ETEC 520 - Assignment 3:

Analysis and Comparison of Approaches to E-Learning: Québec and Nova Scotia

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Analysis and Comparison of Approaches to E-Learning: Québec and Nova Scotia

E-learning approaches and initiatives for Québec and Nova Scotia are described, reviewed, and compared within this analysis. Despite Québec having roughly ten times the student population of Nova Scotia, similarities and recommendations are identified for both provinces. These recommendations will help improve and streamline technology integration for education and training of all learners, from pre-school children to working adults.

Part 1: Provincial E-Learning Overviews

Québec

The Québec education system has four levels: preschool, elementary and secondary school (includes general education and vocational training); college (includes pre-university education and technical training); and university (Gouvernement du Québec, 2019). In 2017, the government of Québec launched its provincial Digital Strategy (French) and Policy on Educational Success, which highlight the integration of digital technology as a key means to transforming Québec's education system and supporting lifelong educational success of Québec's citizens. Given this strategic direction, a five year Digital Action Plan for Education and Higher Education (2018) for 2018 to 2023 was developed to provide measures for achieving effective integration and optimal use of digital technologies in Québec's education system. The Digital Action Plan (2018) outlines three major orientations for developing young people and adults' digital skills, using technologies to enhance teaching and learning, and creating an environment conducive to the development of digital technology throughout the education system (Figure 1).

Orientation 1: Support the development of the digital skills of young people and adults ($191 million)	Orientation 2: Make use of digital technologies to enhance teaching and learning practices ($204 million)	Orientation 3: Create an environment conducive to the development of digital technologies in the education system ($790 million)
Development of the types of education and training offered - Objective 1.1: Define digital skills and integrate them effectively into the types of education and training offered	Innovative practices - Objective 2.1: Develop new digital teaching and learning practices	Monitoring of educational progress - Objective 3.1: Oversee the deployment of dedicated administrative and educational solutions to monitor educational progress
Digital skills and culture - Objective 1.2: Support the development of the digital skills of teachers, non-teaching professionals and support staff - Objective 1.3: Support individuals and organizations in making the transition to a digital culture	Resources and services - Objective 2.2: Pool resources and services so that they can be shared and made as accessible as possible	Adapted and flexible governance - Objective 3.2: Strengthen digital governance and rely on partnerships as a strategic lever
	Distance education - Objective 2.3: Foster the development of distance education offerings based on needs at the various levels of education	Access - Objective 3.3: Guarantee access to fair and safe digital technologies in educational institutions

Figure 1. Measurements Table, Digital Action Plan (2018, p. 70)

The government of Québec adopts both radical and conservative strategies for changing the educational landscape in the province (Bullen, 2019, Unit 5.2). Conservatively, the Québec government intends to promote digital technology's integration, application, training, infrastructure, funding, collaboration and resource sharing. Radically, the government will create eCampus Québec, which will amalgamate all provincial post-secondary distance education

programs. The creation of the eCampus can enable collective efforts and recommendations for implementing structural changes from technological, administrative and financial perspectives (Gouvernement du Québec, 2018). The government will also draw in new partners from public and private sectors in the field of educational technology and telecommunication to help develop digital programs and services.

The Québec government's commitment of nearly $1.2 billion to implement the Digital Action Plan is noteworthy and includes over $797 million for education and $387 million for higher education (Gouvernement du Québec, Economic Plan in Brief, 2018). Government funding plays a significant role in ensuring sufficient financial support. It may also help prevent unnecessary duplication within a publicly-funded system through policy, regulation, collaboration and competition (Bullen, 2019).

Nova Scotia

Nova Scotia (NS) has two main education departments: the Department of Education and Early Childhood Development (NSDEECD), which focuses on pre-school and K-12 education, and the Department of Labour and Advanced Education (NSDLAE), which focuses on post-secondary, adult, vocational, professional, and lifelong learners. NSDLAE supports and monitors many aspects of provincial training and education, including adult education and legislation for higher education institutions. Specifically, the University and Colleges Division of the department's Higher Education sector maintains ties and provides governmental partnerships with provincial post-secondary institutions. Although there is no publicly available NSDLAE strategic guidance, legislation and initiatives related to educational innovation are considered. There is only one main provincial e-learning resource for higher education learners supported by the NSDLAE: SkillsOnlineNS. Other resources exist, but they are privately funded.

In 2015, the NSDEECD released NS's Action Plan for Education, which focuses on three R's: Renew, Refocus, and Rebuild. This is the first thorough education review in over a generation for the province and focuses on four key pillars (Figure 2): building a modern education system, creating an innovative curriculum, promoting inclusive school environments, and advancing excellence in teaching and leadership (2015). Overall, the plan has lofty objectives; however, by definition remains conservative, as it encompasses regulation and supports the development of partnerships (Bullen, 2019, section 5.2). The main online resource for K-12 education is the Nova Scotia Virtual School (NSVS), which is a provincial learning management system for students and educators.
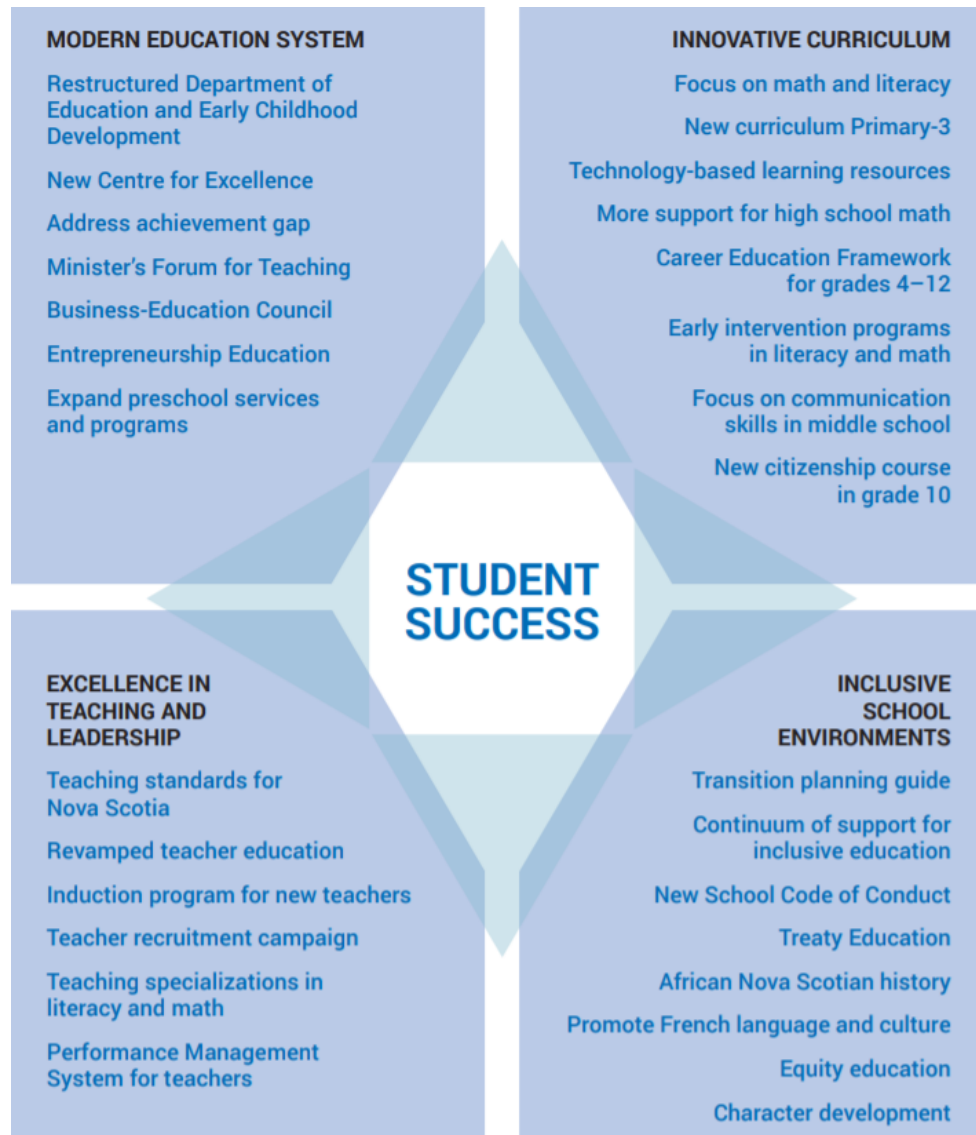
MODERN EDUCATION SYSTEM

Restructured Department of Education and Early Childhood Development

New Centre for Excellence

Address achievement gap

Minister's Forum for Teaching

Business-Education Council

Entrepreneurship Education

Expand preschool services and programs

INNOVATIVE CURRICULUM

Focus on math and literacy

New curriculum Primary–3

Technology-based learning resources

More support for high school math

Career Education Framework for grades 4–12

Early intervention programs in literacy and math

Focus on communication skills in middle school

New citizenship course in grade 10

STUDENT SUCCESS

EXCELLENCE IN TEACHING AND LEADERSHIP

Teaching standards for Nova Scotia

Revamped teacher education

Induction program for new teachers

Teacher recruitment campaign

Teaching specializations in literacy and math

Performance Management System for teachers

INCLUSIVE SCHOOL ENVIRONMENTS

Transition planning guide

Continuum of support for inclusive education

New School Code of Conduct

Treaty Education

African Nova Scotian history

Promote French language and culture

Equity education

Character development

Figure 2. Nova Scotia Action Plan, Four Pillars (2015, p. 36)

Part 2: Provincial E-Learning Readiness Audit

Provincial e-learning readiness is reviewed against the E-Learning Readiness Framework's criteria: **connectivity, capability, content, and culture (**Economist Intelligence Unit, 2003). **Costs** has also been added to evaluate provincial consideration of e-learning budgeting and financial support requirements.

Québec

Connectivity. The Digital Action Plan (Gouvernement du Québec, 2018, p.59) states that reliable access to digital technology is a major concern and required to support the Québec education system and adoption of innovative digital pedagogical practices. To this end, actions are taken to establish infrustructures based on the needs of the education system, improve access to digital equipment for pedagogical purposes, provide teaching tools for training in digital technologies, create accessible environment for students with special needs, and improve information security. The Digital Action Plan (Gouvernement du Québec, 2018) devotes over $700 million to the objective, which includes nearly $3.5 million to update its fibre optics network and ensure high-speed internet access for all schools in the region.

Bates (2001, p. 40) stresses that "the main barrier to using the internet for education and training purposes is that many students cannot access the internet or, even if they could, they do not have the necessary equipment or funds to purchase the equipment". The Digital Action Plan (Gouvernement du Québec, 2018) outlines a new project that enables mobile devices to access student financial aid information; although there is no financial support associated with the purchase of digital equipment for student's daily internet use.

Capability. The Digital Action Plan (Gouvernement du Québec, 2018) introduces the global context for e-learning by describing the digital revolution as the fourth industrial revolution, which details global trends and challenges regarding the integration of digital technologies into education system. This context provides strong rationale for the development of digital technologies and their integration into Québec's education system. Based on the Digital Strategy and the Policy on Educational Success, the Québec government aims to build an effective digital society and prepare citizens with advanced digital skills and 21st century competencies so that they are ready for future challenges (Digital Action Plan, 2018).

The Digital Action Plan (Gouvernement du Québec, 2018) also supports education and training in digital skills development. A reference framework for identifying required digital skill levels for different student and teacher groups is established, which helps determine what types of education and training are needed. Additionally, continuing education in digital pedagogies for teachers, non-teaching professionals and support staff, as well as professional development in digital technology for adult learners will be fostered in Québec's vocational centres, colleges and universities.

All the actions taken speak to the Québec government's value of digital technology as an absolute necessity to adapt to the digital era. It also reflects the perception that effective integration of digital technologies in education plays a central role in fostering the success of all Québec citizens and promoting lifelong skills development and maintenance.

Content. The Digital Action Plan (Gouvernement du Québec, 2018) devotes several sections to developing readily available educational content and tools called Digital Educational Resources (DERs). Teachers will be encouraged to use DERs in their pedagogical practices for diverse learners. A provincial platform, accessible on all devices and open to all stakeholders, will be established for pooling and sharing high quality DERs in various subject areas. In order to strengthen communication and collaboration among students, teachers and parents, social media tools such as Facebook and Twitter will also be used to support daily school activities.

Distance education will be developed at the elementary and secondary levels, as well as in vocational training and adult general education in both English and French sectors. Massive Open Online Courses (MOOCs) will be offered to meet educational needs in Québec and attract international collaboration. A virtual campus, eCampus Québec, will amalgamate distance education offerings at the college and university level while promoting credit recognition and

transfer among partner institutions. This will help prevent duplication and pool and share educational expertise for every demographic.

Library systems in both education and higher education will be upgraded. Legal access to e-books will be enhanced by the deployment of an e-book lending platform for libraries in private and public schools. A shared services platform for Québec university libraries will replace current systems. The Québec government will also release open adminstration data for public review. Overall, the Digital Action Plan (Gouvernement du Québec, 2018) is very advanced in providing and increasing access to open/digital educational resources (in both English and French).

Culture. Digital technologies are transforming culture at national, provincial, organizational and individual levels. The Québec government has responded to this by unveiling a Digital Cultural Plan (French) for 2014 to 2021. According to UNESCO (2018, March 15), this plan focuses on creating digital cultural content, innovating to adapt to digital culture, and disseminating digital cultural content to ensure its accessibility. This will help transit Québec's digital culture so that Québec retains significant support for its economy and remains competitive in world markets.

The Québec government (Gouvernement du Québec, 2018) wants to raise awareness of the influence of digital technologies within the education system. At the organizational level, a measure is in place to support techno-pedagogical leadership initiatives. Funding will also be available for financing paid leave for teachers to develop and support techno-pedagogical leadership initiatives. This will act as motivation and incentive to change teachers' attitudes toward using technology in teaching.

At professional levels, teachers, non-teaching professional and support staff are encouraged to recognize the benefits of digital technologies and invest more in adopting innovative pedagogical practices. Individually, learners will be given tools to understand and manage the digital world and be aware of issues related to using digital technologies (e.g. privacy). In general, awareness activities and tools (e.g. information sessions and campaigns, videos and expertise sharing activities) will promote innovative practices and foster overall culture change.

Cost. It is impressive that the Québec government recognizes education as the primary means to develop an inclusive, fair and innovative society (Gouvernement du Québec, 2018), and has significantly invested in integrating technology into the education system to achieve this. Government funding plays a huge role in the government's strategies as there is $1.186 billion in funding associated with the Digital Action Plan (2018). A detailed financial breakdown by orientations and objectives in the Digital Action Plan (Gouvernement du Québec, 2018) illustrates the government's investment focus.

The Québec government uses multiple funding strategies discussed by Bullen (2019, Unit 5.3) that provide grants for new initiatives such as artificial intelligence based research and the collaborative campus project. Existing operational costs will be reallocated to hire new resources, created new budget measures for the school system, and increase funding for developing digital educational resources and training for teachers and staff. Among all the objectives in the Digital Action Plan (2018), funding for digital infrastructure, technical support and information security occupies a large portion of the government's investment.

The Québec government funds technology infrastructure and human technology support; however, these need to be seen as ongoing operational costs (Bates, 2001, p.38). The Digital

Action Plan does not state whether investments in digital infrastructure and support are planned

beyond five years. The Digital Action Plan also does not mention how it will manage

government funding and its mechanism for selecting projects and partners. This is critical as

Bullen (2019) emphasizes that the cost-effectiveness of e-learning "will only be achieved if e-

learning is appropriately funded and, more importantly, appropriately planned and managed"

(Unit 5.3).

Nova Scotia

  Connectivity. The second pillar of the Nova Scotia (NS) Action Plan (2015), to provide

an innovative curriculum, also includes an objective to provide modern technology access to

support classroom teaching and learning, which speaks to ensuring connectivity even in rural

areas. It has only been within the past decade that Nova Scotia has seen rural areas enabled with

high-speed internet connectivity, which marks achievement of provincial connectedness.

Relatedly, the NS Action Plan (2015) mandates the establishment of an Achievement Gap

Initiative to address ongoing disparity among provincial student groups of various demographics,

cultures, and geographic locations; however, there is no publicly available information regarding

progress or quantified objectives (p. 30).

  A unique initiative in the NS Action Plan (2015) is to register all children in an electronic

school file to enable parents to track their child's learning and development, as well as assist in

school screenings and transition plans (p. 21). Although not specifically mentioned within the

larger action plan mandate, student security and privacy of data, which is a central concern

(Bates and Sangrà, 2011), are assumed to be considered.

  As of 2017, NS had over 82% of K-12 students enrolled in an online or blended learning

program, which is the highest proportion of all provinces (Barbour & LaBronte, 2018). This high

percentage of participants is due to ministry-provided student enrolments in the provincial learning management system. This indicates enrolments and not active users, but the ministerial effort to engage and connect the student population with e-learning is worth noting.

Capability. Based on the NS Action Plan (2015), there is a clear acknowledgement of the necessity to integrate technology into learning. Two of the four pillars of the plan pertaining to building a modern education system and creating an innovative curriculum speak to the need to innovate and integrate; however, there is a lack of action items tied to these pillars specific to e-learning or integrating online or blended learning across the province.

The first annual update to the Action Plan, the 2016 Action Plan Annual Report, details continued efforts to engage students with educational technology, including computer-based training added to the kindergarten curriculum, computer labs, and Google Apps for Education, but there is no mention of e-learning initiatives for students. There is instead an e-learning educator development resource launched by the Council of Atlantic Ministers of Education and Training (CAMET) and the Atlantic Province's Special Education Authority (APSEA). This evidence-based course provides educators the experience, knowledge and skills needed to provide special needs students the support required to succeed in both official languages (Government of Nova Scotia, 2016, p. 7).

Overall, there is a lack of consideration for mature learners within the NSDEECD's Action Plan with respect to e-learning access and readiness (2015). However, there are additional initiatives aimed at mature or lifelong learners such as SkillsOnlineNS, a partnership between NSDLAE and a local courseware development company, providing access to thousands of free online courses to improve workplace skills and career prospects. The NS Action Plan (2015) highlights the strategic importance of institutional partnerships, such as SkillsOnlineNS, across

government and within the business community (p. 14). Albeit fragmented, the ideology for e-learning within these initiatives acknowledges the necessity for innovation and preparing students for a life of connectedness.

Content. The NS Action Plan (2015) includes a provision for improved access and program delivery for NSVS to provide students with more flexible options and teaching support (p. 17). Additionally, an objective details engaging middle school students with online learning opportunities to better prepare them for digital engagement in secondary school (p. 23). At the secondary level, the NS Action Plan (2015) mandates improved media and digital literacy courses for 21st century citizenship (p. 24). From 2011 to 2012, funding for NSVS was increased to bring course offerings under one provincial umbrella. This was intended to increase course development, quality and infrastructure as well as provide online learning to all public secondary students ("History of K-12 E-Learning", 2018). From 2015 to 2016, there were 44 fully online courses offered through NSVS.

Since the NS Action Plan (2015), Google Apps for Education (G-Suite) has been made available to all K-12 educators and students (Barbour & LaBronte, 2018). An additional initiative to improve local cultural curriculum calls for updating high school courses for language, history, and culture of Acadians, African Nova Scotians, Gaels and Mi'kmaq (including Treaty Education). In addition to the history of immigration to the province, this is an important part of local culture and heritage; although e-learning was not specifically mentioned as the media chosen for this initiative (NS Action Plan, 2015, p. 18).

More recently, the NS Department of Education launched a new course for all schools, *Citizenship 9*, in 2018, that incorporates inquiry-based learning through a blended learning

approach (Barbour & LaBronte, 2018). A focus on digital citizenship is now fully integrated into the new provincial curriculum.

Culture. Based on the NS Action Plan (2015), there is little focus on innovating or expanding e-learning initiatives aside from the NSVS. This suggests that the culture and acceptance of e-learning was not yet at the forefront of the provincial mandate when the plan was created. Since then, strides have been made by many provincial post-secondary institutions to design, develop, and deliver e-learning content.

In 2017, legislation and a collective agreement between the government of Nova Scotia and the Nova Scotia Teachers Union acknowledges changes and advances in technology. It also recognized the advantages of learning online; designating, certifying, and training distance learning teachers in every school to deliver distance education programs; and providing ongoing professional development for teachers facilitating e-learning programs ("Article 49: Distributed Education", 2017). Provincial acts also exist for French language education (CSAP), Mi'kmaq education and special education; although without specific mention of e-learning as a medium of choice.

Costs. According to the NSDEECD Business Plan (2018), there has been only a slight yearly increase of $300 000 in funding for "Education Innovation Programs and Services," which is approximately only 1.14% of the overall education budget. Within the Business Plan (2018), there is no specific mention of e-learning, technology, online or distance education, as the provincial focus has been inclusive education and improving classroom conditions. Budgeting for educational technology and online learning is found within other programs and services such as public education funding, student support services, and strategic policy and research.

The NSDLAE Budgetary Statement of Mandate (2015) does not have a funding breakdown of e-learning, so we must assume that e-learning initiatives and budgeting for technology innovation is allocated at the program-level vice the departmental level. The mandate directs additional resources toward institutional collaboration of Recognition of Prior Learning (RPL) assessment tools among provincial and international post-secondary institutions. This effort "strengthen[s] a collaborative approach between institutions [and] has the advantage of avoiding duplication and accessing a higher level of infrastructure and resources than would otherwise be possible" (Bates, 2001, p. 61-2).

The NSDLAE has a Memorandum of Understanding (MOU) that provides $25 million to subsidize universities through a University Excellence and Innovation Program. This program's aim was to "remove costs and maintain quality within the university system" in order to achieve sustainability by 2015. The MOU (2012) also aims to include increased institutional collaboration, provincial grants, improved credit transfers, accessibility, and affordable tuition (para 9). Although there is no specific mention of technology innovation within the MOU, projects are overseen by various working groups including government and institutional representatives, and it is a fair assumption that e-learning initiatives were included therein.

Part 3: Provincial E-Learning Comparison and Recommendations

One of the most significant differences between NS's and Québec's strategies is that NS lacks focused strategic guidance without a dedicated e-learning strategy or action plan, whereas Québec does not and adopts a strong top-down approach. NS's plan also focuses mainly on K-12 learners and does not address mature learners; whereas Quebec's plan addresses learners of all ages. Both plans stress the importance of innovation, digital citizenship, access, and shared resources. However, Québec has a clearer investment plan, multiple funding strategies, and more

comprehensive list of targeted objectives, which demonstrate a more sophisticated understanding

of the implications and needs for e-learning. NS is in need of specific objectives for

technological innovation, infrastructure, and e-learning support.

Collaboration/institutional partnerships

Both governments envisions using e-learning to meet the needs of a changing world and

highlight the strategic importance of partnerships; however, they could do more to foster

collaboration. For example, both provinces could implement more structures and mechanisms

(e.g. financial incentives) to reward collaboration amongst institutions. This would help ensure

better commitment from staff (Bates, 2001) and decrease competition amongst institutions as

well as resistance towards e-learning. NS could also foster closer collaboration between the

NSDEECD and the NSDLAE in order to incorporate all levels of learning (e.g. mature/adult

learners) into the provincial strategic action plan. A continued exploration of institutional

partnerships would also help prevent duplication of efforts to innovate, support transferrable

credits and prior learning assessment equivalency for similar courses completed, and pool

resources and infrastructure to hasten innovation (Bates, 2001; The Economist, 2003).

Funding strategies

Québec has a clear funding plan within its Digital Action Plan (Gouvernement du

Québec, Economic Plan in Brief, 2018); however, NS's Provincial Business Plan (2018) and

funding allocation for provincial e-learning development is unclear since it is captured within

other budgetary services and programs. This might mean that e-learning initiatives are budgeted

at a program or service-level, rather than at a strategic level of government. It is recommended

that increased budget visibility specifically pertaining to e-learning infrastructure, design,

development, delivery, and ongoing support be allocated within the Department of Education

and NSDLAE Business Plans. Bates (2001) suggests institutions consider adopting activity-based costing to "more effectively assess the costs and benefits of e-learning" (p. 94). Without clear objectives involving technological innovation, infrastructure, and e-learning support, decisions will remain at the program level and may stifle innovation if the programs lack subject matter expertise.

Both plans also lack mention of ongoing investments for e-learning and the need to fund recurring operational costs beyond a five year term (Bates, 2001). Sustainable funds can be acquired in many ways such as by using e-learning to make processes more efficient and creating savings in or moving funds from other budgets (Bates, 2001). A financing, planning, and accountability process is also needed to justify new investments made towards costs (Bates, 2001). Additionally, both governments must ensure that educational applications of technology are given the appropriate level of support needed (Bates, 2001). Support for other areas such as student security and privacy of data, which Québec addresses more comprehensively than NS, are essential but should not be the only focus. Québec has invested significantly more in digital infrastructure, technical support, and information security and may need to re-evaluate how funding is balanced in order to ensure that educational applications of technology, hiring of non-teaching human resources (program administrative staff, instructional designers, etc.) and faculty training are given the appropriate level of funding and support needed (Bates, 2001).

Integration of inclusive content with technology

Both provinces differ in their approach and extent to which they've created online learning materials adapted to different cultures and languages. Québec is creating learning materials in both English and French and making efforts to take First Nations and Inuit people's needs into account. Despite legislating curriculum inclusion of such topics, NS requires an

increased focus on second language and local historical/cultural online resources and courses. Currently, there are far more English online courses than French. The NSDLAE must continue to develop French training materials as well as ensure French and Acadian representation at public consultations. Legislation exists to include geographically relevant topics within curriculum; however, digital engagement of this content should be encouraged through clear e-learning adoption objectives. This will increase accessibility and, depending on the level of fidelity, make content more interactive and engaging for learners.

Part 4: Conclusion

Being the larger and more economically advanced province allows Québec to offer a more comprehensive digital action plan and funding initiatives for education, but both Québec and NS acknowledge the importance of integrating e-learning into curricula for all demographics. There is a need for improved institutional partnerships, better-defined funding strategies for e-learning innovation and ongoing support, as well as increased consideration for designing and developing local and inclusive e-learning content. Once these needs are met, both provinces will be better positioned to continue providing technology-based, relevant content and driving technology-enhanced educational innovation to benefit learners of all ages.

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