

CASE STUDIES

# Levelling Up:

The Quest for Digital Literacy

June 2018



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ISBN: xxx

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# INTRODUCTION

igital literacy is a fundamental component of 21st-Century literacy and vital for civic and social participation, accessing public services, and succeeding in a digitizing economy. Supporting the development of digital literacy at all ages, there has been an exciting growth of programs across Canada, both within the formal educational system and delivered by for and non-profit actors alongside it. For people who live in urban centres with disposable income and high literacy and numeracy, it is relatively easy to access training to upskill in their profession or transition into the tech sector. However, the landscape is fragmented, difficult for some learners to navigate within, and some people are falling through the cracks: unsure what skills they are missing, how to develop them, and how to make sure they aren't left behind. In Canada, low levels of digital literacy continue to overlap with other aspects of socioeconomic marginalization and there is a risk that those that are being left behind will be further marginalized.

This collection of case studies is a companion piece to [Levelling Up: The Quest for Digital Literacy](#), which maps Canada's digital literacy education and training programs from early childhood education to seniors and from "Introduction to Windows" to machine learning, video game design, and other advanced skills and digital professions. It examines how learners are building pathways through programs, the challenges they face in developing digital literacy, and the role of organizations within the digital literacy sector. It highlights trends in curriculum and pedagogical approaches and exciting program models across the country.

Pulled from 90+ interviews with Canadian digital literacy and education programs, policymakers, academics, and industry experts, these case studies were selected to illustrate the diversity of program models, delivery approaches, skills taught, and client groups served. Though they do not cover Canada's geographic breadth in full or comprise all of the many promising models and leading organizations active in this space, they showcase some of the exciting work happening across the country. For more program examples and overviews of leading national organizations, please see the [full report](#).

Across the country, we found a broad range of both non- and for-profit programs inside and outside the formal education system, and deep but scattered curricula spanning from beginner computing to cutting-edge programming languages, virtual reality (VR), and machine learning, along with creative animation and illustration, video and sound editing, game design, and wearable technology. We found: programs that require learners to bring their own laptops and software, while others allow students to keep equipment after class; short, intensive bootcamps that cost more than three-year college programs, and programs that charge no fees at all; programs for seniors, and programs for children as young as three years old. Taken together, these case studies highlight a small swath of the diversity of digital literacy education and training in Canada, the complex pathways and barriers that learners face, and local models and approaches, some of which may have the potential to scale or be adopted and adapted elsewhere.

## LIST OF CASE STUDIES

### **Case 1: ABC Internet Matters, ABC Life Literacy Canada**

*Toronto, Ontario*

A pilot program teaching basic digital literacy skills to low-income seniors in social housing.

### **Case 2: Atwater Library and Computer Centre**

*Montreal, Quebec*

A non-profit library that offers introductory and intermediate classes, tutoring, a drop-in computer centre, and a multimedia program for youth and seniors in partnership with other community organizations.

### **Case 3: Code, Create, Teach, Kids Code Jeunesse x Lighthouse Labs**

*National*

A national initiative that offers an introduction to computational thinking and coding in the classroom for Canadian educators.

### **Case 4: Dames Making Games**

*Toronto, Ontario*

A non-profit video game arts organization that runs a range of programs and events for people who identify as women, non-binary, femme, and queer and are interested in games.

### **Case 5: Digital Skills and Innovation for the Global Economy (EID100), Ryerson University**

*Toronto, Ontario*

An undergraduate course that offers an introduction to digital design tools and methodologies to non-computer science students.

### **Case 6: Fireside Analytics Inc.**

*Online, in Canada and the US*

Online data analytics courses, offered through partnerships with IBM Canada and a number of high schools in Canada and the US.

### **Case 7: First Nations Technology Council Fiit programs**

*British Columbia*

A program that offers introductory and advanced training for Indigenous students interested in careers in the tech sector.

### **Case 8: Les Labs Inc.**

*Montreal, Quebec*

An organization that offers coding bootcamp programs and part-time digital literacy education for adults and youth.

### **Case 9: NextBillion**

*Online, in Canada and the US*

A free online mentorship program for people with disabilities interested in learning about or working in the tech sector.

### **Case 10: STEM Learning Lab Inc.**

*Calgary, Alberta*

A company that promotes student engagement in science, technology, engineering, and math (STEM) fields by engaging educators and students through in-class and after-school programs.

## CASE 1:

### ABC INTERNET MATTERS



**I**n 2016, ABC Life Literacy piloted the [ABC Internet Matters](#) program to empower and support Canadians who are not comfortable with using the internet. The program aimed to help learners develop a deeper understanding of what the internet is, how it can be accessed affordably, and how it can be used for everyday tasks that support the users, their families, workplaces, and communities. The pilot targeted seniors and residents in social housing, bringing workshops to the participants.

*“The interest and awareness piece is important; it’s a big explanation for why people are not online at all. To some degree, the barrier can be cost, but often the issue is that learners need to understand why this will help them. Through this work, we’re aiming to build up the value proposition of the internet.”*

—Carissa Di Gangi, Senior Manager,  
ABC Life Literacy Canada

*“Technology changes so quickly. The ideal outcome for us is to alleviate [learner] anxiety and have them think about how technology and computers can be used in their day to day lives, and where to find resources.”*

—Carissa Di Gangi, Senior Manager,  
ABC Life Literacy Canada

**Location:** ABC Internet Matters, a program of ABC Life Literacy, was delivered in Toronto, Whitby and Oshawa, Ontario, in 2016. ABC Life Literacy is otherwise a national organization, delivering programs in cities, towns, and villages across Canada.

**Program type:** Workshops outside of the formal education system

**Target participants:** Low-income seniors with low levels of digital literacy

#### **Skills, abilities, and software taught:**

- + Building awareness of what the internet makes possible
- + Building interest in the internet and technology
- + Increasing confidence when it comes to talking about and using the internet

**Number of participants:** 90 learners in 2016

**Instructor/participant ratio:** Approximately 1 instructor/15 learners

## DELIVERY MODEL

ABC Internet Matters uses a facilitated, three-hour workbook-based workshop with an encouraging, discussion-friendly approach. All sessions were delivered by ABC Life Literacy staff in the common rooms of senior residence homes, and low to no technology support was required. A digital copy of the ABC Internet Matters workbook is available [online](#).

## FUNDING/PRICING

ABC Life Literacy is a non-profit organization, and receives funding from the government and private sectors. The ABC Internet Matters pilot was supported by Rogers Communications.

## EVALUATION


The success of ABC Internet Matters was evaluated by using surveys designed for the pilot by the Constellation Consulting Group. Learners completed both a pre-workshop survey and a post-workshop survey.

Results from these surveys include:

- + 80% wanted to learn more about the internet; 68% were more interested in the internet and digital technologies after the workshop.
- + 64% planned to use the internet more; 60% identified more types of potential benefits from using the internet; 60% felt more aware of internet safety.
- + 57% felt more comfortable with the internet.
- + 57% felt better to able communicate digitally.
- + 54% planned to participate in digital communities more.
- + 50% increased their knowledge of where to access the internet.
- + 40% increased their knowledge of how to access the internet.



## CASE 2: ATWATER LIBRARY AND COMPUTER CENTRE

 **Atwater Library and Computer Centre** is a non-profit library offering drop-in computer access, one-on-one lessons, part-time courses and workshops, and free programming in partnership with other community organizations through the Digital Literacy Project. [The Digital Literacy Project](#) seeks to foster positive digital citizenship and engage people in creative new media production. Since 2007, the program has worked with over 60 partner organizations and schools and more than 3,100 individuals from ages six to 96.

The Atwater Library has a long history in adult education, originating as a mechanics' institute in 1828 to educate workers in emerging industries in the arts, sciences, and other "useful knowledge" through lectures, information sessions, and access to the library and reading room.

*"Seniors are delving into experimental techniques to create space to be creative... We're trying to dismantle the impression that digital literacy is for young people and seniors don't learn new things. If they can learn how to make interesting videos with their camera they can spend a winter afternoon in their house being really engaged and sharing....I'm trying to create a space where all age groups are intersecting on projects within the same room and normalize their learning deficits and their strengths at the same time."*

—Eric Craven, Digital Literacy Project  
Coordinator, Atwater Library and  
Computer Centre

**Location:** Montreal, Quebec

**Program type:** Library programs and/or community access programs

**Target participants:**

- + Seniors looking to learn new skills and stay connected
- + Job seekers looking to enhance their digital skill set
- + Kids and youth

**Skills, abilities, and software taught:**

- + Computer essentials and Windows 10
- + Microsoft Office Suite including Word, Excel, and PowerPoint
- + Web design
- + Digital storage
- + Social media
- + Workshops with devices (both Android and iOS)
- + Buying a device
- + Online safety and preventing cyberviolence
- + Digital music-making
- + Sound, video, and multimedia

**Number of participants:** ~500 participants/year

**Instructor/participant ratio:** 1 instructor/8 learners

### DELIVERY MODEL

Most programs are small group instruction with hands-on experiential learning, offered on-site at the Atwater Library. Some programs have an intergenerational and peer support focus, bringing together seniors and youth on collaborative digital media projects. Atwater Library also has partnerships with local universities, serving as a site for action research and collaborating on a Concordia University course, The Neighbourhood Theatre, an interdisciplinary, hands-on, place-based course that embeds students in community organizations to explore social capacity building and arts-based approaches to strengthening community.

## FUNDING/PRICING

The Atwater Library is a non-profit organization. Computer literacy courses range from \$35 for a two-hour workshop to \$170–\$190 for 12-hour courses (with lower rates for seniors and library members). Digital Literacy Project programming is offered for free to participants and partner organizations.

## EVALUATION


Learners are asked to fill out self-assessed course evaluations based on their experience in the program and how they feel their skills have changed.



## CASE 3:

## CODE, CREATE, TEACH



 **Code, Create, Teach** is a national initiative launched by Kids Code Jeunesse and Lighthouse Labs that offers an introduction to computational thinking and coding in the classroom for Canadian educators. This campaign builds on the 2016–2017 work of Kids Code Jeunesse, Lighthouse Labs and the British Columbia Ministry of Education to introduce coding to teachers.

### DELIVERY MODEL

Code, Create, Teach offers an Introduction to Coding and Computational Thinking program in the K–12 Classroom. From April to December 2018, Code, Create, Teach is hosting one-day workshops in every province and territory. Full-day workshops begin with an introduction to computational thinking through an unplugged activity. This transitions into a discussion about how computational thinking is defined and how it exists in everyday life. Scratch, a popular visual programming platform, is used to teach fundamentals of coding concepts; participants are given an opportunity to learn by playing with Scratch with the help of mentors. Participants can explore hands-on projects using a micro:bit, a small programmable computer, and get an introduction to text-based coding using JavaScript and other popular languages as well as apply their learnings in the interactive storytelling tool, Twine.

### FUNDING/PRICING

Lighthouse Labs is a for-profit organization and Kids Code Jeunesse is non-profit. Code, Create, Teach is funded by the federal government's CanCode program and is free for K–12 educators in Canada.

**Location:** Code, Create, Teach plans to visit every province and territory in Canada in both a rural and urban setting. While not all locations were decided at the time that this report was being written, some locations include Vancouver, Prince Rupert, Edmonton, Calgary, Saskatoon, Toronto, Ottawa, Montreal, and Quebec City.

**Program type:** Teacher training

**Target participants:** K–12 teachers (from pre-service to over 30 years of experience)

#### Skills, abilities, and software taught:

- + Computational thinking
- + Coding with Scratch
- + Micro:bit
- + JavaScript
- + Twine

**Number of participants:** 1,500 participants

**Instructor/participant ratio:** 1 instructor/10 participants

*“Through initiatives like HTML500 and our work with teachers, our goal is to make coding more accessible and less intimidating. We are great believers that at the heart of great education are great teachers. If we want to make coding accessible to all, we must invest in our teachers and start in the classrooms. What’s the difference between computational thinking and digital literacy? We’re working to demystify these concepts.”*

—Topaz Glazer, Head of Special Projects and Strategic Initiatives, Lighthouse Labs

## CASE 4:

### DAMES MAKING GAMES (DMG)

 MG is a non-profit video game arts organization that “creates space for marginalized creators to make, play, and critique video games within a cultural context.” [DMG](#) teaches computing skills for artistic expression, offers production and exhibition facilities, and provides community support for the creation of new artworks. Current programs include a six-week game design intensive, public workshops, mentorships and internships, game jams, emerging artist exhibitions, school programming, and a monthly speaker social presenting talks from women and other groups that are traditionally marginalized in game making and tech. Participants include beginner and self-taught game designers, artists and illustrators, and students from college and university game design programs who are seeking additional support.

*“We try to present the whole spectrum of things so people can pick what’s interesting to them. For the most part, it’s the mentors who support the people who have very particular interests in writing or art, but on the whole we try to get people involved in a little bit of everything. The workshops give you this base knowledge, and when you’re actually building your game and being mentored, you get a sense of what you need.”*

—Izzie Colpitts-Campbell,  
Programming Director,  
Dames Making Games

**Location:** Toronto, Ontario, and at collaborators’ venues across Ontario

**Program type:** Grassroots community programs and mentorship programs

**Target participants:** Adult genderqueer, non-binary, Two Spirit people and trans and cis women who are new to game making and creative coding; however, all skill levels are welcome including experienced artists (animators, filmmakers, illustrators, etc.) and established digital professionals.

**Skills, abilities, and software taught:**

- + Game programming languages (C#, JavaScript, Python, etc.)
- + Unity
- + Maya
- + Game design and play theory
- + Experimental game design
- + Narrative design
- + Interaction design
- + User experience design
- + VR design
- + Project management
- + Animation and 3D modeling
- + Sound design and composition
- + Hardware and electronics
- + Alternative controllers and interfaces
- + Zine making
- + Podcasting

**Number of participants:** ~3,000 participants/year

**Instructor/participant ratio:** 2 mentors/  
1 participant

## DELIVERY MODEL

All of DMG's programs are delivered in person and many are available online by livestream for participants who are unable to attend a class. Diverse formats are available to ensure wide accessibility, including six-week intensives (meeting three evenings a week with optional weekend work sessions), one-day weekend game jams, and three-hour workshops. Participants are provided with equipment (software and computers), food, and transit tokens; childcare and ASL interpretation are also available; and online support is provided through DMG's private Slack group between sessions. DMG's curriculum is tool-agnostic and participants are given an introduction to programming tool options at the start of each intensive. Mentors from the community are available to provide support for participants' interests, both technical (e.g., narrative design, sound design) and in specific game genres. Workshop leads are DMG community members—often graduates of DMG programs or past presenters from the talk series—and receive support from organizers on how to teach and run workshops. DMG has intentionally chosen not to expand to multiple sites and locations, believing that this kind of programming needs to be localized and community-led, though it does offer access to its materials for people to launch their own game-making programs.

## FUNDING/PRICING

DMG is funded primarily through membership dues, which are supplemented by corporate sponsorship and some project funding (community development and arts grants). DMG's operating space was previously provided through in-kind support from [Gamma Space Collaborative Studio](#), a workspace for independent designers, developers, game makers, artists, social justice organizers, and small businesses. Most of their funding is used to provide software, food, and equipment for participants. Most programs are free, though a few (e.g., the VR intensive) have charged an optional \$200 fee for the six-week intensive, which is significantly lower than market rates or most non-profit programs.


*"We believe these programs have to be localized. We're pretty grassroots, member-funded, member-run, and member-centric. [DMG] is fundamentally different from a lot of private organizations, because we're not just trying to teach people something. We're providing an environment for people to learn and teach each other. And there isn't an end goal. With bootcamps ... people are investing with a specific goal at the end. But with DMG, it's ongoing; it's a community."*

—Jennie Robinson Faber, Executive  
Director and Co-Founder,  
Dames Making Games

## EVALUATION

Short online surveys are circulated to participants following each program, asking them to score how the program met their expectations, what their key learnings were, if they received the support they needed, and whether they would return in a leadership or mentorship role. Evaluation also includes measuring returning and new student ratios and tracking student outcomes and pathways post-program.

## CASE 5: DIGITAL SKILLS AND INNOVATION FOR THE GLOBAL ECONOMY (EID100)

 Digital Skills and Innovation for the Global Economy (EID100) is a Ryerson University undergraduate course that was designed and launched in 2012 to offer an introduction to digital design tools and methodologies, and an understanding of digital literacy concepts to non-computer science students. The course aims to introduce students to issues surrounding the use of the internet, to a range of online tools and communication platforms, and to code including a basic understanding of nomenclature and how it can be used. Students are expected to critically explore the use of digital tools in career development and broader society and understand how digital media can be integrated into their own work.

*“The course was designed in 2012 with Dr. Jaigris Hodson, primarily to give a quick intro to design tools, methodologies, understanding for non-computer science students. There was minor code, but just enough so that they could understand the nomenclature and figure out if they need it for their areas.”*

—Dr. Michael Carter, Assistant Professor, School of Creative Industries, Ryerson University

*“As an instructor, success is having students realize there are options outside standard paths that can be quite successful. Receiving positive feedback helps validate my role as an educator.”*

—Ahmed Sagarwala, Manager of Industry Relations, Master of Digital Media; Instructor, EID100, Ryerson University

**Location:** Toronto, Ontario

**Program type:** University course

**Target participants:** Students in any four-year undergraduate degree at Ryerson University

### Skills, abilities, and software taught:

- |                           |                           |
|---------------------------|---------------------------|
| + Digital theories        | + Online branding         |
| + Digital citizenship     | + Problem solving         |
| + Interoperability        | + Data visualization      |
| + Programming             | + Artificial intelligence |
| + User experience design  | + Knowledge management    |
| + Lean methodologies      | + HTML/CSS                |
| + Entrepreneurship        | + JavaScript              |
| + Social media management |                           |

**Number of participants:** 240 undergraduate students/year (120 per semester)  
770 students have participated in the course since Fall 2015, including students from the Faculty of Communication and Design, the Faculty of Engineering and Architectural Science, the Faculty of Arts, the Faculty of Science, and the Ted Rogers School of Management

**Instructor/participant ratio:** 1 instructor/120 students

### DELIVERY MODEL

EID100 is a credit course that runs three hours per week over one semester. A Twitter account [@EID100\\_RU](#) is used to share content, job postings, and relevant events with students. Students in the course are required to create a blog and Twitter account and submit 10 assignments over the course of the semester by tweeting them with some brief details, an identifying hashtag, and a mention to @EID100\_RU. Students are assigned a final group project to create either a short video,

infographic series, shareable online presentation, or social media guide.

LEAN methodology and tools are a major focus of the course. Students are considered to be users, with the course being the product. Tools can be introduced to the instructor by students and incorporated into future classes, and students are given opportunities to provide feedback on tools in use and recommend alternatives.

Online tools and platforms used in EID100 include:

- + Twitter: For assignment submissions, reviews, shared resources, open discussions, and feedback.
- + Kahoot!: For in-class quizzes after each lecture to test for content retention.
- + D2L: For gradebook, official announcements, and course resource links.
- + Medium: For long-form content and course support literature.
- + Slides: For course lecture slides.
- + IFTTT.com and Zapier.com: For automated course administration.
- + YouTube: For live streaming for accessibility and students who are unable to attend class.
- + Swivl: To produce lecture recordings with comments and slides integrated.
- + Google Drive: For course outline, assignment instructions, and lecture notes.
- + Akindi: An alternative to Scantron, used for exams to reveal issues with questions or teaching effectiveness.
- + EID Bot: Simplifies administration by collecting student tweets, pre-assessing content, providing receipt notifications, tracking attendance using QR codes, and tracking online participation.
- + Thomson Reuters Open Calais: For summarizing assignments using natural language processing in order to aid in grading assignments.

## FUNDING/PRICING

As EID100 is a university credit course, it is funded and priced in accordance with the university's funding structure. For continuing education students, the cost of the course is \$908.15.

*"[Students] have aspects of the skills that they can understand, but they may not understand concepts related to online branding, digital theories, innovation practices, or the affordances of digital media. They need to ask, what can I do in a digital space that transcends an analog space? When should I use digital over physical? ....I'm trying to set the stage and understand where the digital space came from, which is literally based on an on/off switch. We look at binary, versus how humans think. When you take concepts from a computer and apply them to humans, what is different and what should people know, ethically?"*

*—Ahmed Sagarwala, Manager of  
Industry Relations, Master of Digital  
Media; Instructor, EID100,  
Ryerson University*


## EVALUATION

EID100 students are evaluated through online and in-class participation. Online participation is measured through tweets and how the student uses hashtags in assignment submissions. Weekly assignments are assessed through measures including writing quality, industry terms applied, curated content, Twitter interactions (such as shares and likes), and the use of visual media to support writing. Evaluations include examinations consisting of multiple choice, short answers, and a lean canvas. Outcomes are measured in terms of job placements, feedback on course material, concepts applied to other courses, and applicants that pursue the Master of Digital Media program at Ryerson University. Success is seen when students are able to creatively solve problems using digital media and the tools taught in the course.



## CASE 6: FIRESIDE ANALYTICS INC.

## FIRESIDE ANALYTICS INC @FIRESIDE\_INFO

 t [Fireside Analytics](#), courses are built to fill the gap between the growing demand for data science skills in the job market and the lack of accessible hands-on training available below the graduate school level. Courses are offered online through partnerships with IBM Canada and through a number of high schools in Canada and the US. They include Data Science 101, Big Data 101, Data Privacy Fundamentals, Digital Analytics and Regression, and Data Science for high school students. Future courses in the works include fintech and soccer analytics.

*“When you give learners a relevant and compelling problem to solve, they start to see data and computer programming as tools to solve the problem. The focus becomes, critical thinking, debate and problem solving, not the anxiety that may come with learning complex technical concepts or tools.”*

—Shingai Manjengwa, Founder and  
Director, Fireside Analytics

### *Example case study from Data Science for High School (IDC4U):*

Drake and Justin Bieber are often associated with the City of Toronto. How can tweets help us to understand brand associations? How can we quantify and visualize sentiment?

**Location:** Online

**Program type:** Massive online open course providing data science consulting services, curricula, courses, and workshops for schools (K–12) and corporate clients

### **Target participants:**

- + People who want to use data analytics to provide clarity in decision making
- + High school learners from all backgrounds and working professionals in all verticals

### **Skills, abilities, and software taught:**

- + Problem-solving techniques
- + Data analysis
- + Concepts in computer programming
- + Data privacy
- + Digital literacy
- + Big data
- + Statistics
- + Mathematics and business concepts

**Number of participants:** Over 200,000 participants registered in Fireside Analytics online courses to date

## DELIVERY MODEL

Fireside Analytics offers data science courses both online and in the form of customized curricula and programs for high schools. Open online courses are short, focused, and completable in 3–5 hours and participants receive an IBM certification upon completion. In addition, Fireside Analytics offers customized data science curricula and programs for high schools built around real-world case studies that are relevant to students. The focus is on data science and analytics skills that students can use in modern jobs. In Ontario, this course adheres to the Ontario Ministry of Education guidelines and successful learners may earn credit towards their high school diploma. Delivery may be online or through blended learning depending on the school.

## FUNDING/PRICING

Fireside Analytics is a for-profit organization offering for-fee curriculum development services. In addition, the organization works with IBM to deliver free open courses for working professionals on the IBM learning platform CognitiveClass.ai.

## EVALUATION :

Fireside Analytics measures enrolments, completions, and other performance metrics.

*“It was important to offer a credit for the high school data science course because formalizing the experience signals to learners from different backgrounds that this is important. The curriculum is academically rigorous, and the lessons are challenging, the skills gained in the course are directly linked to modern jobs and the workforce demand is so great that learners should have their efforts formally recognized.”*

—Shingai Manjengwa, Founder and  
Director, Fireside Analytics



## CASE 7: FIRST NATIONS TECHNOLOGY COUNCIL FiiT PROGRAMS



First Nations  
Technology Council

Run by the [First Nations Technology Council](#), the two FiiT programs (Foundations in Innovation and Technology and Futures in Innovation and Technology) offer introductory and advanced training for Indigenous students interested in careers in the tech sector. They seek to remove barriers to participation, including financial and logistical, and to foster a thriving Indigenous technology ecosystem within the province and beyond. Curriculum in both programs has been designed to incorporate Indigenous content and educational approaches in order to better reflect students' own experiences and demonstrate the role of Indigenous innovation in Canada's tech-driven future.

*"We really want to find a strong network of trainers who are ideally Indigenous, or people who have worked with communities and are invested in the outcomes of this project, to create digital skills learning programs and support participants who have had to relocate for the program. How do we create a strong, supportive learning environment? As we work with industry partners to bring in co-op students, looking for diverse companies, how do we make sure that this is a safe, supportive, and diverse environment for Indigenous entrepreneurs?"*

—First Nations Technology Council

**Location:** British Columbia

**Program type:** Bootcamps and other intensive programs

**Target participants:** Indigenous participants interested in learning about and pursuing in-demand careers in the technology sector, whether they are young adults with limited work experience or older individuals looking for a career change.

**Skills, abilities, and software taught:**

- + Microsoft Office Suite
- + Content management systems such as WordPress
- + Software testing concepts and activities
- + Principles of mapping and QGIS software
- + Basic web design and development
- + Computer network setup and security
- + Incorporating indigenous content and educational approaches

**Number of participants:** The FiiT program anticipates 300 students in 2018–2019, 390 in 2019–2020, and 270 in 2020–2021

**Instructor/participant ratio:** Approximately 1 instructor/15 students

*"We're taking digital literacy from something that is needed to fit job descriptions to something that supports our understanding of nationhood and reconciliation, creating a more inclusive and equitable tech environment."*

—First Nations Technology Council

## DELIVERY MODEL

The 12-week, full-time Foundations program is available both online and in-person at central locations throughout British Columbia. It is operated in a cohort model, with groups of students starting and graduating from the program at the same time. An aptitude for or interest in technology is the primary requirement for students, as well as the completion of a literacy assessment. Online delivery brings students together in a classroom with synchronous delivery from a lead instructor and supported by local teaching assistants. Building on the Foundations program, the Futures program offers intensive and advanced career preparation, delivered in partnership with industry and educational partners and intended to take advantage of current labour market projections in the technology sector and adjacent sub-sectors. Program structure varies from intensive eight-week bootcamps to more extended year-long programs. Students in both programs have access to support funds for accommodation, meals, transportation, child care, and other expenses that made impede student completion. Through the “Complete to Keep” program, the First Nations Technology Council is working to provide students with access to hardware and equipment that they can keep after completion of the program in order to further their training or apply their skills.

## FUNDING/PRICING

The FiiT programs are funded provincially through the Ministry of Indigenous Relations and Reconciliation and federally through Western Economic Diversification Canada, as well as through in-kind contributions from a number of key industry partners and post-secondary institutions.

## EVALUATION

Along with metrics on the number of students trained and job outcomes, the First Nations Technology Council measures impact through indicators such as an increased awareness of technology and a growing Indigenous technology ecosystem. The Council maintains a centralized data system across all their programs, in order to track individual students’ pathways through programs and provide detailed reporting at the student, community, and program levels.

A relatively new entrant to the Montreal program landscape and the bootcamp scene, [Les Labs](#) was launched by the founders of Pronexia, a “new generation headhunting firm” that focuses on small and medium-sized businesses in recognition of the gap in training between traditional academic programs and the demand for talent in the digital economy. This experience positions Les Labs with insight into the in-demand digital literacy and skills that employers are seeking.

*“There are so many people who graduate from marketing degrees or computer science degrees but hardly touch the web. Coding bootcamps are exploding in North America, but with Les Labs we wanted digital literacy to be accessible to people from all walks of life. We wanted to show that anyone can be digital and at least understand the basic concepts and do things on the web, whether for professional or personal use.”*

—Marina Byezhanova, Co-Founder,  
Les Labs

*“Les Labs was born out of a joint interest and passion in lifelong learning. We are big believers that people always have more potential than they realize, and in creating a platform for learning where people learn in a physical space, not just online.”*

—Stefano Faustini, Co-Founder and  
Managing Director, Les Labs

**Location:** Montreal, Quebec

**Program type:** Intensive bootcamps and part-time classes

**Skills, abilities, and software taught:**

- + JavaScript
- + WordPress
- + HTML/CSS
- + PHP
- + Google Analytics
- + Social media analytics
- + Search engine optimization (SEO)
- + YouTube
- + Storyboarding
- + Visual storytelling
- + Animation
- + Internet security

**Target participants:**

- + Beginner coders
- + Children aged 8–12
- + Mid-career professionals seeking retraining in digital skills

**Instructor/participant ratio:** 1 instructor/15 students

**DELIVERY MODEL**

Alongside an intensive eight-week bootcamp teaching JavaScript, WordPress, HTML/CSS, and PHP, Les Labs also offers part-time digital literacy courses for adults and kids aged 8–12. Adult courses teach HTML/CSS, social media analytics, marketing, and visual storytelling (five hours/week for nine weeks) and youth-focused courses (1.5 hours/week for 10 weeks) introduce participants to technology and coding, photo editing, animation and storyboarding, YouTube, and internet security. Adult programs at Les Labs target individuals who are mid-career and looking to modernize their skill sets, including entrepreneurs and those working in fields that are undergoing technological

transformation (e.g., marketing, project management, office administration, etc.).

Les Labs' in-person courses employ a learning-by-doing teaching philosophy. Students complete modules at their own pace in accordance with their skill level and learning curve, working on their own projects during and between classes in order to apply class concepts in practice. Classes are intentionally small with a 1:15 instructor/participant ratio, and students are not graded. Evaluation is based on the completed project rather than mid-course assignments. Instructors have a combination of academic teaching experience and professional expertise in their field.

## FUNDING/PRICING

Les Labs is a for-profit organization, funded by a combination of participant fees and self-funding in the startup phase. Currently, its coding bootcamp costs \$5,500 plus tax (\$17.19/class hour) and its digital literacy course costs \$1,695 plus tax (\$37.67/class hour). Payment plans are available to students.



**N**extBillion is a free online mentorship program for people with disabilities interested in learning about or working in the tech sector, including in roles that draw on computer science, data science, design, graphic design, and/or marketing. The team also works on disability advocacy and inclusion in the tech industry, including by forming partnerships with major tech firms. Participants include university students and people who are changing careers.

*“For students with disabilities, there are challenges that apply to learning as a student and then there are barriers due to specific disabilities in the university context (e.g., differences in learning styles, challenges in accessing educational material and/or physical locations). There are question marks about applying to certain jobs, disclosing disabilities in the application process, and asking employers for accommodations in the tech industry. Universities are usually capped in terms of their workload to provide this level of personal support to every student with a specific disability.”*

—Naitik Mehta, Founder,  
NextBillion.org

*“People with disabilities are two times less likely to be employed—often arising from social stigma....[They] need and deserve opportunities to reach their full potential. Our goal as an organization is to break down barriers.”*

—Naitik Mehta, Founder,  
NextBillion.org

**Location:** Online, with the team based in Vancouver, British Columbia

**Program type:** Mentorship program, grassroots community program

**Target participants:**

**Mentees:** University students with visible or invisible disabilities in STEM or tech-related fields and individuals interested in changing careers.

**Mentors:** Employees of companies working in engineering, design, data science, or marketing with an interest in mentoring, who may or may not have experience with disabilities.

**Skills, abilities, and software taught:**

- + Goal setting
- + Networking
- + Disability disclosure
- + Personal branding
- + Relationship building
- + Navigating opportunities
- + Interviewing
- + Understanding the industry

NextBillion focuses on the soft skills needed in the tech sector, career advising, and employment support, including referrals to employment positions in top tech companies and help with developing technical training pathways.

**Number of participants:**

2017: 85 mentees  
2018: Targeting 500 mentees  
2019: Targeting 2,000 mentees

**Instructor/student ratio:** 1 mentor/1 mentee

## DELIVERY MODEL

NextBillion currently offers an eight-week online mentorship program providing matching services, mentorship guidance, weekly webinars showcasing industry speakers, and written resources. Previous iterations included a four-week program that matched participants locally, and a 12-week program that matched participants anywhere in the world. Mentors and mentees are paired based on shared stories, experiences, and goals, and can choose to be paired with someone who is close in geographic location, has a similar disability, or works in a particular industry.

## EVALUATION

NextBillion uses pre- and post-intervention surveys and interviews, and metrics such as mentorship completion rates to evaluate its program. Surveys are used to assess whether the program has impacted mentees' personal and professional lives and prepared them for work in the tech industry, including through improved knowledge of the tech industry, technical skills, career confidence, and preparedness to apply for a job (e.g., writing a resume or building a personal website). It is also used to assess increases in disability knowledge and sensitization for mentors.

## FUNDING/PRICING

NextBillion is a for-profit social enterprise offering programming that is free for both mentees and mentors. The program is supported by a talent placement revenue stream, as well as grants and awards.



Developed by a former math teacher, [STEM Learning Lab](#) is intended to engage all kids, regardless of skill level or STEM abilities, creating opportunities to rapidly prototype, take risks, fail, and learn from it. From using Dot Robots to learn the colours of the rainbow in pre-K to coding music with Sonic Pi (a live coding musical synthesizer based in Ruby) for ages 12 and up, programming is hands-on and creative, incorporating unplugged activities to teach to basic concepts, logic, and computational thinking, and build adaptability to interact with any software or hardware program.

*“Kids are digital citizens. They readily embrace technology and see this as a normal way to engage. When they can code something or program a robot to move and interact with their environment, they get excited and want to continue learning. AT STEM Learning Lab, our goal is to help them be creators of technology through play, instead of just playing with technology as consumers. We know our youth will take these critical technology skills with them throughout their lifetime and they will need to—they’re going to be living in a world that’s very different from the one we live in today. They need to be creators, problem solvers and changemakers.”*

—Dr. Gina Cherkowski, Founder and CEO, Stem Learning Lab Inc.

**Location:** British Columbia, Alberta, Saskatchewan, California, Mexico, Qatar

**Program type:** Early childhood education (ECE) and K–12 programs

**Target participants:**

- + K–12 students and their parents
- + Teachers
- + Education leaders
- + Administrators

**Skills, abilities, and software taught:**

- |                              |                      |
|------------------------------|----------------------|
| + Design thinking            | + App development    |
| + Innovative problem solving | + Math and science   |
| + Coding                     | + Creativity and art |
| + Robotics                   | + Technology fluency |

**Number of participants:** 5,000+/year

**Instructor/participant ratio:** 1 instructor/12 students on average, with a higher ratio for teacher professional development programs

*“In Canada and internationally we are working with some very forward-thinking schools—some who move quickly and push the boundaries and others who are more methodical as we work to achieve systematic and sustained change. Through our work with teachers and schools, we are increasing teacher capacity in regards to digital literacies and technology as well as equipping teachers with the tools to design for deep learning through robust, integrated problem-based learning activities. It is an exciting time to be in education!”*

—Dr. Gina Cherkowski, Founder and CEO, Stem Learning Lab Inc.



## DELIVERY MODEL

STEM Learning Lab offers before and after school programs, summer camp, weekend workshops, and K–12 curriculum modules in coding, robotics, app development, circuits, engineering, wearable tech, AR/VR, maker programs, and design thinking. For teachers, it offers professional development sessions as well as in-residence coaching for schools and school districts.

## FUNDING/PRICING

STEM Learning Lab is a for-profit social enterprise. Summer camps for 2018 cost \$275–\$345/student for one week of full-time programming and before and after school programming costs \$355/month, with some programs offering grants and financial aid. Schools and teachers can also purchase workshops and other programming directly.