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GETTING WHAT WE ASKED FOR: AN EDUCATIONAL NEEDS ASSESSMENT FOR GRADUATE-LEVEL EDUCATION IN THE CAF

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LIST OF ACRONYMS

AUCC - Association of Universities and Colleges of Canada (now Universities Canada)

BCI - Bureau de Coopération Universitaire

CAF - Canadian Armed Forces

CDA - Canadian Defence Academy (now Military Personnel Generation)

CEP - New Program Evaluation Commission (Quebec)

CF - Canadian Forces

CFITES - Canadian Forces Individual Training and Education System

CHEA - Council for Higher Education Accreditation

CIS - Critical Interpretive Synthesis

CMEC - Council of Ministers of Education, Canada

COU - Council of Ontario Universities

CVEP - Program Evaluation Review Commission (Quebec)

DLE - Degree Level Expectations

DP - Developmental Periods

DQP - Degree Qualifications Profile

EHEA - European Higher Education Area

EQAR - European Quality Assurance Register for Higher Education

GO/FO General Officers / Flag Officers

JCSP - Joint Command and Staff Program

MBA - Masters of Business Administration

MDS - Master of Defence Studies

MPA - Master of Public Administration

MPHEC - Maritime Provinces Higher Education Commission

NCM - Non-Commissioned Members

NSP - National Security Programme

OCAV - Ontario Council of Academic Vice-Presidents

OCGS - Ontario Council of Graduate Studies

OGS - Officer General Specification

OUCQA - Ontario Universities Council on Quality Assurance

PGQR - Postgraduate Qualification Requirements

PME - Professional Military Education

RMCC - Royal Military College of Canada

ABSTRACT

This study has used Critical Interpretive Synthesis to identify the synthetic constructs that best represent the CAF perceived needs of graduate-level education for senior officers as well as the student learning outcomes of graduate-level education. Through comprehensive literature review, seven CAF perceived needs and six generic graduate-level student learning outcomes were identified. After subjective comparison and analysis, credibility, communications skills, continuing education and ethos/ethics were identified as the perceived needs that had direct links with the generic student learning outcomes. The study concludes with recommendations for further research, discussion and analysis in order to appropriately align and satisfy CAF professional development needs in the future. Considerations with respect to the type and field of study of graduate-level education to be pursued and potential unidentified needs should be further developed before any common policy for graduate-level education for CAF senior officers is implemented.

> *The future armed forces of Canada must be led by senior officers who have an understanding of government, international affairs and economics; and at the junior level, an increased knowledge of the behavioural sciences. The establishment of the necessary academic foundation for such professional development stipulates an undergraduate education.....*
>
> - Major-General Roger Rowley, *Report of the Officer Development Board*

CHAPTER 1 - INTRODUCTION

As far back as 1969, Major-General Roger Rowley provided great insight and justification for the requirement of a bachelor's degree within the Canadian Armed Forces (CAF) officer corps.[1] Nonetheless, the CAF did not fully adopt his recommendations until they were imposed through the 1997 Report to the Prime Minister.[2] The reasons for this delay have been addressed elsewhere[3] and are both complicated and complex. It should be of no surprise, then, that the same discussion is ongoing now with respect to the need for graduate-level education for senior officers.

In a 2012 article in the *Canadian Military Journal*, established and respected officer-scholars Bill Bentley and Bernd Horn presented similar recommendations for the adoption of the graduate degree for senior officers as did Major-General Rowley with respect to the bachelor's degree for junior officers. The article, entitled "Higher Education and the Profession of Arms: Explaining the Logic," recommended all lieutenant-colonels

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[1] Department of National Defence, *Report on the Officer Development Board (Rowley Report),* (Ottawa, 1969), Vol 1, 33-34.
[2] Deputy Minister Young, *Report to the Prime Minister on the Leadership and Management of the Canadian Forces*, (Ottawa: DND, 1997).
[3] Colonel R.T. Wakelam, "So What's in a Degree," *Canadian Military Journal*, (Summer 2003); John Benson, "The Professionalization of the Canadian Army Officer Corps: From the Rowley Report to Somalia," (Bachelor's Thesis, Royal Military College, April 2004); Dr. Ron Haycock, "The Labours of Athena and the Muses: Historical and Contemporary Aspects of Canadian Military Education," *Canadian Military Journal* 2, no. 2 (Summer 2001).

and colonels employed at the operational or strategic levels and all general officers / flag officers (GO/FO) require graduate degrees.[4]

> Given the nature of the abstract theory-based body of knowledge at the core of the profession of arms, the old paradigm that is based upon the concept that successful tactical command equals promotion must be rejected. The new paradigm for the 21st Century quite simply is - successful tactical command, plus higher education, equals promotion.[5]

Unfortunately, their logic lacks the critical element of actually looking at what the graduate degree is intended to provide and the subsequent educational needs assessment. While not a certainty, without this critical component of the discussion, these reasoned and justifiable recommendations may face the same uphill battle as the Rowley Report. If graduate-level education is to become an integral component of the officer professional development system, the CAF must properly understand what it will actually provide.

Professional development within the CAF is based on four pillars: Education, Training, Employment Experience and Self-Development.[6] As noted by Major-General Rowley, education provides the foundation upon which the modern professional is able to learn and master the profession of arms. Education is generally divided into two distinct, but at times overlapping, categories. Its objective is to create a reasoned response to an unpredictable situation, contrary to training, which seeks a learned response to a predictable situation.[7] The first is professional military education (PME), achieved

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[4] Bill Bentley and Bernd Horn, "Higher Education and the Profession of Arms: Explaining the Logic," *Canadian Military Journal* 12, no. 3 (Summer 2012), 71.
[5] *Ibid.,* 70.
[6] Department of National Defence, *Defence Administrative Order and Directive 5031-8: Canadian Forces Professional Development, (*Ottawa, 2012).
[7] Dr. Ron Haycock, "The Labours of Athena and the Muses: Historical and Contemporary Aspects of Canadian Military Education," 8. Note that education is defined in DAOD 5031-2 as "providing a base of

through career courses where the objective is "the systematic instruction of professionals in subjects enhancing their knowledge of the science and art of war."[8] The CAF recognizes though, that much of the knowledge and intellectual skills provided by the education pillar can come from sources outside of PME. Academic education, the knowledge and intellectual skills derived from external, higher education institutions, is the other category of education within the pillars of professional development. As a result, since 1997 the baccalaureate degree has become a mandatory (with some exceptions) requirement for commissioning into the CAF.[9] Of course, academic education does not end at the Baccalaureate level.

The perceived need for further education at the graduate level has been the subject of discussion within reports, publications, studies and professional articles for many years now. However, the ability of the CAF to properly articulate the need for higher education within the professional development system has lacked a genuine educational needs assessment. While many academics, scholars and officers have discussed the merits of higher education for the current and future professional officer, the analysis of the perceived needs of the CAF has not been appropriately compared and measured with respect to the actual degree-level expectations and outcomes of higher education institutions. This paper intends to address this gap.

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knowledge and intellectual skills upon which information can be correctly interpreted and sound judgement exercised." Department of National Defence, *Defence Administrative Order and Directive 5031-2: Individual Training and Education Strategic Framework*, (Ottawa, 2009). Training is defined as the "provision of technical and procedural knowledge and skills required in the performance of assigned duties." Department of National Defence, *A-P9-050-002/PT-006, Manual of Individual Training and Education, Volume 6, CFITES - Conduct of Instructional Programmes*, (Ottawa, 1998), 36.

8 Department of National Defence, *A-P9-050-000/PT-Z01(1), Manual of Individual Training and Education, Volume 1, Supplement - CFITES Glossary*, (Ottawa, 2014), 30.

[9] Deputy Minister Young, *Report to the Prime Minister on the Leadership and Management of the Canadian Forces*, 15.

The aim of this paper is to confirm that regardless of discipline, graduate-level education meets the CAF professional development needs of communication skills, credibility, continuing education and ethos/ethics for senior officers. This will be demonstrated through an educational needs assessment through literature review. Perceived needs of the CAF will be compared with the stated student learning outcomes of higher education institutions through Critical Interpretive Synthesis (CIS). CIS is a method developed by Dixon-Woods et al[10] and employed in an educational needs assessment by Chan et al.[11] in a similar context to this paper. Through systematic review of literature, CIS seeks to generate theory in discrete stages. In the case of this paper, CIS is employed to identify and quantify the "synthetic constructs"[12] of both the perceived needs of the CAF and the generic student learning outcomes of government, external agencies and institutions of higher education. An analytic comparison of the two synthetic constructs establishes direct and indirect links between the two, thus establishing the competencies identified above.

To clearly define the knowledge and intellectual skills that graduate-level education provides within the CAF professional development system, several questions must be answered:

1. What are the explicit and implicit senior officers' professional development needs for pursuing graduate-level education?

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[10] Mary Dixon-Woods *et al*., "Conducting a Critical Interpretive Synthesis of the Literature on Access to Healthcare by Vulnerable Groups," *BMC Medical Research Methodology* 6, no. 35 (2006).
[11] Roy Chan, Gavin Brown, and Larry Ludlow, "What is the Purpose of Higher Education? A Comparison of Institutional and Student Perspectives on the Goals and Purposes of Completing a Bachelor's Degree in the 21st Century," Paper presented at the Annual American Education Research Association (AERA) Conference, Philadelphia, 2014.
[12] *Ibid.*, 4.

2. What are the stated student learning outcomes of graduate-level education and how do they differ with those at the Bachelor's level?
3. Do the explicit and implicit needs coincide with the stated student learning outcomes and where are there gaps between the two?

These questions will be answered through the methodology described above. Chapter Two will address the varied terminology employed and discuss studies and analyses that are comparable with this paper. Of significance, it will illustrate several methodologies employed for an educational needs assessment, including the methodology employed here. The perceived needs of the CAF will be identified in Chapter Three, through an analysis of relevant reports, studies and professional articles. Owing to the scarcity of official discussion and variety of opinions available, these perceived needs are presented in the form of synthetic constructs, grouped descriptions derived by the author. Chapter Four will detail the generic student learning outcomes established by governments, external agencies and higher education institutions in Europe, the United States and Canada. Again, the variety in terminology and frameworks employed to describe student learning outcomes necessitated the interpretation of material into synthetic constructs. The perceived needs of the CAF and the generic student learning outcomes will be compared in Chapter Five. This comparison establishes the perceived needs that have direct and indirect links to the generic student learning outcomes and forms the foundation of this paper's thesis. Finally, Chapter Six provides a conclusion for the paper, including discussion of some of the indirect links and their relevance to potential future areas of study.

The scope of this paper is limited to generic graduate-level education needs and student learning outcomes, regardless of employment and field of study. This is necessary due to the already limited amount of literature that specifically addresses graduate-level education in the CAF and the generic nature of student learning outcomes in various frameworks. As such, this paper will not address the current Postgraduate Qualification Requirements (PGQR)[13] policies, nor attempt to define which fields of study should be considered specific to the military profession. This paper also does not seek to establish or recommend policy with respect to the attainment of a Master's Degree. While certainly related, policy must consider much more than the needs and outcomes of graduate-level education, including retention, finances and implementation. For this reason, and the fact that this paper addresses graduate-level education and not specifically the attainment of a Master's degree, potential CAF policy is not an element of the conclusions or recommendations included.

[13] Department of National Defence, *A-P9-050-000/PT-Z01(1), Manual of Individual Training and Education, Volume 1, Supplement - CFITES Glossary*, 29. PGQR are postgraduate requirements specific to occupations and positions, not related to common officer requirements.

CHAPTER 2 - TERMINOLOGY AND LITERATURE REVIEW

Introduction

Prior to introducing the synthetic constructs developed from analysis of needs of graduate education in the CAF and learning outcomes as described by higher education institutions, a common understanding of terminology employed must be established. This includes defining terminology as it is employed by the military, including developmental periods and needs assessment, and by academia, such as graduate education and academic/professional, which are a necessary foundation to this needs assessment.

Further, the methodology chosen for this analysis is certainly not an exclusive, nor the most common, approach to a needs assessment. Needs assessments have been conducted by professions, companies and institutions through various methods, including the use of interviews and focus groups with subject matter experts, professionals, employers and graduates and through literature review. They have focused on needs of the profession that are not currently being met by higher education institutions and by contrasting perceived outcomes with measured results. Through a review of several studies conducted with these varying methodologies, this chapter will describe the advantages and disadvantages of potential methodologies, in addition to further explaining the CIS methodology employed.

Military Terminology

While the CAF approach to officer professional development was addressed in the introduction, it is important to also understand the officer developmental periods (DP)

employed within the professional development system. A DP is "a timeframe in a career during which an individual is trained, employed and given the opportunity to develop specific occupational or professional skills and knowledge."[14] Officer professional development employs five DP with specific ranks, objectives and professional military education associated with each level. Table 2.1 describes the rank and objectives of each DP. Graduate-level education can be pursued during all DPs. Emphasis on the need for graduate-level educations tends toward DP 3 and, more specifically, at the rank of Major.[15] This occurs for several reasons including career tempo, perceived needs of the officer corps in future employment and the need for some experience to properly exploit graduate-level education. This last factor was specifically mentioned by the Defence Science Advisory Board in a report on role and value of education in the CAF:

> It is, of course, possible to be too early. It has been widely observed by university faculty who have taught graduate courses at both RMCC and other universities that the practice of the CAF of sending folks back for a second degree typically 4-15 years after achieving the first degree has a profound effect on the environment in any classroom or seminar group where these mature student land up.[16]

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[14] Department of National Defence, *Defence Administrative Order and Directive 5031-8: Canadian Forces Professional Development.*

[15] Department of National Defence, *Final Report of the Officer Development Review Board (Morton Report)*, (Ottawa, 1995), 98.

[16] Department of National Defence, "The Role and Value of Education in the Intellectual Development of the Canadian Armed Forces' Officers and Non-Commissioned Members," Defence Science Advisory Board Report 1304, (Ottawa, 2013), 13.

Table 2.1 - Officer Developmental Periods

DP	Rank	Objective(s)
1	OCdt/NCdt 2Lt/ A/SLt (Capt/Lt(N)) (See Note below)	To meet the requirements for performing effectively as an entry-level CF [Canadian Forces] officer, and to provide the opportunity to develop as a competent leader with the necessary competencies. The first DP [developmental period] encompasses the period from time of entry to the point when an officer completes all qualifications required for initial employment in their occupations (referred to as the Operationally Functional Point (OFP)). During this DP, officers undertake their Basic Military Officer Qualification (BMOQ), second language training (for some occupations), Basic Occupational Qualification (BOQ), and environmental qualifications. They acquire the background knowledge and skills necessary to meet the requirements of their first appointments. An officer progresses to DP 2 upon reaching the OFP.
2	(2Lt/ A/SLt) Lt/ SLt Capt/Lt(N) (See Note below)	To further develop functional, occupational, and environmental skills**.** The focus is on unit level employment at the tactical level of operations**.** Officers employ their occupational skills, environmental skills, and knowledge, enhancing them through on-the-job training, self-study, and formal courses. For CEOTP [continuing education officer training plan] officers, focus will also be on attainment of a baccalaureate degree IAW DAOD 5002-6. The extent of developmental efforts during this stage should be commensurate with the officer's potential for advancement. An officer progresses to DP 3 upon promotion to Maj/LCdr.
3	Maj/LCdr LCol/Cdr	To prepare senior officers for continued effective service in their current and higher ranks. To prepare for employment as a unit commander, in command, and staff duties at the headquarters level and in defence resource management duties. The focus is on joint, combined, and interagency operations at the tactical and operational levels. Developmental efforts will be undertaken with officers from other environments and from other countries to prepare for joint exercises and operations, for staff assignments, and for foreign exchange assignments. Command and control issues will be studied at the operational level of war. The extent of developmental efforts during this stage should be commensurate with the officer's potential for advancement. An officer progresses to DP 4 upon promotion to Col/Capt(N).
4	Col/Capt(N)	To prepare senior officers for employment as strategic level leaders, operational-level joint task force commanders, and General/Flag staff officers. This DP is characterized by its focus on the national and international environment, decision making within states and their civil-military interface. It includes the study of strategic leadership and the management of resources at the national level. It examines issues regarding the design, direction, and conduct of security operations, ranging from domestic security response to military operations in a war zone. The extent of developmental efforts during this stage should be commensurate with the officer's potential for advancement. An officer progresses to DP 5 upon promotion to BGen/Cmdre.
5	General Officers/Flag Officers	To prepare for the highest levels of command and staff employment within the CF, including formation Commander and defence executive. To prepare officers for institutional command, leadership, and management responsibilities.

Source: Department of National Defence, *A-PD-055-002/PP-003, Canadian Forces Officer General Specification*,(Ottawa, 2014), 2-9.

The most recent Officer General Specification (OGS) outlines the common officer requirements of the CAF for each DP, in addition to defining the method in which

each proficiency should be gained or increased.[17] This concept is of importance to this study. Academic education is not specifically addressed within the OGS as a common officer requirement, beyond the prerequisite of a baccalaureate degree prior to commissioning which was implemented in 1997.[18] Instead, it is included as part of the self-development pillar, which is defined as "self-initiated, professionally or personally oriented learning that is normally done on personal time."[19] As a result, there is no specific reference to graduate-level education with respect to common officer DP in official documentation, including the OGS and the Common Officer Professional Development Qualification Standard.[20] In development of synthetic constructs related to CAF needs, a certain level of judgment is required in determining whether graduate-level education is implied when specific proficiencies are to be gained or increased through self-development.

The use of the term educational needs assessment for this paper is also important to consider. The Canadian Forces Individual Training and Education System (CFITES) defines a *needs assessment* as " the systematic study of a problem or innovation incorporating data and opinions from varied sources in order to make effective

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[17] Department of National Defence, *A-PD-055-002/PP-003, Canadian Forces Officer General Specification*,(Ottawa, 2014).

[18] Note that two exceptions remain to this prerequisite. Members that are commissioned from the ranks (Commissioning From The Ranks Plan) and those that enter through the Continuing Education Officer Training Plan - Regular Force do not require a baccalaureate prior to commissioning, but are subject to specific limitations and requirements at a later stage in their career. See Department of National Defence, *Defence Administrative Order and Directive 5002-6: Continuing Education Officer Training Plan - Regular Force,* (Ottawa, 2011) and Department of National Defence, *Canadian Forces Administrative Order 11-9: Commissionning From the Ranks Plan,* (Ottawa, 2009)..

[19] Department of National Defence, *A-PD-055-002/PP-003, Canadian Forces Officer General Specification,* 2-6.

[20]Department of National Defence, *Qualification Standard - Common Officer Professional Development (Developmental Periods 1 to 5),* (Kingston, 2013).

recommendations or to propose valid solutions."[21] In addition, they contrast this term with *analysis* as " the process necessary to examine training needs to determine the outcomes of training."[22] The comparison of the needs of the CAF with the stated learning outcomes of graduate-level education must not assume that graduate-level education is the unique solution for all of the needs identified and this is reflected in the use of the term perceived needs with respect to CAF literature. In similar studies discussed below, the terms needs assessment and needs analysis tend to be interchangeable.[23]

Academic Terminology

As can be expected when analyzing higher education systems from several different countries and perspectives, terminology employed can vary considerably. This is certainly true with respect to the term graduate-level education. The terms undergraduate, graduate and postgraduate tend to be employed differently in different countries (and indeed within Canada). Undergraduate-level education typically refers to the first cycle of post-secondary education which usually leads to the attainment of a Baccalaureate (or Bachelor's) Degree. Graduate and postgraduate-level education refers to education in the second and/or third cycles that normally leads to the attainment of a Master's Degree or Doctorate. While the province of Ontario employs the term graduate education for both the Master's and Doctoral Degree,[24] the CAF employs the terms

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[21] Department of National Defence, *A-P9-000-002/PT-000, Manual of Individual Training and Education, Volume 2, CFITES - Needs Assessment,* (Ottawa, 1997), 1.
[22] *Ibid.,* 2.
[23] See, for example, Innovative Training Solutions Inc, *Comparing the Strategic Leaders Competency Framework and the DP 4 Professional Development Requirements,* Learning Needs Analysis Report, (Victoria: Innovative Training Solutions Inc., 2003) and Nadia Permalloo, *An Assessment of the Education Needs of Primary Care Health Professionals in England for the NHS Antenatal and Newborn Screening Programmes,* Fetal, Maternal and Child Health Subgroup of UK NSC Report, (London: FMCH, 2010).
[24] Ontario Universities Council on Quality Assurance, *Quality Assurance Framework, (*Toronto, 2014), 33.

postgraduate and advanced degrees to refer to education leading to the attainment of a Master's Degree. [25] In addition, many institutions such as Queen's University[26] offer Graduate Diplomas and Certificates, where education is at the graduate level, but less credits are required than for the attainment of a Master's Degree. For the purposes of this paper, graduate-level education refers to education above the undergraduate/Baccalaureate level that could normally lead to the attainment of a Master's Degree.

In addition to clarification with respect to undergraduate/graduate/postgraduate education, the terms academic and professional are often employed to categorize the type of Master's Degree attained. The Bologna Process recognizes the differences between "academically and professionally oriented institutions"[27] but has intentionally developed a standardized model for credits to reduce restrictions on access to the next cycle of education due to the type of qualification obtained. In the United States, like most countries, Professional Master's Degrees are generally subjected to accreditation by programmatic accreditors that are directly associated with the specialization of the program, such as law, medicine, engineering and health professions.[28] This is the case in Canada as well, although some programs, such as the Master of Defence Studies (MDS) from the Royal Military College of Canada, are considered to be a professional program despite the fact that they are not subject to accreditation by a specific organization

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[25] Department of National Defence, *A-P9-050-000/PT-01(1), Manual of Individual Training and Education, Volume 1, Supplement - CFITES Glossary*, 29.
[26] Queen's University School of Graduate Studies, *Graduate Calendar*, 2016, http://www.queensu.ca/sgs/prospective-students/programs-degrees (accessed March 4, 2016).
[27] European Higher Education Area, *The European Higher Education Area in 2015: Bologna Process Implementation Report*, (Luxembourg: Publications Office of the European Union, 2015), 59.
[28] Council for Higher Education Accreditation, *An Overview of U.S. Accreditation, (*Washington: CHEA, 2015), 2.

representing the profession. Of importance with respect to this paper, the student learning outcomes identified and discussed do not differentiate between academic and professional education. According to *Duty With Honour*, the profession of arms in Canada is "composed of military members dedicated to the defence of Canada and its interests, as directed by the Government of Canada."[29] As such, a professional Master's degree would be one in which the field of study is directly related to the defence of Canada and its interests. This differentiation between academic and professional degrees will be briefly discussed in the conclusion and recommendations of this paper.

Finally, the term student learning outcomes is used in this paper to describe the stated objectives of graduate-level education by higher education institutions, governments and external quality assurance and accreditation agencies. The specific term employed tends to vary by country and organization. The European Higher Education Area (EHEA) refers to these as outcomes within their Framework of Qualifications, but also refer to learning outcomes and competences.[30] In the United States, the Council for Higher Education Accreditation refers to student learning outcomes as "the knowledge, skills, and abilities that a student has attained at the end (or as a result) of his or her engagement in a particular set of higher education experiences."[31] In contrast, the Lumina Foundation uses the term proficiencies in their Degree Qualification Profile. They define a proficiency as "a set of demonstrations of knowledge, understanding and skill that

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[29] Department of National Defence, *Duty with Honour: The Profession of Arms in Canada, (* Ottawa: DND, 2003), 10.
[30]European Higher Education Area, "The Framework of Qualifications for the European Higher Education Area." *The Bologna Process*, 2005, http://www.ehea.info/ (accessed September 23, 2015), 1.
[31]Council for Higher Education Accreditation, *Statement of Mutual Responsibilities for Student Learning Outcomes: Accreditation, Institutions, and Programs, (*Washington: CHEA, 2003), 5.

satisfy the levels of mastery sufficient to justify the award of an academic degree."[32] Finally, organizations and institutions in Canada use the terms degree-level standards[33]and degree level expectations to describe the "knowledge and skill outcome competencies that reflect progressive levels of intellectual and creative development."[34] This paper uses the generic term student learning outcomes to describe the specific terms employed above. This is further defined in Chapter Four.

Literature Review

Needs assessments and analyses are conducted regularly by employers, professions and the military to define gaps in training or education that need to be addressed for better effectiveness and efficiency. Educational needs analyses specifically addressing the needs of a profession are less common. Nonetheless, analysis of this type is typically conducted in one of three manners. Traditional needs assessments conduct interviews and focus groups with individuals that are directly affected by the needs assessment - including employers, professionals and graduates, to identify perceived needs from education or training to appropriately accomplish their tasks. Others seek expert advice through subject matter experts or external advisory teams/organizations. These studies may review existing documentation and practices or employ models such as the Delphi Technique.[35] Finally, some compare expectations and outcomes from several points of view to determine gaps in needs and delivery methods. Some have used

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[32] Lumina Foundation, *The Degree Qualifications Profile,* (Indianopolis: Lumina Foundation, 2014), 45.
[33] Council of Ministers of Education, Canada, "Ministerial Statement on Quality Assurance of Degree Education in Canada," *CMEC Extranet*, April 02, 2007, http://www.cmec.ca/9/Publications/index.html?searchYr=2007 (accessed March 6, 2016), 5.
[34] Ontario Universities Council on Quality Assurance, *Quality Assurance Framework*, 4.
[35] Peter Facione, *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction (The Delphi Report),* APA Delphi Research Project Report, (Millbrae, CA: California Academic Press, 1990).

critical interpretive synthesis (CIS) to conduct this analysis through revision of literature and the creation of synthetic constructs.

Traditional Needs Assessments

Traditional needs assessments generally follow the five steps described by Robert Price et al. in their study *The Use of Competency-Based Needs Analysis in Developing Employee Training Program*. Needs assessments go through different variations of identifying a critical body of knowledge, defining competent performance, collecting performance data, analyzing data to reveal knowledge gaps and proposing solutions.[36] In their study, they evaluated the performance of employees of a land-survey service by identifying critical knowledge skills and evaluating employees competencies in these skills by supervising managers. With evaluation completed, they analyzed the data using standard deviation to determine which skills were outside of previously determined acceptable ranges. These results then led to proposed training plans to specifically address the gaps in knowledge identified.

The step of collecting performance data can be conducted in several methods other than the observation and evaluation technique employed by Price et al. Janet Grant, a professor of education in medicine at the Open University Centre for Education in Medicine in the United Kingdom, discusses several different methods that may and have been employed in needs assessments for graduate education in healthcare professionals. In addition to observation, she identifies the following methods that may be employed:

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[36] Robert Price, Jim Lee, and Theodore Kozman, "Use of Competency-Based Needs Analysis in Developing Employee Training Program," *International Journal of Business and Public Administration* 7, no. 1 (Summer 2010), 120.

1. Gap or discrepancy analysis;
2. Reflection on action and reflection in action;
3. Self assessment by diaries, journals, log books, weekly reviews;
4. Peer review;
5. Critical incident review and significant event auditing; and
6. Practice review.[37]

She also notes, of significance to the subject of this paper, that while needs assessments in educational planning are important, they must not be considered in isolation. "Exclusive reliance on formal needs assessments in education planning could render education an instrumental and narrow process rather than a creative, professional one."[38] Within professions such as healthcare and the profession of arms, it is important to assess gaps in skills that should be addressed by graduate education, yet it is equally important that all of the aspects of professional development are taken into consideration when proposing solutions to address the gaps identified.

In *Analysis of Multi-Component Educational and Training Needs*, Earl Misanchuk also identified the fact that prior to collecting performance data, some analysis could be required in simply identifying the critical body of knowledge and defining competent performance. A professor at the University of Saskatchewan, he proposed employing a proportionate reduction in error (PRE) approach to properly analyze the competency identified and the relevance of the competency to the individual's

[37] Janet Grant, "Learning Needs Assessment: Assessing the Need," *British Medical Journal* 324, no. 7330 (2002), 157-158.
[38] *Ibid.*, 157.

particular role.[39] This method provides "a single statistic which succinctly describes the need as defined on both dimensions [competency and relevance] simultaneously."[40] Thus, while Grant focused on specific methods for ensuring validity of the needs assessment with respect to collection of performance data, Misanchuk appropriately emphasizes the need to coherently describe the critical knowledge and perceived needs before collecting data.

Variations of these methods were employed in a study conducted for the United Kingdom National Screening Committee in *An Assessment of the Education Needs of Primary Care Health Professionals in England*. Critical knowledge skills were identified in a questionnaire and confirmed by a pilot group of general practitioners, health visitors and practice nurses. Self-assessment was then employed for collection of performance data. The questionnaire was sent to a random sample of 500 of the three professions to be completed electronically, in which they identified their self-assessment of knowledge and confidence for each of the screening programmes (needs). This information was then analyzed using a data analysis tool to account for differences in self-assessment amongst the three groups of professionals. While this method identified "some key issues that [were] informative,"[41] it also demonstrated an inherent weakness. The voluntary online questionnaire only yielded a response rate of 7%, despite indications in previous literature that the response rate could be expected to be between 30% and 50%.[42] As a result, data analysis and drawing conclusions from results was difficult. However, it was "considered important that the questionnaires were self-administered as participants

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[39] Earl Misanchuk, "Analysis of Multi-Component Educational and Training Needs." *Journal of Instructional Development* 7, no. 1 (1984), 28.
[40] *Ibid.,* 31.
[41] Permalloo, *An Assessment of the Education Needs of Primary Care Health Professionals...*, 56.
[42] *Ibid.,* 55.

might not have wanted to disclose their true knowledge and confidence levels to an individual in person and/or by phone."[43] This final point is important in realizing one of the weaknesses of self-assessment in collection of performance data - the method employed could affect the quality of the responses.

Self-assessment can also be employed in a different manner with different results for data collection. In a study by Christian Cable et al, initial participants in an interprofessional master's degree program in health profession education were involved in a focus group to identify the needs they felt the graduate education should be able to address.[44] The results were then subjected to grounded-theory analysis and interpretation, as had been employed in other studies. The resultant theory of needs was confirmed and refined by the focus group. This method, combined with the environment (focus group during graduate studies), is more akin to the "reflection on action and reflection in action"[45] method described by Grant. The result of this study was the identification of the intrinsic and extrinsic needs[46] of graduate education for health professional educators that could be addressed through a relatively new type of interprofessional master's degree.

The needs assessments reviewed employ different methods of identifying critical knowledge and potential gaps and varying approaches to data collection and analysis. Despite these differences, traditional needs assessments follow a relatively similar process to identify educational and learning needs identified by those directly affected

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[43] *Ibid.*, 15.
[44] Cable *et al.*, "Why Are You Here? Needs Analysis of an Interprofessional Health-Education Graduate Degree Program," *Advances in Medical Education and Practice*, no. 5 (2014), 84.
[45] Grant, "Learning Needs Assessment: Assessing the Need," 15.
[46] Cable *et al.*, "Why Are You Here? Needs Analysis of an Interprofessional Health-Education Graduate Degree Program," 87.

(employers, employees, students) that can be addressed through established professional development and/or education.

Subject-Matter Expert Analysis

Subject-matter expert analysis will often employ a similar process to traditional needs assessments, but employ subject-matter experts, using various techniques, to provide an external identification of needs within a profession. The use of external subject-matter experts permits analysis beyond identifying educational needs that can specifically addressed by established professional development or education. This can be done through identifying gaps in current education and professional development that do not currently fully meet previously established needs.

The Delphi technique is one method of collecting and validating this gap analysis. This method "requires the formation of an interactive panel of experts."[47] Through several rounds of questions, subject-matter experts develop a consensus on the responses, aided by a dispersed and confidential environment. Peter Facione employed this technique to identify the skills and disposition of critical thinking, effective ways of teaching critical thinking through education and appropriate methods for assessment.[48] The result of this study was the consensus from forty-six experts on the central and core cognitive skills of critical thinking, proposed curriculum and an assessment strategy.

[47] Facione, *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction (The Delphi Report),* 2.
[48] *Ibid.,* 3.

Brill, Bishop and Walker also employed the Delphi technique in their study, *The Competencies and Characteristics Required of an Effective Project Manager*.[49] Beginning with a panel of 598 experts, they established the questions required to identify the educational needs of project managers. From this, they used a combination of criterion, stratified and random sampling techniques to establish a 100-member panel to "validate empirically"[50] the initial results of the first round of questions. The result of this study was the identification of core project management competencies and the recommended approaches to facilitating their development in project management courses.

The CAF has also employed subject-matter experts for needs assessment. The Defence Science Advisory Board, a private sector body "drawn from industry and academia...[that] provides independent advice from a broad scientific and technological perspective"[51] to the CAF is one such group of subject-matter experts. In 2013, they were requested to undertake a study of the role and value of education during the career progression of members of the CAF. Their report addressed a series of five questions posed by the Canadian Defence Academy (currently named Military Personnel Generation). After deliberation on each question, they published their report, based on their extensive experience and knowledge. This report was subsequently employed in the *CAF Officer Professional Development Study*, specifically with respect to the findings of

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[49] Jennifer Brill, M.J. Bishop, and Andrew Walker, "The Competencies and Characteristics Required of an Effective Project Manager: A Web-Based Delphi Study," *Educational Technology Research and Development* 54, no. 2 (April 2006).
[50] *Ibid.*, 124.
[51] Department of National Defence, "The Role and Value of Education in the Intellectual Development of the Canadian Armed Forces' Officers and Non-Commissioned Members," 1.

the graduate education sub-focus area within the Tier 2 Officer Report.[52] Key findings, which will be further elaborated in Chapter Three, included the identification of needs of education beyond undergraduate level for DP 3 (and higher) officers and non-commissioned members (NCM).[53]

The Canadian Defence Academy also contracted the services of Innovative Training Solutions to analyze the professional development needs of DP 4 in 2003. The resulting report, *Comparing the Strategic Leaders Competency Framework and the DP 4 Professional Development Requirements*, recommended development of new learning modules into the DP program (amongst other recommendations) to appropriately address the needs of senior officers.[54] The study employed three retired officers with significant military, government and private sector experience to conduct the analysis. These experts analyzed and synthesized the professional development needs of DP 4 officers and compared them with current curriculum, effectively conducting a gap analysis. This method, although clearly based on subject-matter expert assessment, is similar to the final type of needs assessment to be discussed.

Comparative Analysis and Critical Interpretive Synthesis (CIS)

Comparative analysis studies seek to measure educational needs perceptions of students with the institution. The result of these studies is the identification of gaps between perceived needs and the actual competencies addressed in education. Through

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[52] Department of National Defence, *Canadian Armed Forces Professional Development Study 2013,* Tier 2 - Officer Report, (Kingston: Canadian Defence Academy, 2014), 25-36.
[53] Department of National Defence, "The Role and Value of Education in the Intellectual Development of the Canadian Armed Forces' Officers and Non-Commissioned Members," 21.
[54] Innovative Training Solutions Inc, *Comparing the Strategic Leaders Competency Framework and the DP 4 Professional Development Requirements*, 18.

the study of needs assessment of English for academic purposes (EAP), Dana Ferris identified these gaps in 1998. Through a survey of 476 students in an English as a Second Language (ESL) program and 206 instructors at the same institutions, Ferris found that the perceived needs of students contrasted significantly with instructor expectations. Specifically, while students considered formal speaking and pronunciation competencies to be critical, instructors focused more on communication with professors and note-taking.[55] The author was then able to make recommendations for adjustments to curriculum to address these gaps.

In a similar, but more generic study, Chan, Brown and Ludlow compared the purposes and aims of undergraduates education from the perspective of higher education institutions and undergraduate students.[56] Contrary to the employment of a survey in the study by Ferris, the authors employed literature analysis for their research. As a result, they chose to employ the Critical Interpretive Synthesis (CIS) methodology developed by Dixon-Woods et al.[57] for their interpretation of results. Following a comprehensive search of related literature, they established nine themes that reflected the various aims or goals of completing undergraduate education. These themes are defined as synthetic constructs in the methodology employed, "new constructs generated through synthesis...the through the development of a synthesizing argument."[58] All literature reviewed was then associated with the synthetic constructs to determine themes which

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[55] Dana Ferris, "Students' Views of Academic Aural/Oral Skills: A Comparative Needs Analysis," *TESOL Quarterly* 32, no. 2 (Summer 1998), 308.
[56] Chan, Brown, and Ludlow, "What is the Purpose of Higher Education? A Comparison of Institutional and Student Perspectives on the Goals and Purposes of Completing a Bachelor's Degree in the 21st Century."
[57] Dixon-Woods *et al.,* "Conducting a Critical Interpretive Synthesis of the Literature on Access to Healthcare by Vulnerable Groups."
[58] *Ibid.,* 44.

were more closely associated with student or institutional perceived needs. The study found "a partial misalignment"[59] in which "student expectations tended to be very instrumental and personal...while higher education institutions...tended towards highly ideal life- and society-changing consequences."[60] The study concluded with the need to "revitalize the interest and research into goals and purposes of completing a bachelor's degree in the 21st century."[61] This type of study has obvious links to the purpose and methodology of this paper.

A study by Rubin and Dierdorff from DePaul University used a similar methodology to achieve similar goals, although not specifically employing CIS. In comparing results from literature review from a previous study, institutional data and course requirements, they analyzed the relevancy of Masters of Business Administration (MBA) curricula with defined managerial competency requirements.[62] To do so, they developed six "competency categories"[63] to be compared with established curriculum. These competency categories are equivalent to the synthetic constructs developed through CIS. Their study found that the most important competency categories (managing human capital and managing decision-making processes) identified by incumbent managers were not given proportional emphasis in most MBA programs.[64] The study further recommended changes to current MBA curriculum and noted the

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[59] Chan, Brown, and Ludlow, "What is the Purpose of Higher Education? A Comparison of Institutional and Student Perspectives on the Goals and Purposes of Completing a Bachelor's Degree in the 21st Century," 11.
[60] *Ibid.*
[61] *Ibid.*, 13.
[62] Robert Rubin and Erich Dierdorff, "How Relevant is the MBA? Assessing the Alignment of Required Curricula and Required Managerial Competencies," *Academy of Management Learning and Education* 8, no. 2 (June 2009), 208.
[63] *Ibid.*, 213.
[64] *Ibid.*, 217.

statistically-significant ability of programs housed in "doctoral/research universities" to better address competencies than those in "master's only institutions."[65]

Conclusion

The literature reviewed in preparation for the analysis of the research questions in this paper identified several different methods and variances in conducting needs assessment. Traditional assessments generally employ surveys and questionnaires to determine needs as identified by users - employers, professionals and graduates. These studies follow a similar process and result in recommendations for improvement of training or education to address the gaps identified. Subject-matter experts may also be employed to analyze existing needs to determine their validity and the extent to which they are addressed in current curriculum. Finally, comparative analyses tend to employ literature review, often of studies conducted through traditional or subject-matter needs assessment, supplemented by official documentation from educational institutions, to determine the association between perceived needs and actual curriculum.

This paper employs CIS to conduct the educational needs assessment of CAF graduate-level education. Literature review combined with the development of a synthesizing argument is an appropriate and efficient method to determine the needs of the CAF professional development system with respect to graduate-level education. This avoids the potential weaknesses of a traditional survey/questionnaire, including time and response rates, while exploiting studies and subject-matter expert assessment that has already been conducted. Contrary to a study such as the one on MBA curriculum conducted by Rubin and Dierdorff, the perceived needs are not specific to a unique

[65] *Ibid.*, 217.

graduate-level program or degree. As a result, analysis of the generic student learning outcomes of graduate-level education identified by institutions, government and external agencies enables alignment of assessment between the needs and the outcomes. This is achievable through the use of CIS to establish synthetic constructs for both the implicit and explicit needs and student learning outcomes. Where these synthetic constructs have direct links, validated needs of graduate-level education can be identified. Where links are not as strong between the sets of synthetic constructs, further study and contemplation is required.

CHAPTER 3 - CAF PERCEIVED NEEDS OF GRADUATE EDUCATION

Introduction

The lack of policy with respect to graduate education within the CAF has not prevented discussion within reports, studies and professional journals. It has, however, inhibited a consolidated approach to identifying and analyzing the senior officers' professional development needs for pursuing graduate-level education. To fill this gap and establish the synthetic constructs representing CAF needs, a comprehensive search of literature was conducted. This search included all CAF professional development studies and reports conducted between the *Report of the Officer Development Review Board* of 1969[66] and the *Canadian Armed Forces Professional Development Study 2013*.[67] In addition, all articles related to education in the *Canadian Military Journal*, the professional journal of the CAF since 2000, were considered. Finally, CAF policy and doctrine that refer, implicitly or explicitly, to graduate-level education were consulted. This search was supported by the Canadian Defence Academy Technical Report 2015-01 entitled *Who is Writing about What: An Examination of the Canadian Armed Forces Professional Journals*.[68]

Literature varied considerably with respect to purpose and emphasis placed on graduate-level education. Some focused explicitly on the need for graduate-level education as perceived by the author, including *Higher Education and the Profession of*

[66] Department of National Defence, *Report on the Officer Development Board (Rowley Report).*
[67] Department of National Defence, *Canadian Armed Forces Professional Development Study 2013.*
[68] Bill Bentley and Cathy Sheppard, *Who is Writing about What: An Examination of the Canadian Armed Forces Professional Journals*, Technical Report 2015-01, (Kingston: Canadian Defence Academy, 2015).

Arms: Explaining the Logic[69], written by military-scholars Bill Bentley and Bernd Horn and Defence Science Advisory Board's *Report on the Role and Value of Education in the Intellectual Development of the Canadian Armed Forces' Officers and Non-Commissioned Members.*[70] Others implicitly referred to perceived needs of graduate-level education, including the *Officer General Specification* (OGS)[71] and *Canadian Officership in the 21st Century (Officership 2020).*[72] As a result, establishing a consolidated list of CAF needs of graduate-level education necessitated the use of synthetic constructs to articulate the various terms and concepts employed in literature.

Synthetic Constructs

Following the comprehensive review of literature, the Professional Development Framework was employed as a foundation for the establishment of the seven perceived senior officers' professional development needs for pursuing graduate-level education. The Professional Development Framework was presented by Dr. Robert Walker in *Canadian Forces Leadership Institute Technical Report 2006-01, The Professional Development Framework: Generating Effectiveness in Canadian Forces Leadership*.[73] The table below (Table 3.1) outlines the continuum of four leader levels (junior, intermediate, advanced and senior) and the five leader elements (expertise, cognitive capacities, social capacities, change capacities and professional ideology), which are

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[69] Bentley and Horn, "Higher Education and the Profession of Arms: Explaining the Logic."
[70] Department of National Defence, "The Role and Value of Education in the Intellectual Development of the Canadian Armed Forces' Officers and Non-Commissioned Members."
[71] Department of National Defence, *A-PD-055-002/PP-003, Canadian Forces Officer General Specification*.
[72] Department of National Defence, *Canadian Officership in the 21st Century - Strategic Guidance for the Canadian Forces Officer Corps and the Officer Professional Development System,* (Ottawa: DND, 2001).
[73] Robert W. Walker, *The Professional Development Framework: Generating Effectiveness in Canadian Forces Leadership,* CFLI Technical Report 2006-01, (Ottawa: DND, 2006).

further divided into sixteen leader attributes.[74] While this framework was not established specifically to address graduate-level education needs, it provides the guiding principles in officer professional development that must be considered when identifying perceived CAF needs.

These five elements assist in categorizing the varying terminology employed in literature to describe the perceived needs of the CAF with respect to graduate-level education. These synthetic constructs are the following (with relevant leader element and associated leader attribute in parantheses):

a. intellectual broadening from the tactical/operational level to institutional/strategic thinking (Expertise - Strategic and Institutional);
b. mastery of the profession of arms (Expertise - Military and Organizational);
c. critical thinking (Cognitive Capacities - Analytic/Creative Thinking);
d. communication skills (Social Capacities - Communications);
e. credibility (Social Capacities - Interpersonal/Team);
f. continuing education (Change Capacities - Self-Development); and
g. ethos/ethics (Professional Ideology - Moral Reasoning).

[74] Department of National Defence, *A-PA-005-000/AP-006, Leadership in the Canadian Forces: Leading the Institution*, (Ottawa: DND, 2007), 130. The sixteen leader attributes are (1) technical and specialist, (2) military and organizational and (3) strategic and institutional expertise, (4) analytic and (5) creative cognitive capacities, (6) flexibility, (7) communications, (8) interpersonal, (9) team and (10) partnering social capacities, (11) self-, (12) group- and (13) learning organization change capacities and (14) internalized ethos, (15) moral reasoning and (16) credibility/impact within the professional ideology element.

Table 3.1 - The Professional Development Framework

LEADER LEVEL	EXPERTISE TACTICAL TO STRATEGIC	COGNITIVE CAPACITIES ANALYTIC TO CREATIVE/ABSTRACT	SOCIAL CAPACITIES INTERPERSONAL TO INTER-INSTITUTIONAL	CHANGE CAPACITIES OPENNESS TO PARADIGM SHIFTING	PROFESSIONAL IDEOLOGY INTERNALIZING TO STEWARDSHIP
SENIOR	**Security Expertise** • Scope and content moves from knowledge to expertise with accompanying expansion to a strategic understanding of the domain of security. • Shift from knowledge to expertise requires ability to apply the philosophy and principles that govern the generation and employment of military capacities (knowledge + philosophy = expertise) and strategic, institutional co-existence among peer ministries, foreign defence agencies. • Expertise at this stage clearly is dependent upon the complementary development in Professional Ideology, a full understanding of the profession of arms.	**Knowledge Creation** • Able to generate, organize and manage the theory-based body of knowledge applied across the profession. • This goes beyond the analytic, creative and judgment capacities needed to adapt the profession to the external environment, and expands to include the obligation to update and extend the profession's unique body of knowledge so as to ensure that the profession is discharging all of its responsibilities to society in the most effective manner. • Strong parallel to cognitive capacities at advanced academic post-graduate levels; masters the particular academic discipline but also generates new knowledge.	**Strategic-Relations Building** • Relates to the concept of Leading the Institution, relies on secondary and tertiary influence processes for the senior leader to communicate institutional priorities and strategic intent across organizational systems. • Builds open teams such that immediate subordinates can contribute novel ideas and can critique taken-for-granted assumptions. • Externally focused capacities pertain to building and maintaining strategic relations with others engaged in the broad security arena and related national/government initiatives.	**Multi-Institutional Partnering** • Focus is external, on changing others' understanding of the military as a strategic political capacity; and internal on implementing internal change initiatives. • In this latter regard, there is an emphasis on the initial stages of anticipating change, effectively contributing to the change, and monitoring and adjusting initiatives over the change period. • Senior leader initiatives exist to transform and improve a team or multiple units, or to attempt learning-organization applications at organizational and institutional levels.	**Stewardship of the Profession** • Core capacities are related to managing collective professional identity – the key issues of articulating what the profession is, what it stands for and what it believes in. • Able to engage in very abstract reasoning, exemplified at the highest stages of moral/identity development - in particular, the capacity for independent judgment of the profession's core philosophy, ideology and principles. • This capacity is integrated with acquisition of related capabilities in Cognitive and Change Capacities.
ADVANCED	**Defence Knowledge** • Shift from information to knowledge, incorporating a broad understanding of the CF and defence as key components of security and government functions. • The shift from information to knowledge requires the additional perspective of understanding the rationale and purpose of intended actions; and the generalized outcomes that are to be achieved (information + purpose = knowledge).	**Mental Models** • Uses inductive and deductive reasoning skills to create, adapt and generalize knowledge both from one's own previous learning and experiences, and from other domains such as professional literatures. • Conducts abstract reasoning and draws on appropriate professional orientation to be able to understand desired outcomes. • Aware of assumptions embedded in the military way of framing issues, testing working hypotheses, operating within the academic discipline of military thinking.	**Group Cohesiveness** • At this level of larger or multiple units/teams/groups, is involved in aspects of leading the institution, and applies broad influence processes to ensure internal cohesion, fostering commitment and supporting subordinate leaders while also engaging in effective boundary-spanning activities, especially in joint or multi-national operations.	**Group Transformation** • Able to adapt and align groups or sub-systems to the broadest requirements of the institution while ensuring the tactical proficiency and effective integration of individuals and small teams/sections within the larger formation.	**Cultural Alignment** • Guides framing of problems, and interactions with others, to apply leader influence to shape or align the extant culture to be consistent with the ethos. • Contains some of the most complex challenges in achieving competing institutional effectiveness objectives – mission success versus member well-being; internal synchrony and stability versus external adaptability and experimentation.
INTERMEDIATE	**Military Information** • How MOC contributes to larger formation capabilities. • Understanding not only what to do but the context in which this occurs (data + context = information). • Examples: Effects-based operations, impact of instability and conflicts on multinational relations, international law, civil control of military.	**Theories and Concepts** • Able to reason, moving from the concrete to the abstract, from procedures and rules to principles.	**Individual Persuasion** • Social skills for leading people, particularly the abilities to effectively influence others "one-on-one" or small-group, using some range of influence behaviours appropriate to the characteristics of the situation, the followers and the individual leader.	**Self-Efficacy** • Capacities at this stage are focused on the individual's abilities to monitor self-efficacy, engage in self-reflection, make early commitments to self-development, and adapt one's behaviours to the social environment/context in which one is functioning.	**Self-Regulation** • Conducts basic self-regulation, avoiding obvious ethical violations and not displaying behaviours that erode the reputation, image or credibility of the profession; essentially a journeyman stage of professionalization. • Abides by the principles of the Defence Ethics Program. • Capable of serving as an example.
JUNIOR	**Technical and Tactical Procedures** • Learning standard Military Occupational Classification (MOC) and sea/land/air procedures. • For initial leader roles, acquiring an overview of such standards and procedures, and small group tactics.	**Theorems, Practical Rules** • Reasoning at this level is intended to identify the appropriate task procedures, using simple theorems, practical rules or established scientific principles/laws. • When cognitive capacities interact with expertise at the junior level, the two elements function in a 'cookbook' approach to problem solving and task accomplishment. There is limited capacity for innovation.	**Team-Oriented Followship** • Aware of group norms, minimum leader-style flexibility. • Moderate communication capabilities applied through baseline interpersonal skills, reflecting an awareness of basic influence factors, group diversity issues and non-prejudicial self-behaviour.	**External Awareness** • Minimal expectation in change capacities would be a generalized orientation and awareness of changes occurring external to the CF, and the CF transformational efforts, as means of signalling the importance of practising openness to externally driven change.	**Normative Compliance** • Understands the concepts and practices of the profession of arms at an introductory level. At a minimum, practices military group norms, and adheres to discipline demands. • As an *ab initio* professional (apprentice), looks externally (to supervisors or codes of conduct) for guidance as to the appropriate behaviours in specific circumstances. Internalizes values minimally.

Source: Robert W. Walker, *The Professional Development Framework: Generating Effectiveness in Canadian Forces Leadership*, CFLI Technical Report 2006-01, (Ottawa: DND, 2006), 32.

As would be expected, this list is not exhaustive. Instead, it represents the perceived senior officers' needs of graduate education in professional development that are most often discussed and best described in literature.

At first glance, it may be of surprise to see perceived needs other than cognitive capacities that could be addressed by graduate-level education. However, no literature has suggested that graduate education, in isolation, completely satisfies the professional development requirements of the CAF. Instead, graduate education can be seen as an enabler for the entire professional development system. It acts as a foundation which is supplemented by professional military education (PME), training , self-development and, most notably, experience.[75] Thus, the perceived needs of the CAF with respect to graduate education must not be seen as ends in themselves. They are attributes of higher academic education which provide the opportunity for the professional officer to exploit the full potential of the professional development system.

Intellectual Broadening

Dr. Robert Walker describes the changes required of the professional officer's expertise from the junior level of technical and tactical procedures, through the intermediate level of military information and the advanced level of defence knowledge, to finally achieve security expertise at the senior level.[76] This gradual intellectual broadening from the tactical and operational level to the strategic and institutional levels is mentioned in various forms in other literature as well. The method, according to

[75] Department of National Defence, *Report on the Officer Development Board (Rowley Report),* Vol I, 34.
[76] Walker, *The Professional Development Framework: Generating Effectiveness in Canadian Forces Leadership,* 32.

Walker, of achieving this intellectual broadening is through "advanced level courses at national and international institutions, complex self-development, and slow-growth but crucial career experiences."[77] Military strategist Barry Watts argues that there is a cognitive boundary between the tactical level that requires intuitive thinking for tame problems and the operational and strategic levels that require analysis, synthesis, judgement and insight for wicked problems.[78] According to Bentley and Horn, "crossing this boundary...requires advanced education, specifically graduate level education."[79] Thus, while Walker refers to complex self-development to provide the intellectual broadening to overcome this cognitive boundary without specifically mentioning graduate-level education, Bentley and Horn are much more explicit.

The Defence Science Advisory Board addresses the same perceived need in other terms. They state categorically that "the impact of a period of postgraduate study on *breadth of perspective* [emphasis added], on judgement, and on preparation for the unexpected is well established."[80] Similarly, the *Senior Officer Professional Development Study (Lightburn Study)* of 1986, describes the rank of Lieutenant-Colonel/Commander as the "first rank where broadening becomes essential."[81] While the author describes an "unease" of the time with respect to obtention of a Master's degree, he specifically mentioned the role of graduate-level education in the "need to broaden intellectually."[82]

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[77] *Ibid.,* 33.
[78] Barry Watts, *US Combat Training, Operational Art and Strategic Competence,* (Washington: Center for Strategic and Budgetary Assessments, 2008), 37.
[79] Bentley and Horn, "Higher Education and the Profession of Arms: Explaining the Logic," 70.
[80] Department of National Defence, "The Role and Value of Education in the Intellectual Development of the Canadian Armed Forces' Officers and Non-Commissioned Members," 13.
[81] Department of National Defence, *Senior Officer Professional Development (Lightburn Study),* (Ottawa: DND, 1986), 29.
[82] *Ibid.,* 8.

This unease with graduate-level education is present in most CAF studies and reports, as it is seen as a need of the professional development system for senior officers, but is not specifically required by policy. Within the context of the current CAF Professional Development System, graduate-level education can be considered both within the Education and Self-Development pillars, as it is not mandatory and thus can be regarded as "based on the self-motivation"[83] of the member. *Officership 2020*, written fifteen years after the *Lightburn Study*, similarly identified a capability gap in officers' capacities to "have an enhanced ability to conceptualize at the strategic level and apply those principles to design and build the force of the future."[84] Their proposed solution for "the development of intellectual capabilities is directly related to education."[85] They proposed this intellectual foundation was required no later than in DP 3, thus inferring a higher level of education than the Baccalaureate degree, which is required upon commissioning.

Intellectual broadening is clearly seen as a professional development need for senior officers that can be addressed through graduate-level education. Several studies and reports have highlighted the need for senior officers to be able to adapt their thinking processes from the tactical and operational levels to the institutional and strategic levels. This cannot be achieved through academic education alone, as indicated by *Officership 2020*. However, the literature described above certainly points to graduate-level education as the solution to provide the foundation for the intellectual broadening required, when complemented by PME and experience.

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[83] Department of National Defence, *Defence Administrative Order and Directive 5031-8: Canadian Forces Professional Development*.
[84] Department of National Defence, *Canadian Officership in the 21st Century*, I-15.
[85] *Ibid.*

Mastery of the Profession

Graduate-level education has also been identified as the method to address the need for a mastery of the profession of arms. This appears to be somewhat contradictory, as the same education would provide not only the foundation to broaden perspective, but also the capability to become an expert in a specific domain. This is perhaps best explained by Alan Okros through a comparison with other professions. His research suggests that as "a general rule of thumb that it can normally take 10 to 15 years to move from novice learner to mastery of the profession."[86] This is completed through "subsequent graduate education (for those who assume responsibility for generating, evaluating and updating the theory-based body of knowledge and accepted professional practice)."[87] It is important to note that he specifically mentions the role of research within the graduate education as critical to "enhancing one's professional expertise."[88]

This point is reinforced by Brigadier-General (retired) W. Don MacNamara, who argues that officers "who have serious academic interests and intellectual bent should be encouraged"[89] to complete research-based graduate education. This type of education encourages mastery of the profession and "forms the basis for subsequent doctoral studies or a leadership role in society."[90] Thus, contrary to intellectual broadening, graduate-level education enables mastery of the profession when it is research-based. The 1969 *Report of the Officer Development Review Board* similarly argues that the "officer must be permitted to do research to make original contributions to the professional body of

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[86] Dr. Alan Okros, "Leadership in The Canadian Military Context," (CFLI Monograph Series, 2010), 37.
[87] *Ibid.*
[88] *Ibid.*, 37 (footnote 71).
[89] BGen (ret) W. Don Mcnamara, "Intellectualism in the General Officer Corps," in *Generalship and the Art of the Admiral*, by Bernd Horn and Stephen Harris, (St. Catherines: Vanwell Publishing, 2001), 502.
[90] *Ibid.*

knowledge."[91] He notes that this can be done through graduate education, but also should be achievable through professional military education. Nonetheless, he argues that this would also permit the PME conducted to "lead to the acquisition of a professional degree,"[92] thereby reaffirming that it is a quality that is best associated with graduate-level education. MacNamara and Rowley did not suggest that this mastery of the profession was needed for all officers, but suggested that graduate-level education was the preferred approach for those that required this capability.

The *CAF Professional Development Study* demonstrates a change in mentality with respect to graduate-level education between 1969 and 2013. The study concluded that "a graduate degree has become an expectation within the CAF for the majority of senior officers."[93] In addition, they specifically describe the Master of Defence Studies (MDS) as the graduate degree that "provides the integrated learning required to 'master' the profession of arms."[94] Officer-scholar David Last concurs with this conclusion. According to Last, "a professional master's degree indicates mastery and application of a specialized body of professionally relevant knowledge, and a demonstrated ability to work within that professional community."[95]

Interestingly, Last actually argues that both types of graduate education - research-based academic degrees and professional degrees, lead through slightly different paths to a mastery of the profession. A research-based academic master's focuses on epistemology and provides the foundation for further education and contribution to the

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[91] Department of National Defence, *Report on the Officer Development Board (Rowley Report)*, Vol 1, 44.
[92] *Ibid.*, Vol 1, 45.
[93] Department of National Defence, *Canadian Armed Forces Professional Development Study 2013*, 29.
[94] *Ibid.*
[95] Lieutenant-Colonel David Last, "Military Degrees: How High is the Bar and Where's the Beef?" *Canadian Military Journal*, (Summer 2004), 34.

professional body of knowledge. The professional degree enables a path with more emphasis on methodology which, when combined with PME, allows for mastery of the profession as well. Regardless of the approach taken, it is clear from the literature that graduate-level education is considered critical in permitting the professional to become a master of their art.

Critical Thinking

The potential for graduate-level education to provide critical thinking skills to the CAF is a subject that requires special consideration. This is due to the often misunderstood, but related concepts of critical thinking and creative thinking. The most widely-accepted definition of critical thinking comes from the Delphi Report of 1990. It is defined as the "purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based."[96] The second component of the definition is crucial to the difference with analytical thinking; it involves not only the judgement, but an analysis of the thinking methods involved.

Creative thinking is generally defined in contrast to critical thinking. It is the right-brained antonym to the left-brained critical thinking. It "involves being able to generate new, varied and unique ideas."[97] While they may appear to be polar opposites, many of the processes involved in these methods of thinking are similar. These

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[96] Facione, *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction (The Delphi Report)*, 2.
[97] Julie Forrester, "Thinking Creatively, Thinking Critically," *Asian Social Science* 4, no. 5 (May 2008), 100.

similarities tend to result in a confusion in the employment of the terms. This is demonstrated in literature with respect to officer professional development and graduate-level education, where the term critical thinking is at times used appropriately, but also used in the stead of analytical or creative thinking.

Officership 2020 identifies "an officer who thinks critically"[98] as one of the eight strategic objectives of officer professional development. It encourages the achievement of this objective "through education, particularly the acquisition of graduate degrees."[99] It also notes the need for officers to foster contributions to military journals and encourage skill development through all PME, but clearly considers graduate-level education as the foundation to enable critical thinking. This is implicitly reinforced in the OGS with respect to the common officer requirements related to critical thinking (Apply Critical Thinking, Apply Systems Thinking, Apply Creative and Adaptive Thinking, Apply Decision Making Techniques and Apply Problem Solving Processes).[100] These requirements are met through PME (up to and including the Joint Command and Staff Program or equivalent) to the rank of Major / Lieutenant-Commander. However, increased proficiency is required at subsequent DP levels (starting at Lieutenant-Colonel / Commander), to be gained through experience and self-development.[101] As previously noted, while the OGS does not specifically mention graduate-level education, it is implied that it is a critical element to self-development, particularly at the rank of

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[98] Department of National Defence, *Canadian Officership in the 21st Century*, I-23.
[99] *Ibid.*, I-29.
[100] Department of National Defence, *A-PD-055-002/PP-003, Canadian Forces Officer General Specification*, Ch 2, Anx C.
[101] *Ibid.*

Lieutenant-Colonel and above. The CAF Professional Development Study reinforces this belief, in addressing the necessity of graduate degrees:

> PG [post-graduate, graduate] education in general offers an opportunity to step outside of the conventional approach to PME, to see the same issues at a different level, and exercise *critical thinking skills* [emphasis added].[102]

Still others point indirectly to graduate-level education's ability to develop or enhance critical and creative thinking skills. Edwards, Bentley and Walker consider "education as the centre of gravity"[103] in the development of complex and gradual knowledge creation. Griffin argues that the National Security Program (PME conducted at graduate-education level) has a "well-considered blend of critical thinking, fostered by academic study and professional growth."[104] In his concept for the development of the Executive Development Program for DP 5, Lieutenant-General (retired) Michael Jeffery points to the need for General Officers / Flag Officers to develop cognitive capacities to break from the current professional development system, in which the "underlying thinking ability is founded more on a process approach then principles."[105]

These authors all discuss the need for education to provide the ability to evolve thinking skills from analytic to critical and creative thinking, especially at DP 4 and 5. While they do not specifically attribute this capability to graduate-level education, the

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[102] Department of National Defence, *Canadian Armed Forces Professional Development Study 2013,* 26.
[103]Commander Robert S. Edwards, Lieutenant-Colonel (ret'd) William Bentley and Doctor Robert W. Walker, "Professionalism and Leadership: Requisite Proficiencies for CF Transformation," *Canadian Military Journal*, (Spring 2006), 11.
[104] Brent Griffin, "Educating the New National Security Professional: A Review of the National Security Program at the Canadian Forces College," *Canadian Military Journal* 12, no. 4 (Autumn 2012), 21.
[105] LGen (Retired) Michael Jeffery, *A Concept for Development Period 5 - The Canadian Forces Professional Development System,* (Kingston: Canadian Defence Academy, 2008), 6.

solutions they discuss infer professional military education that has the rigour of academic graduate education. Their argument is further supported by General (retired) David Petraeus, a fervent supporter of higher education, who insists that "graduate school inevitably helps U.S. military officers improve their critical thinking skills."[106] While the use of the terms critical and creative thinking tend to be imprecisely employed, literature clearly points to the importance of graduate-level education in the development of this cognitive capacity within the CAF.

Communication Skills

The Professional Development Framework highlights the need for officers to develop social capacities through the evolution of communications skills. As officers progress from the Junior to Senior levels (through Intermediate and Advanced), communication skills must progress from interpersonal to inter-institutional. The emphasis at the advanced and senior levels transition to effective "boundary-spanning" and "externally focused capacities."[107] The foundation for the development of these skills is, according to some, based on the acquisition of graduate-level education.

Doctor Peter Foot, while seconded to the Canadian Forces College as Director of Academics from the Joint Services Command and Staff College, United Kingdom, outlined the requirement for graduate-level education to avoid critical failures in communication. He argued that "education, rather than experience on its own, would ensure that...diminishing quality of military advice to political leadership...[and] growing

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[106]David Petraeus, "To Ph.D or Not to Ph.D," *American Interest* 6, no. 2 (July/August 2007), 19.
[107] Walker, *The Professional Development Framework: Generating Effectiveness in Canadian Forces Leadership,* 32.

isolation of the military from its parent society [do not happen]..."[108] According to Foot, the foundational communication skills needed by CAF members when interacting with political leadership and society as a whole are enabled through graduate-level education and the failure to do so could be significantly detrimental to the profession. Griffin additionally stated that PME at the graduate level played a "critical role in translating policy into strategy."[109] This social capacity need to develop communication skills, especially for senior leaders, cannot be developed through experience alone; Foot and Griffin argue that graduate-level education must play a role.

Lieutenant-General (retired) Jeffery similarly highlighted a capability gap in General Officers / Flag Officers with respect to communication skills required. He argued that they often "lack conciseness in their communications, tend to be too linear in arguing a position and lack personal confidence and presence."[110] In addition, they lack "effective listening skills."[111] Contrary to Foot and Griffin, Jeffery argues that the solution to this gap is not necessarily found in graduate-level education, but with exposure to various organizational cultures. This point of view is in line with the previous CAF Study from 1986, which confirmed the importance of evolving communication skills for senior officers, but also considered a broadened exposure to be the appropriate solution.[112] These examples suggest a slight derivation from other needs of CAF PD discussed, as academics tend to consider graduate-level education as a critical component to evolving

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[108]Peter Foot, "Military Education and the Transformation of the Canadian Forces," *Canadian Military Journal*, (Spring 2006), 18-19.
[109] Griffin, "Educating the New National Security Professional: A Review of the National Security Program at the Canadian Forces College," 23.
[110] Jeffery, *A Concept for Development Period 5 - The Canadian Forces Professional Development System,* 7.
[111] *Ibid.,* 7.
[112] Department of National Defence, *Senior Officer Professional Development (Lightburn Study),* 35.

communication skills, while military studies have tended toward a solution in the experience pillar.

Credibility

The importance of credibility with respect to education has been a cornerstone of discussion since at least the *Rowley Report* of 1969. Rowley recognized not only the cognitive attributes of an educated officer corps, but the importance in relation to other professions as well. In discussing the potential need for graduate education in the CAF, Rowley stated the following:

> There is a need for the Armed Forces to maintain approximate parity with other professions in the numbers of professionals with post-graduate education. This has become a universally accepted characteristic of a modern and dynamic profession.[113]

Thus, according to Rowley, the actual benefits of graduate education were not only in the development of knowledge and intellectual skills; the reputation and credibility of the profession was equally important.

The definition of credible is "believable or worthy of belief."[114] In his study of professions, Terence Halliday denotes the unique role of the military profession as "an amalgam of scientific and normative elements."[115] The military professional must possess the unique knowledge inherent to the profession of arms and the "credibility [of society]...to exercise professional judgement."[116] This credibility is subject to what

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[113] Department of National Defence, *Report on the Officer Development Board (Rowley Report)*, Vol 2, 298.
[114] *The Canadian Oxford Paperback Dictionary*, s.v. "Credible."
[115] Terence Halliday, "Knowledge Mandates: Collective Influence by Scientific, Normative and Syncretic Professions," *The British Journal of Sociology* 36, no. 3 (1985), 426.
[116] Keith Macdonald, *The Sociology of the Profession,* (London: SAGE Publications, 1999), 164.

psychologists Tessa Wesy and David Kenny refer to as the "truth and bias model of judgement."[117] Literature with respect to senior officers' professional development needs indicate that obtention of graduate-level education is an element of the bias of society with respect to the 'worthiness of belief' of the professional military officer.

This argument has been re-iterated in nearly every study of CAF Professional Development. The 1986 *Lightburn Study* highlights "the perception that senior CF officers generally lack depth in discussion of broader aspects of security...This is evidenced to some degree in Ottawa but is more apparent in international fora...."[118] The 1996 *Officer Professional Development Working Group Final Report* confirmed that "PG [post-graduate] education will continue to be part of the strategy of enhancing the qualifications, *credibility* [emphasis added] and the overall educational level of officers."[119] The most recent CAF Professional Development Study also points to the results of a questionnaire sent to all CAF Vice-Admirals / Lieutenant-Generals, in which they confirmed that the "possession of a graduate degree helps to establish an individual's credibility with DND [Department of National Defence] and OGD [Other Government Departments] executives as well as international military and civilian counterparts."[120]

Thus, the credibility provided by graduate-level education is not just with respect to other professions, but with other militaries and with security partners. While statistics with respect to education levels of federal public service equivalents to senior officers

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[117] Tessa West and David Kenny, "The Truth and Bias Model of Judgement," *Psychological Review* 118, no. 2 (2011), 357.
[118] Department of National Defence, *Senior Officer Professional Development (Lightburn Study),* 10. Lightburn refers to Ottawa as the location of National Defence Headquarters and the geographical meeting-point between senior officers and other government departments.
[119] Department of National Defence, *The Officer Professional Development Working Group Final Report, (*Ottawa, 1996), 13.
[120] Department of National Defence, *Canadian Armed Forces Professional Development Study 2013,* 48.

(specifically positions in the executive group) are not readily available,[121] a study of Canadian Public Service Elite found that 49% of assistant deputy ministers and deputy ministers surveyed possessed a graduate degree.[122] The numbers with respect to American Army peers is even more revealing. In 2012, 36% of majors and 65% of lieutenant colonels possessed a master's degree.[123] Fully 41.3% of all officers in the US Military, regardless of rank, held advanced degrees in 2014.[124] By comparison, 16.4% of all commissioned officers in the Canadian Forces held a degree above the Bachelor's level according to the 2011 National Household Survey.[125]

Colonel Wakelam further reinforces this perception by identifying "the societal credibility"[126] that graduate education provides to the profession. "Research (conducted by the teaching arm of the profession), book learning and the university milieu all combine to give the profession a heightened status,"[127] according to Wakelam. The importance of this heightened status is perhaps best defined by Bentley and Horn:

> After all, those who claim the title of professional, and who [sic] society has entrusted with the safety of the nation and the lives of its sons and

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[121] Government of Canada, *Qualification Standards for the Core Public Administration by Occupational Group or Classification,* August 4, 2015, http://www.tbs-sct.gc.ca/psm-fpfm/staffing-dotation/rqs-qcr/qscp-nqap-eng.asp#ex (accessed March 26, 2016). Deputy heads are required to identify educational requirements for Executive (EX) group positions either through organizational policy or on a case-by-case basis.

[122] Bryan Evans, Janet Lum and John Shields, "Profiles of the Canadian Public Service Elite," *Session of the Canadian Political Science Association,* (Saskatoon: University of Saskatchewan, 2007), 13.

[123] Charles Vance, "How Army Officers Attending the Command and General Staff Officers Course Decide Whether or Not to Pursue a Master's Degree," *Adult Education Research Conference,* (Paper 96, 2014), 562.

[124] U.S. Department of Defense, *2014 Demographics: Profile of the Military Community,* (Arlington: DoD, 2014), 41.

[125] Statistics Canada, *2011 National Household Survey: Data Tables*, 2011, https://www12.statcan.gc.ca/nhs-enm/2011/dp-pd/dt-td/Rp-eng.cfm?LANG=E&APATH=7&DETAIL=0&DIM=0&FL=O&FREE=0&GC=0&GID=0&GK=0&GRP=0&PID=107615&PRID=0&PTYPE=105277&S=0&SHOWALL=0&SUB=0&Temporal=2013&THEME=94&VID=0&VNAMEE=Occupation%20%2D%20National%20Occupation (accessed March 28, 2016).

[126] Wakelam, "So What's in a Degree," 64.

[127] *Ibid.*, 64.

> daughters, are obliged to ensure they are as prepared as possible to provide advice to the government, and to lead the nation in harm's way.[128]

Thus, credibility is not important purely for the reputation of the profession. The credibility graduate-level education provides enables the social capacities required of officers as they interact with external organizations, both military and civilian. It is the door-opener that allows the professional to accomplish their mission.

Continuing Education

Almost as common as the mention of credibility within literature is the concept of graduate education as a critical component to the continuing education of the professional. This is directly associated with the self-development attribute of the Change Capacity component of the Professional Development Framework. Graduate-level education, especially as espoused by military studies and reports, is an important component of the self-development pillar of professional development. This fact is abundantly clear in the official guidance provided for selection board criteria. "Continuous learning / self-improvement through education upgrading"[129] is a mandatory common criteria for promotion starting at DP 2. Points are awarded for successful completion of PME and education above the Bachelor's level. Its importance increases in selection criteria up to DP 4, although the terminology is altered to reflect a "commitment / dedication to PD,"[130] in order to allocate points for more than one graduate degree. While the graduate degree is not mandatory, its perceived value with respect to continuing education is significant in the promotion of officers beyond DP 2.

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[128] Bentley and Horn, "Higher Education and the Profession of Arms: Explaining the Logic," 71.
[129] Department of National Defence, *A-PD-229-001/AG-001, Canadian Armed Forces Selection Board Guidance Manual,* (Ottawa, 2014), Annex H, 1.
[130] Chief of Military Personnel, "5640-1 (DMCSS 2) Review of Selection Board Scoring Criteria," (15 June 2015), Annex A, 2.

This emphasis on the graduate degree's importance to continuing education comes directly from *Officership 2020*, which identified a gap in the profession's willingness to "embrace life-long learning through increased education, training, self-development and experience."[131] The rationale of this association is based upon "the rapid pace of change and the requirement to continuously broaden and deepen an officer's knowledge, intellectual capacity and overall awareness."[132] Bentley and Horn agree in arguing that "senior officers of all ranks can never stop studying and learning if they are to lead and act as stewards of the profession into the future...context that is ever changing and evolving."[133] In short, graduate-level education acts both as an integral element of the education pillar and an enabler of the self-development pillar.

As previously noted, some have specified the importance of a research-based academic graduate degree in this respect. As described by Last, "...the Bachelor knows because he has read it himself, the Master knows because she tested it, and the Doctor of Philosophy doubts - which is what spurs new questions."[134] In this manner, a research-based graduate degree is not only critical to continuing education itself, but permits further education to the doctorate level if desired or required. While he does not explicitly suggest that the PhD is required, Okros also mentions the value of the research-based academic graduate degree with respect to the development of DP 5 leader competency roles, and more specifically the "Steward of the Profession."[135] According to Okros, the Steward of the Profession "requires the greatest level of abstract thinking...to ensure that

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[131] Department of National Defence, *Canadian Officership in the 21st Century*, I-17.
[132] *Ibid.*
[133] Bentley and Horn, "Higher Education and the Profession of Arms: Explaining the Logic," 70.
[134] Last, "Military Degrees: How High is the Bar and Where's the Beef?," 35.
[135] Okros, "Leadership in The Canadian Military Context," 43.

the fundamental key questions are raised."[136] The graduate degree, in these circumstances not only addresses the need for continuing education itself; it also permits further education as necessary.

Ethos / Ethics

The role of steward of the profession is directly related to the final perceived need of graduate-level education. The gradual development along the Professional Development Framework of the Professional Ideology element requires advanced and senior officers to not only comply with the military ethos and ethics,[137] but to support the cultural alignment and provide the abstract and moral reasoning required of the profession.[138] According to Edwards, Bentley and Walker, graduate education enables "the balancing of autonomous thinking with appropriate conformity / team membership...and the values, beliefs and expectations"[139] required of senior officers. Okros argues that "full effectiveness [in the stewardship of the profession] requires a higher degree of self-insight and self-understanding"[140] which may be enabled by graduate-level education. Thus, graduate-level education should enable officers to move beyond compliance to the military ethos and provide the tools required to conduct the moral reasoning required to align culture.

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[136] *Ibid.,* 44.
[137] Department of National Defence, *A-PA-005-000/AP-001, Duty with Honour: The Profession of Arms in Canada,* 26 and 31. The military ethos is made up of three fundamental components: beliefs and expectations about military service, Canadian values and Canadian military values. Ethics refer to the respect of the dignity of all persons, service to Canada before self and obedience and support to lawful authority.
[138] Walker, *The Professional Development Framework: Generating Effectiveness in Canadian Forces Leadership,* 35.
[139] Edwards, Bentley and Walker, "Professionalism and Leadership: Requisite Proficiencies for CF Transformation," 12.
[140] Dr. Alan Okros, *Developing Fully Effective General/Flag Officers and their Staff,* Report for Officer DP 4/5 Working Group, (Kingston: Canadian Defence Academy, 2014), 7.

Once again, the OGS implicitly supports these arguments. The common officer requirements to "Demonstrate Canadian Military Ethos Through Example" and "Align CF Culture with Canadian Military Professional Ideology" require increased proficiency at all DP levels beyond DP3.[141] The proposed method for the increased proficiency is once again through work experience and self-development, of which graduate-level education is included. While not referred to in literature as often when compared to some of the other requirements identified, the association between ethos / ethics and graduate education is of importance. Professional Ideology, according to Walker, "occupies a privileged position in the Professional Development Framework."[142] It acts as the linchpin required for institutional effectiveness and graduate-level education is perceived to act as a foundation to ensure that it is properly aligned and integrated.

Conclusion

The seven perceived senior officers' professional development needs of graduate-level education identified in this chapter reflect the synthetic constructs developed through the explicit and implicit statements of reports, studies and professional articles since the 1969 *Rowley Report*. The vast majority of the discussion, however, has taken place since the mandatory requirement for a baccalaureate education for officers was enforced. The list is not exhaustive; there are certainly other perceived needs that could be identified. Instead, they represent the attributes that are most often mentioned or discussed, those that are best articulated and fit within the professional development

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[141] Department of National Defence, *A-PD-055-002/PP-003, Canadian Forces Officer General Specification,* Ch 2, Anx C.
[142] Walker, *The Professional Development Framework: Generating Effectiveness in Canadian Forces Leadership,* 34.

framework. None of these attributes are argued to be exclusive to graduate-level education and there is not always consensus amongst the literature reviewed. It is important for the CAF, however, that these perceived needs can be directly associated with actual outcomes of graduate education in order to maintain a coherent professional progression.

CHAPTER 4 - GRADUATE-LEVEL LEARNING OUTCOMES

> *Learning is a complex process and institutions and programs are not solely responsible for it...Furthermore, institutions and programs will always differ appropriately with respect to mission and goals...*
>
> - Council for Higher Education Accreditation, *Statement of Mutual Responsibilities for Student Learning Outcomes: Accreditation, Institutions, and Programs*

Introduction

Just as identifying the perceived needs of the CAF requires an interpretation of many varying viewpoints, establishing a consolidated description of institutional objectives of graduate-level education can be an equally daunting challenge. The remarkable independence that most institutions of higher education have enjoyed throughout their history has only recently been challenged by demands of society for universities to properly identify learning outcomes. In fact. most frameworks for learning outcomes have only been established in the last decade. As a result, while there is certainly considerable commonality between the learning outcomes articulated by universities for graduate-level education, institutions' independence and the maturity of their articulation of outcomes results in varied interpretations of what graduate-level education provides.

These varied interpretations are further complicated by differences between countries and even within countries. The degree to which the state, the institutions and external accreditation agencies are involved in establishing and enforcing learning outcomes varies vastly between countries and within Canada itself. As a result, simply focusing on the learning outcomes of a specific institution, such as the Royal Military College of Canada (RMCC) or even on those identified by a single sub-state or state

(such as Ontario) does not provide the clarity necessary for an appropriate educational needs assessment. Instead, this chapter will address the systems of several different institutions and education structures, including some from amongst Europe, the United States of America and Canada. The establishment of a synthetic construct of common learning objectives, with varying degrees of universality, is necessary.

Historical Role of Master's Education

The establishment of higher education institutions is generally accepted to originate from the original three universities in the Middle Ages. These were Salerno with a focus on medicine, Bologna with a focus on law and Paris with a focus on theology.[143] In these institutions, degrees eventually developed "out of the necessity of restricting the right to teach, and consequently of fixing the qualifications which the teacher should possess."[144] Initially, the terms Master and Doctor were interchangeable; the terminology used was simply a preference of the institution. Eventually, Doctor became the preferred term for all authorized teachers in all areas of study with the exception of arts and theology and even these domains gave way to the employment of the term Doctor by the nineteenth century.[145] Master, as a result, eventually became a degree that marked advanced studies beyond the first cycle of education, usually intended for mastery in a specific subject and employment within a profession. The impact of these changes in the purpose and scope of the Master's Degree is seen to this

[143] *1911 Encyclopaedia Britannica*, 11th ed., accessed 21 March 2016, https://en.wikisource.org/wiki/1911_Encyclop%C3%A6dia_Britannica/Universities, s.v. "Universities."
[144] *Ibid.*
[145] *Ibid.*

day in some of the ambiguity found between learning outcomes at the Bachelor's, Master's and Doctorate levels.

Learning Outcomes - Defined

In attempts to reduce ambiguity and maintain institutional credibility, most higher education institutions have identified learning outcomes to define the role of graduate-level education. Learning outcomes can actually refer to two different, but related concepts. They are both "a measurement of what students *actually have learnt* [sic] during their studies" and "statements of what students are *expected to learn* during their studies."[146] The processes of assessment of learning outcomes and accreditation support the former definition, while this paper focuses on the latter. Of course, both definitions must be considered. The processes through which institutions actually ensure that their stated learning outcomes are valid, reliable and authentic[147] are just as important as the expectations themselves.

These learning outcomes are generally established in the form of a qualification framework which describes the generic "transferable learning skills and level of mastery of a body of specialized knowledge"[148] separated in dimensions and by degree-level. Institutions are then responsible for incorporating this qualification framework into their own degree and program-level learning outcomes. These frameworks vary in detail and

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[146] Per Aamodt and Elisabeth Hovdhaugen, "Assessing Higher Education Learning Outcomes as a Result of Institutional and Individual Characteristics," *Outcomes of Higher Education: Quality Relevance and Impact, (*Paris: Programme on Institutional Management in Higher Education, 2008), 2.
[147] Higher Education Quality Council of Ontario, *Learning Outcomes Assessment: A Practitioner's Handbook,* (Toronto: HEQCO, 2015), 16.
[148] Council of Ministers of Education, Canada, "Ministerial Statement on Quality Assurance of Degree Education in Canada," 5.

organization according to the maturity of the process in place and the unique cultural aspects of the nation.

Identification, Assessment and Accreditation

The evolution of the structure of higher education and the Master's Degree has led to the interaction of the state, the institution and external agencies in identifying and assessing learning outcomes and accreditation. The differences between nations with respect to this interaction are a result of culture and the origins of higher education institutions within the nation. However, "the post-[Second World War] transition from elite to mass higher education"[149] has gradually led to societal demands for more standardization and transparency. In Canada, the United States and Europe (and indeed elsewhere around the world) generic learning outcomes of graduate-level education have received more emphasis than previously and the system of interaction between the state, the institutions and external agencies has evolved considerably over the last two decades. In general terms, the state and institutions are involved in establishing generic learning outcomes, while institutions themselves are responsible for identifying their specific degree and program learning outcomes, in addition to initial assessment of whether they are being met. External agencies, either governmental or private, are then responsible for accreditation - "a process of external quality review created and used by higher education to scrutinize [universities] for quality assurance and quality improvement."[150] The specific particularities of Europe, the United States and Canada will be addressed individually below.

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[149] Julian Weinrib and Glen Jones, "Largely a Matter of Degrees: Quality Assurance and Canadian Universities," *Policy and Society* 33, no. 3 (2014), 225.
[150] Council for Higher Education Accreditation, *An Overview of U.S. Accreditation*, 3.

Analysis and Classification of Learning Outcomes

Analysis, both through comparison between Bachelor's and Master's levels outcomes and of the actual terminology employed, provides an understanding of what institutions actually consider to be the outcomes of graduate level education. While the frameworks described below assume the achievement of Bachelor's-level outcomes prior to commencing Master's-level education[151], the terminology used between the degree levels can appear very similar. The differences between the two must be considered in two manners. First, the differences in context and detail between outcomes in the same category must be identified. This often is reflected in the use of qualifiers such as 'systematic,' 'two or more fields,' and 'unambiguously.' The outcomes are also different with respect to verbs employed to describe the expectations of students. These differences reflect the employment of Bloom's Taxonomy in the creation of the outcomes.

In 1956, a committee of College and University Examiners, headed by Benjamin Bloom, established a Taxonomy of Educational Objectives, commonly referred to as Bloom's Taxonomy. Based largely on analysis and classification of educational goals from the upper educational levels,[152] the taxonomy describes six major classes of learning (in order): Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation.[153] Bloom's Taxonomy has been extensively employed for development and assessment of curriculum since, including the creation of lists of verbs associated with

[151] Council of Ministers of Education, Canada, "Ministerial Statement on Quality Assurance of Degree Education in Canada," 5; European Higher Education Area, *The European Higher Education Area in 2015: Bologna Process Implementation Report*, 59; Lumina Foundation, *The Degree Qualifications Profile,* 21.
[152]Benjamin Bloom, *Taxonomy of Educational Objectives Book 1: Cognitive Domain,* (New York: Longman Publishers, 1956), 2.
[153] *Ibid.,* 18.

each class of learning.[154] It was also the subject of considerable debate and discussion, which led to a revision in 2001. In *Taxonomy for Learning, Teaching, and Assessing*, the authors presented a revised version of Bloom's Taxonomy, employing verbs instead of nouns (Create replacing Synthesis) and switching the two highest levels of learning (Synthesis followed by Evaluation replaced by Evaluate and Create).[155] Comparing verbs used in student learning outcomes between the Bachelor's and Master's level with Bloom's Taxonomy permits an understanding of the class of learning sought. This paper employs the classes originally established by Bloom, as "the initial version was aimed largely at higher education, with almost no examples drawn from elementary and secondary education, [while] instances from the latter predominate in the revision."[156] It is important to note that the analysis focuses on differences between classes of learning sought through student learning outcomes, not exclusively the hierarchy of learning. Thus, the debate of hierarchical position between Evaluation and Synthesis is less important than the actual determination of the level of learning to be targeted.

Graduate-Level Education in Europe

Without a doubt, the most mature attempt at standardizing higher education learning outcomes comes from the European Higher Education Area (EHEA). Beginning in 1998 with the Sorbonne Declaration, 47 countries within and beyond Europe have consistently worked towards a common system of higher education. Standardized

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[154] Fresno State University, "Bloom's Taxonomy Action Verbs," *Office of Institutional Effectiveness,* http://www.fresnostate.edu/academics/oie/documents/assesments/Blooms%20Level.pdf (accessed February 25, 2016). Many educational institutions use variances of this document in the writing of learning outcomes.
[155] Lorin Anderson and David Krathwohl, *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives,* (New York: Longman Publishers, 2001), 268.
[156] *Ibid.*, 264.

learning outcomes are one of many themes that have evolved, including "mobility of students and staff, a common degree system, the social dimension, lifelong learning, a European system of credits, quality assurance and the development of Europe as an attractive knowledge region."[157] What has become known as the Bologna Process resulted in a declaration in 1999 to create common cycles (first cycle - Bachelor's, second cycle - Master's and third cycle - Doctorate), common credits (European Credit Transfer and Accumulation System - ECTS) and a framework of qualifications which was adopted in 2005.

Implementation of this framework within national higher education policies continues to this day; the majority of participating countries have completed (10/47) or are nearing completion (27/47) of the implementation process.[158] The EHEA also monitors quality assurance, both internal and external, of participating countries. They stress that "the primary responsibility for quality assurance in higher education lies with each institution itself,"[159] but denote the requirement for external quality assurance as well. Here, the participating countries vary considerably in their approaches. While most countries employ the Qualification Framework and ensure internal quality assurance remains the purview of the institution, external quality assurance (including accreditation) approaches include national bodies, independent organizations, designated quality assurance agencies that are registered with the European Quality Assurance Register for Higher Education (EQAR) and international agencies.[160]

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[157] European Higher Education Area, *The European Higher Education Area in 2015: Bologna Process Implementation Report,* 26.
[158] *Ibid.,* 68.
[159] *Ibid.,* 88.
[160] *Ibid.,* 94.

The Framework of Qualifications lists the 'Dublin Descriptors'; "generic descriptors for each cycle based on learning outcomes and competences. Table 4.1 identifies the descriptors for the first and second cycles. The five descriptors for each cycle can be classified as the extension and consolidation of knowledge, application of knowledge, formulation of judgements, communication skills and learning skills.[161] Analysis of the descriptors for the second cycle is accomplished through comparison with related descriptors for the first cycle and through identification and classification of verbs employed, in accordance with Bloom's Taxonomy.

While the descriptors appear to be very similar at first glance, comparison between the two cycles leads to specific differences of level of competency expected between students of the first and second cycles. With respect to Extension and Consolidation of Knowledge, students of the second cycle are expected to reach a point at which the "opportunity for originality"[162] exists. This suggests a level of creative thinking that is not expected at the Bachelor's level. Ambiguity and the unknown are expected within the second cycle for both Application of Knowledge and the Formulation of Judgements. Problem solving in an unfamiliar environment denotes the former, while dealing with incomplete or limited information is highlighted in the latter. In addition,

[161] Note that these classifications are made by the author, as they are not identified by EHEA. Germany, in completing their self-certification, used the terms "Extending knowledge, Consolidating Knowledge, Instrumental Competences [sic], Systemic Competences [sic] and Communicative Competences [sic]. Germany, Federal Ministry of Education and Research, "Report on The Compatibility of the "Qualifications Framework for German Higher Education Qualifications" with the "Qualifications Framework for the European Higher Education Area"," *European Higher Education Area Archive*, September 18, 2008, http://archive.ehea.info/search (accessed January 27, 2016).
[162] European Higher Education Area, "The Framework of Qualifications for the European Higher Education Area," 1.

there is a distinct focus on social and ethical responsibilities linked to judgement. Communication Skill competencies are expected to become more precise, emphasizing clarity, while Learning Skills are expected to incrementally improve to the level of self-direction or autonomy.

The verbs employed also demonstrate higher cognitive levels, as defined by Bloom's Taxonomy, in some cases. Specifically, the employment of the verb 'develop' with respect to Extension and Consolidation of Knowledge suggests a requirement not only for application, but for synthesis of knowledge. This is particularly true with respect to the outcomes related to Formulation of Judgements. While the verbs employed for students in the first cycle (gather, interpret, inform) are generally associated with analysis and evaluation, the verbs employed for students in the second cycle (integrate, formulate) are associated with the level of synthesis.

Table 4.1 - First and Second Cycle Descriptors from EHEA Framework of Qualifications

	Qualifications that signify completion of the **first cycle** are awarded to students who:	Qualifications that signify completion of the **second cycle** are awarded to students who:
Extension and Consolidation of Knowledge	Have demonstrated knowledge and understanding in a field of study that builds upon their general secondary education, and is typically at a level that, whilst supported by advanced textbooks, includes some aspects that will be informed by the knowledge of the forefront of their field of study;	Have demonstrated knowledge and understanding that is founded upon and extends and/or enhances that typically associated with the first cycle, and that provides a basis or opportunity for originality in developing and/or applying ideas, often within a research context;
Application of Knowledge	Can apply their knowledge and understanding in a manner that indicates a professional approach to their work or vocation, and have the competencies typically demonstrated through devising and sustaining arguments and solving problems within their field of study;	Can apply their knowledge and understanding, and problem solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study;
Formulation of Judgements	Have the ability to gather and interpret relevant data (usually within their field of study) to inform judgements that include reflection on relevant social, scientific or ethical issues;	Have the ability to integrate knowledge and handle complexity, and formulate judgements with incomplete or limited information, but that include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgements;
Communication Skills	Can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences; and	Can communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and non-specialist audiences clearly and unambiguously; and
Learning Skills	Have developed those learning skills that are necessary for them to continue to undertake further study with a high degree of autonomy.	Have the learning skills to allow them to continue to study in a manner that may be largely self-directed or autonomous.

Source: European Higher Education Area, "The Framework of Qualifications for the European Higher Education Area," *The Bologna Process.* 2005, http://www.ehea.info/ (accessed September 23, 2015), 1-2.

Thus, the EHEA has established learning outcomes related to graduate-level education that go beyond Bachelor's-level in both quantitative and qualitative terms. The focus of Extension and Consolidation of Knowledge is with respect to opportunity for originality and highest-level synthesis. Application of Knowledge anticipates the ability to problem solve in a new or unfamiliar environment. With respect to Formulation of Judgement, graduate-level studies provide competencies in terms of quality level (synthesis) and with respect to ambiguity, while placing particular emphasis on social and ethical responsibility. Communication Skills differentiate between the two levels in terms of explanation of the rationale behind knowledge and the ability to communicate clearly and unambiguously. Finally, Learning Skills are expected to increase incrementally to a level at which learning can be achieved in the future in a self-directed or autonomous manner.

Graduate-Level Education in United States

Contrary to the efforts in Europe of state-sponsored standardization in student learning outcomes, the United States higher education institutions tend to be "subjected to less government supervision and control."[163] This has been challenged recently with the introduction of a proposed bill by Senators Michael Bennet and Marco Rubio to amend the Higher Education Act of 1965.[164] This legislation seeks to establish "innovation authorizers" who would be approved by the Secretary of Education to employ performance metrics in ensuring that institutions of higher learning meet "nationally

[163]Derek Bok, *Higher Education in America,* (Princeton: Princeton University Press, 2013), 16.
[164] House of Congress, *Bill S.211: Higher Education Innovation Act,* (Washington: U.S. Government Printing House, 2015).

defined, demonstrated, objective, and verifiable measure[s] of student learning."[165] This would be in stark contrast to the current system.

In line with American culture, the American higher education system is highly decentralized and autonomous. This does not suggest that oversight does not exist; instead, identification and assessment of learning outcomes and institutional accreditation is complex and largely non-governmental. The Council for Higher Education Accreditation (CHEA) is a national coordinating body for institutional and programmatic accreditation that serves to recognize accreditation agencies and encourage standards of academic quality and learning outcomes. Accreditation itself is "carried out by private, nonprofit organizations designed for this specific purpose."[166] As of 2015, 18 institutional accrediting organizations and 67 programmatic accrediting organizations were recognized and responsible for the accreditation of 7,896 institutions and 42,686 programs.[167] While these organizations follow specific standards to be recognized, they vary considerably in their implementation of accreditation, thereby making standardized learning outcomes, as described in the Rubio-Bennet Bill, very difficult to establish.

Nonetheless, student learning outcomes have received considerable emphasis over the last decade. Contrary to the system in Europe that includes the generic Framework of Qualifications, under the current American system, "institutions and programs are responsible for establishing clear statements of student learning outcomes."[168] Accrediting organizations, in turn, are "responsible for establishing clear expectations

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[165] *Ibid.,* 14.
[166] Council for Higher Education Accreditation, *An Overview of U.S. Accreditation,* 1.
[167] *Ibid.,* 6.
[168] Council for Higher Education Accreditation, *Statement of Mutual Responsibilities for Student Learning Outcomes: Accreditation, Institutions, and Programs,* 1.

that institutions and programs will routinely define, collect, interpret, and use evidence of student learning outcomes."[169] As a result of this system, institutional expression of learning outcomes differ significantly. Not all institutions make learning outcomes public; some employ generic degree-level outcomes or specific program-level outcomes or a combination of both.

In an effort to clarify what is expected of each degree, the Lumina Foundation commissioned a study to establish a 'degree profile,' which is "prompted and informed by similar exercises in other countries" but focused on "the issues, strengths and potential that are distinctive to higher education in the United States."[170] The resultant degree qualifications profile (DQP) employs basic proficiencies across five categories of learning: specialized knowledge, broad/integrative knowledge, intellectual skills (including six sub-skills), applied/collaborative learning and civic/global learning.[171] Since the introduction of the Beta version in 2011, more than 400 institutions have employed the DQP in some form.[172] It has become the private, optional alternative to the Framework of Qualifications employed by EHEA.

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[169] *Ibid.*
[170] Lumina Foundation, *The Degree Qualifications Profile,* 3.
[171] *Ibid.,* 5.
[172] *Ibid.,* 2.

Table 4.2 - Bachelor's and Master's Proficiencies From Lumina DQP

	At the Bachelor's Level, the student:	At the Master's Level, the student:
Specialized Knowledge	• Defines and explains the structure, styles and practices of the field of study using its tools, technologies, methods and specialized terms. • Investigates a familiar but complex problem in the field of study by assembling, arranging and reformulating ideas, concepts, designs and techniques. • Frames, clarifies and evaluates a complex challenge that bridges the field of study and one other field, using theories, tools, methods and scholarship from those fields to produce independently or collaboratively an investigative, creative or practical work illuminating that challenge. • Constructs a summative project, paper, performance or application that draws on current research, scholarship and techniques in the field of study.	• Elucidates the major theories, research methods and approaches to inquiry and schools of practice in the field of study, articulates their sources and illustrates both their applications and their relationships to allied fields of study. • Assesses the contributions of major figures and organizations in the field of study, describes its major methodologies and practices and illustrates them through projects, papers, exhibits or performances. • Articulates significant challenges involved in practicing the field of study, elucidates its leading edges and explores the current limits of theory, knowledge and practice through a project that lies outside conventional boundaries.
Broad/ Integrative Knowledge	• Describes and evaluates the ways in which at least two fields of study define, address, and interpret the importance for society of a problem in science, the arts, society, human services, economic life or technology. Explains how the methods of inquiry in these fields can address the challenge and proposes an approach to the problem that draws on these fields. • Produces an investigative, creative or practical work that draws on specific theories, tools and methods from at least two core fields of study. • Defines and frames a problem important to the major field of study, justifies the significance of the challenge or problem in a wider societal context, explains how methods from the primary field of study and one or more core fields of study can be used to address the problem, and develops an approach that draws on both the major and core fields.	• Articulates how the field of study has developed in relation to other major domains of inquiry and practice. • Designs and executes an applied, investigative or creative work that draws on the perspectives and methods of other fields of study and assesses the resulting advantages and challenges of including these perspectives and methods. • Articulates and defends the significance and implications of the work in the primary field of study in terms of challenges and trends in a social or global context.
Intellectual Skills		
Analytic Inquiry	• Differentiates and evaluates theories and approaches to selected complex problems within the chosen field of study and at least one other field.	• Disaggregates, reformulates and adapts principal ideas, techniques or methods at the forefront of the field of study in carrying out an essay or project.
Use of Information Resources	• Locates, evaluates, incorporates, and properly cites multiple information resources in different media or different languages in projects, papers or performances.	• Provides evidence (through papers, projects, notebooks, computer files or catalogues) of contributing to, expanding, evaluating or refining the information base within the field

	• Generates information through independent or collaborative inquiry and uses that information in a project, paper or performance.	of study.
Engaging Diverse Perspectives	• Constructs a written project, laboratory report, exhibit, performance or community service design expressing an alternate cultural, political or technological vision and explains how this vision differs from current realities. • Frames a controversy or problem within the field of study in terms of at least two political, cultural, historical or technological forces, explores and evaluates competing perspectives on the controversy or problem, and presents a reasoned analysis of the issue, either orally or in writing, that demonstrates consideration of the competing views.	• Investigates through a project, paper or performance a core issue in the field of study from the perspective of a different point in time or a different culture, language, political order or technological context and explains how this perspective yields results that depart from current norms, dominant cultural assumptions or technologies.
Ethical Reasoning	• Analyzes competing claims from a recent discovery, scientific contention or technical practice with respect to benefits and harms to those affected, articulates the ethical dilemmas inherent in the tension of benefits and harms, and either (a) arrives at a clearly expressed reconciliation of that tension that is informed by ethical principles or (b) explains why such a reconciliation cannot be accomplished. • Identifies and elaborates key ethical issues present in at least one prominent social or cultural problem, articulates the ways in which at least two differing ethical perspectives influence decision making concerning those problems, and develops and defends an approach to address the ethical issue productively.	• Articulates and challenges a tradition, assumption or prevailing practice within the field of study by raising and examining relevant ethical perspectives through a project, paper or performance. • Distinguishes human activities and judgments particularly subject to ethical reasoning from those less subject to ethical reasoning.
Quantitative Fluency	• Translates verbal problems into mathematical algorithms so as to construct valid arguments using the accepted symbolic system of mathematical reasoning and presents the resulting calculations, estimates, risk analyses or quantitative evaluations of public information in papers, projects or multimedia presentations. • Constructs mathematical expressions where appropriate for issues initially described in non-quantitative terms.	Uses logical, mathematical or statistical methods appropriate to addressing a topic or issue in a primary field that is not for the most part quantitatively based. • Articulates and undertakes multiple appropriate applications of quantitative methods, concepts and theories in a field of study that is quantitatively based. • Identifies, chooses and defends the choice of a mathematical model appropriate to a problem in the social sciences or applied sciences.
Communicative Fluency	• Constructs sustained, coherent arguments, narratives or explications of issues, problems or technical issues and processes, in writing and at least one other medium, to general and specific audiences. • Conducts an inquiry concerning information, conditions, technologies or practices in the field of study that makes	Creates sustained, coherent arguments or explanations summarizing his/her work or that of collaborators in two or more media or languages for both general and specialized audiences.

	substantive use of non-English-language sources. • Negotiates with one or more collaborators to advance an oral argument or articulate an approach to resolving a social, personal or ethical dilemma.	
Applied/ Collaborative Learning	• Prepares and presents a project, paper, exhibit, performance or other appropriate demonstration linking knowledge or skills acquired in work, community or research activities with knowledge acquired in one or more fields of study, explains how those elements are structured, and employs appropriate citations to demonstrate the relationship of the product to literature in the field. • Negotiates a strategy for group research or performance, documents the strategy so that others may understand it, implements the strategy, and communicates the results. • Writes a design, review or illustrative application for an analysis or case study in a scientific, technical, economic, business, health, education or communications context. • Completes a substantial project that evaluates a significant question in the student's field of study, including an analytic narrative of the effects of learning outside the classroom on the research or practical skills employed in executing the project.	• Creates a project, paper, exhibit, performance or other appropriate demonstration reflecting the integration of knowledge acquired in practicum, work, community or research activities with knowledge and skills gleaned from at least two fields of study in different segments of the curriculum. Articulates the ways in which the two sources of knowledge influenced the result. • Designs and implements a project or performance in an out-of-class setting that requires the application of advanced knowledge gained in the field of study to a practical challenge, articulates in writing or another medium the insights gained from this experience, and assesses (with appropriate citations) approaches, scholarly debates or standards for professional performance applicable to the challenge.
Civic/Global Learning	• Explains diverse positions, including those representing different cultural, economic and geographic interests, on a contested public issue, and evaluates the issue in light of both those interests and evidence drawn from journalism and scholarship. • Develops and justifies a position on a public issue and relates this position to alternate views held by the public or within the policy environment. • Collaborates with others in developing and implementing an	• Assesses and develops a position on a public policy question with significance in the field of study, taking into account both scholarship and published or electronically posted positions and narratives of relevant interest groups. • Develops a formal proposal, real or hypothetical, to a non-governmental organization addressing a global challenge in the field of study that the student believes has not been adequately addressed. • Proposes a path to resolution of a problem in the field of study

	approach to a civic issue, evaluates the strengths and weaknesses of the process, and, where applicable, describes the result. • Identifies a significant issue affecting countries, continents or cultures, presents quantitative evidence of that challenge through tables and graphs, and evaluates the activities of either non-governmental organizations or cooperative inter governmental initiatives in addressing that issue.	that is complicated by competing national interests or by rival interests within a nation other than the U.S.

Source: Lumina Foundation, *The Degree Qualifications Profile,* (Indianopolis: Lumina Foundation, 2014), 14-19.

The DQP employs similar categories of learning as other frameworks but obviously is unique in its sheer quantity of detail. This, of course, is feasible due to the fact that it was developed "to be a useful, flexible and practical tool,"[173] but does not subject institutions to accreditation. Instead, most institutions employ simpler and more generic student learning outcomes that are subject to review through external accreditation agencies.

For example, Kansas State University employs the following sentences for five essential areas at the undergraduate level and three essential areas at the graduate level:

1. Undergraduate Student Learning Outcomes:
    a. Knowledge. Students will demonstrate a depth of knowledge and apply methods of inquiry in a discipline of their choosing, and they will demonstrate a breadth of knowledge across their choice of varied disciplines.
    b. Critical Thinking. Students will demonstrate the ability to access and interpret information, respond and adapt to changing situations, make complex decisions, solve problems, and evaluate actions.
    c. Communication. Students will demonstrate the ability to communicate clearly and effectively.
    d. Diversity. Students will demonstrate awareness and understanding of the skills necessary to live and work in a diverse world.
    e. Academic and Professional Integrity. Students will demonstrate awareness and understanding of the ethical standards of their academic discipline and/or profession.[174]
2. Graduate Student Learning Outcomes:
    a. Knowledge. Demonstrate through understanding and/or competency in a specific area of emphasis, study, or profession.
    b. Skills. Demonstrate the ability to apply knowledge through critical thinking, inquiry, analysis, and communication to solve problems and to produce scholarly and creative works including but not limited to design, art, performance, original research in the form of thesis or dissertation.

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[173] *Ibid.,* 3.
[174] Kansas State University, *Graduate School - Graduate Student Learning Outcomes,* www.k-state.edu/grad/faculty/program-review/slo.html (accessed January 24, 2016).

> c. Attitudes and Professional Conduct. Exhibit an awareness of their responsibilities (professional integrity, ethical behavior, ability to work with diverse groups of people, etc.) and engage in professional conduct towards all constituent groups, including students, faculty, public, etc.[175]

These student learning outcomes employ similar proficiencies, termed essential areas, and terminology as the Lumina DQP, but clearly lack the same level of detail. In addition, they do not include proficiencies related to multiple languages and with respect to public policy, global challenges or national interests that are found in the DQP.

In contrast, Texas A&M University employs 34 student learning outcomes, divided into seven proficiencies (master the depth of knowledge required for a degree, demonstrate critical thinking, communicate effectively, practice personal and social responsibility, demonstrate social, cultural, and global competence, prepare to engage in lifelong learning and work collaboratively) at the Baccalaureate level and seven additional student learning outcomes at the Master's level.[176] Again, terminology is similar to the DQP, although structure and detail differ. Analysis of individual American institutions' student learning outcomes would certainly go beyond the scope of this paper. However, identifying the key outcomes and differences between the Bachelor's and Master's levels of education, as described in the DQP, provides a generic understanding of the student learning outcomes expected of the American system.

Similar to the outcomes described in the European system, differences between the Bachelor's-level and Master's-level proficiencies identified can be described in terms

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[175] Kansas State University, *Office of Assessment - Undergraduate Student Learning Outcomes,* April 13, 2004, www.k-state.edu/assessment/slo/undergradobj.html (accessed January 24, 2016).
[176] Texas A&M University, *Texas A&M Catalogs.* 2015/2016, catalog.tamu.edu (accessed March 23, 2016).

of context and detail and in quality of learning through the verbs employed. With respect to specialized knowledge and quantitative fluency, graduate-level education focuses on the sources of methodologies (to include qualitative and quantitative) and the employment of knowledge and theories at the leading edge of the field of study. The quality of learning moves from Analysis and Evaluation at the Bachelor's level (differentiate, evaluate) to Synthesis at the Master's level (disaggregate, reformulate, adapt). Similarly, ethical reasoning moves from Analysis to Evaluation, where the graduate-level education seeks to challenge assumptions related to ethical perspectives. The proficiencies related to engaging diverse perspectives and communicative fluency are similar at the Bachelor's and Master's levels, but are significant in that they highlight outcomes that are not covered in the European system. According to the DQP, Master's-level education should seek a focus on issues from different perspectives (chronological, cultural, linguistic, political and technological) and employ the use of two or more media or languages in communication skills. Learning skills highlight the requirement for practical application of knowledge from at least two fields of study and the need for creative thinking (Synthesis) to address public policy, global challenges or national interests related to the principal field of study.

Graduate-Level Education in Canada

As could be expected, policy for graduate-level education in Canada sits somewhere between the European and American systems. Central to Canadian policy with respect to higher education is the fact that education is clearly a provincial, not

federal, responsibility.[177] According to Weinrib and Jones, this is one of three "structural characteristics"[178] critical to understanding the Canadian system. In addition to, and perhaps despite, the unique provincial systems that have evolved is the "emergence of a relatively homogenous university sector."[179] Despite decentralized policy, the significant autonomy of universities has led to a relatively common model of higher education in Canada, reinforced by the non-governmental Universities Canada, previously known as the Association of Universities and Colleges of Canada (AUCC). Finally, the "limited policy capacity"[180] of provincial governments has generally led to a situation in which the government has focused on access, tuition and government grants; the institutions have traditionally been responsible for identification and assessment of learning outcomes and, in some cases, accreditation itself.

This balance between Government and institutional responsibilities varies amongst the provinces. Alberta and British Columbia provincial governments have created quality assessment councils to ensure external assessment; the Campus Alberta Quality Council (CAQC) and Degree Quality Assessment Board (DQAB) provide arm's-length quality review to bridge the internal quality assessment conducted by institutions with government authorization of new degree-granting institutions and programs.[181] The provincial governments of New Brunswick, Nova Scotia and Prince Edward Island, through the Council of Maritime Premiers, have similarly established the Maritime Provinces Higher Education Commission (MPHEC). MPHEC has also established a

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[177] Government of Canada, *Constitution Act*, (Ottawa: Canada Communications Group, 1867), Section 93.
[178] Weinrib and Jones, "Largely a Matter of Degrees: Quality Assurance and Canadian Universities," 225.
[179] *Ibid.*, 226.
[180] *Ibid.*
[181] Canadian Information Centre for International Credentials, *Quality Assurance Practices for Post-Secondary Institutions in Ontario*, http://www.cicic.ca/1178/Quality-assurance-practices-for-postsecondary-institutions-in-Ontario/index.canada (accessed April 5, 2016).

Degree Level Qualifications Framework[182], employed for the assessment of programs prior to implementation and, to a lesser degree, for ongoing evaluation of existing programs.[183]

In contrast to these provinces, Manitoba, Saskatchewan and Newfoundland governments retain the authorization of new degree-granting institutions, but provide considerably more autonomy to the institutions for the creation and assessment of degree-granting programs. External review is conducted through peers or as a voluntary measure with external agencies. No provincial qualification frameworks exist within the provinces.[184] Quebec has a similar system, although the institutions have, to varying degrees, sought standardized approaches to identification and assessment of outcomes outside of government control. The Conférence des Recteurs et des Principaux des Universités du Québec (CRÉPUQ) was established in 1963 as "a voluntary coordinating body by Quebec universities"[185] and was renamed the Bureau de Coopération Universitaire (BCI) in January 2014[186] as a result of a decision to remove the role of representation to the public and government from the organization; their new role is now focused on exchange of ideas and management of information services and cost-effective services for member institutions.[187] They also established the New Program Evaluation Commission (CEP) and the Program Evaluation Review Commission (CVEP) to support

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[182] Maritime Provinces Higher Education Commission, "Academic Program Assessment Prior to Implementation (Policy and Procedures)," *Maritime Provinces Higher Education Commission - Publications.* March 2013, http://www.mphec.ca/resources/Academic_Program_Assessment_Prior_to_Implementation.pdf (accessed January 26, 2016), 21-24.
[183] *Ibid.*, 1.
[184] Canadian Information Centre for International Credentials, *Quality Assurance Practices for Post-Secondary Institutions in Ontario.*
[185] Weinrib and Jones, "Largely a Matter of Degrees: Quality Assurance and Canadian Universities," 232.
[186] Bureau de Coopération Interuniversitaire, *Bureau de Coopération Interuniversitaire,* http://www.crepuq.qc.ca/?lang=fr (accessed January 23, 2016).
[187] *Ibid.*

the establishment of new programs and the audit of existing internal quality assessment respectively.[188] Of note, CVEP has functioned through three cycles of verification, each four years long, which concluded in 2012. CVEP has focused on audit of institutional quality assurance, not as an external quality assurance mechanism, as seen with the government-established practices in the provinces of Alberta, British Columbia and the Maritimes. Its role has been to identify the strengths and weaknesses of institutional quality assurance mechanisms, not to provide external quality assurance of the programs themselves.

Ontario employs a similar system to the Quebec model, but with significantly more power given to the Ontario Universities Council on Quality Assurance (OUCQA). The Quality Council was established by the Ontario Council of Academic Vice-Presidents (OCAV) and endorsed by the Council of Ontario Universities (COU) in 2010. It "ensures that Ontario continues to have a rigorous quality assurance framework"[189] for undergraduate and graduate education. Universities have "vested in the Quality Council the authority to make the final decision"[190] on new program approval and cyclical review of existing programs through the employment of the Institutional Quality Assurance Process. This process makes use of Degree Level Expectations (DLE) developed by OCAV in their quality assurance process. These DLE are intended to act as a standardized high-level expression of what has been termed student learning outcomes elsewhere. They were established in 2008 and updated in 2012, but originated through

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[188] Conférence des Recterurs et des Principaux des Universités du Québec, *Program Proposal Evaluation Process and Procedures,* (Montréal: CRÉPUQ, 2011), 5; Conférence des Recterurs et des Principaux des Universités du Québec, *L'évaluation Périodique des Programmes Universitaires au Québec: Un Système en Voie de Consolidation,* (Montréal: CRÉPUQ, 2013), 1.
[189] Ontario Universities Council on Quality Assurance, *Quality Assurance Framework,* 2.
[190] *Ibid.*

the Ontario Council of Graduate Studies (OCGS) creation of graduate DLE in January 2005 and OCAV creation of undergraduate DLE which were endorsed by COU in December of 2005.[191] Subordinate to these DLE are the DLE and Learning Outcomes established by the institutions themselves. In hierarchical order, these are Institutional DLE, Specific Degree DLE, Degree Program Learning Outcomes, Program Learning Outcomes and Course Learning Outcomes.[192] Thus, the system in Ontario is similar in structure and standardization to the provinces of Alberta, British Columbia and the Maritimes, but quality assurance remains external to government involvement, much like the other provinces.

Despite provincial responsibility for education, federal cooperation and attempts at standardization are achieved through the Council of Ministers of Education, Canada (CMEC). Of note, they released a Ministerial Statement on Quality Assurance of Degree Education in Canada in 2007.[193] This statement recognized that "primary responsibility for academic and institutional quality assurance rests with postsecondary institutions themselves."[194] At the same time, in establishing a Canadian Degree Qualifications Framework they recognized that "governments are responsible for assuring themselves and the public that appropriate forms of quality assurance are in place...[particularly with respect to] new programs or new institutions...."[195] The Canadian Degree Qualifications Framework Degree-Level Standards, presented in Table 4.3 below, are largely similar to the only established provincial frameworks, namely the OUCQA Degree Level

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[191] *Ibid.,* 1-2.
[192] *Ibid.,* Annex 1 - Guide to the Quality Assurance Framework, 1.
[193] Council of Ministers of Education, Canada, "Ministerial Statement on Quality Assurance of Degree Education in Canada."
[194] *Ibid.,* 1.
[195] *Ibid.*

Expectations and the MPHEC Maritime Degree Level Qualifications Framework, in structure and terminology.

The high level of similarity between the CMEC and OCAV DLE are not coincidental. The CMEC framework was established at the same time that Dr. Richard Van Loon, a former president of Carleton University, completed a report to the COU recommending the creation of the OUCQA and alignment of undergraduate and graduate DLE.[196] There are, however, four specific differences between the CMEC and OCAV DLE. With respect to Depth and Breadth of Knowledge, Ontario DLE include the phrase "where appropriate, relevant knowledge outside the field and/or discipline,"[197] thus putting emphasis on a broader knowledge base required at the Master's level. Similarly with respect to Professional Capacity/Autonomy, the requirement to demonstrate "the ethical behaviour consistent with academic integrity and the use of appropriate guidelines and procedures for responsible conduct of research"[198] was added. OCAV DLE do not include the qualifier of 'specialist and non-specialist audiences' included in CMEC DLE, however the level of communication skills remains the same. Finally, in a purely structural difference, the phrase "capacity to address complex issues and judgments based on established principles and techniques"[199] is categorized under Research and Scholarship (equivalent of Knowledge of Methodologies and Research), as opposed to Application of Knowledge in CMEC DLE. Thus, with these exceptions, analysis of OCAV DLE in addition to CMEC DLE would be redundant.

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[196] Ontario Universities Council on Quality Assurance, *Quality Assurance Framework,* 2.
[197] *Ibid.,* 33.
[198] *Ibid.,* 34.
[199] *Ibid.,* 33.

Table 4.3 - Bachelor's and Master's Degree Level Standards from CMEC Degree Qualifications Framework

	Bachelor's Degree This degree is awarded to students who have demonstrated	Master's Degree This degree is awarded to students who have demonstrated
Depth and Breadth of Knowledge	(a) Knowledge and critical understanding in a field of study that builds upon their secondary education and includes the key assumptions, methodologies, and applications of the discipline and/or field of practice (b) Basic understanding of the range of fields within the discipline/field of practice and of how the discipline may intersect with fields in related disciplines (c) The ability to gather, review, evaluate, and interpret information, including new information relevant to the discipline, and to compare the merits of alternate hypotheses or creative options relevant to one or more of the major fields in a discipline (d) The capacity to engage in independent research or practice in a supervised context (e) Critical thinking and analytical skills inside and outside the discipline (f) The ability to apply learning from one or more areas outside the discipline	A systematic understanding of knowledge, and a critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of their academic discipline, field of study, or area of professional practice.
Knowledge of Methodologies and Research	(a) An understanding of methods of enquiry or creative activity, or both, in their primary area of study that enables the student to (i) evaluate the appropriateness of different approaches to solving problems using well established ideas and techniques, (ii) devise and sustain arguments or solve problems using these methods, and (iii) describe and comment upon particular aspects of current research or equivalent advanced scholarship in the discipline and on their relevance to the evolution of the discipline (b) The ability to review, present, and critically evaluate qualitative and quantitative information to (i) develop lines of argument; (ii) make sound judgments in accordance with the major theories, concepts, and methods of the subject(s) of study; (iii) apply underlying concepts, principles, and techniques of analysis, both within and outside the discipline; and (iv), where appropriate, use this knowledge in the creative process	A conceptual understanding and methodological competence that enables the graduate to (a) Have a working comprehension of how established techniques of research and inquiry are used to create and interpret knowledge in the discipline (b) Have a capacity to evaluate critically current research and advanced research and scholarship in the discipline or area of professional competence, and on the basis of that competence, have shown at least one of the following: (i) the development and support of a sustained argument in written form or (ii) originality in the application of knowledge.

Application of Knowledge	(a) The ability to use a range of established techniques to (i) initiate and undertake critical evaluation of arguments, assumptions, abstract concepts, and information; (ii) propose solutions; (iii) frame appropriate questions for the purpose of solving a problem; (iv) solve a problem or create a new work (b) The ability to make critical use of scholarly reviews and primary sources.	The capacity to (i) address complex issues and judgments based on established principles and techniques and (ii) apply an existing body of knowledge in the research and critical analysis of a new question or of a specific problem or issue in a new setting.
Communication Skills	The ability to communicate information, arguments, and analyses accurately and reliably, orally and in writing, to specialist and non-specialist audiences, using structured and coherent arguments, and, where appropriate, informed by key concepts and techniques of the discipline.	The ability to communicate ideas, issues, and conclusions clearly and effectively to specialist and non-specialist audiences.
Awareness of Limits of Knowledge	An understanding of the limits to their own knowledge and ability; an appreciation of the uncertainty and ambiguity of and limits to knowledge, and an appreciation of how this might influence analyses and interpretations.	A cognizance of the complexity of knowledge and of the potential contributions of other interpretations, methods, and disciplines.
Professional Capacity/ Autonomy	Qualities and transferable skills necessary for further study, employment, community involvement, and other activities requiring (i) the exercise of initiative, personal responsibility and accountability in both personal and group contexts, (ii) working effectively with others, and (iii) behaviour consistent with academic integrity.	(a) The qualities and transferable skills necessary for employment requiring (i) the exercise of initiative and of personal responsibility and accountability and (ii) decision-making in complex situations, such as employment (b) The intellectual independence required for continuing professional development (c) The ability to appreciate the broader implications of applying knowledge to particular contexts

Source: Council of Ministers of Education, Canada, "Ministerial Statement on Quality Assurance of Degree Education in Canada," *CMEC Extranet*, April 02, 2007, http://www.cmec.ca/9/Publications/index.html?searchYr=2007 (accessed March 6, 2016),5-7.

Analysis of the MPHEC Degree Level Qualifications Framework is similarly redundant. It is "an adaptation of the Canadian Degree Qualifications Framework...[based on] a very early draft"[200] from 2004. The differences are entirely with respect to structure; it divides Depth and Breadth of Knowledge into separate categories in and outside the field of study and delineates between Level of Analytical Skill and Level of Application of Knowledge, rather than the CMEC Application of Knowledge. The fact that the MPHEC and OCAV frameworks are remarkably similar to the CMEC framework speaks to the standardization that exists amongst provinces that have adopted quality assurance frameworks. While the CMEC Framework does not have any legal authority, it has largely been created and adopted by provincial quality assurance organizations, whether non-governmental or governmental.

The amalgamation and analysis of these frameworks lead to eight overarching outcomes that differentiate graduate-level education from undergraduate education in terms of context, detail and quality in Canada. In terms of Depth and Breadth of Knowledge, graduate-level education requires a systematic understanding of knowledge and current problems at, or informed by, the forefront of their own field of study and a sufficient knowledge of related fields of study. With respect to Knowledge of Methodologies and Research, Synthesis is required at the Master's level (as opposed to Bachelor's level requirements that include the qualifier 'where appropriate') to critically evaluate current research and methodologies. This is also true in the domain of Application of Knowledge, where the level of learning moves from Evaluation (evaluate, frame, solve) at the Bachelor's level to Synthesis (new question, new setting) at the

[200] Maritime Provinces Higher Education Commission, "Academic Program Assessment Prior to Implementation (Policy and Procedures)," 14.

Master's level. While similar to Bachelor's-level requirements, Master's-level education seeks students who can communicate clearly and effectively to specialist and non-specialist audiences. Finally with respect to Professional Capacity/Autonomy, Master's-level education seeks the ability to make decisions in complex situations, intellectual independence required for continuing professional development and the ethical behaviour consistent with academic integrity.

Generic Graduate-Level Outcomes

Given the significant differences in development, governance and oversight of graduate-level outcomes between and within the countries and institutions studied, the degree to which there are commonalities is impressive. The EHEA Framework of Qualifications, Lumina Degree Qualifications Profile and CMEC Degree Level Expectations employ similar terminology and structures that allow for the establishment of generic graduate-level outcomes for comparison with CAF perceived requirements of graduate-level education. Table 4.4 illustrates the synthetic constructs generated through CIS to classify these generic outcomes.

Table 4.4 - Generic Graduate-Level Outcomes (Synthetic Construct)

Graduate-Level Outcomes	Description
Depth and Breadth of Knowledge	Systematic understanding of knowledge and current problems at the forefront of the field of study
Analysis and Synthesis of Methodologies	Critical evaluation and synthesis of methodologies in the field of study, supported by sufficient understanding of knowledge and methodologies associated with another field of study
Application of Knowledge	Ability to apply knowledge to a new question and/or in a new or unfamiliar environment
Communication Skills	Ability to communicate clearly and unambiguously knowledge and rationale behind knowledge to specialist and non-specialist audiences
Professional and Ethical Capacity	Ability to evaluate assumptions relative to ethical and social perspectives and demonstrate ethical behaviour consistent with academic integrity, including decision-making in complex situations
Autonomous Learning Skills	Ability to continue to learn and develop in an autonomous or self-directed manner

Of all of the key outcomes described above, only the outcomes from the American DQP related to use of two or more languages and with respect to public policy, global challenges or national interests have not been included. While interesting, none of the other frameworks included outcomes with such specificity. As previously mentioned, the DQP is different both in terms of generation and application. While it often serves as a foundation for Student Learning Outcomes established by American institutions, the

author was not able to find any institution-specific outcomes that employed these terms, as noted through comparison with examples from Kansas State University and Texas A&M University. These outcomes may be of interest, but do not reflect the common aspects prevalent amongst all frameworks studied.

Conclusion

Graduate-level education has developed and evolved in many different contexts amongst and within countries. The high level of autonomy that universities possess with respect to the identification and assessment of graduate-level student outcomes varies, but most governments, external agencies and institutions agree that the universities retain the primary responsibility for internal quality assessment, including establishing their own institutional, degree-level and program outcomes. The emergence, especially since 2005, of various frameworks to establish standardized student learning outcomes has confirmed that despite the differences in systems in Europe, the United States and Canada, the generic outcomes of graduate-level outcomes of institutions remain remarkably similar. These outcomes have been described here through the synthetic constructs of Depth and Breadth of Knowledge, Analysis and Synthesis of Methodologies, Application of Knowledge, Communication Skills, Professional and Ethical Capacity and Autonomous Learning Skills.

However, it must not be forgotten that these outcomes are both a statement of what graduate-level students should learn and what they have actually learned. Confirmation that outcomes are achieved come through quality assurance, internal to the institution and through external agencies, and accreditation through government or other

mechanisms. The establishment of a framework of student learning outcomes does not ensure that they are being learned by students, however it does provide a certain level of standardization amongst institutions and the ability to compare these student learning outcomes with the CAF perceived requirements of graduate-level education.

CHAPTER 5 – COMPARISON AND DISCUSSION

Introduction

The two sets of synthetic constructs developed in Chapter Three and Chapter Four present obvious similarities and differences between what the CAF perceives to be needs of graduate-level education and what higher education institutions consider to be generic student learning outcomes. Through comparison of the two sets of synthetic constructs, direct and indirect links will be identified and explained. Table 5.1 demonstrates this analysis in matrix form. The seven perceived needs of the CAF are aligned vertically and compared with the six generic graduate-level outcomes presented horizontally. Each relationship between perceived requirements and graduate-level outcomes is then evaluated in terms of association, using the terms direct, indirect or none. This analysis is clearly subjective, a limitation to a learning needs assessment of this type. However, this subjectivity is mitigated by the critical interpretive synthesis conducted to establish the synthetic constructs. Through comprehensive literature review and the inclusion of reports, studies, articles and frameworks from various sources, this study has attempted to identify the perceived needs of the CAF that appear to be best associated with student learning outcomes. Disagreement with the conclusions reached below should be considered an excellent opportunity for further discussion, research and analysis.

Direct links occur when the synthetic constructs are directly related. The most glaring example of this is communication skills – they are seen as both a perceived need and a graduate-level outcome, with similar descriptions. Other links are indirect. In these cases, there is an association between the synthetic constructs; however the link is less

evident. This occurs when only specific elements of the synthetic constructs are aligned, or when the concepts are associated, but only under specific circumstances. Finally, some comparisons will lead to no association worth discussion.

Table 5.1 – Synthetic Construct Comparison Matrix

CAF Perceived Needs of Graduate Education	Generic Graduate-Level Outcomes					
	Depth and Breadth of Knowledge	Analysis and Synthesis of Methodologies	Application of Knowledge	Communication Skills	Professional and Ethical Capacity	Autonomous Learning Skills
Intellectual Broadening	Indirect Link	Indirect Link	Indirect Link	No Significant Link	No Significant Link	Indirect Link
Mastery of Profession of Arms	Indirect Link	Indirect Link	No Significant Link	No Significant Link	Indirect Link	No Significant Link
Critical Thinking	No Significant Link	Indirect Link	Indirect Link	Indirect Link	Indirect Link	No Significant Link
Communication Skills	No Significant Link	Indirect Link	No Significant Link	Direct Link	Indirect Link	No Significant Link
Credibility	Indirect Link	Indirect Link	Indirect Link	Direct Link	No Significant Link	No Significant Link
Continuing Education	No Significant Link	Indirect Link	No Significant Link	No Significant Link	No Significant Link	Direct Link
Ethos/Ethics	No Significant Link	No Significant Link	Indirect Link	No Significant Link	Direct Link	Indirect Link

Discussion

Comparison of the synthetic constructs led to three perceived needs of the CAF that had direct links to generic graduate-level outcomes. These were Communication

Skills, Credibility, Continuing Education and Ethos/Ethics. The three other perceived needs certainly had associations with the generic graduate-level outcomes, but not enough to suggest that there is a distinct and obvious link between the perceived need and the expected outcomes. Some of these associations, such as Intellectual Broadening and Mastery of the Profession of Arms, could not be considered direct due to the fact that they were compared with generic graduate-level education, instead of specific fields of study or types of degrees. Critical Thinking also had associations; however, these associations were not directly related to graduate-level education to suggest they were needs of the CAF that should be specifically addressed by graduate-level education.

Intellectual Broadening. Intellectual Broadening was found to have indirect links with Depth and Breadth of Knowledge, Analysis and Synthesis of Methodologies, Application of Knowledge and Autonomous Learning Skills. There were no significant links with Communication Skills and Professional and Ethical Capacity. The broadening of an officer's intellect, from thinking at the tactical and operational levels to eventually gaining expertise at the strategic and institutional levels can certainly be supported by graduate-level education, as denoted by the indirect links with four of the six generic graduate-level outcomes. However, these indirect links, as described below, do not provide the justification necessary to consider Intellectual Broadening as a CAF need satisfied through generic graduate-level education.

The indirect links between Intellectual Broadening and both Analysis and Synthesis of Methodologies and Autonomous Learning Skills are as a result of some association, but only to specific aspects of the generic graduate-level outcome. In the case of Analysis and Synthesis of Methodologies, the sufficient understanding of knowledge

and methodologies associated with another field of study permits the officer to develop intellectual skills outside of their normal skill-set. This enables, to some degree, the ability to make the cognitive leap required from the tactical level up to the strategic and institutional levels. Similarly, developing the ability to continue to learn and develop in a self-directed manner will further enhance the potential for the officer to becoming a strategic thinker. This potential is not enough, though, to be considered a direct link.

The increase in understanding of knowledge and current problems at the forefront of the field of study is certainly related to the ability of an officer to broaden their intellect. However, this is only true if the field of study is related to the profession of the officer. Education leading towards expertise in a specific field of study does not ensure that the officer can translate that expertise into intellectual broadening within the profession. This is also true with respect to Application of Knowledge. While the ability to apply knowledge to a new question and/or unfamiliar environment certainly is helpful in enabling the officer to transition from the tactical and operational levels to the strategic and institutional levels, the graduate-level education would need to enable further expertise in order to be a direct link. Thus, if the graduate-level education led to the ability to continue intellectual broadening through further studies at higher levels, a direct link could be justified. However, not all generic graduate-level education leads to the ability to continue to higher education. Only the obtention of a Master's Degree that permits entry into a Doctorate program would truly provide a direct link to Intellectual Broadening. This is not the case for any generic graduate-level education.

Mastery of the Profession of Arms. The rationale behind the indirect links associated with the Mastery of the Profession of Arms and Depth and Breadth of

Knowledge and Application of Knowledge is similar to the arguments described above with respect to Intellectual Broadening. Critical to the establishment of indirect links, vice direct links, is the generic graduate-level education. Study in fields directly related to the profession of arms would certainly form the basis for direct links in these categories. However, while the understanding of varying fields of study and the application of that understanding could achieve the perceived need of Mastery of the Profession of Arms, this is only true if the field of study has a direct link with the profession. According to the recommendations of the 1995 Morton Report, command and leadership, national security studies, strategic studies and defence management are the specific fields of interest in professional development during DP 3 and 4.[201] Fields of study that concentrate on these subjects would likely establish the direct link between the perceived need and established learning outcomes.

Of note, these subjects are all covered to varying degrees in the Joint Command and Staff Program (JCSP) and the National Security Programme (NSP) at the Canadian Forces College. These professional development courses are taught at a graduate level and can lead respectively to a Master of Defence Studies (MDS) and Master of Public Administration (MPA) degree. JCSP specifically addresses the programme goals of Command and Leadership (C1)[202] and National Security and Defence Studies (C5)[203] in the core curriculum. Similarly, NSP includes specific programme goals of Strategic

[201] Department of National Defence, *Final Report of the Officer Development Review Board (Morton Report),* 98-99.
[202] Canadian Forces College, "Syllabus Canadian Forces College (CFC) Joint Command and Staff Programme Residential (JCSP RESID) and Joint Command and Staff Programme Distance Learning (JCSP DL)," (CFC Syllabus, 2015), 1-1/19.
[203] *Ibid.,* 1-4/19.

Command and Institutional Leadership (N1),[204] Strategic Resource Management (N2)[205] and Canadian National Security and International Relations (N3).[206]

In addition to these indirect links, the component of Professional and Ethical Capacity related to decision making in complex situations can be associated with Mastery of the Profession of Arms. This link is irrespective of the field of study of graduate-level education. Generic graduate-level education should provide CAF members with the requisite skills to make decisions in any situation. The link remains indirect as it is only one element of the generic learning outcome. Thus, Mastery of the Profession of Arms is being addressed through graduate-level education for some members of the CAF, although not through generic graduate-level education. The JCSP and NSP are formal Individual Training and Education requirements for DP 3 and 4 respectively[207], although obtention of the associated graduate degrees is not mandatory. This suggests that the perceived need of Mastery of the Profession of Arms is being met through these specific courses for those that complete them, but generic graduate-level education does not expressly meet the need.

Critical Thinking. Critical thinking, as defined in Chapter Three, has indirect links with Analysis and Synthesis of Methodologies, Application of Knowledge, Communication Skills and Professional and Ethical Capacity. Each of these generic learning outcomes enable to varying degrees the potential for critical thinking. Learning new methodologies provide additional analytical tools, while applying knowledge in a

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[204] Canadian Forces College, "Syllabus Canadian Forces College (CFC) National Security Programme (NSP)," (CFC Syllabus, 2015), 1-1/9.
[205] *Ibid.*, 1-2/9.
[206] *Ibid.*, 1-3/9.
[207] Department of National Defence, *Qualification Standard - Common Officer Professional Development (Developmental Periods 1 to 5)*, 11.

new or unfamiliar environment enables the individual to frame their thought process. Communication of the rationale behind knowledge and the ability to evaluate assumptions support the actual analysis of the thinking processes employed.

However, several studies have demonstrated that while education can enable elements of critical thinking, it does not necessary provide a direct link to improved critical thinking skills. Articles by Flores et al.,[208] Davies[209] and Pithers and Soden[210] all came to similar conclusions in different studies. The studies focused on the employment of several different critical thinking assessment tools to determine improvement through undergraduate education. Davies, former editor of the Higher Education Research and Development periodical, highlights the results of a comprehensive study of American college students from 2005-2009, which employed a Collegiate Learning Assessment to conclude that nearly half of the students made "no significant improvement in their critical thinking or reasoning skills during the first two years of college and that 36% made no significant improvement after an entire four-year college degree."[211] Pithers and Soden came to similar conclusions using the Critical Reasoning Test with students in Scottish and Australian universities.[212] Flores et al., reviewing multiple similar studies,

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[208] Kevin Flores et al., "Deficient Critical Thinking Skills Among College Graduates: Implications for Leadership," *Educational Philosophy and Theory* 44, no. 2 (2012).
[209] Martin Davies, "Introduction to the Special Issue on Critical Thinking in Higher Education," *Higher Education Research and Development* 30, no. 3 (2011).
[210] R.T. Pithers and Rebecca Soden, "Critical Thinking in Education: A Review," *Educational Research* 42, no. 3 (2000).
[211] Davies, "Introduction to the Special Issue on Critical Thinking in Higher Education," 255.
[212] Pithers and Soden, "Critical Thinking in Education: A Review," 240.

found that "the educational system has not performed well in consistently producing critical thinkers."[213]

While the studies mentioned specifically addressed critical thinking in undergraduate education, there is nothing in the generic graduate-level learning outcomes that suggest this skill is being addressed to a more significant degree at the graduate level. Where critical thinking is mentioned in frameworks, the terminology employed in Bachelor's and Master's learning outcomes does not suggest a significant increase in competency. In fact, none of the generic learning outcomes identified in Chapter Four specifically address critical thinking as a competency developed through graduate-level education. The reason for this is perhaps best explained in the *Delphi Report* by the American Philosophical Association.

> ...The value of CT [critical thinking] extends well beyond its importance as a university-level inquiry tool. CT is vitally important in the personal and civic life of all members of society. A significant percentage of the citizenry will not graduate from high school, or if they graduate, will not have the benefit of post-secondary education.[214]

Critical thinking should not be a need of the CAF achieved through graduate-level education because it is a skill that is necessary for all members of the CAF, regardless of rank and educational background. It certainly has indirect links with some of the generic learning outcomes associated with graduate-level education as they *may* improve critical thinking skills. However, to suggest that graduate-level education provides the CAF with critical thinkers would suggest that it is not a skill that is required much earlier than DP 3.

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[213] Flores et al., "Deficient Critical Thinking Skills Among College Graduates: Implications for Leadership," 221.
[214] Facione, *Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction (The Delphi Report),* 15.

Communication Skills. The direct link between the perceived need for communications skills and the generic graduate-level learning outcome goes beyond the common term employed for the synthetic constructs. The communication skills sought by the CAF are directly related to the ability of CAF members in DP 3 and beyond to lead the institution; they must apply "broad influence processes," engage in "effective boundary-spanning activities," "communicate institutional and strategic intent across organizational systems" and build and maintain "strategic relations with others engaged in the broad security arena and related national/government initiatives."[215] Graduate-level education provides competencies in communication skills specifically to specialist and non-specialist audiences. The ability to articulate the rationale behind the knowledge being communicated ensures that the message is understood and is able to influence the intended audience.

It also has an indirect link with Analysis and Synthesis of Methodologies and Professional and Ethical Capacity. The synthesis of information permits the communication of not only the message, but the rationale behind it. The understanding of the ethical and social perspectives of the intended audience permit the communicator to maximize the comprehension and influence of the message. Thus, the perceived need for graduate-level education to acquire communication skills for CAF officers at the DP 3-level and above is substantiated by the generic learning outcomes identified.

Credibility. The generic learning outcome of Communication Skills also establishes a direct link with the perceived need of Credibility. Graduate-level education

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[215] Walker, *The Professional Development Framework: Generating Effectiveness in Canadian Forces Leadership,* 33-34.

provides the requisite communication skills for CAF members to establish and maintain credibility with members of the broad security arena, including other militaries and other government departments. The ability to clearly and unambiguously communicate knowledge to non-specialist audiences permits the CAF member to provide critical information required to decision-makers that are not entirely familiar with the military environment. Conversely, the ability to explain the rationale behind the knowledge to specialist audiences ensures that CAF members maintain credibility when in discussion with their equivalents in other nations' militaries.

This direct link is supported by indirect links with Depth and Breadth of Knowledge, Analysis and Synthesis of Methodologies and Application of Knowledge. When the graduate-level education is specific to the profession of arms, the Depth and Breadth of Knowledge obtained supports the Mastery of the Profession of Arms and the subsequent credibility of the individual. As previously stated, generic graduate-level education does not provide this, but could, dependant on the field of study. The development of cognitive skills in other fields of study and in a new/unfamiliar environment permit the CAF member to have more common ground with their peers from other government departments, that will have similar educational experiences. Credibility is subject to a psychosocial filter largely based on perception.[216] This filter plays a role in organizational knowledge sharing, which directly affects the ability of a CAF member to influence intended audiences. With this in mind, graduate-level education provides the communication skills, supported by several other learning outcomes, that influences the perception of knowledge and competence required of CAF

[216] Kate Andrews and Brian Delahaye, "Influences on Knowledge Processes in Organizational Learning: The Psychosocial Filter," *Journal of Management Studies* 37, no. 6 (September 2000), 800.

members. This is particularly true as CAF officers become leaders of the institution, beyond leading people, which requires of them the ability to broaden their influence to government and the global security arena.

Continuing Education. Pursuing graduate-level education is a form of Continuing Education in and of itself, much like many other activities such as writing in professional journals, participation in seminars and professional discussion forums and mentorship, to name a few. However, graduate-level education also provides a direct link between Continuing Education and Autonomous Learning Skills. Above and beyond other professional development activities, graduate-level education enables the 'life-long learner' by providing the skills required to continue to professionally develop outside of structured professional development courses and activities. It also provides an indirect link with Analysis and Synthesis of Methodologies. The knowledge of new methodologies permits the individual to employ these methodologies in future learning.

Policy, especially with respect to recognition of continuing education for promotion, should not consider graduate-level education in isolation. Graduate-level education enables the autonomous continuing education required of senior CAF officers. Actual demonstration of life-long learning, though, can be reflected and recognized in many continuing education activities. In addition, there is currently no specific policy with respect to when graduate-level education should be obtained. Indeed, some CAF members may and do obtain graduate-level education before joining or during DP 1 and 2. Specific continuing education activities should be identified for each DP, dependant on CAF needs. Graduate-level education should enable and encourage the participation in

these activities, particularly at DP 3 and beyond, when the opportunities for structured and mandated professional development courses and activities diminish.

Graduate-level education could also provide the prerequisites for education beyond the Masters level at a certain DP if this need was identified. However, this is neither suggested as a perceived need, nor the reality for generic graduate-level education. As described by David Last, while military PhDs could "bring military knowledge to civilian universities [or] foreign shores,"[217] the "number of military students progressing from the second to the third cycle should be small, and their careers might be limited."[218] The Defence Science Advisory Board similarly suggested that it "would be beyond reasonable to make a doctorate either a requirement or even a common convention for general and flag officers in the CAF."[219] Regardless, even if the Doctorate was a perceived need for DP 5, generic graduate-level education would not guarantee entry into the third cycle. Most Doctorate programs require a Masters Degree with appropriate specialization or bridging studies for entry.[220]

Ethos/Ethics. Becoming a 'steward of the profession' has indirect links with the generic learning outcomes of Application of Knowledge and Autonomous Learning Skills. Graduate-level education provides the cognitive ability to apply knowledge in a new/unfamiliar environment and continue development in a self-directed manner. These higher-order skills are required for the CAF member to progress from compliance with

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[217] Last, "Military Degrees: How High is the Bar and Where's the Beef?" 36.
[218] *Ibid.*, 35.
[219] Department of National Defence, "The Role and Value of Education in the Intellectual Development of the Canadian Armed Forces' Officers and Non-Commissioned Members," 16.
[220] Council of Ministers of Education, Canada, "Ministerial Statement on Quality Assurance of Degree Education in Canada," 4.

the military ethos to balancing autonomous thinking with aligning the military culture. These indirect links are not enough, though, to establish a direct link.

The direct link between the perceived need and the generic learning outcome is with respect to Professional and Ethical Capacity. Graduate-level education provides the cognitive skills necessary to evaluate the assumptions relative to ethical and social perspectives. This skill is essential for senior officers to align the military ethos with societal norms and continually re-evaluate the assumptions that constitute the foundation of the ethos. The ability of CAF officers to do so is central to the stewardship of the profession:

> In the future, stewards of the profession will need to maintain a watchful eye on the Statement of Canadian Military Ethos, *adapting it as necessary* [emphasis added] to meet the demands of the evolving security environment and Canadian society.[221]

Graduate-level education provides the future stewards of the profession with the cognitive ability to achieve this objective by providing the ability to question and analyze assumptions based on ethical and social perspectives.

Conclusion

All of the perceived needs of the CAF with respect to graduate-level education are associated with the generic learning outcomes identified. The degree to which they are associated vary considerably, however. Communication Skills, Credibility, Continuing Education and Ethos/Ethics are seen to have direct links that validate their inclusion as appropriate CAF needs that are addressed by graduate-level education. Based on direct

[221] Department of National Defence, *A-PA-005-000/AP-006, Leadership in the Canadian Forces: Leading the Institution*, 8.

links with the synthetic constructs of Communication Skills, Autonomous Learning and Professional and Ethical Capacity, these needs of officers at DP 3 and higher should be considered essential needs of graduate-level education for the CAF. Critical Thinking is certainly supported by graduate-level education as well. That being said, this need can be (and is) addressed through many other professional development activities. It is not specific to officers at DP 3 and beyond, nor are there any direct links to suggest graduate-level education is even the most appropriate method to develop the necessary competencies. This does not suggest that Critical Thinking is not important to professional development within the CAF. In fact, it is essential at all levels and should be seen as a need that is continuously addressed throughout the career of all members of the CAF, not specifically to those that need graduate-level education.

Finally, only indirect links were identified with respect to Intellectual Broadening and Mastery of the Profession of Arms. The lack of a direct link to the learning outcomes of graduate-level education was due to the fact that the outcomes were generic. Direct links between could be established between Depth and Breadth of Knowledge and Intellectual Broadening if the graduate-level education provided the gateway to further doctorate studies that enabled the creation of knowledge related to the profession. Similarly, a direct link between Application of Knowledge and Mastery of the Profession of Arms would be established if the field of study at the graduate-level was directly related to the profession of arms. Professional Military Education, such as the JCSP and NSP courses, provide this direct link, but generic graduate-level education does not.

CHAPTER 6 - CONCLUSIONS AND RECOMMENDATIONS

Conclusions

When Major-General Roger Rowley recommended compulsory undergraduate education for CAF officers in 1969, his conclusions were ignored or avoided outside of further professional development studies by the CAF for the next thirty years. The change in policy and genuine realization of the value of academic education only occurred when it was imposed by the Minister of National Defence in 1997. While no explicit policy exists for graduate-level education as a common requirement for all senior CAF officers at this time, there certainly is momentum with respect to identifying potential professional development needs that could be satisfied through academic education.

Fortunately, the general attitude of the CAF with respect to education has evolved considerably as well. When Colonel Lightburn defined the role of graduate-level education for senior officers in his *Senior Officer Professional Development Study*, he noted the mentality of the officer corps in 1986:

> Two distinct schools of thought exist; one that claims a need to broaden intellectually (a better educated individual is a better officer), and the other insists that a military officer's focus must remain riveted on the profession of arms.[222]

Discussion in reports, studies and articles since this time have shown a gradual change in mentality. The CAF no longer sees the role of graduate-level education as a binary decision. Instead, much of the literature reviewed sees graduate-level education as a means of accomplishing both of the objectives sought by the two schools of thought that

[222] Department of National Defence, *Senior Officer Professional Development (Lightburn Study* , 8.

existed in 1986. Indeed, according to the CAF Professional Development Study of 2013, "a graduate degree has become an expectation within the CAF for the majority of senior officers."[223] To truly exploit the professional development opportunities of graduate-level education though, the CAF must be in a position to properly articulate the professional development needs of CAF officers that are most appropriately achieved through graduate-level education. Just as important, the CAF should ensure that the needs identified are, in fact, directly related to student learning outcomes as defined by higher learning institutions.

This study has used Critical Interpretive Synthesis to identify the synthetic constructs that best represent the CAF perceived needs of graduate-level education for senior officers as well as the student learning outcomes of graduate-level education. Through comprehensive literature review, the seven CAF perceived needs identified were:

1. intellectual broadening;
2. mastery of the profession of arms;
3. critical thinking;
4. communication skills;
5. credibility;
6. continuing education; and
7. ethos/ethics.

[223] Department of National Defence, *Canadian Armed Forces Professional Development Study 2013*, 29.

The generic graduate-level student learning outcomes of depth and breadth of knowledge, analysis and synthesis of methodologies, application of knowledge, communication skills, professional and ethical capacity and autonomous learning skills were also identified.

Subjective comparison of the two sets of synthetic constructs established direct links between communication skills, credibility, continuing education and ethos/ethics and the student learning outcomes. There were certainly associations between the other perceived CAF needs and student learning outcomes as well. However, without direct links amongst them, this study suggests that they should not be considered CAF needs of generic graduate-level education. They do represent potential areas for further research, discussion and analysis.

As noted in Chapter Five, the perceived CAF needs of intellectual broadening and mastery of the profession of arms were only found to have indirect links with the student learning outcomes due to the fact that they were not specific to a field of study or type of degree. The Master of Defence Studies degree associated with JCSP and granted by the Royal Military College of Canada presents a unique opportunity to establish direct links with the perceived needs of the CAF. As a professional master's, it should be considered an appropriate method to satisfy the need for mastery of the profession. The CAF should consider whether all senior officers need to be masters of the profession and the implications this would have for delivery of the curriculum to those that do not attend JCSP or are not accepted for the MDS. In addition, as a professional degree, the CAF has a responsibility to ensure it is appropriately accredited by the profession, similar to professional degrees in law, medicine, business and others. Further research and analysis

is needed to consider the mechanisms required to ensure the curriculum delivered as part of the MDS fulfills CAF needs for the mastery of the profession of arms. Accreditation does not necessarily have to be conducted by the military itself. External organizations directly associated with the profession could be requested to act as external accreditation authorities.

The need for intellectual broadening requires similar consideration. Do all CAF officers need this competency and what methods of achieving this are possible? Insistence on research-based master's degrees in fields of study directly related to the profession could be the answer. This could suggest a return to mandatory directed research projects for those completing the MDS through JCSP. Similarly, the graduate-level education delivered on NSP could be considered adequate to meet the need for those that attend, based on the curriculum focus of operational and strategic thinking. However, the CAF must decide whether this need must be met before officers reach the point in their career in which they attend this course.

Continuing education is a need addressed by graduate-level education, as it is directly linked to the autonomous learning skills developed. Caution should be used, however, in not confusing graduate-level education as the goal of continuing education, as opposed to the enabler for future learning and professional development. The autonomous learning skills developed should provide the tools for senior officers to continue to self-develop, both personally and professionally. Graduate-level education enables the 'life-long learner' that is sought by the CAF. Actual demonstration of life-long learning, though, can be reflected and recognized in many continuing education activities

such as writing in professional journals, participation in seminars and professional discussion forums, mentorship and academic education.

Critical thinking is most certainly a professional development need of the CAF. However, this study suggests that this need is addressed by many professional development activities other than graduate-level education. Indeed, the introduction of the requirement for undergraduate education was in part to ensure that officers could think critically. Critical thinking should be (and is) addressed throughout the career of CAF officers, not specifically through graduate-level education. Analysis of the student learning outcomes did not identify a significant difference in the quality of critical thinking skills between the Bachelor's and Master's levels. Continued insistence on the link between this perceived need and graduate-level education could call into question the ability of other professional development activities to satisfy the need for critical thinkers.

The analysis of graduate-level education from the perspective of higher learning institutions also presents some interesting considerations. Specifically, analysis and synthesis of methodologies was identified as a generic student learning outcome that was indirectly related to all of the CAF perceived needs. Consideration should be given to establishing this competency as a CAF professional development need for senior officers.

Finally, the self-development pillar of professional development lacks the clarity necessary for professional development to be fully understood and exploited. As mentioned in the *CAF Professional Development Study* of 2013, programs for both

professional and personal self-development should be developed.[224] This will enable identification of specific activities, including graduate-level education, that are considered elements of this pillar. As a result, common officer requirements identified in the *Officer General Specification* that are to be met through self-development will be more explicit and appropriate consideration can be given to all of the activities related to self-development for career progression and promotion, as opposed to obtention of a Master's degree, as is currently the case.

This study should leave no doubt with respect to the value of graduate-level education in meeting the professional development needs of senior officers in the CAF. While only four of the perceived needs were found to have direct links with the generic student learning outcomes, there are certainly others to be considered and subjected to further analysis and discussion. It should also support the continued discussion with respect to any future policies for the requirement of a Master's Degree. This policy should not be taken lightly. With graduate-level education, the CAF is entrusting some elements of professional development of its members to institutions outside of its direct control. Decisions of this nature should be carefully considered and subjected to substantial scrutiny, both from within and externally. While the decision to institute mandatory undergraduate education for the CAF officer corps was imposed on the profession, the questions of who, what and when with respect to graduate-level education merits the analysis that provides the explanation and justification for members to understand where graduate-level education truly fits in the officer professional development system.

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