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The State of Entrepreneurship Education in Ontario's Colleges and Universities

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Table of Contents

- Executive Summary5
- 1. Introduction7
- 2. Research Questions and Methodology9
 - 2.1 Phase One: Environmental Scan.....9
 - 2.2 Phase Two: The Survey 10
- 3. Findings and Analysis11
 - 3.1 Courses and Programs 11
 - 3.2 Extracurricular Opportunities 20
 - 3.3 Program Operation 24
 - 3.4 Evidence on Assessment 30
- 4. Conclusions.....37
- References40

List of Figures

Figure 1: Faculties Hosting Entrepreneurship Education Courses in Universities	14
Figure 2: Number of College Entrepreneurship Courses by Associated Credential	14
Figure 3: Most Common College Credentials with Entrepreneurship Course(s) Requirements	15
Figure 4: Types of Extracurricular Entrepreneurship Programs at Ontario Universities.....	23
Figure 5: Types of Extracurricular Entrepreneurship Programs at Ontario Colleges	23
Figure 6: Faculties Overseeing Extracurricular Entrepreneurship Programs at Universities	24
Figure 7: Year of Establishment of Curricular and Extracurricular Programs.....	25
Figure 8: Sources of Funding by Program Type.....	25
Figure 9: Number of Faculty Members Involved by Program Type	26
Figure 10: Annual Operating Budget by Program Type.....	27
Figure 11: Duration of Extracurricular Programs	28
Figure 12: Number of Student Participants by Program Type	28
Figure 13: Breakdown of Participant Types by Program Type	29
Figure 14: Participation Fee Requirement for Extracurricular Programs.....	30
Figure 15: Importance Ratings of Program Goals for Curricular Programs.....	32
Figure 16: Importance Ratings of Program Goals for Extracurricular Programs	32
Figure 17: Program Evaluation Mechanisms by Program Type	33
Figure 18: Locus of Responsibility for Coordinating Evaluation Processes by Program Type.....	34
Figure 19: Program Evaluation Criteria Being Used by Program Type	35
Figure 20: Importance Ratings of Evaluation Criteria for Curricular Programs	36
Figure 21: Importance Ratings of Evaluation Criteria for Extracurricular Programs.....	37

List of Tables

Table 1: Number of Entrepreneurship Courses in Ontario Colleges and Universities	12
Table 2: Most Frequent Sub-Topics of University Entrepreneurship Courses	13
Table 3: Numbers of Entrepreneurship Courses Offered in Colleges by Program Topic.....	16
Table 4: Most Frequent Sub-Topics of College Entrepreneurship Courses	17
Table 5: University Entrepreneurship Credentials Offered	17
Table 6: Entrepreneurship Centres and Hubs at Universities and Colleges	19
Table 7: Entrepreneurship Personnel at Colleges and Universities	20
Table 8: Mean Importance Ratings of Program Goals by Program Type.....	31
Table 9: Mean Importance of Evaluation Criteria by Program Type.....	36

Executive Summary

The purpose of this study was to identify how entrepreneurship education is delivered in Ontario colleges and universities. In Ontario, as in the rest of Canada, the increase in the number of entrepreneurship courses at universities and colleges, and the concurrent popularization and maturation of entrepreneurship programming, contribute to fostering entrepreneurial skills and mindsets, and the creation of businesses. The overall aim of this report is to inform debate and decision-making on entrepreneurship education through a mapping and assessment of existing programs in the province.

Entrepreneurship is the process of creating and implementing innovative ideas to address economic opportunities or social problems, whether that is through enterprise creation, improved product development or new a mode of organization (Volkman et al., 2009). Research in recent decades has indicated that the quantity of entrepreneurial activity is a critical determinant of the economic vitality of industries, communities, regions and countries (Audretsch, 2007; Florida, 2002; Hart, 2003). Echoing trends at the federal level, provincial policy in Ontario has made supporting entrepreneurs and providing entrepreneurial education opportunities a priority, generally under the banner of employment, innovation and economic development goals (Ministry of Training, Colleges and Universities, 2012; Ontario, 2013; Ontario, 2012).

Three main research questions guided this study: How have postsecondary institutions defined “entrepreneurship” in the programs and initiatives they offer that purport to teach entrepreneurship? What are the range and type of programs and initiatives that aim to teach entrepreneurship skills? How are institutions measuring the impact of such programs and initiatives? This study was conducted in two phases. The first phase consisted of a systematic scan of university and college websites to identify all of the entrepreneurship education programs, courses and other opportunities currently offered within the province’s postsecondary institutions. The second phase consisted of a web-based survey questionnaire sent to faculty and staff responsible for the management of these programs and initiatives.

Consistent with previous research, the findings indicate that entrepreneurship education in the province’s postsecondary institutions is in a state of flux, with an overall diversification of curricular and extracurricular opportunities available to Ontario students. Delivery modes, target audiences, objectives and evaluation mechanisms exhibit remarkable variety across institutions and even within institutions among the numerous organizational units that may now offer entrepreneurship training or experiences in one form or another.

Many for-credit college and university programs and initiatives linked to entrepreneurship intend to facilitate the learning of key skills expected to be important for successful entrepreneurship. The assumption underlying such efforts is that at least some of the components that lead to successful entrepreneurship are transferable via classroom instruction and that the effectiveness of such approaches can be measured using tools and strategies that are also used for other types of curriculum-based teaching and learning. However, much of the growth of the wide range of extracurricular entrepreneurship programming in the province might be at least partially attributed to the belief that in addition to skills that can be learned in a classroom, would-be entrepreneurs benefit from – and perhaps even require – more varied and experiential learning opportunities. Initiatives that provide hands-on knowledge of launching new businesses, access to business networks, and that enhance attitudes that foster the identification of entrepreneurial opportunities are emerging as important components of institutional strategies to generate entrepreneurship. In terms of resources, these new types of initiatives run the gamut from entrepreneur-student mentoring programs without budgets, operated on a volunteer basis, to student-business incubators that may cost hundreds of thousands of dollars annually and rely on private, public and philanthropic financing.

One of the main contributions of this study is that it provides evidence of the range of characteristics of programs in the province that purport to teach entrepreneurship. Both classroom-based and experiential learning models are flourishing in a variety of venues, from college campuses in relatively remote

communities to universities in the province's densest cities. Extracurricular activities seem to have increased substantially in recent years. This group of initiatives consists of a diverse set of programs and activities including: business incubators and accelerators; student residences, workspaces and mentoring programs emphasizing and encouraging entrepreneurial behaviour; internships and co-op placements that allow students to experience working in start-ups; competitions and awards for seed funding or business plans; and an array of speaker series, workshops and networking events that are engineered to support entrepreneurial learning and culture.

Furthermore, the findings suggest that there has been a parallel expansion and diversification of formal entrepreneurship-related offerings in university and college curricula. At the graduate and undergraduate level, there has been a proliferation of entrepreneurship majors, minors, concentrations, options, foci and specializations. For those not pursuing a degree, numerous diplomas, certificates and other credentials are now available that either focus on entrepreneurship or include a substantive entrepreneurship component. The development of such a panorama of programming options in Ontario is consistent with recent recommendations from the burgeoning literature on the topic.

1. Introduction

Entrepreneurship has been taught at universities for over a century, from intensive business and technology training seminars for the self-employed farmers of the mid-to-late nineteenth century, to the first dedicated university entrepreneurship course for business students one hundred years later (Katz, 2003). However, over the past three decades a series of new social and economic drivers has brought entrepreneurship education to the forefront of the agendas of postsecondary institutions and public policymakers. Although the teaching of entrepreneurship emerged in earnest during the 1970s among a handful of universities, today it is not uncommon to find at least one entrepreneurship education course at almost any university or college (Kuratko, 2014).

The purpose of this study was to identify how entrepreneurship education is delivered in Ontario colleges and universities. In Ontario, as in the rest of Canada, the increase in the number of entrepreneurship courses at universities and colleges, and the concurrent popularization and maturation of entrepreneurship programming, have given rise to campus initiatives intent on fostering the creation of businesses by current students, alumni and other community members. This movement is supported by recent shifts in higher education policy that emphasize the promotion of entrepreneurship and by the inclusion of additional focus on entrepreneurship in a handful of college and university strategic mandate agreements. Nevertheless, little is known about the current state and nature of entrepreneurship education in, particularly in relation to extracurricular opportunities. The overall aim of this report is to inform debate and decision-making on entrepreneurship education through a mapping and assessment of existing programs in the province. Our analysis of the entrepreneurship education opportunities available to postsecondary students in the province acknowledges common aims and practices while identifying differences among existing programs and offerings.

Our framework for this research recognizes that a variety of approaches currently exist to provide entrepreneurship education. Even within the same postsecondary institution, a number of divergent conceptualizations of entrepreneurship and of how to provide entrepreneurship education may coexist. Thus, this project first considered how different actors in postsecondary institutions have chosen to define entrepreneurship in the programs they offer that purport to teach it. Next, identifiable entrepreneurship education programs in Ontario were profiled and information was collected on key characteristics such as intended audience, faculty affiliation, duration and cost. Finally, special emphasis was placed on taking stock of the efforts currently being made to evaluate the impact of entrepreneurship education programs.

Generally speaking, entrepreneurship is the process of creating and implementing innovative ideas to address economic opportunities or social problems, whether through enterprise creation, improved product development, or a new mode of organization (Volkman et al., 2009). Research in recent decades has indicated that entrepreneurial activity is a critical determinant of the economic vitality of industries, communities, regions and countries (Audretsch, 2007; Florida, 2002; Hart, 2003). As such, many public policymakers have made the promotion of entrepreneurship a priority (e.g., European Commission, 2008; Jonathan, 2008; OECD, 2009). In Canada, policy reports such as that by the Competition Policy Review Panel have indicated the importance of “entrepreneurial culture and ambition” for national competitiveness (Competition Policy Review Panel, 2008, p. 25) and have argued that the government can play a role in increasing the number of entrepreneurs by providing access to resources such as entrepreneurship education and entrepreneurship centres (Industry Canada, 2010).

Echoing these trends at the federal level, provincial policy in Ontario has made supporting entrepreneurs and providing entrepreneurship education opportunities a priority, generally under the banner of employment, innovation and economic development goals (Ontario, 2013; Ministry of Training, Colleges and Universities, 2012; Ontario, 2012). Recent developments include the following:

- In 2013, the Ontario Government committed to encouraging entrepreneurship by directing \$20 million of the Youth Jobs Strategy to support university or college campus-based business accelerators and other on-campus entrepreneurship activities. One of the stated goals of this new funding is to “build the most entrepreneurial post-secondary system in North America” (Ontario, 2013, p. 4). As a result, two programs have been created to provide financial support for Campus-Linked Accelerators (CLAs) and On-Campus Entrepreneurship Activities (OCEAs) in universities and colleges.
- Later in the year, Ontario’s Differentiation Policy Framework for postsecondary education reinforced the importance of entrepreneurial activity as a component used to assess the efforts of colleges and universities, and suggested it as a means by which some campuses may distinguish themselves from others (Ministry of Training, Colleges and Universities, 2013). The framework identifies promoting a culture of entrepreneurship as a way to support job creation, innovation and economic development. The framework also recognizes that entrepreneurial teaching and learning may be another line of institutional differentiation.

In Canada, the number of entrepreneurship courses offered at universities grew from 72 in 1979 to 446 by 2008 (Menzies, 2009). Most universities in Canada now offer at least one course in entrepreneurship (Menzies, 2009; Industry Canada, 2010). At least some universities in Ontario have offered entrepreneurship education since the 1970s. Most information available on entrepreneurship education in Ontario comes from an inventory of university courses and programs composed by Brock University Professor of Management Teresa Menzies for the John Dobson Foundation in 1999, 2004 and 2009, in addition to two studies of entrepreneurship centres in Canada completed by the same author in 2000 and 2009.

Accompanying the rise in course offerings, universities in Canada have introduced entrepreneurship degrees, certificates and specialization programs. By the middle of the 1980s, there were at least two programs offering an entrepreneurship specialization in Canada, at York University and the University of Calgary (McMullan & Long, 1987). In 2004, six universities in Ontario had entrepreneurship programs (three undergraduate and three graduate), with most programs offered through business schools and, to a lesser extent, through faculties of engineering (Menzies, 2009).

Some entrepreneurship programs are coordinated and supported by entrepreneurship centres. The first entrepreneurship centre in Canada was created in the late 1970s, and many others were established throughout the 1980s and early 1990s (Menzies, 2000, 2009). By 2004, Ontario universities were home to a total of five entrepreneurship centers, most of which were affiliated with business schools (Menzies, 2004). Entrepreneurship centres serve as nodes connecting students with entrepreneurs and business owners in the wider community, act as champions for entrepreneurship on campus, and often provide coaching or mentoring to students in the development of business plans and pitches (Katz, Roberts, Strom & Freilich, 2014). According to Menzies (2000), funding from successful entrepreneurs and private foundations is largely responsible for the creation of university entrepreneurship centres at Canadian universities.

The emergence of dedicated entrepreneurship centers has given rise to a network of support services for students who are interested in entrepreneurship or in starting a business. A host of supports are now available to students on many campuses in the province, including experiential learning opportunities, the provision of consulting and mentoring for students who are starting businesses, networking events, entrepreneurs-in-residence, student entrepreneurship clubs, student-run venture capital funds, and a range of workshops and seminars (Menzies, 2000, 2009).

Despite the increased attention and funding devoted to entrepreneurship education, there does not appear to be any universal criterion for measuring the effectiveness of entrepreneurship programs at postsecondary institutions (Roberts, Hoy, Katz & Neck, 2014). Many evaluations of entrepreneurship education programs examine economic and social-psychological outcomes (Weber, 2012). Economic measures may include the number of businesses started during or after graduation, revenue generation and profitability, the number of

jobs created, and tax revenue impact (Carter & Collinson, 1999; Charney, Libecap & Center, 2000; McMullan, Chrisman & Vesper, 2001). Metrics for the effectiveness of programs may also be collected at the individual level. Student reports of greater inclination to start a business, measures of innovative behaviour, and improved competencies in a variety of skills tied to entrepreneurship may be used to evaluate whether programs for educating entrepreneurs are having the desired effect (Souitaris, Zerbinati & Al-Laham, 2007; European Commission, 2012; Ruhle, Mühlbauer, Grünhagen & Rothenstein, 2010; De Faoite, Henry, Johnston & van der Sijde, 2003; Roberts et al., 2014). The lack of standard evaluation protocols may be due in part to variations in conceptions of entrepreneurship (Gartner, 1990; Winkler, 2014). There is also little agreement about the competencies or capabilities that are most valuable for aspiring entrepreneurs to learn (Solomon, 2007).

According to a survey of business school deans and directors of entrepreneurship centres conducted by Industry Canada (2010), half of universities and colleges surveyed aim to foster entrepreneurial behaviours, skills and mindsets, while 23% have an institution-wide strategy to deliver entrepreneurship education. For most institutions, strategic policies to deliver entrepreneurship education stem from within specific faculties, largely those of business and engineering. In the Industry Canada report, about half of reporting institutions were identified as having no procedures for evaluating medium- and long-term effects of entrepreneurship courses. Surveyed institutions reported limited support for student start-ups, with 40% of reporting institutions with start-up support having no connections to the local investor community, and 61% without access to incubator facilities. The largest barrier to success was that entrepreneurship education depended on the efforts of one or only a few people.

This report builds on these previous studies of entrepreneurship education. Since the publication of these studies, a tidal wave of press releases, newspaper articles and reports (e.g., Council of Ontario Universities, 2013) regarding entrepreneurship education in Ontario suggests an increase in the popularity and diversity of the sector over the past few years, which has not yet been recorded systematically in the literature.

2. Research Questions and Methodology

Three research questions guided this study:

- 1) How have postsecondary institutions defined “entrepreneurship” in the programs they offer that purport to teach entrepreneurship?
- 2) What are the range and type of programs that purport to teach entrepreneurship skills?
How many students take these courses?
What are the trends in terms of what is being offered and how?
How much do these courses cost?
- 3) How are institutions measuring the impact of their programs that purport to teach entrepreneurship?
What outcome measures are they using to measure success?
What are the results/outcomes of these programs?

2.1 Phase One: Environmental Scan

The first phase of this project began in August 2013. The primary objectives of the first phase were to establish a broad overview of the range and types of programs in the province's universities and colleges that purport to teach entrepreneurship skills, and to collect contact information to use in administering the survey in Phase Two. The sampling frame consisted of all provincially funded universities and colleges in Ontario listed on the Ontario Ministry of Training, Colleges and Universities webpage (20 universities and 24

colleges).

The environmental scan involved a) performing keyword searches on major Internet search engines, b) using the search engines of each relevant institution's web page, and c) searching institutional timetables and catalogues for the 2013-2014 academic year. Keywords consisted primarily of "entrepreneurship" and "venture," but we also considered courses and programs dealing with small business enterprises.¹ This report focuses on "dedicated" entrepreneurship courses and programs, not courses and programs that include content about entrepreneurship. We exclude from our sampling frame continuing/part-time and distance education courses, non-recurring and non-permanent events and programs, student clubs or events by student clubs, and non-university entrepreneurship events in which university students participate. We also omitted university centres devoted to commercialization and/or innovation not exclusively dedicated to student entrepreneurship.

Phase One allowed the team to begin to address questions related to how postsecondary institutions define "entrepreneurship" through the programs they currently offer that purport to teach, foster and support entrepreneurship. This initial step also facilitated the construction of the sampling frame of potential survey recipients, as faculty and staff contact information was collected from relevant institutional webpages.

2.2 Phase Two: The Survey

Phase Two took place from October to December 2013 and was designed to capture publicly unavailable information regarding program enrolment, costs, duration, and how programs are evaluated. This phase of the research project used a web-based questionnaire to survey relevant university and college informants identified through Phase One of the project. The sampling frame for this phase included what we termed "entrepreneurship education program leaders" – the most senior identifiable representative in charge of each program identified in Phase One.

The online survey included a preliminary assessment (three questions) and a main survey of 13 questions (see Appendix D). The purpose of the preliminary assessment was to establish an overall profile of a program's home institution, type and name. The survey questionnaire contained a set of short- and long-answer questions inquiring about:

1. How many students participate in each type of entrepreneurship education offering (e.g., courses, workshops, etc.);
2. Trends in enrolment (course types, number of participants, participant degree and discipline, demographics, etc.);
3. Program costs;
4. Frameworks and procedures for evaluating programs;
5. The indicators used to evaluate program impact;
6. Who undertakes the measurement (e.g., the program staff itself, the home department, the technology transfer office); and
7. The results and outcomes reported.

Before the implementation of the survey, the instrument was piloted to ensure that respondents would

¹ Scholars have highlighted distinctions between entrepreneurship education and small business management education (Zeithaml & Rice, 1987; Gartner & Vesper, 1994); nevertheless, because the two concepts are often used interchangeably, and because entrepreneurship education often includes starting and then developing/growing a business, we included the term "small business" in our search parameters and then examined course descriptions in order to determine whether courses are aimed at starting or developing a business, or managing an ongoing business.

understand the questions in the way they were intended. In addition to piloting the questionnaire with three volunteers familiar with the topic, the research team conducted interviews with one university informant and one college informant to obtain detailed feedback on the instrument. After the pilot and finalization of the survey instrument, all university and college contacts were invited by email to complete the survey. The survey was delivered through FluidSurveys, an online application that is compliant with Canadian privacy and accessibility standards. While we intended to collect complete survey responses from all institutional contact persons, this proved a difficult goal to achieve.

Potential participants were sent up to four invitations between October and November 2013. The first round of invitations included emails to 109 individuals at all provincially funded universities and colleges connected to the entrepreneurship education courses and programs identified in the first phase of data collection. Most invited participants were clearly responsible for entrepreneurship education at their respective institutions, as indicated by their title or by serving as the contact for specific entrepreneurship courses and programs on their campus. For some courses and programs, predominantly at Ontario's colleges, we were unable to identify individuals with administrative responsibility over entrepreneurship programming. In these cases, we added the contact information of those individuals or offices we deemed to be best positioned to respond to the survey based on title or administrative proximity to the entrepreneurship courses and programs of interest.

Throughout the next rounds of invitations, we modified our list of potential participants based on feedback from the individuals contacted in Phase One. Unavailable individuals were removed from our list (n=5), while other individuals were added based on the recommendations of our initial contacts (n=4). For a few universities and colleges we were notified that the institution had selected one invited participant to report on all courses and programs, and so we removed individuals not designated to report on behalf of the institution from our list (n=18). A total of 40 individuals completed the survey, reporting on 93 courses and programs from 31 universities and colleges. After cleaning survey responses for duplicates and programs excluded from our sample frame, we were left with 54 items from 13 universities and 10 colleges. Some respondents skipped particular questions on the survey, thus results are presented in the findings section with the number of respondents provided on a per-question basis.

3. Findings and Analysis

Phase One of the study resulted in a synthesis of publicly available information on entrepreneurship education programs offered in the province. This synthesis is provided below in subsections 3.1 and 3.2. Subsections 3.3 and 3.4 present the findings from Phase Two of the study, which surveyed entrepreneurship education program leaders.

3.1 Courses and Programs

At universities, there are more than twice as many undergraduate entrepreneurship courses as there are graduate entrepreneurship courses.

In total, 72 undergraduate entrepreneurship courses and 42 graduate courses were identified within Ontario's universities.² Thirty-nine of the undergraduate courses were required, while 33 were optional. For graduate courses, 34 were required courses, while 8 were optional. While there are a little more than twice as many undergraduate courses as graduate courses in entrepreneurship, the population of undergraduate students in the province is much larger. According to available estimates, the ratio of undergraduate to graduate students

² Figures include courses required by programs in 2013-2014 and optional courses offered during the 2013-2014 academic year.

in the province's universities is more than seven to one.³

There is a slightly larger number of entrepreneurship courses within Ontario's colleges than its universities.

There are 174 entrepreneurship courses within colleges and 148 within universities. 163 college courses were required parts of programs, while 11 courses were optional.

In absolute terms, our investigation found there to be more entrepreneurship courses in Ontario colleges than universities. A total of 174 entrepreneurship education courses were identified among the province's 24 publicly supported colleges and only 114 (undergraduate and graduate) courses among its 20 universities. However, relative to the sizes of the populations served by the province's colleges and universities, the availability of entrepreneurship courses is greater in universities. When taken together, undergraduate and graduate entrepreneurship courses in universities are offered at a rate of approximately one course for every 2,600 students. Based on estimates that place the total number of students and clients served by Ontario colleges at roughly 600,000 (Colleges Ontario, 2011), there are 3,450 students per entrepreneurship course in the college sector. When university-based undergraduate courses and students are considered separately from their graduate-level equivalents, it becomes evident that the higher rate of students per course offering at universities is driven primarily by the prevalence of graduate entrepreneurship courses, as depicted in Table 1 below.

Table 1: Number of Entrepreneurship Courses in Ontario Colleges and Universities

Institution Type	Students/Clients	Entrepreneurship Courses	Students per Course
Colleges	600,000	174	3,448
Universities – Undergraduate	336,637	72	3,300
Universities – Graduate	47,168	46	1,025

There is a broad range of entrepreneurship courses being offered at universities in Ontario.

The three most popular course topics for undergraduate entrepreneurship courses are introduction/principles of entrepreneurship, new venture creation/development, and entrepreneurship strategy. As the name suggests, courses under the introduction/principles of entrepreneurship topic area are courses providing an introduction to entrepreneurial attitudes, behaviours and processes. New venture creation and development courses also reflect the topic area title in that they focus on the processes of business entry and expansion.

Entrepreneurship strategy courses center on developing entrepreneurial skills, such as opportunity recognition and creativity. Technological entrepreneurship and finance for entrepreneurs are popular course topics for graduate courses. Technological entrepreneurship focuses on technology-based business ventures, and finance for entrepreneurs includes such subjects as venture capital, fundraising and money management.

³ According to the Council of Ontario Universities (COU), most recent data indicate that in 2009 there were 336,637 undergraduate students and 47,168 graduate students enrolled in Ontario universities (Council of Ontario Universities, 2013).

Table 2: Most Frequent Sub-Topics of University Entrepreneurship Courses⁴

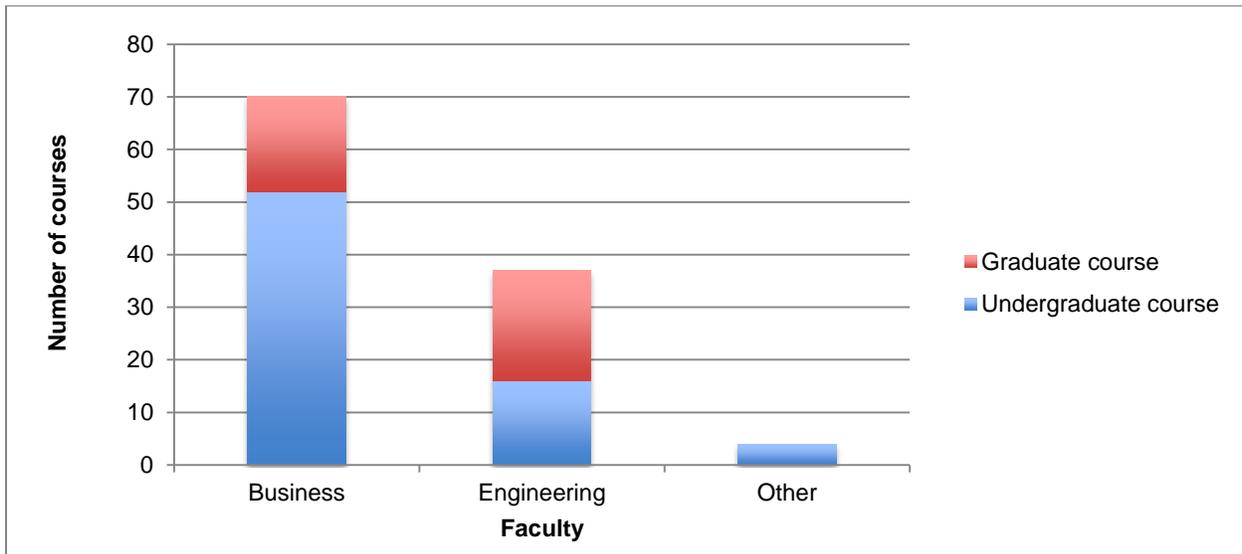
Undergraduate	Frequency	Graduate	Frequency
Introduction/Principles of entrepreneurship	13	Technological entrepreneurship	6
New venture creation and development	11	Finance for entrepreneurs	6
Entrepreneurship strategy	8	Entrepreneur strategy	3
Finance for entrepreneurs	7	Introduction/Principles of entrepreneurship	4
Small/family business entrepreneurship	6	Social entrepreneurship strategy	4
Business plan development	4	Innovation Management	3
Entrepreneurship management/leadership	3	New venture creation	4
Innovation management	3	Introduction/Principles of entrepreneurship	2

In universities, business faculties host most entrepreneurship courses.

The majority of entrepreneurship courses at the undergraduate level are offered through faculties of business. Only one university (Ryerson) has a department (within the Faculty of Business) dedicated to entrepreneurship. Engineering faculties also offer a sizable number of courses. Other faculties and administrative units offering entrepreneurship courses include an arts and culture management program, a faculty of design, a faculty of science and a computer science department. Graduate entrepreneurship courses are almost equally divided between engineering and business faculties, although engineering faculties offered slightly more courses, primarily due to the courses being required for entrepreneurship graduate degree programs.

⁴ See Appendix A for further details.

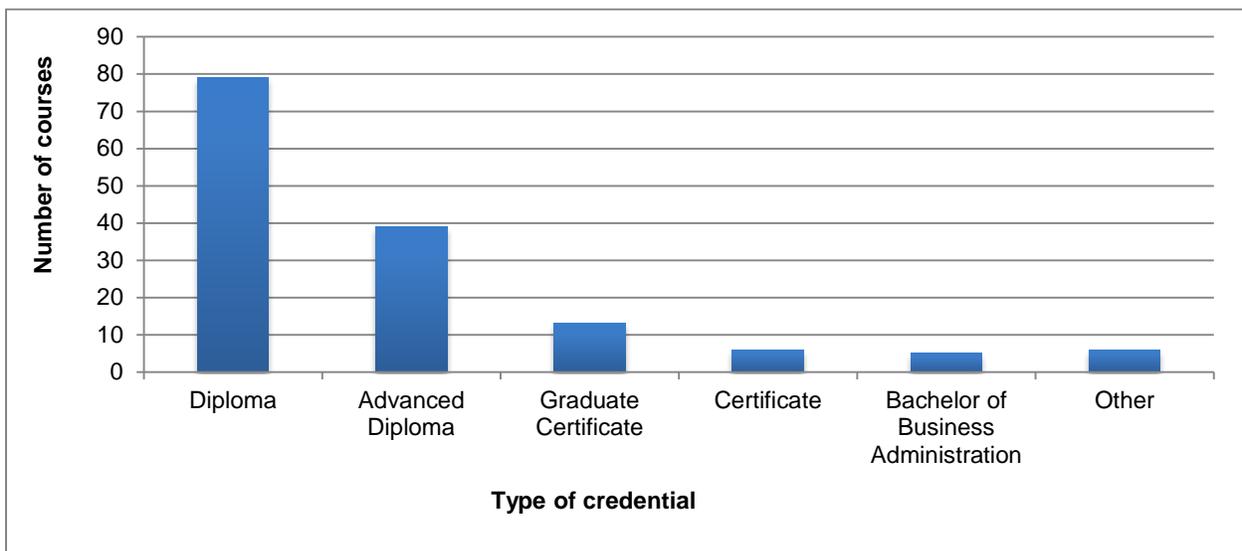
Figure 1: Faculties Hosting Entrepreneurship Education Courses in Universities



Colleges offer entrepreneurship courses through 124 credential programs.

Most entrepreneurship courses within the colleges are offered in diploma programs, followed by advanced diploma, graduate certificate, certificate, and bachelor of business administration programs. Other credential types include bachelor of applied business (2), bachelor of commerce, bachelor of applied arts and bachelor of applied information science.

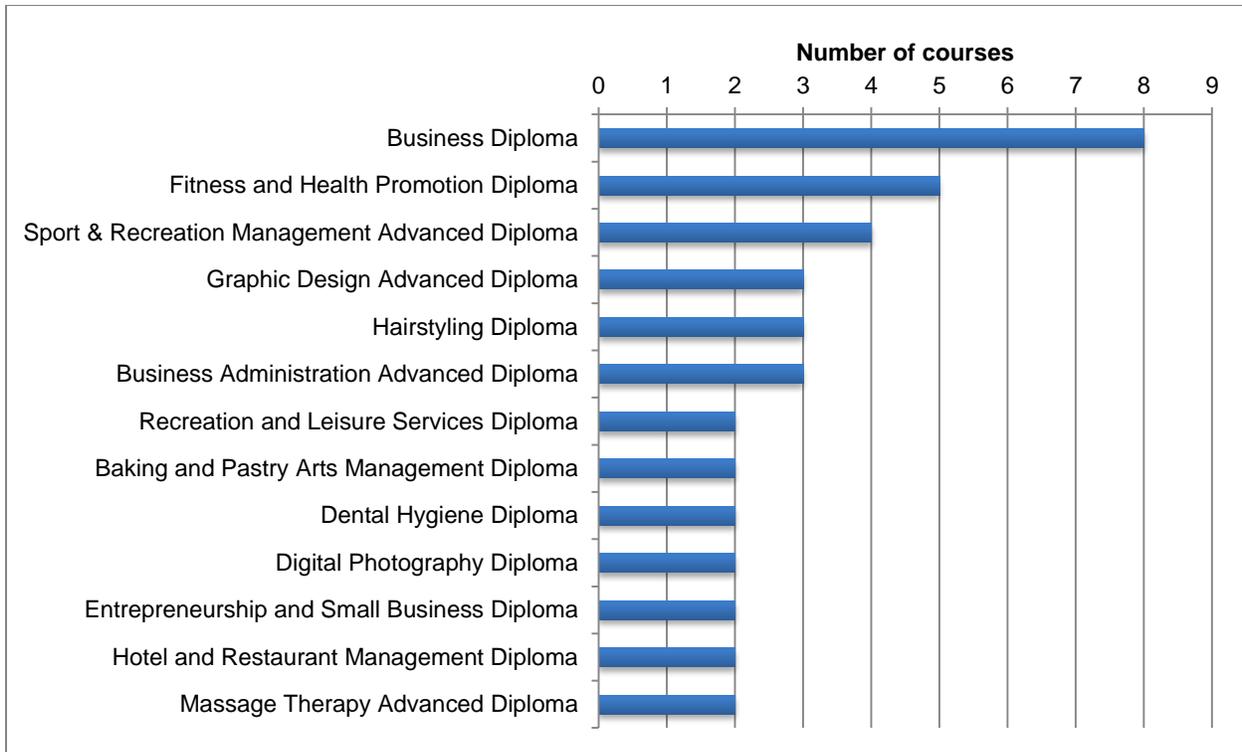
Figure 2: Number of College Entrepreneurship Courses by Associated Credential



College programs with integrated entrepreneurship course requirements that are offered by more than one college are listed in Figure 3 below. While the more generic business diploma is the most common credential

with an entrepreneurship course requirement offered across the province's colleges, a number of specialized programs also integrate entrepreneurship courses.

Figure 3: Most Common College Credentials with Entrepreneurship Course(s) Requirements



Business and management programs host most college entrepreneurship courses.

Programs with the greatest number of entrepreneurship courses are those related to business (general), small business, and entrepreneurship. In addition to entrepreneurship courses that are required components of programs leading to a credential, many elective courses are offered through programs from 17 topical areas.

Table 3: Numbers of Entrepreneurship Courses Offered in Colleges by Program Topic

Program Topic Area	Number of Courses	Number of Colleges
Business (General)	63	19
Small business	25	3
Entrepreneurship and small business	17	3
Hospitality and tourism	10	8
Esthetics and spa management	10	7
Mechanical technician	9	4
Sports and recreation	8	7
Health and fitness	7	6
Photography	5	4
Graphic design	4	3
Computer studies	3	3
Culinary	3	3
Dental hygiene	3	2
Horticulture/agriculture	3	1
Film and media	2	2
Architectural technician/technology	2	2
Construction	2	1

There is a broad range of entrepreneurship courses being offered at colleges in Ontario.

The three most offered course topic areas are introduction to/principles of entrepreneurship, business plan development, and small business. The courses under the introduction to/principles of entrepreneurship topic area provide an introduction to entrepreneurial attitudes, behaviours and processes. Business plan development courses are similar to introduction to/principles of entrepreneurship courses and new venture creation courses, but are structured around the creation of a business plan. Small business courses give attention to issues relevant to small business creation, management and also self-employment.

Table 4: Most Frequent Sub-Topics of College Entrepreneurship Courses⁵

College Course Topic Area	Frequency
Introduction to/Principles of entrepreneurship	28
Business plan development	15
Small business	13
Marketing for entrepreneurs	10
New venture creation	8
Social entrepreneurship	7
Global entrepreneurship	7

Universities offer a wide array of entrepreneurship specializations.

Universities offer a wide array of entrepreneurship specializations using a variety of terminology. At the undergraduate level, we identified 16 programs offered across 13 universities, whether in the form of a minor, major, concentration, area of emphasis, certificate or option. At the graduate level, we identified 16 entrepreneurship specialization programs across 10 universities (Table 5).

Table 5: University Entrepreneurship Credentials Offered

Undergraduate Degree Programs	Faculty	n
Entrepreneurship concentration	Business	2
Minor in entrepreneurship	Business	1
Entrepreneur certificate program	Business	1
The "Entrepreneurship Stream"	Engineering	1
Craft entrepreneur-industrial design major	Material Art & Design	1
Game development and entrepreneurship major	Business & IT	1
Entrepreneurship option	Business	2
Entrepreneurship major	Business	1
Entrepreneurship and innovation minor	Business	1
Certificate in entrepreneurship	Engineering	2
Technological entrepreneurship certificate	Engineering	1
Strategy and entrepreneurship area of focus	Business	1
Specialization in engineering innovation and entrepreneurship	Engineering	1
MASc/MEng in technology innovation management	Independent	1
Master's degree in engineering entrepreneurship and	Engineering	1

⁵ See Appendix A for further information.

Undergraduate Degree Programs	Faculty	n
innovation		
Master's degree in technology entrepreneurship and innovation	Engineering	1
Master of Science in management, emphasis on entrepreneurship and innovation	Business	1
Graduate diplomas (E-business, E-commerce, and technology project management) with an entrepreneurship option	Engineering	1
MBA specialization in entrepreneurship and innovation	Business	1
Entrepreneurship, leadership, innovation and technology in engineering certificate	Engineering	1
Master of business, entrepreneurship and technology	Engineering	1
Graduate diploma in business and entrepreneurship	Engineering	1
PhD in business administration (general management stream includes entrepreneurship)	Business	1
Certificate in entrepreneurship	Business	1
MBA in entrepreneurship	Business	1
Executive master's in technology management	Business	1
MBA, entrepreneurial and family business studies specialization	Business	1
MBA, entrepreneurial studies specialization	Business	1

Most specialization programs are offered to students within business or engineering faculties.

In general, university entrepreneurship programs are offered in faculties of business and, to a lesser extent, in faculties of engineering. Seven undergraduate specializations are offered in business programs for business students, four are offered in engineering programs for engineering students, and two are for students enrolled in specialty programs (Craft entrepreneur-industrial design major and Game development and entrepreneurship major). Three programs are open to non-business students through a business school in the form of an entrepreneurship certificate and two minors in entrepreneurship.

Table 6: Entrepreneurship Centres and Hubs at Universities and Colleges

Year	Entrepreneurship Centres and Hubs	Institution	Host Faculty
1998	Schlegel Centre for Entrepreneurship	Wilfred Laurier	Business
2002	Conrad Business, Entrepreneurship and Technology Centre	Waterloo	Engineering
2002	Queen's Centre for Business Venturing	Queen's	Business
2004	Xerox Centre for Engineering Entrepreneurship and Innovation	McMaster	Engineering
2006	Pierre L. Morrissette Institute for Entrepreneurship	Western	Business
2009	Co-operators Centre for Business and Social Entrepreneurship	Guelph	Business & Economics
2010	Brunsfeld Engineering Student Projects and Entrepreneurship Centre	Ottawa	Engineering
2012	Centre for Entrepreneurship (C4E)	Conestoga	Independent
2012	Imagination Catalyst	OCAD	Independent
2012	Henry Bernick Entrepreneurship Centre	Georgian	Independent
2013	Entrepreneurship Practice & Innovation Centre (EPICentre)	Windsor	Business
2014	Centre for Engineering Innovation and Entrepreneurship	Ryerson	Engineering

Other notable centres of entrepreneurship education include the North-western Ontario Innovation Centre, which moved to the campus of Confederation College in 2013; the Centennial College Centre of Entrepreneurship, which hosts the college's business incubator and also functions as a traditional business assistance centre; the University of Windsor's Law, Technology, and Entrepreneurship Clinic, which offers business law and intellectual property law advice to community and student entrepreneurs through its law students; and the Ryerson Entrepreneur Institute (2008), which leverages the efforts of the campus's ENACTUS student group by providing funding and administrative support to student entrepreneurs.

There are specialized roles supporting university and college entrepreneurship education and training.

Entrepreneurs-in-residence are experienced entrepreneurs who work with faculty, staff and students. These individuals mentor and advise student start-ups, and often serve as program consultants and help judge admissions/competitions. Some entrepreneurs-in-residence focus on supporting social entrepreneurs, but only one college codifies this role in a position of Social Entrepreneur-in-Residence. Other support positions include a special advisor for entrepreneurship to the university president and a faculty entrepreneurship coordinator within a faculty of engineering.

Table 7: Entrepreneurship Personnel at Colleges and Universities

	College	University
Chairs in entrepreneurship	1	6
Entrepreneur-in-residence/equivalent	3	23
Social entrepreneur-in-residence	1	0

3.2 Extracurricular Opportunities

Seventy-five extracurricular entrepreneurship activities – henceforth referred to as opportunities – were identified in Ontario's colleges and universities. 17 of those programs are offered by 8 colleges and 58 programs are available in 13 universities.

Extracurricular entrepreneurship programs are commonplace in many universities and colleges in Ontario, but they take on a variety of forms.

- Incubation

An incubator is an enterprise or facility that directly supports the early-stage development of new business ventures by providing things like office space, shared business or legal services, and other forms of business assistance (Hackett & Dilts, 2004). Characteristics of student incubators in Ontario often vary widely and may include a combination of access to mentors, office space, workspaces, business services, workshops, and other services or resources. Many host demonstration days (demo-day) in which participating ventures pitch their businesses to investors, entrepreneurs and/or an awards panel. At some, like Ryerson University's Digital Media Zone and the Velocity Garage at the University of Waterloo, aspiring entrepreneurs who have conceived of a product or service formally apply to join the incubator. Others, like Western's BizInc, are more informal, involving supervised spaces where students develop venture ideas at their own pace. Some incubator programs offer funding to student participants, while others leverage awards connected to campus entrepreneurship competitions and other campus-based funding opportunities. The Laurier Launchpad, Wilfred Laurier University's incubator located within the Community Hub in Kitchener, allows students to earn course credit for participation. Like the Laurier Launchpad, some incubators are located within local entrepreneurship/innovation centres; the University of Toronto Early Stage Technology program, which is partnered with MaRs Innovation, is another example. Accelerator programs often provide similar services and resources as incubators but focus on facilitating the development and growth of more advanced ventures. For the purposes of this report, programs self-identified as business accelerators are considered as part of the incubator category.

- Competitions

Competitions are processes during which students, most often in teams, present a venture idea before a panel of judges for the chance to win awards and cash prizes. A few competitions offer workshops and mentoring to successful applicants in preparation for the presentation. Most competitions are open to all students, although a few are intended for business students (with students from other disciplinary backgrounds often admitted on teams in which at least one student is from the host program). A couple of competitions are hosted in collaboration with local innovation and entrepreneurship centres, such as the program Durham Ideas Den, which is a partnership between Durham College, Trent University, and Community Innovations Lab in Oshawa.

- Workshop(s)

Workshops engage students in start-up activities. The aim is often skill development rather than venture creation. Examples include Conestoga College's Startup Students, a series of workshops that culminate with a fast-pitch competition, the Startup Challenge. Whereas Startup Students workshops occur throughout the year, the University of Ottawa's Startup Tune-Up is a one-day workshop that also serves as preparation for students seeking to apply to the university's summer incubation program, the Start-up Garage.

- Co-ops

Co-operative programs, or co-ops, include for-credit programs that allow students to work on their own projects with guidance from university faculty and entrepreneur mentors. The co-op may offer students many of the same opportunities as incubator programs, namely support by full-time professional staff, mentors, entrepreneurs and professionals, and access to workspace and workshops. The University of Waterloo's The Conrad Centre Enterprise Co-op is one notable example.

- Internships

Entrepreneurship-focused internship programs are specifically designed to place students in start-up companies. While internships in general continue to be popular experiential learning opportunities in colleges and universities, internship programs with an entrepreneurial focus are unique in that they seek to place students in early-stage firms with high growth potential and large probability of failure. Here, interns are exposed to the challenges and learning opportunities not available to those placed at large, well-established firms. Through the Impact Center at the University of Toronto, students may earn credit by working for a startup right on campus, whereas the Laurier Launchpad at Wilfred Laurier University and the Conrad Centres' Bridging Entrepreneurs to Students program at the University of Waterloo place student interns with seed and early-stage startup companies located in the local community.

- Mentorship

Mentorship programs connect students with entrepreneurs who advise students. Most extracurricular programs connect student entrepreneurs with mentors while also providing other education and training components. The Xerox Centre for Engineering Entrepreneurship and Innovation's Technical Mentorship Program at McMaster University is one such program that is available to students enrolled in the Centre's Master of Engineering Entrepreneurship and Innovation program, whereas the EPICentre mentorship program at the University of Windsor pairs successful student applicants with a mentor and funding.

- Residences

Residence programs focused on supporting entrepreneurship bring together like-minded undergraduate students, often with pre-existing inclinations towards entrepreneurship, to live in a shared residence facility for at least part of the duration of their program. Such residences provide a unique experience that combines academic and extracurricular programming based on the understanding that co-location of entrepreneurially inclined students may facilitate the creation of business ideas and entrepreneurial attitudes and culture. Ryerson University, the University of Waterloo and Wilfred Laurier University offer such programs through student housing services, the student success office and residence life, respectively.

- Workspaces

Workspaces are designated spaces for student to meet, collaborate and access technical equipment for the making of applications and prototypes. For instance, the University of Guelph's Business Innovation Zone houses classrooms and meeting spaces for use by entrepreneurship courses, workshops, and clubs, as well as for students developing a business idea or preparing and delivering their business pitch. Conestoga College's Great-West Life Enterprise Hotel also provides a common space open to student entrepreneurs, and includes a collection of donated software and devices available for student use.

- Awards/Funding

Awards and funding are campus-based grant competitions that provide seed money to selected applicants. At Humber College, the Humber Launch New Venture Seed Fund Competition gives students and recent graduates with startup ideas the chance to compete for up to \$10,000 in seed funding.

- Speaker Series

Speaker series, such as the Entrepreneurship Bridges Series at the University of Ottawa and the Entrepreneurship Hatchery's Speak Series at the University of Toronto, are regular lectures offered throughout the year by invited speakers. Such events seek to inspire a culture of entrepreneurship among students, to provide advice and to connect students with experienced entrepreneurs.

- Networking Events

Networking events are held with the purpose of bringing students, community entrepreneurs and even investors together. Although networking events are often offered through entrepreneurship centres, incubators and workshops, events such as Humber Launch's Entrepreneurial Mash and the Creative Destruction Lab's DemoCamp at the University of Toronto take place explicitly to create opportunities to connect students together with the broader entrepreneurship community.

Figure 4: Types of Extracurricular Entrepreneurship Programs at Ontario Universities

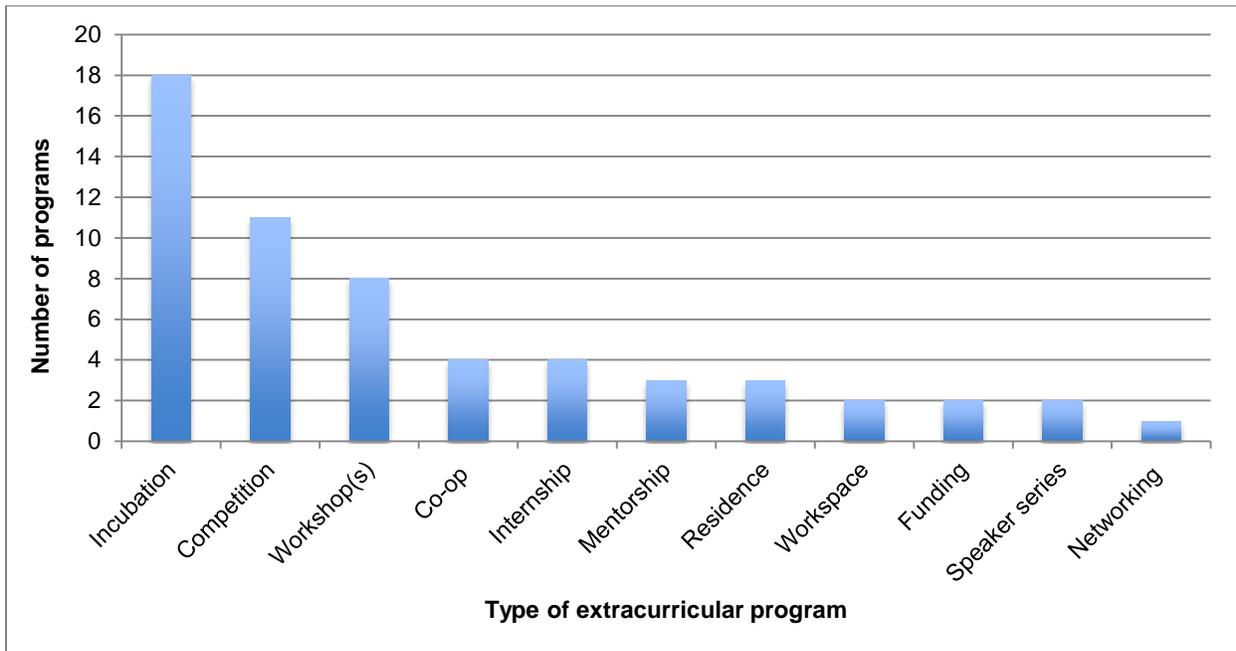
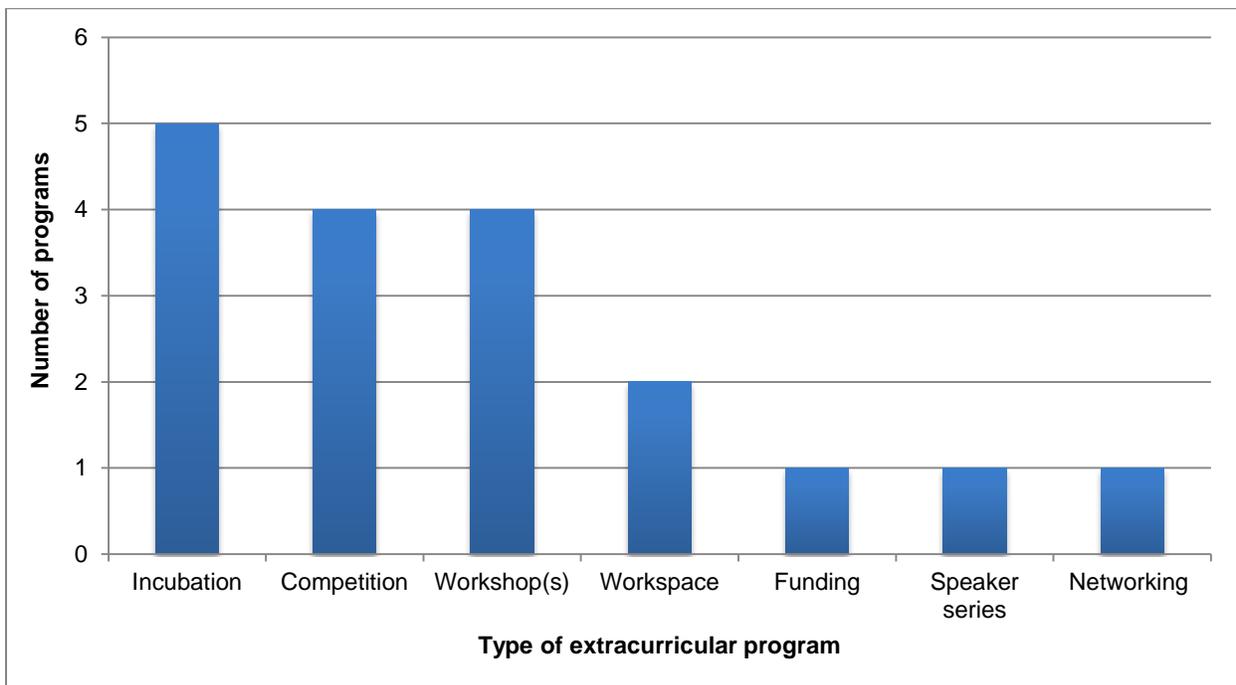


Figure 5: Types of Extracurricular Entrepreneurship Programs at Ontario Colleges

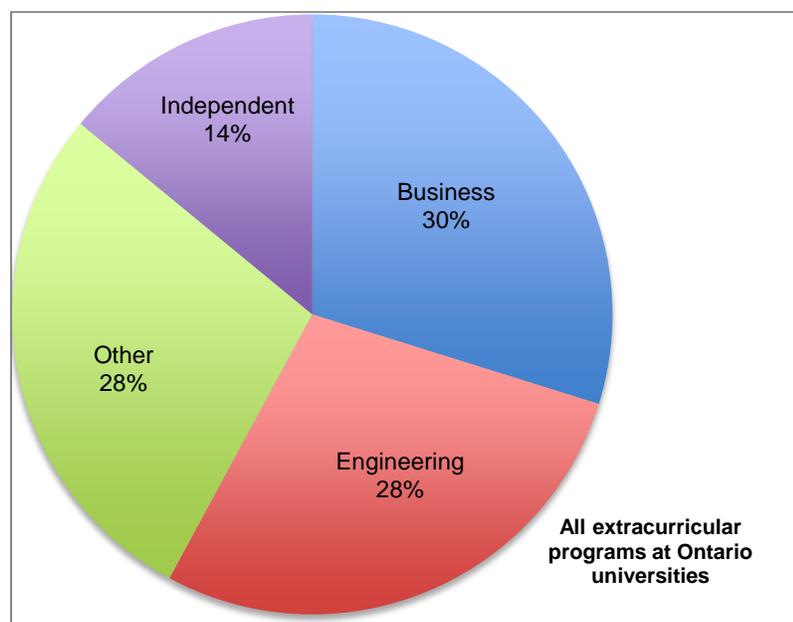


Extracurricular entrepreneurship programs are dispersed throughout universities.

Nearly two-thirds of the extracurricular programs at Ontario universities are offered through faculties of business and engineering. Of the 17 programs offered through business faculties, six are offered through

three different entrepreneurship centres, and two more are offered through an incubator program located within a business faculty. Of the 16 programs offered through engineering faculties, four are within two centres and two are within one incubator. Eight extracurricular entrepreneurship programs are themselves independent programs or centres and 16 are identified as “Other”, which includes: six programs hosted by the University of Waterloo’s Velocity, which is under the Student Success Office; three programs offered through two university “technology transfer offices”; two offered through residence life/housing services; one through a university student council, and another through a university’s career services; two in partnership with local innovation centres, such as Trent University’s partnership with the Community Innovations Lab in Oshawa to host Durham Ideas Den, which pairs mentors with student entrepreneurs who then seek crowdfunding (with the program providing matched funding) for their social venture; and one through the University of Waterloo’s Canadian Centre of Arts and Technology.

Figure 6: Faculties Overseeing Extracurricular Entrepreneurship Programs at Universities



Extracurricular entrepreneurship programs are offered outside of academic units at colleges.

Unlike at the universities, extracurricular programs at the colleges are not embedded within academic units. Of the 17 programs, six take place within Conestoga College’s Centre for Entrepreneurship; four take place within Humber College’s Humber Launch, which is an extension of Humber Research and Innovation; and two take place within Mohawk College’s iDeaWorks research and innovation centre. Centennial College and George Brown College each host one program, which is found within the Centre of Entrepreneurship and Institute of Entrepreneurship and Commercialization, respectively. Programs at Confederation College, Fanshawe College and Durham College are available to students through partnerships outside college administration: Confederation College’s program is offered through the Northwest Ontario Innovation Centre, located on campus; the student union at Fanshawe College supports the incubation space, BizInc; and Durham College partners with the Community Innovations Lab, Trent University and others to host the Durham Ideas Den.

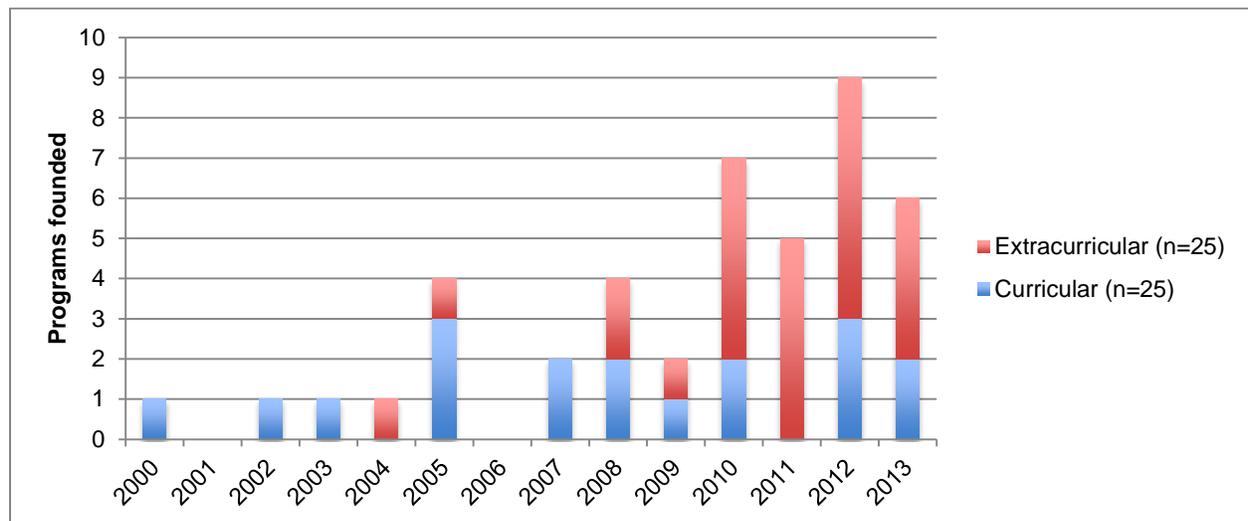
3.3 Program Operation

The survey asked respondents about the operational characteristics of the entrepreneurship education programs under their management, including questions on program age, funding, institutional affiliations, the characteristics of program participants, and whether fees were charged to participants, among others. The following sections report on findings from these questions in order to generate improved understanding of the resources devoted to entrepreneurial education programs in our sample as well as the populations that these programs target.

There has been an increase in the establishment of entrepreneurship education programs offered by universities and colleges over the last six years.

In the sample, there is a noticeable increase in the number of entrepreneurship education programs established since 2008. Extracurricular programs appear to be driving this trend as new incubators, mentoring initiatives, seminar series and other opportunities have been launched to keep pace with growing demand. In addition to the recent expansion of entrepreneurship education opportunities nine programs in the sample have been in operation for ten years or longer, with the oldest program having been established in 1980.

Figure 7: Year of Establishment of Curricular and Extracurricular Programs

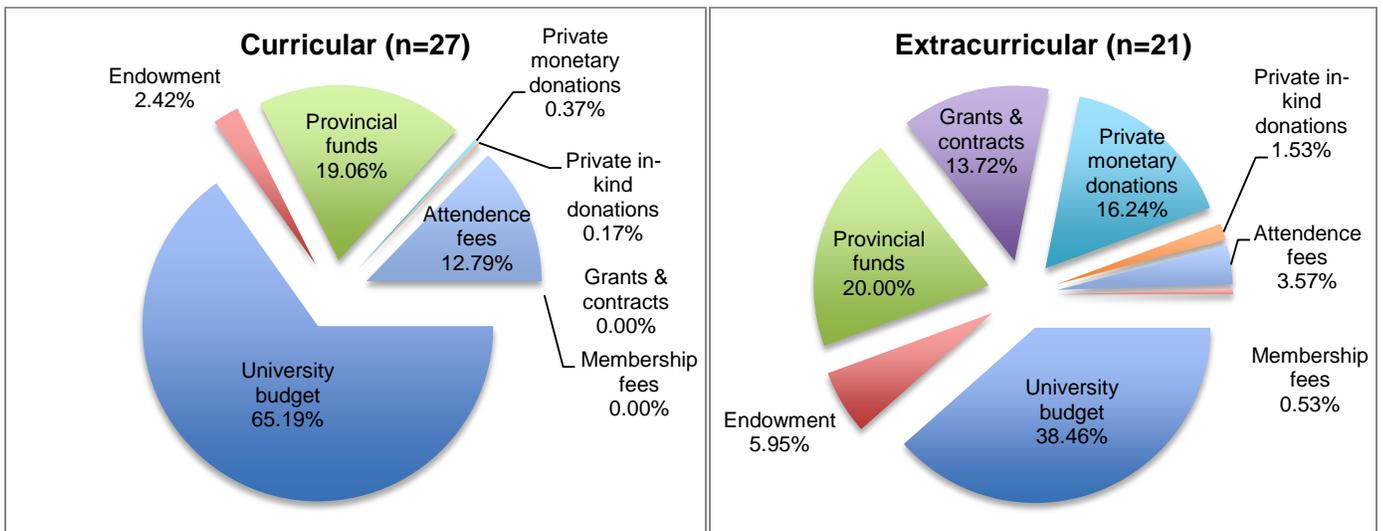


Note: A total of six programs not shown on the figure above were founded between 1980 and 1999.

Extracurricular programs rely on more diverse funding streams than curricular programs, which rely heavily on university budgets.

Figure 8 provides a breakdown of reported funding sources for curricular and extracurricular entrepreneurship education programs. In general, curricular programs in our sample appear to rely heavily on direct funding from university budgets (65% of funding). Extracurricular programs rely on a more varied array of funding sources including university/college funds (38%), provincial funding (20%), monetary donations (16%), grants and contracts (14%) and, to a lesser extent, endowments (6%), attendance fees (3.5%), in-kind donations (1.5%), and membership fees (0.5%). The average percentage of revenue from membership fees and other sources of funding is small, at 0.5% for each source.

Figure 8: Sources of Funding by Program Type

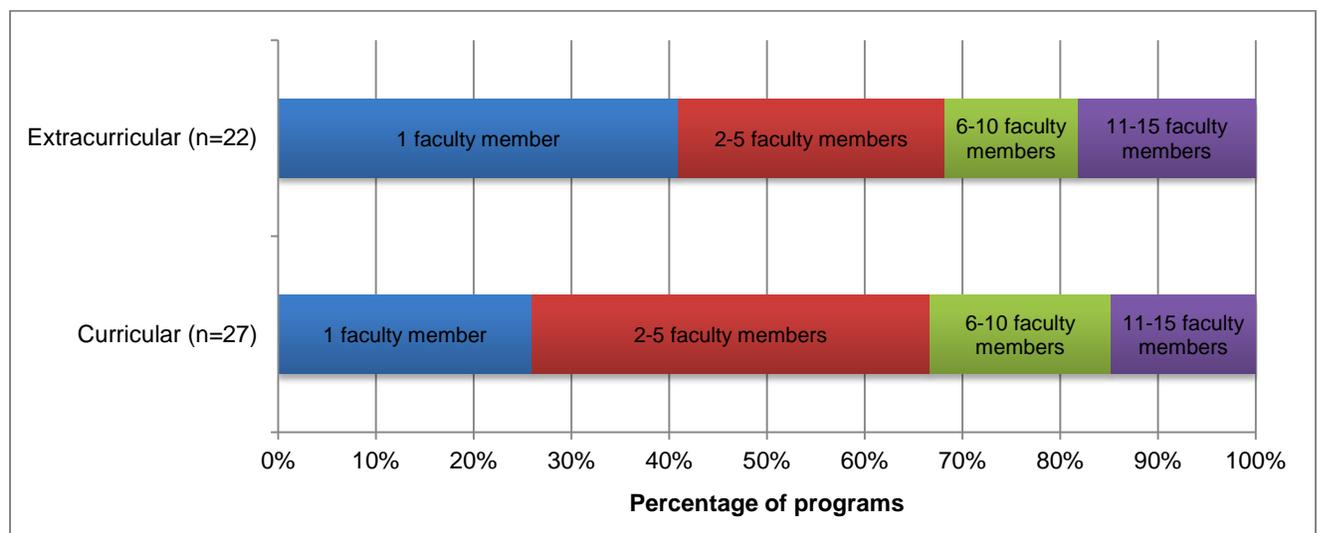


No more than 15 faculty members were actively involved in any entrepreneurship education program in the sample.

More than 200 university and college faculty members were actively involved in the operation of the 49 entrepreneurship education programs for which responses were received to the survey question on faculty involvement.

Figure 9 provides a depiction of the numbers of faculty members actively involved in the programs included in our sample. Nearly 40% of extracurricular programs include the involvement of just one faculty member. Curricular programs were most likely to involve the active participation of between two and five faculty members. None of the programs in the sample was reported to involve more than 15 faculty members.

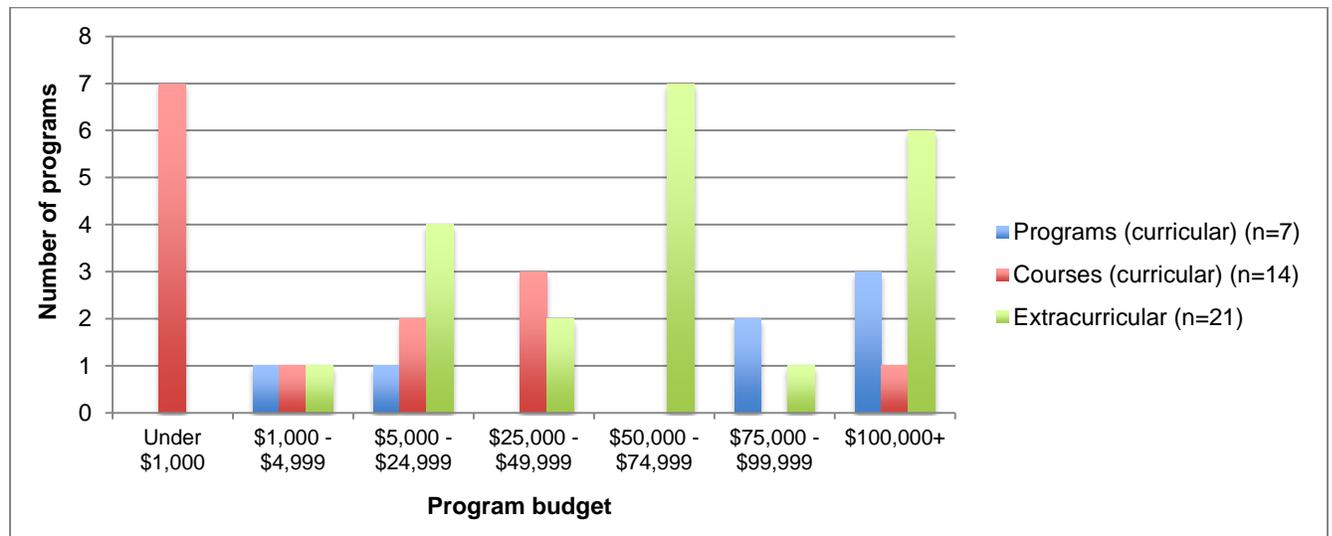
Figure 9: Number of Faculty Members Involved by Program Type



Six extracurricular programs require budgets exceeding \$100,000 per year.

To reflect some of the potential differences between the funding needs of individual courses and programs that might consist of many courses, Figure 10 divides curricular opportunities into the categories of courses and programs. Most individual courses were reported to subsist on budgets of less than \$1,000 per year. A total of ten programs across all program types were reported to rely on budgets exceeding \$100,000 per year. Of these, a majority (n=6) were extracurricular programs.

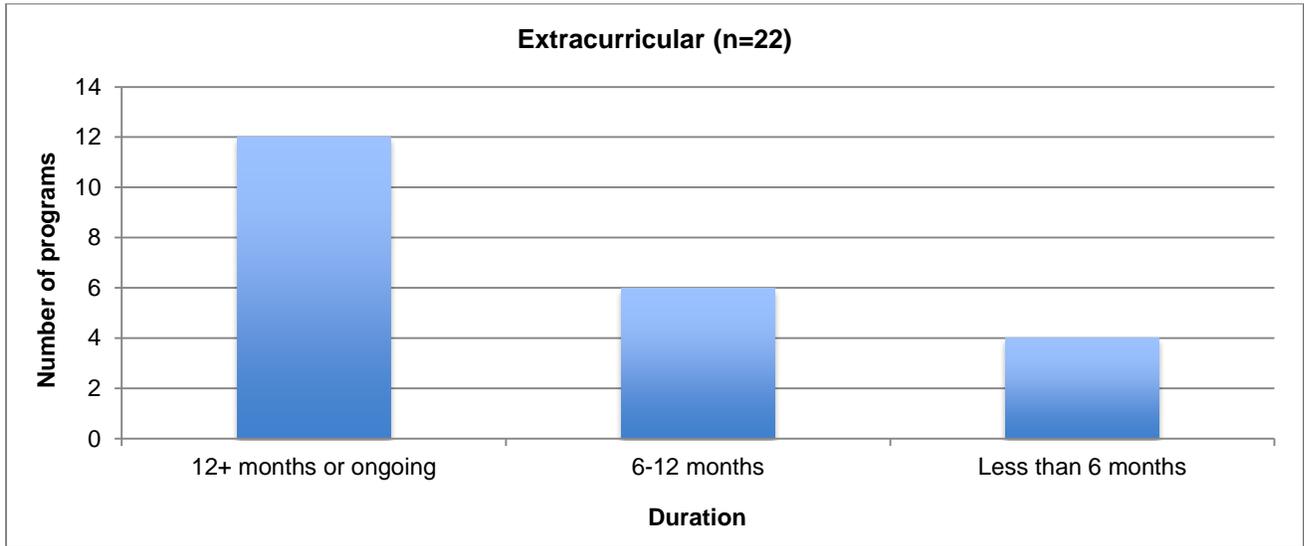
Figure 10: Annual Operating Budget by Program Type



Many extracurricular programs are flexible in duration and offer participants the opportunity to continue to be engaged on an ongoing basis and for twelve months or longer.

Due to the relative standardization of curricular programming, Figure 11 only provides a breakdown of the reported duration of extracurricular programs in the sample. A majority of extracurricular programs were reported to last for 12 months or longer and relatively few operate for less than six months at a time.

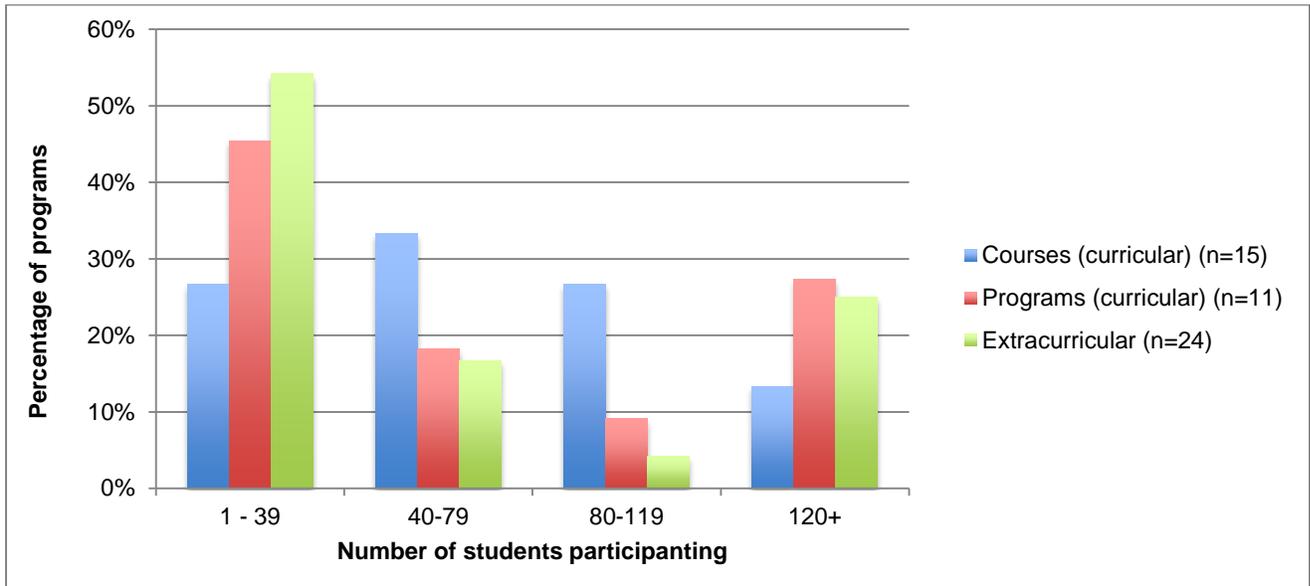
Figure 11: Duration of Extracurricular Programs



Student Participation

Figure 12 provides a breakdown of the number of students reported to be active in the programs of our sample at the time the survey was taken. A relatively large portion of extracurricular programs reported serving less than 40 students at a time. The number of active participants in curricular entrepreneurship education programs was much more varied. While some curricular programs served over 120 students at a time, 45% of all such programs supported fewer than 40 students at a time.

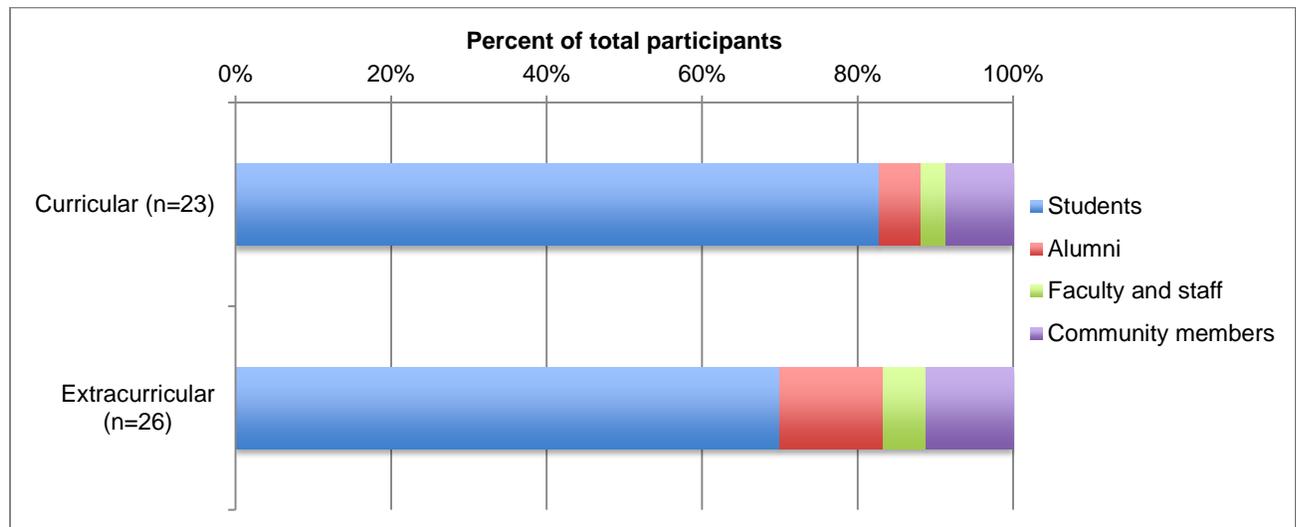
Figure 12: Number of Student Participants by Program Type



Extracurricular programs are more likely to embrace the participation of non-students, including alumni and members of the local community.

In addition to student participation numbers, respondents in our sample were also asked to indicate the percentage of participants in the program by type. As reported in Figure 13, most programs target current university and college students. However, some programs also target alumni, faculty and staff, and other members of the community who are not enrolled or employed by respective institution.

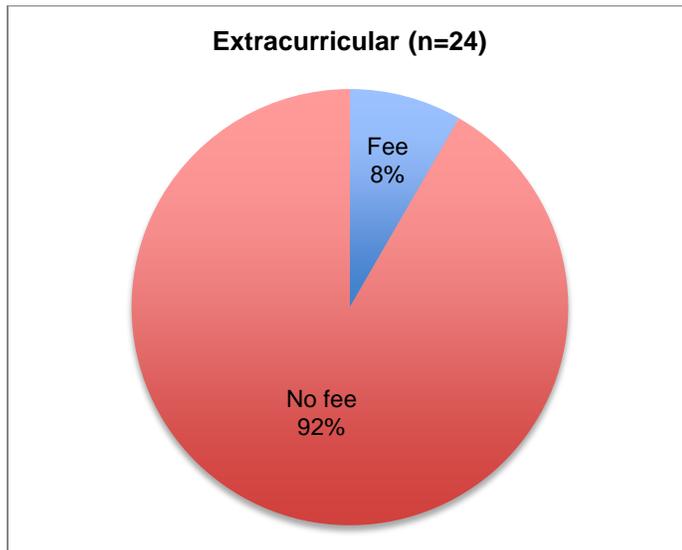
Figure 13: Breakdown of Participant Types by Program Type



The vast majority of extracurricular programs do not charge participation fees.

While tuition and fees are a required component of all curricular entrepreneurship education programs, respondents reporting on extracurricular programs were asked whether fees were charged to participants. As indicated in Figure 14, the vast majority of extracurricular programs did not involve any fees to participants. Only two extracurricular programs reported charging participation fees, one of which was an incubator that charged rent to ventures using the facility and the other a student residence that charged a room rental fee.

Figure 14: Participation Fee Requirement for Extracurricular Programs



3.4 Evidence on Assessment

The survey asked respondents about the characteristics of program evaluation for the entrepreneurship education programs under their management. The purpose of this section is to allow for an improved understanding of the ways in which programs of different types are being assessed.

Evaluation of entrepreneurship education offerings is an area of growing interest. It involves the systematic collection and analysis of data in order to determine if objectives have been achieved and to what degree (Boulmetis & Dutwin, 2005). To date, most evaluation efforts in entrepreneurship education have focused on measuring learning or business outcomes for students and for educational institutions, while paying little attention to the intermediate level of individual programs (Katz et al., 2014). For some program types, such as incubators and accelerators, some limited research exists on evaluation, but the little research that does exist has been generated primarily from data on programs that are not based in educational institutions (Essig, 2014). Findings from such research are of questionable relevance given that “traditional measures of incubator success such as occupancy rates, jobs created, or even venture success are not commonly used metrics in an educational setting where individual self-efficacy and entrepreneurial thinking about the arts and creative industries are primary goals” (Essig, 2014, p. 118).

Thus, this section provides a valuable glimpse into how the growing sector of entrepreneurship education is evaluated as a component of university and college programming in Ontario.

Curricular programs emphasize economic goals to a lesser extent than do extracurricular programs.

Respondents were asked their views about the importance of the various goals of the entrepreneurship education programs under their direction. They were asked to rate the importance of ten goals using a four-point scale. Response options included: very important; important; somewhat important; and not at all important. Responses were scored 3 for very important, 2 for important, 1 for somewhat important, and 0 for those who felt the goal was not important at all.

Table 8 compares the mean importance ratings between curricular and extracurricular programs. As might be expected for curricular programming such as for-credit courses and programs leading to academic credentials, imparting knowledge and skills related to entrepreneurship was a highly important program goal

for nearly every program in the sample. For extracurricular programs, imparting entrepreneurship knowledge and skills remained relatively important, but the development of entrepreneurial attitudes and culture was most important on average. For both curricular and extracurricular programs, generating revenue for the program or institution was the least important goal by a wide margin.

Table 8: Mean Importance Ratings of Program Goals by Program Type

	Curricular		Extracurricular	
	Mean	n	Mean	n
Imparting entrepreneurship knowledge and skills	2.92	25	2.74	23
Fostering lifelong learning	2.32	25	2.29	24
Engendering entrepreneurial attitudes and culture	2.64	25	2.88	24
Providing experience in entrepreneurship	2.28	25	2.79	24
Developing business plans	2.36	25	2.00	23
Directly supporting the creation of new ventures	2.00	25	2.50	24
Directly supporting the growth of existing ventures	1.24	25	1.92	24
Facilitating professional/entrepreneur networking	1.88	25	2.63	24
Generating revenue for the program or institution	0.68	25	0.24	21
Enhancing the local economy (i.e., the creation of jobs)	1.84	25	2.13	24

Figures 15 and 16 display the reported percentage of responses accrued in each response category for each of the ten goals. Examination of the relative importance of the different goals for curricular and extracurricular programs reveals several important findings. The first is that extracurricular programs are most likely to target goals related to enhancing economic growth, creating and growing companies and providing real world experience in entrepreneurship. Other notable findings include the consensus among respondents for both types of programs that “imparting entrepreneurship skills and knowledge” and “engendering entrepreneurial attitudes and culture” are highly important priorities.

A majority of respondents indicated that the generation of revenue for the program or institution was not at all important. However, extracurricular programs tended to rate the importance of objectives related to revenue generation by the program or institution lower than did curricular programs, possibly suggesting that for at least some courses and credential-based programming, supporting entrepreneurship is not independent from financial concerns of departments or institutions.

Figure 15: Importance Ratings of Program Goals for Curricular Programs

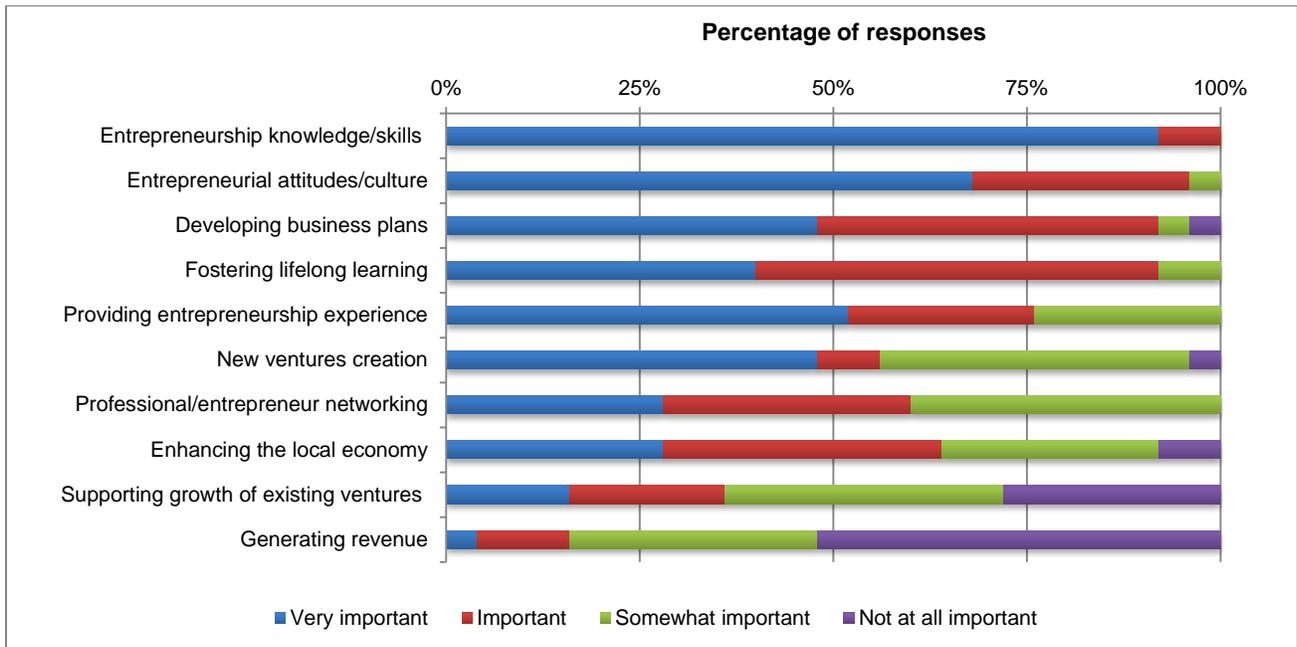
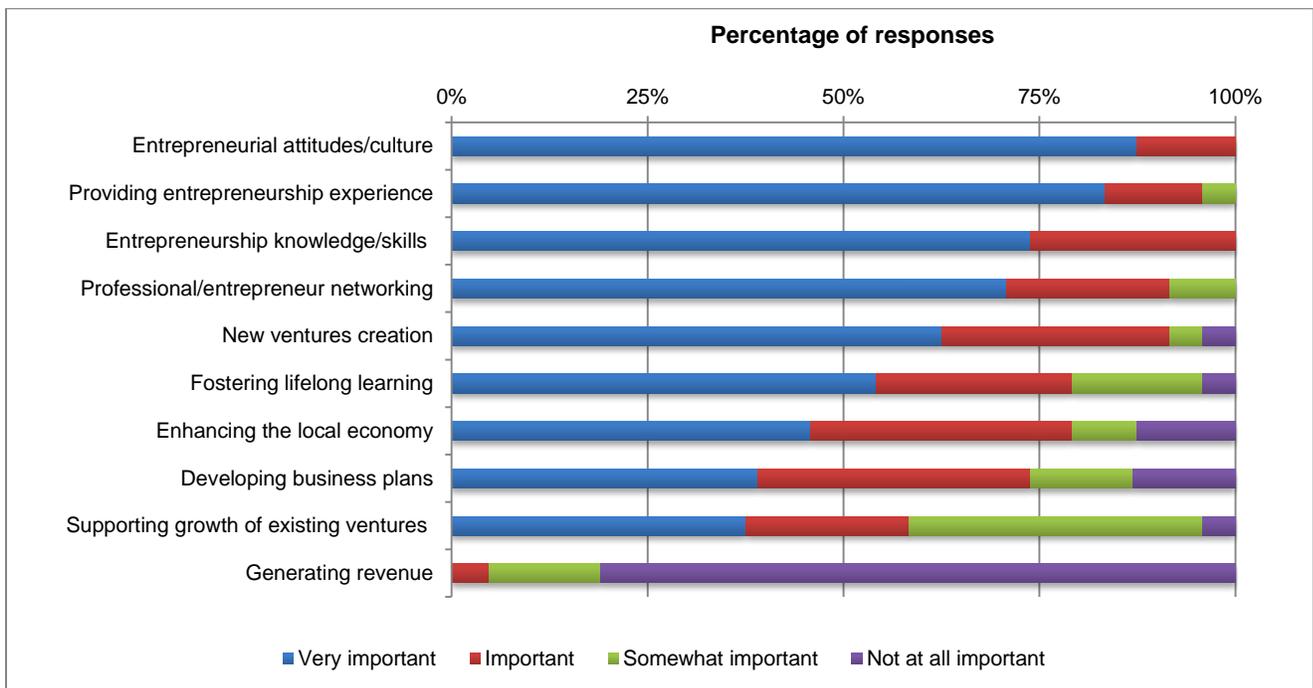


Figure 16: Importance Ratings of Program Goals for Extracurricular Programs



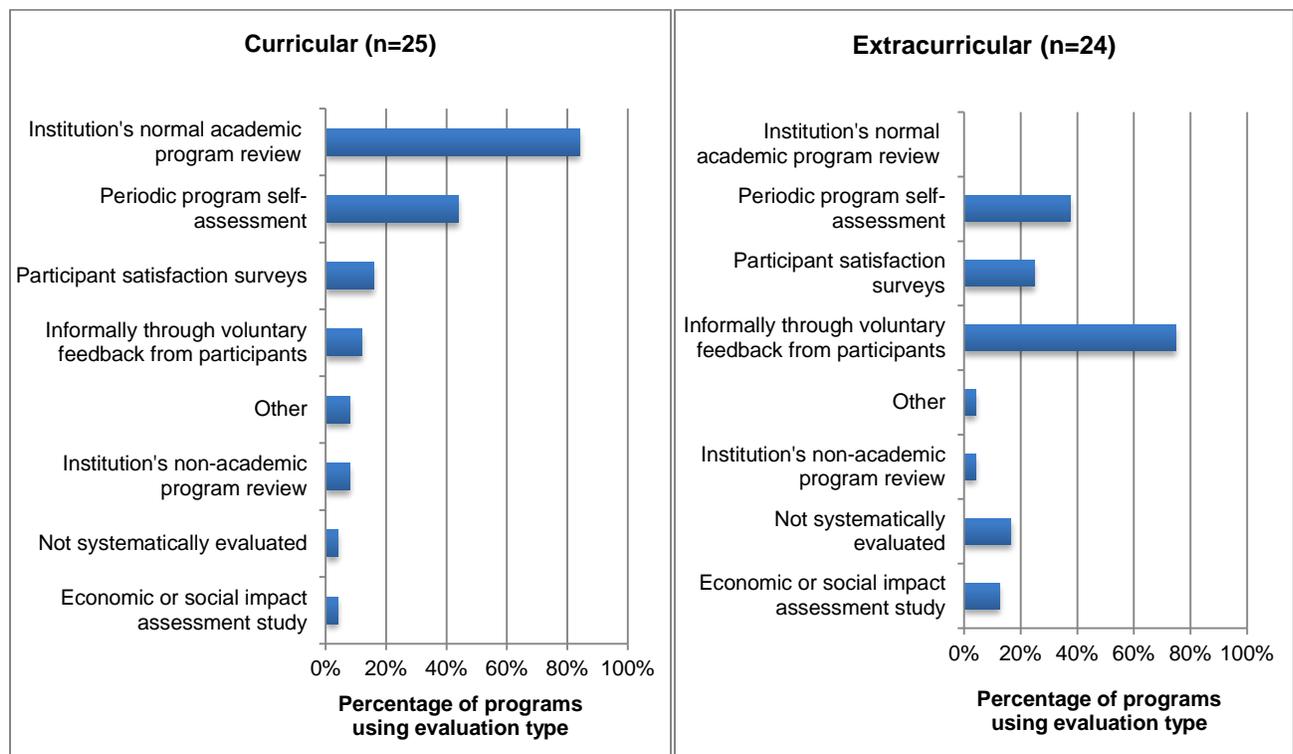
Extracurricular programs are often evaluated informally, while curricular programs are subject to normal academic review processes.

Respondents were asked to provide information about the mechanisms in place to evaluate the entrepreneurship education programs under their management. As displayed in Figure 17, most but not all programs are evaluated in some systematic manner. Interestingly, extracurricular programs were least likely to be evaluated systematically and most likely to be subject to informal methods of evaluation, including through voluntary feedback and casual conversations with participants.

As might be expected, the majority of curricular programs were reported to be subject to evaluation through the institution's normal academic program review mechanisms, while extracurricular programs were not. After normal academic program review for curricular programs and informal assessment for extracurricular programs, periodic self-assessment was the second most common evaluation mechanism used for both program types. Neither institutional reviews nor economic or social impact assessment studies were used with great frequency for either curricular or extracurricular programs.

One important takeaway from these findings is that formalized evaluation for extracurricular entrepreneurship education programs appears to be much less developed than for curricular programs. This is likely because for-credit courses and credentials that purport to teach entrepreneurship have inherited the same mechanisms used to evaluate other academic programming, while extracurricular programs have been forced to develop evaluation procedures in a more ad hoc manner.

Figure 17: Program Evaluation Mechanisms by Program Type

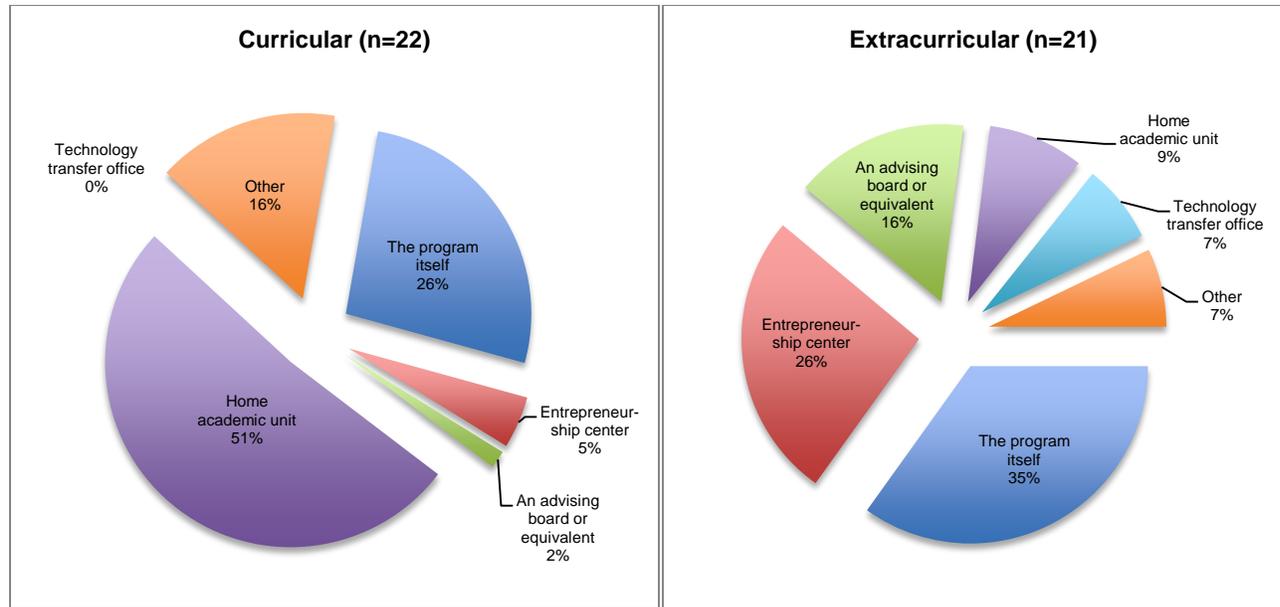


Many different units may have responsibility for coordinating the evaluation of both curricular and extracurricular programs.

Responsibility for coordinating the evaluation processes for the entrepreneurship education programs in the survey was spread across a variety of units. Across all program types, “the program itself” was most likely to be selected as being responsible for managing the evaluation processes. For extracurricular programs

“entrepreneurship centres” were responsible for evaluation for 26% of cases. However, entrepreneurship centres did not play a primary role in coordinating evaluation for a significant number of curricular programs.

Figure 18: Locus of Responsibility for Coordinating Evaluation Processes by Program Type



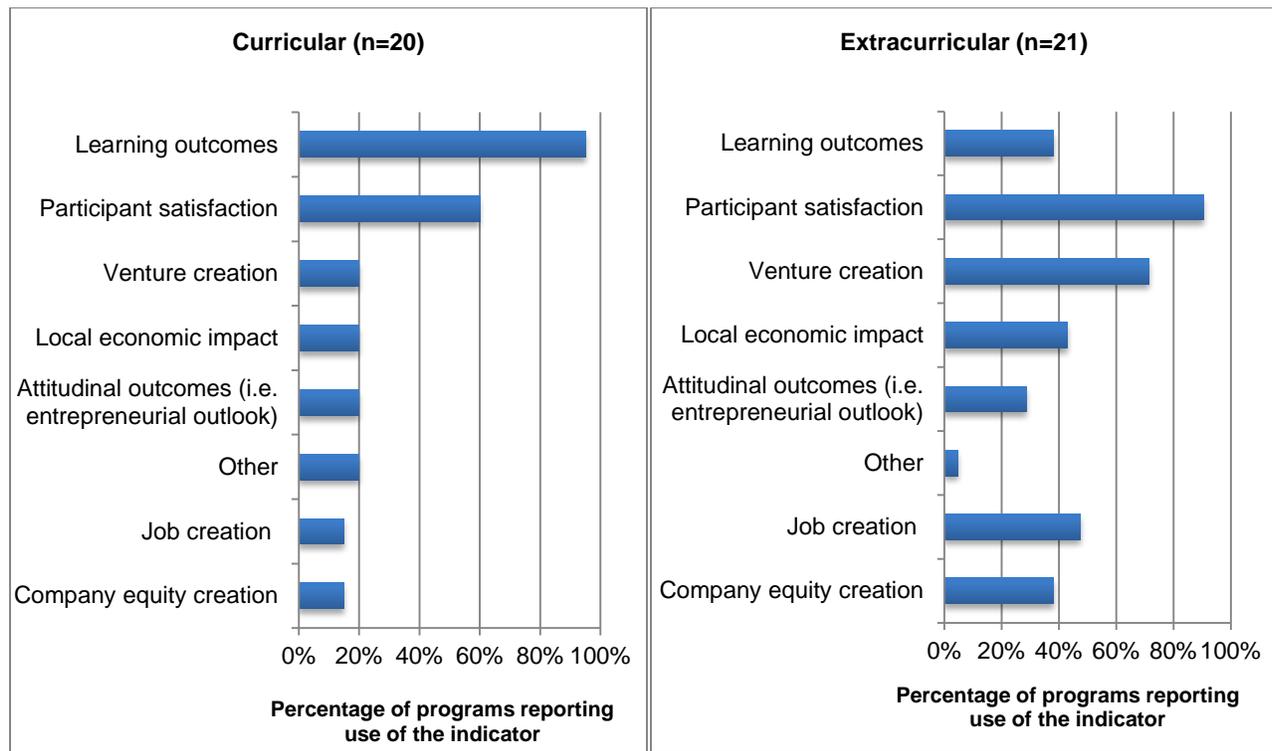
Evaluation Criteria

When asked to indicate the criteria used to evaluate entrepreneurship education programs in the sample, learning outcomes were commonly reported in a majority of cases for curricular programs but were much less commonly relied upon for the extracurricular programs. Unsurprisingly, given the challenge of measuring attitudes and propensities for entrepreneurial behaviour, attitudinal outcomes were not commonly used for the evaluation of either program type and less than 25% of all respondents identified this type of evaluation criteria.

Participant satisfaction was reported as an evaluation criterion by over 90% of extracurricular programs and over 60% of curricular programs. As expected, the use of criteria that might serve as more direct proxies for broad economic impact, such as venture creation, job creation and economic impact on the local community, was much more common for extracurricular programs. In particular, the creation of new companies was an evaluation criterion for 65% of extracurricular programs and was second only to participant satisfaction for this program type.

Two extracurricular programs and seven curricular programs provided additional criteria for evaluation that were not among the survey response options. While the majority of these respondents chose not to elaborate on these other evaluation criteria, one interesting reported item was “self-knowledge regarding suitability for entrepreneurship.”

Figure 19: Program Evaluation Criteria Being Used by Program Type



Different Evaluation Criteria Are Important

In addition to asking respondents to identify the criteria used for evaluation, respondents were asked to rate the importance of each criterion using a four-point scale from very important (3 points), important (2 points), somewhat important (1 point), to not at all important (0 points). Table 9 provides a breakdown of mean importance ratings by curricular and extracurricular entrepreneurial education programs. Evident in the table is that learning outcomes take precedence as the most important evaluation criterion for curricular programs, though it is substantially less important for extracurricular programs. For extracurricular programming, the following criteria are all accorded greater importance than learning outcomes: participant satisfaction, venture creation, attitudinal outcomes, job creation, and economic impact on the local community. The clustering of importance around learning outcomes, attitudinal outcomes and participant satisfaction for curricular programs and the more dispersed importance across all criteria for non-curricular programs are also noteworthy.

Table 9: Mean Importance of Evaluation Criteria by Program Type

	Curricular		Extracurricular	
	Mean	n	Mean	n
Learning outcomes	2.90	21	1.67	18
Attitudinal outcomes (i.e., risk-taking behaviour)	1.94	18	2.28	18
Participant satisfaction	2.33	21	2.89	19
Venture creation (number of companies)	0.89	19	2.58	19
Equity creation (value of companies created or grown)	0.53	17	1.73	15
Job creation	0.89	18	1.87	15
Economic impact on local community	1.16	19	1.87	15

Figures 20 and 21 show a more detailed breakdown of responses indicating the importance ratings of each evaluation criterion. Again unsurprisingly, learning outcomes are overwhelmingly important for curricular programs. Extracurricular programs display much greater variance in the importance of this criterion.

Figure 20: Importance Ratings of Evaluation Criteria for Curricular Programs

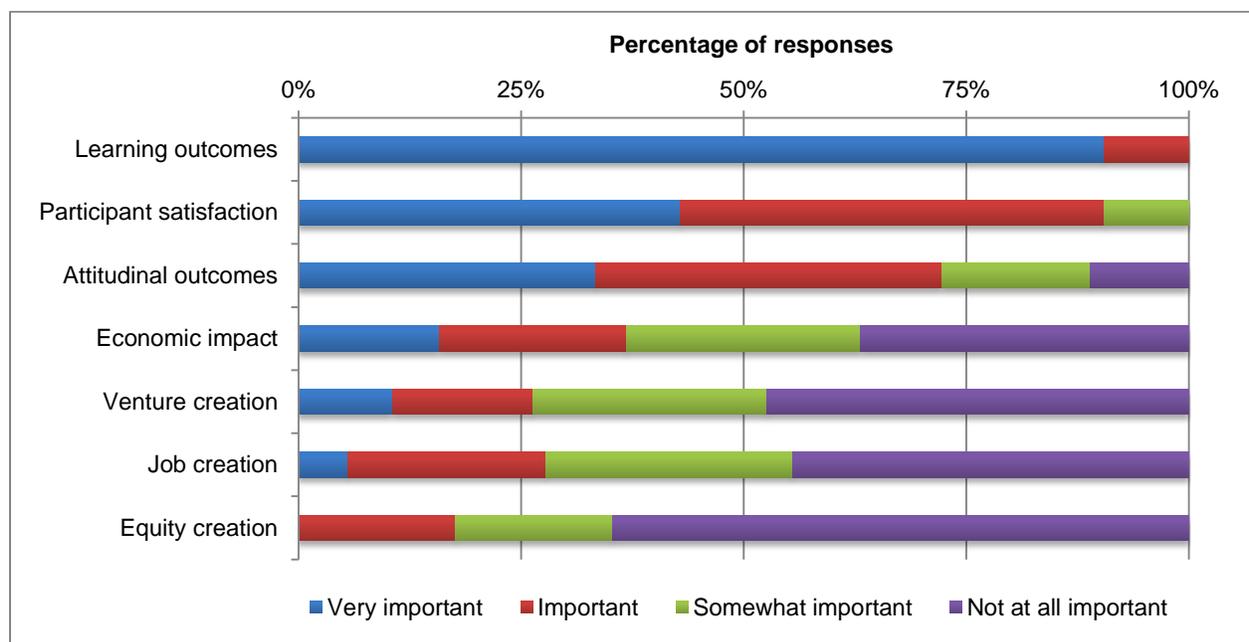
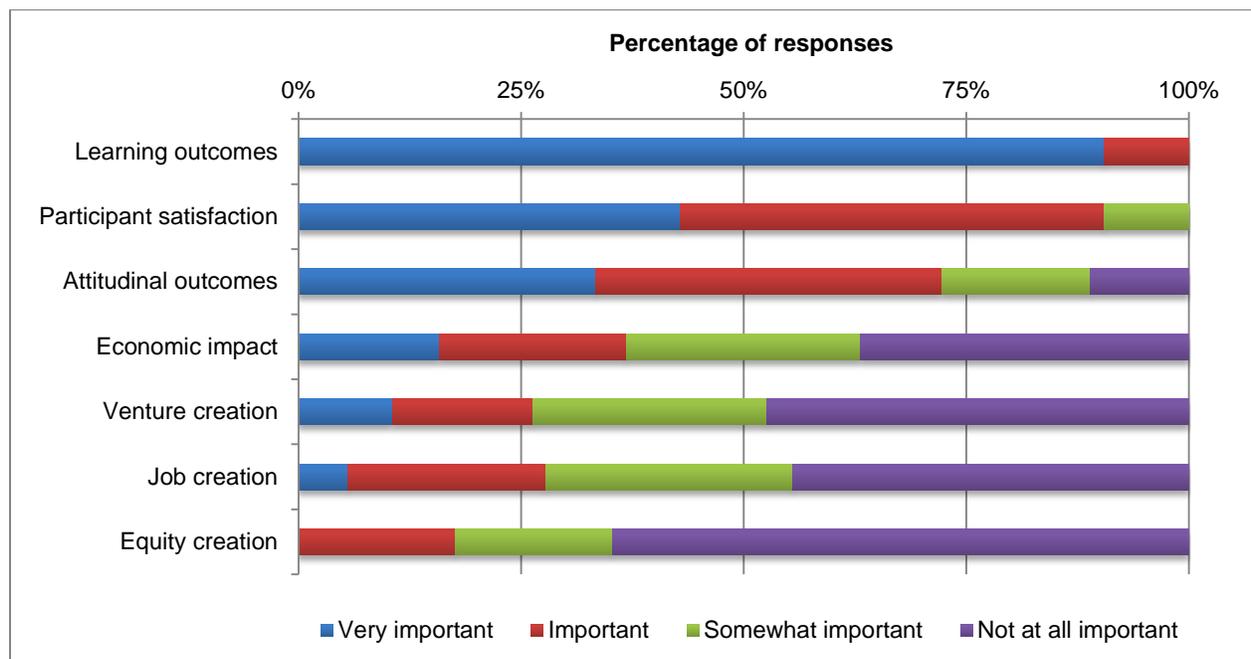


Figure 21: Importance Ratings of Evaluation Criteria for Extracurricular Programs



Results of Program Evaluations Are Used for Multiple Purposes

The final survey question regarding program evaluation asked respondents to provide a description of how evaluations are used. For curricular programs, most respondents reported that evaluations were used to modify and improve future course offerings. Respondents reporting on extracurricular programs indicated much greater variety of evaluation use. For instance, three respondents indicated that evaluations were used to help secure external financing, to report to government sponsors and for future grant applications. Other uses for extracurricular programs included to share information with community partners and to improve future programming.

4. Conclusions

This study explored the state of entrepreneurship education in Ontario colleges and universities through a two-part research process. First, the breadth of curricular (for-credit) and extracurricular programs offered in the province was identified through an environmental scan. The scanning process resulted in an extensive appraisal of what is being offered to aspiring entrepreneurs in the Ontario postsecondary community, albeit subject to the usual limitations concerning the public availability of current and correct information. The second part of the study centered on a web-based questionnaire delivered to contact persons linked to the programs identified in Phase One, ultimately yielding 54 sets of usable responses that provided greater detail about the goals, operational characteristics and evaluation mechanisms of established curricular and extracurricular programs.

In line with previous research, the findings here indicate that entrepreneurship education in the province's postsecondary education institutions is in a state of flux, with an overall diversification of curricular and extracurricular opportunities available to Ontario students. Delivery modes, target audiences, objectives and evaluation mechanisms exhibit remarkable variety across institutions and even within institutions. In this

context, even basic definitions of entrepreneurship remain implicit. Indeed, the vast majority of programs surveyed in the study do not formally define the concept. Arguably, as efforts to promote entrepreneurship emerge across different types of campuses, disciplines and fields of study, quests for specific definitions may not be terribly fruitful or even desirable. This is particularly the case given that in its early formative state, the further development of entrepreneurship education requires the exploration of new and innovative methods of imparting related skills and mindsets (Winkler, 2014).

Yet for campus leaders who must coordinate often disparate and overlapping initiatives, particularly at large institutions, building shared conceptualizations might also enhance collaboration and communication across departments, while reducing confusion among different stakeholders. In this light, Morris et al. (2014) recommend the pursuit of broad institutional definitions of entrepreneurship that will lend themselves to application in numerous disciplines and across a variety of innovative activities. This type of definition allows for the exploration of new and emergent models for educating, while still providing at least some structure and delineation of what programs can be considered as supporting the development of entrepreneurship.

Despite the lack of formal definitions in program documentation, it is evident that developing students' entrepreneurial skills, attitudes and experience is increasingly important in the province. While entrepreneurship may have once been the exclusive domain of business schools and, to a lesser extent, engineering faculties, today courses, programs and extracurricular activities appear to be flourishing in a wide range of non-traditional campus environments. Indeed, entrepreneurial mentoring programs, business incubators and for-credit courses, among others, are open to students from a wide range of disciplines and educational levels.

While, as suggested above, the rapid expansion of entrepreneurship education and the variation of core characteristics of individual programs in Ontario might be seen as positive developments along some dimensions, this growth and diversification pose a challenge for comparability and evaluation. Some experts suggest that the systematic evaluation of entrepreneurship education at the program level is a relatively new phenomenon in higher education (Katz et al., 2014).

Entrepreneurship education is intended to support the learning of key skills expected to be important for successful entrepreneurs. With this in mind, it is not surprising that this study finds that curricular offerings and programs appear to rely on traditional academic structures and mechanisms to evaluate and improve offerings. The assumptions underlying this usage are that at least some of the components that lead to successful entrepreneurship are transferable via classroom (or virtual classroom) instruction and that the effectiveness of such approaches can be measured using tools and strategies that are also used for other types of teaching and learning.

However, much of the growth in the wide range of extracurricular entrepreneurship programming in the province might be at least partially attributed to the belief that in addition to skills that can be learned in a classroom, would-be entrepreneurs benefit from – and perhaps even require – more varied and experiential experiences. Learning opportunities that provide hands-on knowledge of building businesses, access to business networks, and that enhance attitudes that foster the ready identification of entrepreneurial opportunities are emerging as important components of institutional strategies to generate entrepreneurship. In terms of resources, these new types of initiatives run the gamut from entrepreneur-student mentoring programs without budgets, operated on the basis of volunteerism, to student business incubators that may cost hundreds of thousands of dollars annually and rely on private, public and philanthropic financing. Between these two extremes lies a wide variety of programming that escapes easy categorization and combines features of various models. The majority of extracurricular programs in the study's survey sample evaluate program effectiveness only through informal mechanisms and emphasize participant satisfaction and, to a lesser extent, venture creation and attitudinal outcomes.

One of the main contributions of this study is that it provides evidence of the range of characteristics of programs in the province that purport to teach entrepreneurship education. Both classroom- and experience-based learning models are flourishing in a variety of venues, from college campuses in relatively remote communities to universities in the province's densest cities. Survey responses suggest that over the last decade and a half in particular, extracurricular activities educating entrepreneurs have increased substantially. This group of initiatives consists of a diverse set of programs and activities including: business incubators and accelerators; student residences, workspaces and mentoring programs emphasizing and encouraging entrepreneurial behaviour; internships and co-ops that allow students to experience working in start-ups; competitions and awards for seed funding or business plans; and an array of speaker series, workshops and networking events that are engineered to support entrepreneurial learning and culture.

Furthermore, the findings suggest that there has been a parallel expansion and diversification of formal entrepreneurship-related offerings in university and college curricula. At the graduate and undergraduate level, there has been a proliferation of entrepreneurship majors, minors, concentrations, options, foci and specializations. For those not pursuing a degree, numerous diplomas, certificates and other credentials are now available that either focus on entrepreneurship or include a substantive entrepreneurship component. The development of such a panorama of programming options in Ontario is consistent with recent recommendations from the burgeoning literature on the topic, which indicates that the pace of change in today's marketplaces demands that entrepreneurship educators be flexible to continuously explore and innovate in how they impart skills and attitudes to students (Kickul & Fayolle, 2007; Winkler, 2014).

The current surge in this trend coincides with contemporary provincial policies and initiatives encouraging the growth of entrepreneurial education across the province's campus (Industry Canada, 2010; Ontario Government, 2013). Recent budgetary commitments by the Ontario government are resulting in more targeted financial support for Campus-Linked Accelerators (CLAs) and On-Campus Entrepreneurship Activities (OCEAs) in universities and colleges. Additionally, measures of entrepreneurship activity have become increasingly entrenched as components used to assess the efforts of colleges and universities and as characteristics by which some campuses may be differentiated from others. The effects of these policy interventions are yet to be seen, but if the findings of this study are any indication, it would seem that the demand for new streams of entrepreneurship education funding, or for distinction as an entrepreneurial institution, is likely to be high.

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