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CAAT baccalaureates: What has been their impact on students and colleges? Appendices

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This document contains the appendices to
CAAT baccalaureates:
What has been their impact on students and colleges?

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Appendix 1: Methods

This project researched the impact of bachelor degrees on colleges and students. It includes four main methodological components. The first was an extensive literature review of the literature in Ontario, Canada and international relevant jurisdictions. This is included in the main report. The literature review also analysed 39 theses on college baccalaureates in the North America, including seven based on Canada. This is included as Appendix 2. The second is the process of data analysis which had two components. The first component was analysis of open access policy and accreditation documents and college websites. The second component was analysis of the Ontario Student Satisfaction Survey, the Graduate Outcomes Survey, the Ontario Employer Survey of college graduates and college enrolment data and graduation rates. The second consists of interviews with 102 people, including policy leaders, institutional leaders, faculty members and degree students. The fourth is a curriculum analysis that compares and contrasts four degrees in colleges, four degrees in universities that emphasise experiential learning, and four degrees in traditional universities.

Data analysis of open access policy and accreditation documents and college websites

The first method employed in undertaking this research was data analysis of open access policy and accreditation documents and college websites.

This examined policy and accreditation documents on the Postsecondary Education Quality Assessment Board's website to explore past and current applications and consents to award degrees by Ontario's colleges. It also examined the websites of the 13 public colleges that offer baccalaureates to explore how the institutions position themselves, and how their degrees are positioned on their websites. The analysis included exploring how the websites showed student characteristics, student and graduate perceptions and outcomes, and employer perceptions.

As of September 2016, a total of 13 Ontario public colleges had accredited least one baccalaureate program. Table 1 shows the number of baccalaureate programs for which these colleges have current accreditations.

Table 1: Number of degrees accredited in each Ontario college

College	Number of baccalaureate programs
Humber College Institute of Technology and Advanced Learning	26
Sheridan College Institute of Technology and Advanced Learning	22
Seneca College of Applied Arts and Technology	13
Conestoga College Institute of Technology and Advanced Learning	12
Fanshaw College of Applied Arts and Technology	8
Algonquin College of Applied Arts and Technology	6
George Brown College of Applied Arts and Technology	6
Georgian College of Applied Arts and Technology	5
Centennial College of Applied Arts and Technology	3
Niagara College of Applied Arts and Technology	3
La Cite Collegiale	2
College Boreal	1
St. Lawrence College of Applied Arts and Technology	1
Grand Total	108

Note: The number does not include college-university collaborative programs.

The following questions were used to guide the open access data inquiry.

- How does the institution position itself on its website: does it say College of Applied Arts and Technology; or, Institute of Applied Learning and Technology; or, College; or something else?
- How are degree programs described on the institutional websites of each of the degree-offering colleges: How do they position themselves? What language do they use in relation to their degree-offering provision? What is the prominence of information on student transfer, accreditation, labour market, differentiation from other programs, and relationship with other universities?
- How easy or difficult is it to find the information on degree programs? How many clicks does it take one to locate the related information? Are they place in juxtaposition with diploma programs or on the institutional front page?
- How are the degree programs being marketed? What are the selling points about college degree programs? How do they position the outcomes of students from degree programs?

The statistical analysis component consisted of an analysis of student characteristics, student and graduate perceptions and outcomes, and employer perceptions from 2015-2016 data that informed college Key Performance Indicators. It included analysis of:

- 2015-16 Ontario Student Satisfaction Survey;
- 2015-16 Ontario Graduate Outcomes Survey;
- 2015-16 Employer Survey; and
- Enrolment data and graduation rates.

This methods for this component are discussed in Appendix 3.

Semi-Structured Interviews

The second main method employed in this research was semi-structured interviews. Interviews were held with four policy leaders, 18 institutional leaders, 35 faculty members and 45 students (see Table 2). Most interviews were in person, but some were by phone or by Skype. The policy leaders' interviews were conducted with four individuals who are senior policy leaders who have played a role in developing and implementing policy on college baccalaureates in Ontario. The remaining interviews were conducted with 98 participants in seven colleges - three institutes of technology and advanced learning (ITALs), which are permitted to offer up to 15% of their programs as applied baccalaureates, two colleges of applied arts and technology (CAATs) that can offer up to a maximum of 5% of programs as applied baccalaureates and two CAATs which do not offer baccalaureates. The selection of these colleges was based on the consideration of seeking a balance between colleges located in the Greater Toronto Area (GTA) and those located outside the GTA. At the five degree-granting colleges, interviews were conducted with institutional leaders, faculty members and degree students whereas at the two colleges that do not offer degree programs, institutional leaders were interviewed. At one college that offers baccalaureates, interviews were also conducted with 10 diploma students. We haven't included the outcomes of those interviews in this report, and will do so in future work.

Table 2: Profile of interviewees at colleges

	Institutional leaders	Faculty members	Students	**Total**
ITAL 1	2	8	9	**19**
ITAL 2	3	8	6	**17**
ITAL 3	4	7	8	**19**
CAAT degree granting 1	2	7	7	**16**
CAAT degree granting2	4	5	15	**14**
CAAT non-degree granting 1	2			**2**
CAAT non-degree granting 2	1			**1**
Total	**18**	**35**	**45***	**98**

We also interviewed four senior policymakers or college sector leaders bringing the total number of interviewees to 102.

* Includes 10 diploma students. We have not analysed their data in this report, but will do so in subsequent work.

The student participants in the study were from two colleges in the GTA, the most populous metropolitan area in Canada, and three outside of the GTA. Participants were recruited through liaisons who were also college staff. This created a sense of familiarity and trust. In contrast to earlier studies of college students at the point of entry to PSE, our sample included participants from all the levels comprised in a 4-year degree, as well as college degree graduates, so they were able to reflect on what it means to be a student in a college degree programme. The enrolment status of our student sample included two in the first year, 10 in the second year, nine in the third year, 10 in the fourth year, and four recent graduates (see Table 3). The interview schedule covered prior education, reasons for choosing to pursue college degrees, decision-making process, personal expectations, experiences and ascriptions of identity, which also covered the way participants presented themselves to others and the

reactions of others to their roles and activity. This provided a range of findings covering such areas as institutional choice, relationships within family groups, and future aspirations.

Table 3: Student interviewees: prior study, age, year of study and field of study

Prior education	**n**	**%**	**Age**	**n**	**%**
High school	15	42.9%	Under 25 years	21	60.0%
Some prior college	1	2.9%	25-29 years	8	22.9%
College diploma	9	25.7%	30-34 years	3	8.6%
Some university	7	20.0%	35-39 years	1	2.9%
University degree	3	8.6%	40 years & older	2	5.7%
Total	**35**	**100.0%**	**Total**	**35**	**100.0%**
Year of study	**n**	**%**	**Area of study**	**n**	**%**
First year	2	5.7%	Applied Arts	17	48.6%
Second year	10	28.6%	Business	3	8.6%
Third year	9	25.7%	Health	10	28.6%
Fourth year	10	28.6%	Technology	5	14.3%
Recent graduates	4	11.4%			
Total	**35**	**100.0%**	**Total**	**35**	**100.0%**

Interviews ranged between 30 to 60 minutes. They were digitally recorded and transcribed to meet Seale's (2001, 148) 'low inference descriptors.' Thematic qualitative text analysis was utilized (Kuckartz 2014). Analysis was conducted in a multi-stage process. The first stage encompassed careful reading of the texts ensued by deliberations among the broader research team for the selection of emerging categories, subcategories, and codes. In the student interviews, the second utilised peer-review in which two team members analysed the transcripts independently. With the policy leaders, institutional leaders, and faculty members, each interviewer developed a summary document of the the outcomes of the interviews and these were extensively discussed by the research team to identify similarities and differences. As a final check on the consistency of the data, all these interviews were analysed using Nvivo, and the themes that emerged from that analysis were checked with the summary documents of each of the interviewers. Finally, a unified text was produced that was shared with the rest of the team for further review and feedback.

Curriculum Analysis

The third method employed in this research was curriculum analysis. This section begins with an introduction to Basil Bernstein's concepts around pedagogy, which provides a relevant framework for our comparison of the curriculum of twelve baccalaureate degrees across three different types of post-secondary institutions in the province: colleges; experiential universities; and traditional universities. This section then provides an overview of the methods used to investigate the design, development and

delivery of the college baccalaureate in order to assess differences between the college baccalaureate curriculum and curriculum of cognate baccalaureates offered by universities in the province.

This analysis largely draws upon the work of Basil Bernstein which provides a relevant framework for a comparison of curriculum at the university and college level. Bernstein makes a strong distinction between curriculum typically associated with technical vocational training (primarily associated with community college level education) and that of curriculum typically found in university (Bernstein 2000). Therefore, his research, along with that of others provides us with a means through which we can investigate differences in the orientation and content of the baccalaureate degree drawing distinctions between approach to theoretical knowledge, WIL (working integrated learning) and delivery modes (Bernstein 1996, 2000; Muller 2004; McLean 2012; Young 2008).

In his analysis of curriculum, Bernstein (1999, 2000) identified two types of knowledge—theoretical (or esoteric) knowledge and everyday (or mundane) knowledge. He referred to theoretical knowledge as a vertical discourse and everyday knowledge as a horizontal discourse. Curriculum in all sectors of education draws on both, but emphasises theoretical knowledge. Vertical discourse describes systems of theoretical knowledge (the academic disciplines) that are not segmented by specific contexts, and therefore may be considered esoteric, or abstract knowledge. In contrast, horizontal discourse tends to embody every day or "mundane" knowledge: that which operates and is understood in specific contexts (Bernstein 2000; Wheelahan 2010).

Theoretical knowledge organised through disciplinary frameworks is also strongly classified knowledge because the boundaries between it and everyday knowledge are clearly defined, and because each of the academic disciplines has a specialised language and strong boundaries that insulate it from other disciplines. In contrast, everyday knowledge is weakly classified because its contextual relevance is of primary importance. The way an academic discipline is structured has implications for the way in which it is translated for pedagogic transmission.

Classification controls the nature of social space/relationships – stratifications, distribution and location of knowledge. Framing by contrast is about who is controlling the knowledge and defining what that knowledge is. Framing also refers to the control over the selection of the communication, the sequencing, pacing, criteria and the social base in which the transmission is made possible (Bernstein, 2000). Framing involves two key variables: the instructional discourse, referring to rules of discursive order; and the regulative discourse, referring to rules of social order, which strongly correlates with student identity. Together classification and framing constitute the pedagogic code. Our approach to analysis is rooted in these Bernsteinian concepts and further developed by others (Bernstein, 2000; Muller et al., 2004; McLean et.al 2012; Young, 2008). In our analysis of curriculum and pedagogy we sought to understand how the curriculum was framed, who was controlling the knowledge and what was valued within this knowledge across the different degrees. This is essential in understanding key issues around equity in higher education. To understand this in the context of the development of the college baccalaureate in Ontario, an initiative originally meant to address access and equity in higher education in the province, we identified:

i. the curricula of four college degree programs from three fields of study (applied arts, business, and technology);
ii. the curricula of four cognate degree programs offered at universities in Ontario with a focus on experiential learning as identified in their differentiation statement in their Strategic Mandate Agreement with the province;

iii. the curricula of four cognate degree programs offered at traditional universities in Ontario.

The curricula of four college degree programs from three fields of study (applied arts, business, and technology) were selected based on the length of time that the degree had been offered and strength of enrolment over this period as well as representation from across the province and field of study (see Table 4). We selected degrees that had been running for more than ten years, with steady increases in enrolment and representative of western Ontario, eastern Ontario and central Ontario. The selected degrees are all well established, with strong enrolments and have cognate degrees within the Ontario university sector providing the impetus for comparison.

Applied Arts:	Bachelor of Applied Arts in Behavioural Psychology, St. Lawrence College Bachelor of Music, Humber College Institute of Technology and Advanced Learning
Technology:	Bachelor of Applied Technology Architecture – Project and Facilities Management, Conestoga College Institute of Technology and Advanced Learning
Business:	Bachelor of Commerce – Accounting, Seneca College Institute of Technology and Learning

Table 4: Selected degrees used for curriculum analysis from colleges, experiential universities and traditional universities

College Baccalaureate	**Cognate Degree at an university focused on experiential learning**	**Cognate Degree at a traditional university**
Conestoga Institute of Technology and Advanced Learning Bachelor of Applied Technology: Architecture Project and Facility Management	University of Waterloo: Honours Bachelor of Architectural Studies	University of Toronto: Honours Bachelor of Arts: Architectural Studies
Humber Institute of Technology and Advanced Learning Bachelor of Music	University of Waterloo: Bachelor of Arts: Music Major	University of Toronto: Bachelor of Music
Seneca College Bachelor of Commerce: International Accounting and Finance	Ryerson University: Bachelor of Commerce: Accounting and Finance	York University: Bachelor of Commerce, Accounting Specialization
St. Lawrence College Bachelor of Applied Arts: Behavioural Psychology	Ryerson University: Bachelor of Arts, Psychology	Queen's University: Bachelor of Arts, Psychology

Using a Bernsteinian lens to undertake the comparison of degree curriculum, the study identified similarities and differences in the content and delivery of cognate degrees across the province focusing on how curriculum is linked to a theoretical body of knowledge and everyday knowledge. This also provided the framework to determine what rules were created for the selection, sequencing, pacing and evaluation of knowledge with an emphasis on links with the labour market and the role of the labour market in the design and the delivery of college baccalaureates.

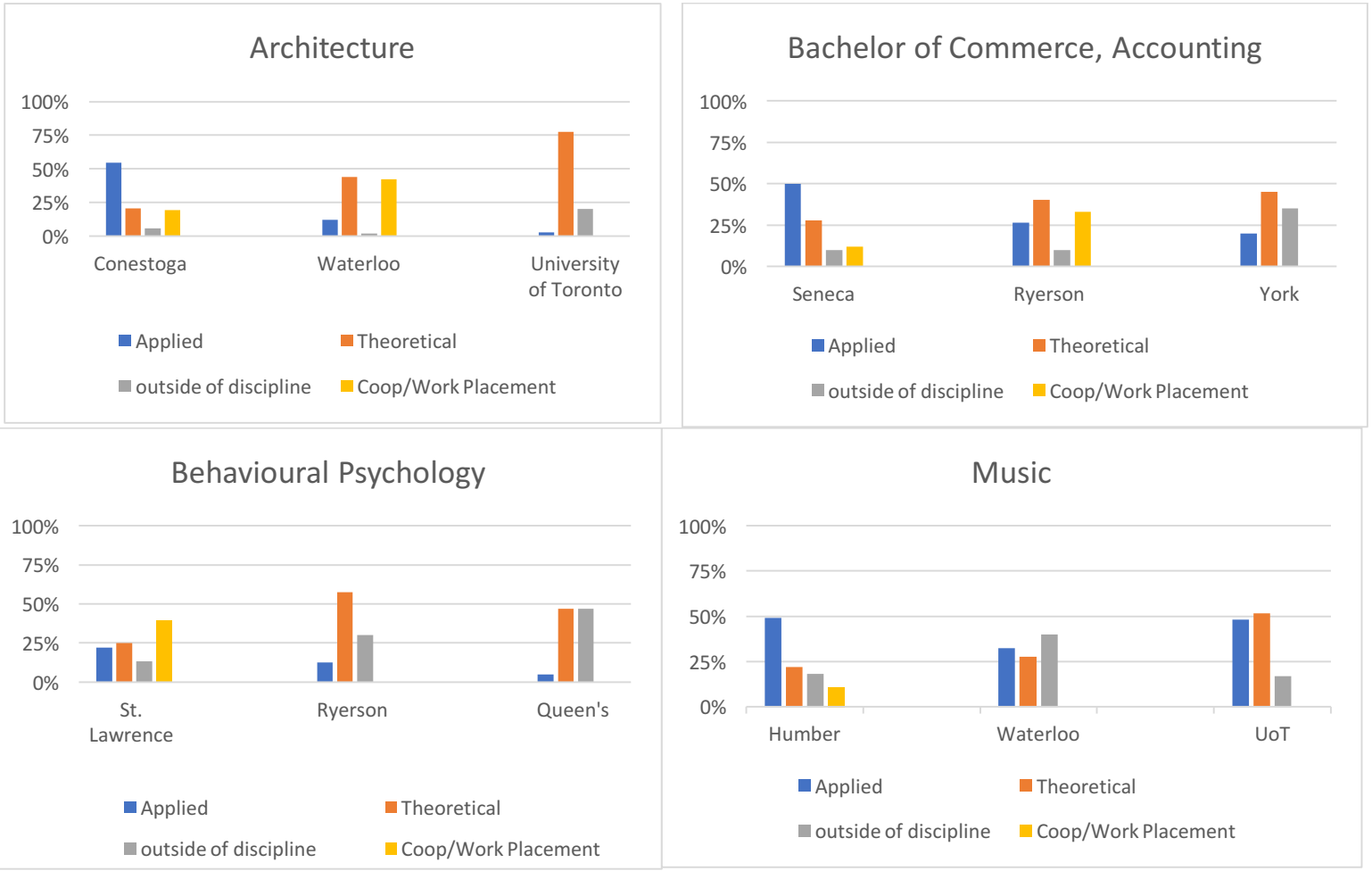
For the curriculum review we developed a series of questions that guided our analysis based on Bernstein's framework for knowledge classification and framing (Bernstein, 2000; Muller et al., 2004). Through these questions we were able to compare and contrast curriculum from the identified community colleges, universities with a focus on experiential learning and traditional universities. Our analysis was divided between two categories of questions. The first focused primarily on the weight of everyday knowledge or horizontal discourse providing a basis for applied skills in specific contexts; versus esoteric or theoretical knowledge organised as disciplinary frameworks which are vertical discourses based on a strong theoretical foundation within the curriculum across the selected degrees. For this part of the analysis we assessed course descriptions that were found on the institutional websites either on the program page or through the course calendars. Our analysis of the curriculum at this level focused on the following questions:

a. What is being taught and what is not being taught?
b. What is the sequence of introducing this knowledge/what is being taught?

We looked at how the curriculum linked to a theoretical body of knowledge and/or applied knowledge and weighted the quantity of each. To assess this, we reviewed course level descriptions to assess the depth of the theoretical foundation on which the curriculum has been built and how this content relates to mundane or esoteric knowledge, or both. An analysis of the weighting of this content provided a perspective on the orientation of the degrees. An in-depth analysis of course descriptions across the four selected degrees provides an overview of the orientation of baccalaureates across the three types of institutions identified. Course descriptions provided a sufficient overview of the courses within the program and identified direct links to the type of knowledge to be imparted through the duration of the program. The course descriptions provided insight into whether the course was based on theory or practice or a blending of the two. Sentences within the descriptions were analysed for use of terminology. An example of terminology used in an applied course description is, "Students will study the technical communication theory/practice and apply the knowledge to creating, critiquing, and presenting technical documents" illustrating an example of applied knowledge as related to the specific skill of technical writing. An example of terminology used in a theory oriented course is, "it explores the connection of materials to methods through an analysis of the technical aspects of designing and constructing building and spaces". In the assessment of the orientation of the degrees we also looked at the percentage of breadth courses and percentage of the credential awarded for work placements, internships or co-ops.

Figure 1 provides a summary of the approach to knowledge across the four degree clusters, outlining the weighting towards applied and theoretical knowledge, along with the percentage of knowledge of courses outside of the discipline and the percentage of coop or work placement opportunities.

Figure 1: Curriculum analysis of cognate baccalaureates across the system



The second part of our analysis focused on how knowledge is framed within the curriculum across cognate degrees. The following questions guided our analysis:

a. What is the pacing and timelines of the degree program?
b. How are students being evaluated? Are they evaluated on their basis of horizontal (applied) knowledge or vertical (theoretical) knowledge?
c. What are the qualifications of faculty members delivering the degree?

To answer these questions, we reviewed the program descriptions for each baccalaureate degree including the sequencing of courses, acknowledging whether the program was cohort based or self-directed and required pre-requisites to move through the program. In order to assess what knowledge is valued within the degrees we needed to see how students are evaluated. This was done through a comparison of lower and upper level courses within the bachelor of music degree. Table 5 provides a summary of the learning objectives and evaluation methods across a lower level course in the music degree and table three provides a summary of the learning objectives and evaluation rules across upper level courses in the three types of institutions.

Table 5: Course outline comparison of lower level music courses

Lower Level Course	**Class**	**Lab**	**Learning Outcomes**	**Student Evaluation**	
Humber: Bachelor of Music: MUS 1011 Music Theory and Improvisation	67%	33.30%	Largely write, identify, perform: 26 learning outcomes listed	Theory Assignments /quizzes/class work	35%
				Theory Midterm Exam	12%
				Theory Final Exam	20%
				Improv Weekly Performance and Assignments	15%
				Improv Midterm Performance and Exam	5%
				Improv Final Performance Exam and Scale Testing	10%
				Improv Attendance	3%
Waterloo: Introduction to Jazz	100%		No specific learning outcomes listed just overall objectives which is repertoire recognition and learning how to listen to jazz. Extensive focus on terminology; comparative analysis of pieces and impact on the genre	Listening and terminology tests (2 x 24%)	48%
				Written Assignment	15%
				Final Test	25%
				Attendance and Participation	12%
University of Toronto: JMU 100Y1	100%		Demonstrate: ability to; knowledge of, competency in; relationship between jazz and other genres	Performance and written assignments and quizzes	50%
				Mid'term Test	15%
				Final Test	20%
				Final Assignment	15%

The rules of evaluation play a role in the pedagogic code. From the course outlines examples in music it is evident that the music courses at both the college and the experiential university are very prescriptive and provide detailed accounts of what students will learn and when in the course the learning will take

place, along with how they will be evaluated. The course descriptions at the college level provided a list of learning outcomes, 24 in the lower level course, all focused on applied skills learning and 11 in the upper level course with a greater focus on application and analysis. At the upper level the college course outcomes evolved to reflect an ability to use skills in alternative contexts. While it doesn't appear that there is any significant difference in evaluation methods within each of the six course outlines reviewed, the learning outcomes speak to what knowledge is valued within each course and this leads to an understanding of what is valued through assessment and what are the expectations in terms of tacit or implicit knowledge. Table 5 provides a summary of the course evaluations for lower level courses, while Table 6 provides a summary of course evaluations for upper level courses.

Table 6: Course outline comparison of upper level music courses

Upper level Course	**Class**	**Lab**	**Learning Outcomes**	**Student Evaluation**	**Percentage**
Humber: Advanced Music Composition and Analysis	100%		Determine, present, create, produce, perform	Critiques of student work, misc. in-class work Assign 1: composition Assign 2: Composition Assign 3: style analysis Assign 4: Composition Final test	10% 20% 20% 20% 20% 10%
Waterloo: Music 371 Music Theory IV	100%		Objectives: provide a comprehensive overview; encourage dev't of students' critical voices; repertoire	Theory Assignments (8 in total) Final Paper (Theory) Singing Dictation Keyboard	50% 20% 10% 10% 10%
University of Toronto: MUS4312H	100%		practical experience and understanding of chromatic language; transcription, analysis and performance	Line writing assignments rhythmic assignments transcription performance and analysis composition Final composition and performance	20% 20% 25% 10% 25%

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Appendix 2: A Review of Theses on College Baccalaureates

Dr. Qin Liu with support from Diane Simpson and Edmund Adam

A total of 39 carefully selected theses on college baccalaureates in the North American context were reviewed, including seven based on the Canadian settings. In terms of research methodology, fifteen of them used case studies. The findings from these theses can be organized into themes to be presented in the following sections and these themes provide empirical evidence for addressing the six research questions for the project.

Rationales for developing college baccalaureate programs

The findings from five studies almost concurred that the main rationales for developing college baccalaureate programs were related to expanding accessibility and responding to labour market needs. Pershin (2006) suggested a few policy arguments for opening doors for community colleges to grant baccalaureate degrees, including expanding baccalaureate access and meeting workforce needs in local communities. The Petrosian (2010) study found that student need and workforce need had greater influence in development of college baccalaureates in Texas than college's relations with area universities and expansion of a college's mission. Petry (2003) found that two primary reasons for creating college baccalaureate programs were expanding student access to the baccalaureate degree and responsiveness to the local community and workforce needs; other reasons included lower cost and community college mission. Accountability and quality issues were viewed as top priorities for developing these programs. Plecha (2007) studied four community colleges that offered baccalaureates and identified meeting the community need of the local businesses for a more educated workforce as a common primary reason for offering those degrees. For two of the colleges, accessibility to baccalaureates was another reason as no university was nearby and there was a high population of low socioeconomic families. Through interviews with senior college leaders at five urban colleges in Ontario and senior government officials, Galea (2015) found that the top reason for the introduction of baccalaureates in Ontario colleges was labour market response and that the next two most often cited reasons were limited university transfer options of college graduates and global trends around credential expectations.

Location of responsibility for baccalaureates and arrangements for resources

The stakeholder groups for college baccalaureate include the administrators (presidents and vice presidents), faculty leaders, library directors, instructors and students, as identified by Ames (2015) and McKee (2001). The involvement of the administrators was found to be an enabling factor for baccalaureate programs (McKee, 2001). This was consistent with McArthur's (1997) study, which provided evidence for the pivotal role of institutional leadership and a supportive internal community as the enabling factors. McKee also found that instructors were mainly involved with curriculum development by integrating industry competencies and general education requirements, and that employers supported the curricular structure and offered input for the development of the competencies for the program. McKee also argued that the curriculum development of college baccalaureates cannot be only seen from the lens of the instructor. Regarding resources, Ames (2015) suggested that college baccalaureates had an impact on the college's staffing, the library, student services and finance. Morton (2013) found that additional resources, such as staffing, student and library services, were needed to implement the baccalaureate programs; in particular, student advising was the most frequently suggested area for improvement.

In terms of staffing, Plecha's (2007) case study found that degree-granting community colleges required bachelor degree teaching faculty to possess doctoral degrees. In the Ontario context, Tesa's (2013) study found that a number of policies and practices had enhanced or deterred from hiring the most appropriate faculty across all credentials - degrees, diplomas, and certificates - at the participating

Institute of Technology and Advanced Learning, or ITALs. Issues included a lack of clarity for potential applicants around the definition of the ITALs, meeting the requirements of the quality assurance agencies, and the constraints on faculty utilization. It was also found that human resources managers and deans did not engage directly in succession planning for the institution; rather, this was the responsibility of the senior institutional leaders.

Two studies analyzed the financial resources available for college baccalaureates in Florida. Bemmel (2008) found that offering baccalaureates at community colleges was a less expensive alternative for baccalaureate education as a result of lower per-student funding and student tuition charged. By comparing two effectiveness measures with those used by universities—student test scores and degrees awarded per credit hour, Bemmel concluded that baccalaureate programs at community colleges were more cost effective. Bottorff's (2011) study found that the capital costs associated with providing baccalaureates at community colleges outpaced the funding provided by the state and in this context, colleges had to seek their own internal equilibrium, which caused concerns about the sustainability of those baccalaureate programs.

In addition, Henderson's (2014) quantitative study found low tuition fees were one of the factors that were associated with the adoption of community college baccalaureates. Grothe (2009) related resources to the student population that college baccalaureates mainly served – mostly adult learners with family and work responsibilities and found that certain elements of resources were available within college degree programs to accommodate student needs. Those sources included smaller class size to allow for more individualized attention and greater access to faculty; affordability of the program; supportive and knowledgeable faculty; and industry connection in their coursework.

Colleges' processes for baccalaureates' curriculum development, program approval and quality assurance

Six studies demonstrated various aspects of the curriculum development process. Hofland's (2011) study showed certain changes took place when developing baccalaureate programs, including revamping general education curriculum, developing upper division courses, which often excited faculty members, and introducing standardization to exams, prerequisites, outcomes and syllabus components. Ames' (2015) study suggested that there was a strong employment orientation in the process of curriculum development as ultimately it was the employees who shaped the developmental process through their actions, roles, and perspectives. Ross' (2007) study suggested the importance of the support and development for faculty in preparation and delivery of upper-division courses and the value of professional activities, such as workshops, conferences, content expertise upgrading, formalised peer interaction, faculty and student research and external professional contact, to the curriculum development process. Support in these areas also posed resource challenges, including additional faculty time and additional instructional and technology support for preparation for upper division courses. McKee's (2001) case study found that the curriculum of baccalaureate programs offered at community colleges was competency-based and that the baccalaureate programs attempted to integrate general education requirement into the competency-based curriculum. It also showed that support from a broad range of constituents of the college and the goal of meeting community workforce needs were the overarching themes throughout the development of a new community college baccalaureate program. Revealing a different scenario, Currier's (2012) study found that community college leaders in the U.S. had taken on the complex decisions to offer baccalaureate programs without a formal strategic planning process. Plecha's (2007) case study found that the curricula were generally similar among the three community colleges under study and argued that the bachelor degree curriculum was an example of mimetic isomorphism as the bachelor degree curricula were created by modeling other schools with similar programs and; and that there was a tendency in degree program development from niche programs to something more general.

Although examining a distinctive scenario where community colleges made a transition to undergraduate universities in the Canadian context, Dyck's (2011) study shed light on the components involved in the transitional process as perceived by the senior academic leaders: implementing an expanded mandate, establishing bicameral governance, establishing academic policies, implementing a rigorous program approval process, changing the qualifications, roles and responsibilities of faculty, advancing the development of scholarship, changing faculty evaluation, rank and promotion, delivering the nursing program autonomously, enhancing student services and engagement, establishing financial resources, and adapting to a changing organizational culture. While only a few Canadian community colleges actually sought to become a university, those identified components do suggest that degree offering has implications for institutional policies and processes in terms of quality assurance, staffing, and student services.

Regarding quality assurance, Morton's (2013) study revealed other indicators of the program quality than the primary indicator of terminally degreed faculty members; those indicators included modeling after other established baccalaureate programs, use of technology in the classroom, local industry needs being met, ad graduates admitted into graduate study, Donohue's (2010) study found a quality-related issue in students' co-op experiences in terms of their skill development. While foundation skills learned in the classroom, such as communication and technical skills, were used in all the cooperative education workplace experiences, co-op experiences did not seem to have challenged students to the level they might be capable of with respect to what they had learned in class and transfer of learning from the classroom to the co-op workplace did indeed occur. The study concluded that program curriculum design plays an important role in enabling the transfer of learning.

Impact of baccalaureate offering on community colleges, including impact on the curriculum

Two studies examined how the provision of college baccalaureate programs had affected offering of other types of programs. Neuhard (2013) found no negative impact on upper-division university enrollments as a result of authorizing the Florida College System institutions to award baccalaureate degrees. Wesse (2012) found that offering baccalaureate programs did not negatively affect the number of associate degrees awarded, demonstrating that as community college evolved to offer baccalaureates, they continued their traditional associate degree-granting role.

In terms of the impact on the college mission, by examining the changes in the salient themes of mission statements of nearly 300 U.S. community colleges, Hernandez (2014) found that the workforce development mission of community colleges were strengthened as a result of the introduction of community college baccalaureates, which can provide a more applied and hands-on type of baccalaureate education and can bridge the gap between vocational and academic education. It also found that although access, workforce and economic development, and high quality and excellence remained steady as the top three themes since 2001, diversity and cultural development were more salient in bachelor's degree-granting institutions than in associate's degree-granting institutions. Two studies – one in the U.S context (McKee, 2001) and the other in the Canadian context (Galea, 2015) - found that introducing degree programs to colleges had expanded their mission. According to the majority of college and governmental leaders in Galea's (2015) study, "the introduction of degrees was a logical extension of the mission, and the progression of the mission itself was essential if colleges were to be responsive to changing labour and community needs."

In Hofland's (2011) case study of one community college, structured and institutionalized changes were found in the workload policy, student services and financial aid services as a result of baccalaureate offering. Other changes included increases of library holdings and the development of policies and procedures resulting in greater standardization of processes and curriculum. Overall college degree programs had a positive impact on strengthening all programs within the college, not just the degrees. All the interviewees in Hofland's study concurred that the curricular changes probably reflected the

most significant impact the baccalaureate degrees had on the college. The significant changes in the curriculum included: (a) reconceiving the general education, (b) the development of prerequisites, (c) the demand for standardization of the curriculum process, (d) the development of the upper division courses, and (e) the focus on outcomes. The general education curriculum had to be reconceived and rewritten; and courses had to be revised to accommodate the new general education requirements. This impact is perceived as positive as it strengthened the two-year degrees. In the area of teaching and learning, Galea (2015) found that a little more than half of the respondents felt that the colleges had maintained their focus on experiential and applied learning.

The role of college baccalaureates in the labour market

College and governmental leaders in Galea's (2015) study suggested that the establishment of applied college degree programs was related to the rising entry-to-practice requirements in the labour market and industry leaders played a significant role in establishing college degrees. However, varied comments were provided on how the introduction of degree programs had affected the colleges' capacity to prepare graduates for the labour market. While some interviewees referenced the colleges' advanced facilities and continued involvement of program advisory committees which consisted of labour market leaders in college programming, others indicated little impact of the introduction of degrees on the colleges' capacity to prepare graduates .

Two studies found that college baccalaureate programs had strengthened the economic development of the community. Grothe's (2009) study on an applied community college baccalaureate program found that the program strengthened the economic development of the community in which it was offered. Employers perceived the program as a community building tool as it tends to keep graduates in the community and provides industry with local talent to hire. The study supports the community service aspect of the community college. The Janezich (2011) study explored how a baccalaureate engineering program at a community college could stop "rural brain drain" in rural Northeastern Minnesota. The program curriculum was found to be distinctive in that it attempted to integrate industry into its curriculum in a transformational way, with industry-sponsored projects as the centrepiece of the curriculum, so that its graduates could be workforce ready. The study found that the program made a positive impact on the economic development of a region that is losing its young human capital to other major metropolitan areas in the region. Students got jobs more locally due to connections being made with local industry.

Doyle's (2013) study in Ontario explored the perceptions among employers about college baccalaureate programs. It was found that (1) most of the employers interviewed generally knew little about college degree programs beyond stating they have an applied nature; (2) Employers interviewed for this study were almost unanimous in that they did not favour a college degree credential over any other credential, although there were a number who felt a degree of any kind was a preference over a diploma or certificate; (3) credentials were among a series of factors that also included institutional fit, skills and experience; (4) some employers did not have a preference for hiring degree graduates, be they from a college or university; (5) employers genuinely believed that the degrees are a competitive advantage for colleges given that the employers' own experiences to date have been that college programs are generally market-oriented and designed to meet industry needs. They believed that the quality of graduates was at least on par with university degree graduates, or perhaps slightly more preferred as a result of the more hands-on nature of college learning.

Shah's (2010) study examined the comparability of graduates of a college degree program and a cognate university program by comparing the program quality and student competencies as perceived by graduates of two teacher education baccalaureate programs offered at a community college and at a state university. The findings show no significant differences reported by the two groups of graduates in terms of teaching competencies; rather, satisfaction rate was higher among college baccalaureate

graduates in terms of their decision to pursue a teacher education baccalaureate, advertisement and early field experiences. The college baccalaureate graduates also complimented the learning community model used at the community college. These findings suggest that the college baccalaureate curriculum can be comparable with its university counterpart in terms of offering students satisfactory learning experiences and producing satisfactory job-related outcomes.

Perceptions of institutional leaders and faculty members

The review shows that institutional leaders and faculty members working at the degree-offering colleges generally perceived college baccalaureates as positive while they expressed some levels of concern. Ames (2015) reported that senior college administrators and faculty leaders all felt an increased level of pride in their colleges; that faculty leaders found the process of designing an entire degree program both challenging and gratifying; and that faculty leaders, vice-presidents of student services and library directors also expressed their appreciation for the opportunities for professional development. Kielty's (2010) survey study showed that overall faculty members held a positive attitude toward supporting community college baccalaureate transition: two thirds of the faculty respondents indicated supporting community college baccalaureate transition was a right thing to do and seventy-seven percent indicated that supporting the transition was beneficial to the college.

In comparison, Burrows (2002) found that most of the institutional leaders in the Florida community college system had concerns about the inadequacy of state funding in supporting the delivery of college baccalaureates. In Currier's (2012) study, community college leaders considered that trustees, communities and program quality had highly influenced their decisions about degree offering and they became the champions and pathfinders for community colleges that began to offer baccalaureates; however, they made these decisions without a formal strategic plan for their colleges. Davis' (2012) study on the perceptions of faculty members found that on the one hand a large proportion of faculty members felt it was a positive part of their experience to see educational innovation occur, but on the other hand nearly all the participants cautioned against adopting an innovation before proper training and some voiced concern about the academic rigor in college degree programs; and that the most resistance to innovation came from those of middle age. The Essink (2013) study found that while college employees regarded changes as significant and saw new opportunities arise, therefore for the most part being supportive, some also expressed concern and even fear about the implications of baccalaureate programs on their employment status. One administrator in the study pointed out that policy change from being open door to having admission criteria had affected the campus culture and that the physical presence of degree students had brought change across the college.

Nasse (2013) found that as a result of the college's expansion into baccalaureate programming, 13 out of the 15 interviewed faculty members perceived an increased level of professional discipline expertise and a change in the perception of occupational prestige had occurred; six faculty members indicated an increased community awareness and six described changes in student attitudes as a result of teaching in the baccalaureate program; and nursing faculty members became more committed to professional research. Williams' (2010) survey found that while the majority of the faculty and administrators surveyed supported the idea of community college baccalaureates and indicated that these degrees would benefit students, they also believed that students would be able to obtain baccalaureates elsewhere.

The quantitative study by Fry (2015) showed that the most important consideration for faculty members was that the college should be responsive to community need; faculty who taught professional, career and technical programs had more positive perceptions about the development of baccalaureate degrees than faculty of traditional transfer programs. The study also found that faculty were concerned with the logistics of developing baccalaureate programs at their institutions and would like to see a concerted effort across disciplines and throughout administrative levels in order to make those programs

sustainable; and that students were concerned with the availability of baccalaureate programs for their fields of study within a reasonable distance and the possibility in pursuing further studies.

Perceptions of students

Three quantitative studies shed light on college baccalaureate students' perspectives on their programs. Gerlach (2015) found that when regardless of students' social background, attending hybrid colleges remained significant in improving the odds of obtaining a baccalaureate. Fry's (2015) study showed that accessibility to baccalaureate degrees was most important for students. Some students would rather transfer away from the community college for their baccalaureates regardless of the commuting distance; however, if their community college were to offer a baccalaureate in their field of study, they would rather consider staying if their commute would go beyond 60 miles one-way, and the likelihood for them to stay to complete their baccalaureates would increase if a transfer program was located farther away. It was also found that non-traditional students indicated a stronger belief than traditional students that lower costs of college baccalaureates were an attraction for them to pursue baccalaureates. All this suggests that college baccalaureates widened access to baccalaureate education for those students who were less mobile and those who had greater financial concerns. Nail (2013) found that approximately 30% of respondents indicated that their only realistic option to obtain a bachelor's degree would be through their local community college. A majority of respondents perceived the college baccalaureates to be effective: 66% of the survey respondents indicated that they would obtain a baccalaureate from the community college if it were offered; 50%, 53% and 66% of the respondents agreed or strongly agreed that obtaining a college baccalaureate would significantly impact their salary at their existing job, impact their opportunities for promotion at their existing job, and impact their ability to get a better job within the community, respectively. It was also found that the factors that influenced their choice of the college baccalaureates were cost, location, work responsibilities, admiration for current school, and familiarity for current school.

Regarding why students had enrolled in college baccalaureate programs, the interviewed graduates in Grothe's (2009) study shared that the need to maintain a steady income and have time with families were the primary considerations for deciding where to pursue a baccalaureate. The interviewees were found to be unanimously positive when being asked how the college baccalaureate programs had prepared them for graduate studies. Manias (2007) listed the reasons why students chose a baccalaureate teacher education program at a community college in the following order of frequency: : location, cost, ability to have personal contact, prior positive experience at the college, reputation of the college, and flexibility.

Williams' (2010) survey results show that a large majority of students indicated that baccalaureate programs at their colleges would benefit them and if such a program was offered at their colleges, they would enrol in the program. On the other hand, a majority of students also reported that they would still be able to obtain a baccalaureate degree without the option of community college baccalaureate programs. The author argued that the result might be explained by the fact that all community colleges in the state of Mississippi were located at most 90 miles from the closest public university.

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Appendix 3: Data analysis

DATA SOURCES

The analysis was mainly based on Ontario college data from four sources made accessible by the Colleges Ontario in January 2017.

- 2015-16 Ontario Student Satisfaction Survey;
- 2015-16 Ontario Graduate Outcomes Survey;
- 2015-16 Employer Survey; and
- Graduation rates.

These data are collected annually through the Key Performance Indicator (KPI) initiative as a partnership between the colleges and the ministry (https://www.app.tcu.gov.on.ca/eng/labourmarket/employmentprofiles/FAQ.asp#anc9)

In addition, some student enrolment data are available for the analysis.

DATA COLLECTION

The survey data collection process is documented in the Frequently Asked Questions section on the Employment Profile website (https://www.app.tcu.gov.on.ca/eng/labourmarket/employmentprofiles/FAQ.asp).

The target population for the Student Satisfaction Survey is "those enrolled in full-time postsecondary programs of instruction approved for funding through the general purpose operating grant (including international and Second Career students) or are enrolled in Co-op Diploma Apprenticeship (CODA) programs of instruction approved for funding through CODA contracts, except for students who are:

- registered in their first semester of their program of instruction; or
- have been given advanced standing and are in the program of instruction for the first time; or
- registered as part-time students and are NOT pursuing a certificate or diploma."

The survey is administered during classroom time mainly during a two-week period in February of each year. Completing the survey is voluntary. Survey data are complied by a third-party service provider. In the year 2015-16, of total college population, 62% was surveyed (149,000 out of 240,000) and of those, 89% were used for the KPI calculation (Dave Corcoran provides the info).

The target population for the Graduate Outcomes Survey is "those from postsecondary programs of instruction approved for funding through the general purpose operating grant including international and Second Career graduates." The survey is administered on phone by a third party service provider. There are three survey windows per year, each at approximately six months after the end of a term: the first week of March for the summer term ending August 31, the first of July for the fall term ending December 31, and the first week of November for the winter term ending April 30. An attempt is made to contact every graduate even if they are residing out of the province. With a graduate's consent, an attempt is made to contact the employer. Completing these surveys is voluntary.

In the year 2015-16, for the Graduate Outcomes Survey, the completion rate (that is, the total number of completed interviews divided by the total number of graduates) was 45.2%; the response rate (that is, the total number of completed interviews divided by the total number of valid graduate numbers) was 58.4%. For the Employer survey, the completion rate (that is, the total number of completed interviews divided by the total number of employer numbers provided) was 54.4%; and the response rate (that is, the total number of completed interviews divided by valid supervisor names and numbers provided) was 78%.

DATA FILES

The final Student Satisfaction Survey data file for analysis includes responses from a total of 112,714 students after the following data cleaning procedure:

- Excluding those currently enrolled in the first semester; that is, only those responded 2 or above to Question 2 (In which semester/term/level are you currently enrolled?) are included;
- Excluding those with MTCU code of 81400 (Collaborative Nursing) as they are a group students with different learning experiences than students in other college programs;
- Excluding those who do not have an MTCU code are excluded;
- Cleaning the data so that the final data set only includes those students who responded to all four KPI capstone questions for deriving the student satisfaction rate (Q13, Q24, Q39 and Q49).

The final Graduate Outcomes and Employer Survey data file for analysis includes responses from a total of 46,244 graduates who filled in the Graduate Outcomes Survey and a total of 3,128 graduates whose employers responded to the Employer Survey, after excluding those who were in Collaborative Nursing program (that is, MTCU code=81400).

Descriptive statistics of the survey respondents in the final data files are provided from Table 7 to Table 10. Please note that the reported enrolment data were the fall 2015 snapshot of full-time headcount (excluding those in collaborative programs) and did not exactly correspond to the characteristics of the survey respondents, who did not include those studying in their first semester but included some part-time students.

Table 7: Student Satisfaction Survey (SSS) respondents as compared with enrolment data: By credential

	SSS survey respondents		Enrolment	
Credentials	n	%	n	%
Certificates	12686	11.3%	25,952	11.6%
Diplomas	54734	48.6%	111,473	50.0%
Advanced diplomas	29587	26.2%	56,192	25.2%
Graduate certificates	8222	7.3%	13,755	6.2%
Degrees	7485	6.6%	14,395	6.5%
Unknown			892	0.4%
Other			128	0.1%
Total	112714	100.0%	222,787	100.0%

Table 8: SSS respondents as compared with enrolment data: By field of study

	SSS survey respondents		Enrolment	
Fields of study	n	%	n	%
Applied arts	39141	34.7%	73720	32.5%
Business	31037	27.5%	62154	27.4%
Health	12310	10.9%	32,721	14.7%
Technology	28936	25.7%	54192	23.9%
Missing	1290	1.1%		
Grand total	112714	100.0%	222,787	100.0%

Table 9: Graduate Outcomes Survey (GOS) respondents by credential

Credentials	n	%
Certificates	8893	19.2%
Diplomas	23031	49.8%
Advanced diplomas	7120	15.4%
Graduate certificates	6140	13.3%
Degrees	1060	2.3%
Total	46244	100.0%

Table 10: GOS respondents by field of study

Fields of study	n	%
Applied arts	18001	38.9%
Business	13169	28.5%
Health	5639	12.2%
Technology	9435	20.4%
Total	46244	100.0%

RESULTS

1 – KPI indicator data

Definitions of KPI indicators:

- The overall graduate employment rate: the percentage of college graduates in the labour force who were employed;
- The overall graduate satisfaction rate: the percentage of college program graduates who perceived that their college experience was useful to them in achieving their goals after graduation; (Graduates Outcomes Survey Q34)
- The overall employer satisfaction rate: the percentage of employers who indicated that they are satisfied with the generic and vocational skills of recent graduates from college programs. (Employer Survey Q74)
- The student satisfaction rate: the average of the percentage of students who indicated that they are satisfied with their learning experience, the relevance of their learning experience to future employment, and their overall satisfaction with college services, resources and facilities (four capstone questions[1] on the SSS – Q13, Q24, Q39 and Q49).

[1] Q13: Please think about how the learning experiences in THIS PROGRAM relate to YOUR future and then rate the importance of, and YOUR SATISFACTION with the following: OVERALL, your program is giving you knowledge and skills that will be useful in your future career.
Q24: Please think IN GENERAL about ALL your courses and ALL your teachings in this program, and then rate the importance of, and YOUR SATISFACTION with the following: The OVERALL quality of the learning experiences in this program.
Q39: Please indicate YOUR usage of the following services. Rate how important they are to YOU, and if you used them, rate YOUR SATISFACTION with them. The OVERALL quality of the services in the college.
Q49: Please indicate YOUR usage of the following facilities/resources. Rate how important they are to YOU, and if you used them, rate YOUR SATISFACTION with them. The OVERALL quality of the facilities/resources in the college.

- Graduation rate: The graduation rate is based on tracking individual students who entered a program in a given semester and assessing how many of those individuals completed the program a number of years later. The completion time frame is based on approximately 200 per cent of the normal program duration, or seven years for Degrees in Applied Areas of Study.https://www.app.tcu.gov.on.ca/eng/labourmarket/employmentprofiles/FAQ.asp#anc11

Some of the data in this report have been calculated using methods that may differ slightly from that used by Ministry of Advanced Education and Skills Development to calculate the KPIs or the employment profile.

For all the results in Table 11 to Table 13, Pearson Chi-square was used to test the statistical difference among the five credentials in terms of graduate satisfaction rate and employer satisfaction rate. The following observations can be made from these tables:

- Overall, only one of the KPIs for degree programs—the graduate employment rate—was slightly higher than those of programs offering other credentials; the student satisfaction rate for degree programs was the lowest among the five credentials Table 11
- Patterns in KPI indicators varied by credential when fields of study were taken into account (Table 13). For Applied Arts programs, the graduate and student satisfaction rates for degree programs were lower than those for other credentials; for Business programs, the student satisfaction rate for degree programs was lower than that for other credentials; for health programs, the employment rate and the graduate and student satisfaction rates for degree programs were all lower than those rates for other credentials; and for technology programs, the employment rate of degree programs was lower than that of certificate programs, the graduate satisfaction rate for degree programs was the highest among all credentials but interestingly, the student satisfaction rate for degree programs was the lowest among all credentials.

Table 11: KPI indicators by level of credential

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees	Sig. level
Graduate employment rate	83.2%	82.8%	83.3%	80.8%	85.2%	
Graduate satisfaction rate	83.2%	79.9%	79.2%	75.8%	75.3%	p < .001
Employer satisfaction rate	90.2%	90.6%	93.8%	96.4%	92.3%	p < .01
Student satisfaction rate	79.5%	77.9%	75.8%	74.1%	71.1%	
Graduation rate	70.6%	64.8%	60.9%	87.3%	67.5%	

Table 12: KPI indicators by ITAL and CAAT status

KPI indicators	ITALs	CAATs	Sig.
Graduate employment rate	81.7%	83.4%	
Graduate satisfaction rate	78.5%	80.7%	p < .001
Employer satisfaction rate	90.3%	92.6%	p < .05
Student satisfaction rate	73.1%	79.4%	
Graduation rate	65.9%	67.1%	

Table 13: KPI indicators by credential within fields of study

Applied arts

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees	Sig.
Graduate employment rate	77.9%	85.5%	84.6%	82.3%	86.2%	
Graduate satisfaction rate	84.9%	82.5%	78.6%	76.4%	72.5%	p < .001
Employer satisfaction rate	91.5%	90.5%	93.2%	96.9%	92.3%	n.s.
Student satisfaction rate	79.2%	79.3%	79.3%	77.3%	72.0%	

Business

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees	Sig.
Graduate employment rate	78.7%	79.1%	82.0%	78.1%	85.8%	
Graduate satisfaction rate	80.8%	77.0%	78.5%	72.7%	77.4%	p < .001
Employer satisfaction rate	91.9%	91.5%	95.9%	95.0%	92.6%	n.s.
Student satisfaction rate	80.3%	77.0%	73.3%	72.8%	71.6%	

Health

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees	Sig.	Phi
Graduate employment rate	87.8%	86.0%	88.3%	91.8%	82.8%		
Graduate satisfaction rate	88.0%	83.5%	86.2%	88.5%	62.1%*	p < .001	
Employer satisfaction rate	93.9%	90.1%	91.4%	98.1%	**	p < .05	.168
Student satisfaction rate	83.1%	78.6%	81.8%	79.4%	55.2%		

**Very small sample size; *small sample size (<30)

Technology

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees	Sig.	Phi
Graduate employment rate	85.4%	80.1%	81.8%	79.1%	80.9%		
Graduate satisfaction rate	77.9%	76.2%	78.5%	75.6%	83.2%	n.s.	
Employer satisfaction rate	84.5%	90.4%	93.6%	100%*	100%*	p < .05	.137
Student satisfaction rate	76.9%	76.2%	74.2%	70.3%	66.1%		

*small sample size (<30)

2 – Data about disadvantaged students

Enrolment data

Table 14 and Table 15 show that nearly 20% of degree students were first generation postsecondary attendees, and that the average GPAs of degree students were approximately 77, which was higher than students studying for certificates, diplomas and advanced diplomas.

Table 14: Enrolment data on first generation

	Yes	Total	%
Certificate	6710	24323	27.6%
Diploma	26347	92850	28.4%
Advanced diploma	12361	49236	25.1%
Degree	2530	12862	19.7%
Graduate certificate	1959	7672	25.5%
Total*	49907	186943	26.7%

Due to limitations of our data warehouse, it is restricted to domestic students in regular, full-time programs and is a snapshot from fall 2015.
*Excluding "unknown" and "other".

Table 15: High school GPAs

	n	Mean
Certificate	19755	71.60
Diploma	44547	72.38
Advanced diploma	18172	72.89
Degree	5093	77.12
Graduate certificate	3470	77.13
Overall*	91329	72.76

This is for incoming, new domestic full-time students in fall of 2015.
*Including "unknown" and "other".

3 – Student Satisfaction Survey data

Three SSS questions indicate the status of disadvantaged students:

- Q80-first generation: Has either of your parents/guardians ever attended a university or college?
- Q81-having learning disability: Do you consider yourself to have a physical, intellectual, mental health or learning disability?
- Q82-Aboriginal ancestry: Do you want to self-identify as an Aboriginal person? (An Aboriginal person is considered related to, or descended from, the Original peoples of Canada).

Table 16: SSS data indicators of disadvantaged students

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees	Total
First generation	32.1%	35.1%	29.9%	32.2%	24.6%	32.5%
Having learning disability	19.3%	17.2%	14.6%	8.1%	13.8%	15.9%
Aboriginal ancestry	6.0%	4.8%	3.4%	2.9%	1.9%	4.2%

Pearson Chi-square was used to test statistical significance. All: $p < .001$.

When the survey data on first generation status were compared with enrolment data, the survey data were 4.5% to 6.7% higher but the pattern by credential was consistent.

A "check all that apply" question asked about students' prior education before entering the program (Q75). Table 17 reports the results of all options for the question.

Table 17: Prior education before entering the program: By credential

	High school diploma	College upgrading	Some previous college	College diploma	Some university	University degree	Other	None of the above	Total number
Certificates	74.4%	4.2%	14.0%	11.0%	7.0%	8.5%	3.2%	1.0%	12686
Diplomas	70.1%	4.2%	12.3%	12.3%	9.0%	12.3%	3.4%	0.7%	54734
Advanced diplomas	73.9%	2.7%	10.4%	10.3%	10.8%	11.0%	2.6%	0.6%	29587
Graduate certificates	22.6%	2.4%	3.1%	17.1%	3.6%	77.5%	3.4%	0.1%	8222
Degrees	75.5%	2.6%	7.2%	20.6%	15.4%	4.4%	2.0%	0.4%	7485

4 – responses to KPI survey questions by credential

Statistical notes: For almost all the survey questions, chi-square test was used to check whether there is a relationship between what the survey question measures and five credential levels (that is, certificate, diplomas, advanced diplomas, graduate certificates, and degrees). When the probability of a chi-square statistic is less than .05, .01 or .001, it is considered to be statistically significant. Specifically, when $p < .001$, it means that the researcher can be 99.9% confident that the relationship between the two variables – the variable that the survey question measures and the credential level – is not due to chance. Take Q13 in SSS for example. The chi-square statistic is significant, with $p < .001$. This means that we can be 99.9% confident that the chance of perceiving "OVERALL, your program is giving you knowledge and skills that will be useful in your future career" as important is different among the five credential levels. However, the importance ratings for all five credentials were close to each other. This is because chi-square test is very sensitive to sample size. When the sample is large enough, the sensitivity of chi-square test to sample size may make a weak relationship statistically significant.

To address this limitation of the chi-square test, the *phi* coefficient, an effect size measure was used to detect the variables of practical significance for the analysis. A value of .1 is considered a small effect, .3 a medium effect and .5 a large effect (Cohen, 1988). In the following tables, only those *phi* coefficients equal to, or above, .1 are reported to indicate the effect size.

Student Satisfaction Survey

Table 18 reports on students' report of the *importance* of overall program-related experiences, learning experiences, quality of services, and quality of facilities/resources in the college, whereas Table 19reports on students' *satisfaction* with these aspects of their studies.

Table 18: Importance of overall program-related experiences, learning experiences, quality of services and quality of facilities/resources in the college: Sorted by degrees

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees	Phi
Q13. OVERALL, your program is giving you knowledge and skills that will be useful in your future career.	98.3%	99.1%	99.3%	98.9%	99.5%	
Q24. The OVERALL quality of the learning experiences in this program	99.0%	99.3%	99.4%	99.5%	99.6%	
Q39. The OVERALL quality of the services in the college*	97.1%	97.5%	97.4%	97.7%	98.0%	
Q49. The OVERALL quality of the facilities/resources in the college^	98.3%	98.6%	98.6%	98.9%	98.8%	
Q51. Your overall college experience*	98.0%	98.4%	98.3%	98.6%	98.7%	

*p < .01;
^ p < .05;

Table 19: Satisfaction with overall program-related experiences, learning experiences, quality of services and quality of facilities/resources in the college: Sorted by degrees

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees	Phi
Q13. OVERALL, your program is giving you knowledge and skills that will be useful in your future career.**	86.3%	87.9%	87.1%	82.8%	85.1%	
Q24. The OVERALL quality of the learning experiences in this program**	82.2%	81.2%	78.9%	75.5%	76.5%	
Q39. The OVERALL quality of the services in the college.>	70.0%	66.3%	62.9%	60.8%	54.1%	.100
Q49. The OVERALL quality of the facilities/resources in the college> **	79.4%	76.3%	74.4%	77.1%	68.7%	
Q51. Your overall college experience**	76.1%	74.3%	72.8%	71.4%	68.6%	

** p < .001

>Reported is the percentage of those students who had used the service and indicated "satisfied" or "very satisfied" with the service.

Table 20 reports on students' main goal in enrolling in their program

Table 20: Main goal in program enrolment

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees
To prepare for employment/career	49.0%	75.1%	75.8%	84.1%	82.5%
To prepare for further college or university study	42.4%	16.3%	17.4%	6.4%	9.8%
To pursue an interest or for personal development	6.6%	6.4%	5.3%	7.4%	6.0%
Other	2.0%	2.2%	1.5%	2.1%	1.6%

The chi-square statistic is significant, p < .001. phi = .24.

5 – Graduate Outcomes Survey

Q1-4: Education status six months after graduation from a college

Of 46, 244 graduate respondents, 22.6% reported that they were attending an educational institution on a full-time basis and 2.6% indicated that they were attending an educational institution on a part-time basis during the reference week (Q1).

Of those 11,641 respondents who were attending an educational institution on a full-time or part-time basis during the reference week, 76.2% were attending a college, 15.2% were attending a university and 4.9% were attending seminaries or faith-based institutions (Q2).

Of the 8,476 college-attending respondents, 5.2% indicated that they were in a college degree program (Q3).

Of the 2,315 university-attending respondents, 9.4% indicated that they were in a graduate or professional degree program (Q4).

Questions related to the program for further education

Table 21: Major reason for further studies

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees	Phi
i. More opportunities for career advancement#	82.3%	82.6%	84.6%	80.9%	82.5%	
j. Upgrade/ improve skills	76.9%	73.7%	71.3%	78.1%	72.8%	
g. Gain theoretical knowledge/ broader education*	70.7%	68.3%	64.7%	67.0%	68.4%	
c. To get diploma/ certificate/ degree	75.5%	73.6%	77.4%	61.9%	67.5%	.101
d. Interest in further/ more in-depth training in field*	73.0%	72.1%	69.6%	69.1%	67.3%	
f. Needed for professional designation	52.9%	46.2%	54.5%	58.5%	60.2%	.090
a. Potential for higher income	57.6%	60.5%	68.4%	52.1%	57.4%	.090
e. Interest in pursuing a different field of study	39.7%	31.8%	22.3%	41.0%	34.2%	.137
h. Encouragement from others (family members, friends, faculty)	38.4%	34.3%	32.7%	33.3%	29.2%	
k. There was a formal transfer agreement between your previous and your current program	31.0%	32.0%	42.4%	25.7%	26.9%	.110
b. No work/ job available in your field of study	23.1%	21.3%	18.2%	25.0%	18.4%	
l. Company required/ paid for it^	9.7%	8.7%	8.4%	12.0%	13.3%	

Reported is the percentage of the respondents who indicated “major reason”
n.s.; * p <.01; ^ p < .05; others: p <.001

Table 22: When did you decide that you would further your education after college graduation?

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees
Before entering program	55.8%	32.6%	26.9%	30.9%	35.1%
At the start of the program	6.4%	4.7%	5.8%	3.2%	2.7%
During the program	23.4%	42.1%	48.7%	33.5%	52.7%
After completion of the program	14.4%	20.7%	18.6%	32.5%	9.5%

The chi-square statistic is significant, p <.001. phi = .285

Table 23: How related is your current program to the college program at the college?

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees
Not related at all	12.4%	11.2%	8.6%	12.5%	14.3%
Somewhat related	34.9%	31.3%	30.8%	40.3%	29.9%
Very related	52.7%	57.5%	60.6%	47.2%	55.8%

The chi-square statistic is significant, p <.001.

Table 24:Please estimate how much of your current program you have or will receive credit for.

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees
None	20.0%	14.1%	8.7%	27.5%	40.6%
Less than half a year	21.0%	10.9%	6.8%	13.2%	10.9%
About half a year	12.1%	8.7%	6.1%	4.9%	0.0%
One year	27.7%	23.5%	12.5%	35.6%	9.4%
One to two years	5.7%	8.8%	13.8%	6.8%	1.6%
Two or more years	10.1%	27.3%	35.6%	9.0%	15.6%
More than 2 years	3.4%	6.7%	16.5%	2.9%	21.9%

The chi-square statistic is significant, p <.001. phi = .381

Table 25:When did you find out whether you were receiving credit for your college program?

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees
With offer of admission	10.8%	15.4%	19.9%	8.5%	23.6%
At or before registration	23.1%	31.6%	36.7%	20.7%	12.7%
After registration	29.0%	24.6%	23.8%	23.3%	10.9%
Have not heard yet	5.2%	3.8%	1.9%	4.8%	1.8%
Have not applied for credit yet	9.9%	6.4%	4.5%	15.1%	9.1%
You are not applying for credit	21.9%	18.1%	13.1%	27.5%	41.8%

The chi-square statistic is significant, p <.001. phi =.210

Table 26: Relative to what you expected, the amount of credit you received was....

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees
Less than expected	14.0%	18.5%	28.4%	15.6%	11.5%
The same as expected	68.0%	62.8%	59.9%	71.4%	69.2%
More than expected	18.0%	18.6%	11.8%	12.9%	19.2%

The chi-square statistic is significant, p <.001. phi = .132

Table 27: Do you think you would have been accepted into your current program without graduating from college first?

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees
Yes	48.1%	49.3%	47.9%	54.4%	36.0%
No	51.9%	50.7%	52.1%	45.6%	64.0%

The chi-square statistic is significant, p <.01.

Table 28: Overall, how satisfied are you with the transition experience from college to your current program?

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees
Very dissatisfied	1.2%	1.4%	1.7%	1.4%	0.0%
Dissatisfied	2.3%	3.8%	6.5%	3.1%	0.0%
Neither satisfied nor dissatisfied	7.1%	10.0%	10.9%	9.6%	14.1%
Satisfied	47.1%	47.9%	48.9%	49.4%	43.7%
Very satisfied	42.3%	36.9%	31.9%	36.5%	42.3%

The chi-square statistic is significant, p <.001. phi = .105

Table 29: And, overall, how satisfied are you with your academic preparation for your current program of study?

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees
Very dissatisfied	.7%	.9%	1.5%	.6%	0.0%
Dissatisfied	3.2%	3.2%	4.5%	2.3%	4.1%
Neither satisfied nor dissatisfied	5.9%	6.9%	7.4%	8.3%	11.0%
Satisfied	51.2%	52.7%	51.8%	53.5%	39.7%
Very satisfied	39.0%	36.3%	34.7%	35.3%	45.2%

The chi-square statistic is significant, p <.01.

Employment status

Table 30: During the reference week were you …

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees
Employed or self-employed, including looking for another job	78.9%	80.4%	81.5%	79.2%	84.5%
Not employed, but had accepted a job to start shortly	1.3%	1.4%	1.5%	1.2%	2.0%
Not employed, but looking for a job	14.2%	14.8%	14.1%	17.1%	11.9%
Not employed, but not looking for a job	5.6%	3.4%	2.9%	2.5%	1.7%

The chi-square statistic is significant, p <.001.

Table 31:How many jobs did you have during that week?

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees
One job	84.6%	82.0%	83.1%	86.0%	80.2%
Two jobs	13.4%	15.4%	14.3%	11.8%	16.6%
Three jobs	1.6%	2.3%	2.1%	1.9%	2.4%
Four jobs or more	.4%	.3%	.5%	.3%	.7%

The chi-square statistic is significant, p <.001.

Table 32: Q15-Were you/will you be…

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees
A permanent employee	66.9%	63.1%	61.9%	57.5%	57.4%
Self-employed	2.7%	2.4%	3.0%	3.3%	3.3%
Freelance	.5%	.9%	2.0%	2.0%	4.2%
A contract employee	7.4%	13.4%	17.5%	23.5%	23.2%
A temporary/occasional or on-call employee	15.1%	15.4%	11.1%	10.9%	8.3%
Seasonal or summer employee	7.3%	4.6%	4.5%	2.7%	3.7%
Elect-to-work employee (volunteered)	.1%	.1%	.0%	.1%	0.0%

The chi-square statistic is significant, p <.001. phi = .165

Table 33: Was this job related to the college program that you graduated from?

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees
Yes	44.1%	54.2%	55.4%	51.0%	52.6%
Yes, partially	11.3%	13.7%	15.6%	17.4%	21.0%
No	44.6%	32.2%	28.9%	31.6%	26.4%

The chi-square statistic is significant, p <.001. phi = .111

Table 34: Q21-To what extent did the skills you developed during college help you get your job?

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees
Not at all helpful	10.0%	6.5%	6.1%	6.8%	4.9%
Not helpful	6.9%	5.8%	5.1%	6.3%	4.6%
Neither helpful or unhelpful	8.3%	7.1%	7.6%	9.2%	9.2%
Helpful	43.7%	45.6%	45.0%	44.8%	49.2%
Extremely helpful	31.1%	35.0%	36.2%	33.0%	32.0%

The chi-square statistic is significant, p <.001.

Table 35: Average annual salaries

	average annual salary
Certificates	28421.75
Diplomas	30006.51
Advanced diplomas	34607.93
Degrees	35177.37
Graduate certificates	36427.27

ANOVA was used to test the group difference. The F-value was significant, p < .001

Table 36: Overall satisfaction with college education

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees
Q33. Overall satisfaction with college preparation for employment	82.9%	84.0%	82.1%	80.4%	80.9%
Q34. Satisfaction with usefulness of college education in achieving goals after graduation	83.2%	79.9%	79.2%	75.8%	75.3%

Table 37: Inclination to recommend the program and the college to others

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees
Q35. Would recommend the program	90.4%	87.8%	88.6%	84.9%	88.8%
Q37. Would recommend the college	96.7%	94.8%	94.6%	93.5%	93.4%

6 – Employer Survey

Table 38: Employers' satisfaction with graduates' overall college preparation for employment

	Certificates	Diplomas	Advanced diplomas	Graduate certificates	Degrees
Dissatisfied or very dissatisfied	2.5%	3.7%	1.5%	.8%	4.6%
Neither satisfied nor dissatisfied	7.3%	5.7%	4.6%	2.8%	3.1%
Satisfied or very satisfied	90.2%	90.6%	93.8%	96.4%	92.3%

The chi-square statistic is significant, p < .01. phi = .107