources/student-resources/publications/reports/pdfs/ensuring-the-value-of-university-degrees-in-ontari.aspx

8.2. OCGS Degree Level Expectations for Graduates of each Credential

These degree level expectations are intended and expected to complement the existing appraisal process, and not to replace it, or any part of it. The degree level expectations elaborate the intellectual development of students, and the acquisition of relevant skills that have been widely understood, but heretofore implicitly rather than explicitly stated.

http://www.wlu.ca/documents/46971/OCAV_Graduate_Degre e_Level_Expectations.pdf

8.3 Canada

Ministerial Statement on Quality Assurance of Degree Education in Canada, 2007.

http://www.cicic.ca/docs/cmec/QA-Statement-2007.en.pdf
(consulté le 6 mai 2015)

8.4 Université de Sherbrooke

Règlement des études, Annexe 1 : Finalités de formation.

« Par finalités de formation, l'Université entend des énoncés généraux qui identifient les orientations privilégiées par notre institution en termes de résultats attendus chez l'étudiante ou l'étudiant à la fin d'un cycle de formation, quel que soit le domaine de savoir ou le programme. Ces finalités doivent donc être prises en compte dans chacun des programmes d'études selon des modalités qui respectent toutefois la spécificité et les objectifs de ces programmes et aussi, dans certains cas, les exigences des ordres professionnels. Les finalités de formation se situent à un niveau plus large que les objectifs d'un programme, ces derniers précisant de façon plus spécifique et plus circonscrite les apprentissages attendus dans ce programme. » (Université de Sherbrooke, Politique-cadre sur la qualité de la formation [2500-024], p. 5.

8.5 Polytechnique-Montréal

Le référentiel développé par l'ADÉSAQ a été inspiré du référentiel développé par Polytechnique Montréal.

http://www.polymtl.ca/rensgen/doc/Compet_vf_fr.pdf

9. États-Unis

9.1. The Professional Science Master's Degree: Meeting the Skills Needs of Innovative Industries

http://www.sloan.org/assets/files/teitelbaum/nga_issue_brief.pdf

http://www.sciencemasters.com/portals/0/Speaker/NGA_Issue_Brief.pdf

9.2. Is a Master's Degree in Library Science a Poor Investment? A Counter Perspective to Forbes Magazine

http://infospace.ischool.syr.edu/2012/03/07/is-a-masters-degree-in-library-science-a-poor-investment-a-counter-perspective-to-forbes

In the June 2011 Forbes online edition, Jacquelyn Smith ranked a Master's degree in Library Sciences as the one of worst Masters Degrees a student could invest in. She based the rankings on employment projection data and average mid-career pay compared to other people in similar jobs. I can understand Smith's conclusions: based solely on statistical data, librarianship on average does make less than

engineering, mathematicians and physicists. My issue with her analysis is that statistical data alone does not provide a complete picture of the opportunities presented by obtaining a degree in librarianship. I disagree with the assertion that a degree in information sciences in an information age is a poor investment. So, let me provide a counter perspective to supplement the statistical analysis and create a more complete picture of the benefits for those considering the degree.

9.3. The Role and Status of the Master's Degree in STEM

Eleanor L. Babco, CGS-NSF Workshop, Arlington, Va. May 18, 2010

http://www.cgsnet.org/ckfinder/userfiles/files/CGSNSF2010_Babco.pdf

9.4. Science Professionals: Master's Education for a Competitive World

Committee on Enhancing the Master's Degree in the Natural Sciences Board on Higher Education and Workforce Policy and Global Affairs

National Research Council, of the National Academies – 2008 - The National Academies Press, Washington, DC – www.nap.edu

9.5. A Silent Success: Master's Education in the United States.

Conrad, Clifton F., Johns Hopkins University Press. 1993.

10. OCDE

10.1. Training creative and collaborative knowledge-builders: A major challenge for 21st century education

François Taddei, Centre de Recherches Interdisciplinaires, Faculté de Médecine, Université Paris Descartes

Executive summary
In a world that is changing at an unprecedented pace, what can education provide that will prepare today's children for the challenges of the Twenty-first century? This report introduces the forces that lead to rapid environmental change and the impact of a relative lag in educational reform in chapter one. In the first part of chapter two, it reviews the strategies various species including our own use to adapt to the environment: exploration, exploitation, knowledge acquisition, cooperation, information transfer, and niche-tailoring. Adaptability and exploration are key to any species that lives in changing environments, where mechanisms generating innovations are being selected. The biological metaphors described helps us to see why the importance of human creativity is growing as our environment change at an increasing pace thanks to the exponential development of science and information and communication technologies. However, education systems are evolving slower than the rest of society and traditional education is not optimally organised to promote creativity and the ability to update one's knowledge.

Hence, only the countries that implement policies to reform their education to promote adaptability and creativity in adults and children are likely to remain at the forefront of human development and technology. Lessons from the social sciences summarised at the end of chapter two, indicate that creativity, initiative, and risk-taking should be encouraged in training today's children to become creative and cooperative knowledge-builders, i.e., able to periodically update and productively use their knowledge in their social and professional lives. Considering that student optimally develop these skills only in fostering environments, as well as the inherent difficulty in assessing creativity in millions of individual children, this report proposes focusing the creativity in education evaluation on the quality of the educational environment.

In chapter three, comparative analysis of education systems show that a huge diversity exists, interesting attempts are tried locally but only in some countries does one see national debates on the issue allowing the emergence of new education paradigms that can foster creativity. In terms of policy, chapter four proposes experimenting with new educational schemes, developing creative environments and programs, and disseminating the best educational practices within countries and across linguistic barriers by organizing a network of well-designed experiments and information exchange that is accessible to all. Recommendations addressed to different stakeholders that want to promote creativity can be found below.