

**A people-centered
strategy for success
in a rapidly changing
environment.**



Horizon *Manitoba*

Building a brighter future together

Executive Summary

Manitoba is facing a turning point as the world is entering the fourth industrial revolution, characterized by rapid disruption of current industries, globally connected devices and people, automation, robotics, and artificial intelligence. These changes have the potential to massively disrupt the province's workforce and will affect almost every industry in Manitoba's economy. We need to be strategic and work together to move our province forward to address the challenges and seize the opportunities.

According to the study *Humans Wanted*, published by the Royal Bank of Canada, over the next ten years, approximately half of all Canadian jobs will be heavily disrupted by technology and automation. Certain jobs may disappear entirely, while others will require a significant skills overhaul. RBC notes that "human skills" such as communication, collaboration, critical thinking, social perceptiveness, and problem-solving, will be more important than ever. These durable skills will be essential assets in any professional career, including technical and scientific ones.

Automation and advances in artificial intelligence will have profound impacts on Manitoba's economy, including manufacturing, construction, transportation, and agriculture. Almost all of these sectors were identified as particularly vulnerable to automation by the Royal Bank of Canada. This has serious implications for Manitoba's future.

Our greatest strength as a province is our people. To tap into Manitoba's full potential, collaboration between employers and those who train the workers of tomorrow is essential.

Manitoba's post-secondary institutions (PSIs) and the Business Council of Manitoba have been working together to develop a people-centred strategy to ensure that Manitoba is well-positioned to succeed in a rapidly changing environment. This work is complementary to Manitoba's Economic Growth Action Plan and the federal government's Western Canadian Growth Strategy. The role of the private sector is to generate wealth through innovative enterprise, often competing on the global stage. The role of the education system is to prepare citizens for full participation in society and to equip graduates with the right skills and knowledge to succeed in the workforce while contributing to the common good now and far into the future. PSIs accomplish this by developing students' individual capacities and directly creating knowledge – knowledge that then can be shared and translated into innovative new ways for private sector enterprises to thrive in their evolving competitive environments.

Manitoba's private sector and post-secondary institutions have a longstanding, collaborative, and mutually beneficial relationship, as evidenced by the many partnerships between business and post-secondary. Moving forward, the presidents of Manitoba's major post-secondary institutions and the leaders of the Business Council of Manitoba want to deepen these partnerships and work with government to ensure Manitoba's success.

In partnership, the government, post-secondary institutions, and the business sector are proposing to implement several key projects that will provide tangible benefits for the province and align with the economic strategy proposed by the Province of Manitoba.

Working together, *we will:*

One

Build an inventory of successful industry-education partnerships and determine how best to further develop and leverage these partnerships.

Two

Determine the full scope of the economic impact of the post-secondary education sector in Manitoba and its contribution to local economies, to better understand how PSIs can align with Manitoba's economic and social goals and how government and business can respond to R&D breakthroughs.

Three

Continue to build upon the Manitoba Collaborative Indigenous Education Blueprint, and work in partnership with Indigenous communities, government, and business, towards significantly increasing Indigenous participation in the post-secondary sector and in the labour market.

Four

Create a "work-integrated learning initiative," with the aspirational goal of creating an opportunity for all post-secondary students to experience work-integrated learning.

Five

Develop a robust, forward-looking, and dynamic labour market tool that recognizes the unique regional needs of employers and that many of our graduates will have multiple careers, work in small-to-medium-sized organizations and in jobs that we have not yet imagined.

Six

Develop a system to track and analyze student movement from secondary education into and throughout the post-secondary system, in order to better understand the link between student choices and career pathways.

We believe these ideas are actionable, practical, and that, taken together, contribute to a strategic blueprint for how PSIs and employers can work together to prepare graduates for the future of work.

Together, we will succeed in building a brighter future for Manitoba.

One: Alignment with Industry and Enhanced Competitiveness

Industry partnerships have historically been an important feature of the post-secondary sector in Manitoba, a process that continues today. These partnerships include research-based initiatives, collaborative projects, work-integrated learning initiatives, scholarship and grant endowments, and general institutional collaborations. Two of the primary purposes of higher education are to produce graduates for the labour force and to generate research results — both of which involve the business sector and are mutually interconnected. Formal and informal partnerships between Manitoba’s PSIs and the business community have produced many successes and have improved Manitoba as a whole.

Recent discussions about the role of PSIs within broader labour market trends have focused on the idea of “aligning” the efforts of post-secondary and employers, which features prominently in Manitoba’s Economic Growth Action Plan. The idea of obtaining better labour market data is also highlighted to help inform decision-making among PSIs and the business community regarding the creation and adaption of programs to produce graduates with the knowledge, skills, and abilities to help them be successful.

Colleges and universities also conduct research and partner with business to create innovative approaches to solving problems. Research performed by PSIs has a direct impact on economic success and innovation. **According to a recent analysis conducted by Research Manitoba, for every dollar invested in research in Manitoba, a \$4.77 economic return is realized.** The impact extends beyond attracting research investment to the province. It includes employment for researchers, graduate students, and permanent research staff; informs decision-making; and creates new technologies and processes for business, government, and non-profit organizations.

With this in mind, post-secondary institutions and the business sector understand the value of working together and building upon partnerships in order to meet these challenges. There are many examples of successful partnerships and collaborations between post-secondary institutions and Manitoba businesses. Just as it is important for PSIs to adapt to changing business realities, it is important for business to know about developments in training and technologies so that they are aware of the skills graduates are coming to them with and how they can capitalize on those skills.



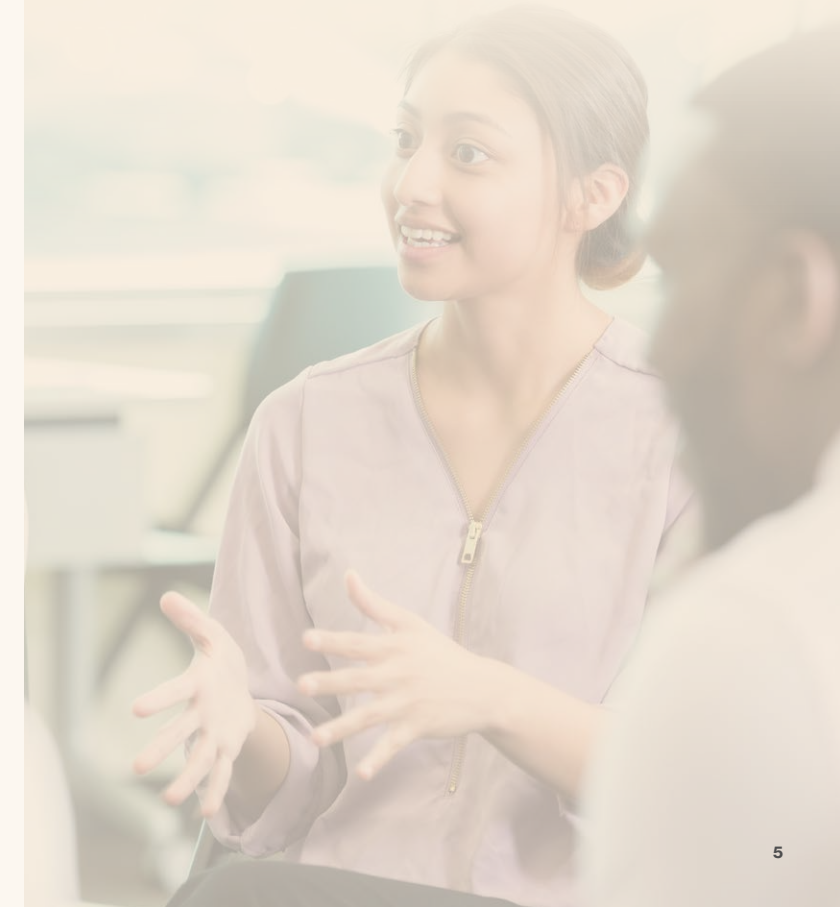
University of Manitoba’s research enterprise is \$211 million per year. As one of Canada’s fifteen research-intensive universities, research conducted at UM covers the spectrum of disciplines from agribusiness to zoology. The University’s intellectual property estate includes hundreds of patents and licences that have generated millions in royalties. The University’s research has led to many innovations and start-up companies that have significantly enhanced the Manitoba economy in fields such as agriculture, engineering, life sciences, and creative arts. University of Manitoba’s research enterprise goes back decades and includes the discovery of canola, which is responsible for 250,000 jobs and contributed \$26 billion to the economy in 2017. The pace of discovery continues to accelerate as UM partners with companies that are driving innovation in Manitoba including Price Industries, New Flyer Industries, Roquette, as well as key industry associations. These innovations create wealth and jobs and are important to key economic sectors.

“Across the globe, growing and healthy economies have strong education sectors — the link between the two is well-documented. Highly qualified personnel are the innovators and wealth creators.”

Brian Manning
Horizon Manitoba facilitator and former head of the Alberta public service.

Action: *Build an Inventory of Partnerships to Leverage and Expand Opportunities*

Post-secondary institutions and businesses will continue to develop partnerships that will draw upon the strengths of each sector. The education system is changing and continues to seek opportunities to work with industry to conduct research and development. Investment is key, and understanding what works today will provide a solid basis for developing a strategy that will help us to expand the number of beneficial partnerships, with the ultimate goal of enhancing Manitoba’s advantage.





Advanced Manufacturing at Red River College:

The Electric Vehicle Centres

This project's goal is to develop an all-electric battery transit bus involving the Province of Manitoba, Manitoba Hydro, Mitsubishi Heavy Industries (Japan), New Flyer Industries, and Red River College. This project developed a prototype "zero emissions" bus and related charging infrastructure. New Flyer Industries then led a new consortium application to secure additional funding to develop four prototypes and undertake a four-year demonstration with Winnipeg Transit under regular transit operating conditions. The total investment in these two projects is \$10 million and will serve to enhance EV-related research, development, testing, and manufacturing capabilities in Manitoba. Due to the project's success, additional industry partners such as Macdon, Buhler, and Fort Garry Fire Truck have signed on. New Flyer is looking at converting 25% of their fleet to electric buses as a result of a positive outcome of the project.



Improving Canada's Most Important Crop at the University of Manitoba:

The Canadian canola industry contributed over \$26 billion to the economy in 2017 (estimated \$4.1 billion to Manitoba's economy). Heart-healthy canola oil can be found in kitchens and restaurants across the country. A group of UM researchers is seeking to take this well-known Canadian crop into exciting and underexplored territory. The Brassica Breeding Program in the Faculty of Agricultural and Food Sciences is working to identify and improve canola's protein content and quality, a move that could boost the crop's utility to producers and position it solidly in the highly competitive and growing plant-based protein market. It was UM plant breeder Baldur Stefansson who first developed canola and today, canola research is part of a UM flagship program with partners that include Bunge Canada, Nutrien Ag Solutions, DL Seeds, Manitoba Canola Growers, and the Canola Council of Canada. Canola research is just one type of agricultural research happening at UM; advances include improved crop yields for farmers and grain storage practices — important contributions that maximize output for producers.



Machine Learning and Agriculture at The University of Winnipeg:

Partnership with EMILI

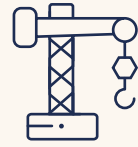
The recent and rapid advancement of miniaturized, low-cost sensors, robotics, autonomous vehicles, and machine learning techniques will soon bring a new revolution to agriculture, which is fundamentally different than the last revolution brought about by mechanization and the large-scale application of fertilizers, herbicides, and pesticides. The new technologies will eventually allow us to lavish the same attention on individual plants in a large prairie crop as one might on the backyard garden. At the forefront of these developments, The University of Winnipeg is working on the application of high-performance computing (HPC) and machine learning (ML) to digital agriculture (digital ag). Through a partnership, Enterprise Machine Intelligence and Learning Initiative (EMILI) will work with UWinnipeg researchers to commercialize the technology, which aligns with the plans of the larger Protein Industries Canada supercluster. Usage of this research by industry will help to advance Western Canada's ag advantage on the global stage.



Bridging Education, Employment in Rapidly Expanding Cyber Security/ICT space at Manitoba Institute of Trades and Technology (MITT):

Collaborate with industry. Build responsive programs. Anticipate disruption. This is how MITT is helping Manitoba's fast-paced ICT sector develop a future workforce with specialized technical knowledge in cyber security and improved employability skills. By embedding industry partners and sector-allied not-for-profits into the fabric of its ICT program cluster, MITT can evolve in lockstep with industry need and provide its students access to an environment that directly mirrors their future workplaces: MITT labs are built on the backbone of industry products and services, offered by partners such as Checkpoint, CISCO, and Microsoft, and are training hubs for workforce upskilling in cyber defence and other crucial technologies. Additional student benefits of MITT's deep collaboration with industry include partner-hosted work integrated learning and capstone projects that hone students' skills and create applied research opportunities. Recognizing the early adoption of technology by younger generations and the forthcoming shortage of skilled ICT talent, MITT and Pembina Trails School Division, in partnership with ICTAM, launched a first-in-Manitoba program — Pembina Trails Early College, PTEC for short — to provide tech-minded secondary students a bridge between education (high school, post-secondary) and employment.

These partnerships are driving innovation and research forward – benefiting students, businesses, and Manitoba as a whole.



Rural Economic Development and Infrastructure Improvements at Brandon University:

Anyone who has driven outside of the city has encountered a gravel road. These roads are expensive to maintain because they easily break down and they can be dusty and dangerous. There is a critical need for low-cost and environmentally sustainable techniques for the stabilization of unpaved roads throughout Canada. Brandon University's Dr. Hamid Mumin is creating a better aggregate by combining polymers to manipulate the natural properties of clays, causing them to act like a cementing agent. The research is carried out in collaboration with Cypher Environmental of Winnipeg, the RM of Cornwallis Public Works, the City of Brandon Engineering Department, and local contractors. Funding for four student researchers comes through the MITACS Accelerate grant and an NSERC Industrial Undergraduate Student Research Awards grant. The results could have an economic benefit to the private sector in the form of a new product line as well as benefits to rural and northern communities by improving the quality of gravel roads and reducing the cost to maintain these roads.



Food Security at Assiniboine Community College:

The Field to Fork Project

A 2,800-square-foot sustainable greenhouse is providing the training ground for students interested in finding new ways to improve food security because local and sustainable food production is a building block to creating healthier and stronger communities. ACC's Horticultural Production and Food Sustainability programs investigate energy use and productivity inside different types of greenhouse models, use fertilizers to extend the shelf life of food, and determine best practices in composting. Their findings are published and presented at workshops and seminars, providing valuable information and guidelines for other growers. An additional long-term research project is examining food security in northern climates. Applied research projects like these provide students with hands-on experience in research methods and will help equip them with in-demand practical skills.



Canadian Mennonite University: *Centre for Resilience (CR)*

Canadian Mennonite University's education in peacebuilding, development, and social justice has developed through partnership with business and community organizations since 1980. Currently these initiatives in social innovation are being extended through the university's Centre for Resilience (CR), where students participate in work-integrated learning across a range of sectors with resident entrepreneurs on campus, including architecture and design, healthcare, law, environmental services, and human resource development. The CR's "social innovation lab" is a course in which students test solutions to problems posed by participating organizations. Most recently, participants included Blossoms (healthcare), Being Pukka (positive psychology), A Rocha (environmental education), Greentech Canada (technology), Compost Winnipeg (environmental services), and Suitehom (a social services start-up). New CR residents include Manitoba Green Building Council, PIKE Design, Red Moon Media, and facilitators with Mediation Services and Achieve Centre for Leadership and Workplace Performance. CMU initiatives linking education and industry build on the university's founding commitment to a practicum component for every student, which preceded work-integrated learning as a common feature of post-secondary education.



Specialized Skills Training By-And-For Francophones

Université de Saint-Boniface's relationship with Roquette

USB is Manitoba's only French university. It also has the unique advantage of offering university and college training as well as continuing education under one roof, which nurtures a systemic approach to education and its relationship to industry. In December 2019, USB's Continuing Education Division offered specialized chemistry training to the French company Roquette, a global leader of plant-based ingredients which is building a pea protein plant in Portage. This 10 day intensive course offered at the Southport office was tailored to meet the needs of Roquette's supervising team. The project's goal is to ensure immediate targeted skill development in English or in French, and the training materials developed for Roquette are therefore bilingual. This new relationship with USB's Continuing Education will in turn provide Roquette with access to USB's bilingual university and college graduates, a rich recruitment source for their Manitoba operation.

Two: The Economic Impact of Post-Secondary Education in Manitoba

The economic impact of post-secondary education in Manitoba is significant. Post-secondary institutions are economic engines across the province as well as within their communities.

PSIs are primary contributors of human capital to Manitoba business and industry, which includes educating and supplying the majority of Manitoba's workforce. The largest component of the return on investment in PSIs is from the development of the skills, knowledge, and abilities required by the economy. Post-secondary graduates are driving Manitoba forward and creating the jobs and industries of tomorrow.

Graduates from Manitoba post-secondary institutions have lower unemployment rates, earn higher wages, and contribute more taxes than non-graduates. The benefits of post-secondary are life-long and far-reaching. There are well-documented links between the level of post-secondary achievement and life-long earning potential, in addition to health and social outcomes, which reduces the draw on government support programs and expenditures. The benefits of post-secondary education can be direct, when, for example, technical proficiency is gained in engineering, or indirect, when cognitive and social skills are acquired and developed while earning a degree in psychology, history, or philosophy. The different and diverse

forms of learning advanced by Manitoba's post-secondary institutions — from the humanities to the trades — will be essential to guaranteeing the cultural, economic, and societal health and vitality of the province.

Post-secondary institutions are also connected to global markets and flows, attracting international research and students. Post-secondary institutions draw international students whose spending has a positive impact on the province. **In Manitoba, international students contributed over \$374.8M to the economy in 2016.** Statistics Canada data shows that the direct and indirect economic impact of international students in Manitoba supported over 4,000 jobs.

On a local scale, post-secondary institutions play an important role in regional economic development throughout the province. Institutions like Brandon University, the University College of the North, and Assiniboine Community College provide opportunities for students to pursue post-secondary education outside of Winnipeg, and directly benefit regional economies by engaging in research and development initiatives within their communities.

Throughout the province, business and post-secondary institutions partner in research and create innovative approaches to solving problems. Research performed by PSIs has a direct impact on economic



success and innovation. The impact extends beyond attracting federal money to the province. It includes employment for researchers, graduate students, and research staff; informs decision-making; and creates new technologies or processes for business, government, and non-profit organizations.

The economic impact of research for Manitoba business, industry, agriculture and social services cannot be underestimated. As an example, for every research dollar spent, \$4.77 is leveraged from other sources and stimulates a wide range of economic activity, including collaborative research and development partnerships with Manitoba companies like Roquette, Magellan Aerospace, Price Industries, Farmers Edge Inc., Maple Leaf Foods, Manitoba Pork Council, Manitoba Pulse and Soybean Growers Association, New Flyer Industries Limited, and Standard Aero Ltd. The economic development benefits stemming from research can be seen through the commercialization of inventions, which at the University of Manitoba alone occur at the rate of about 60 a year.

Understanding the economic impact of the post-secondary sector will help to inform how post-secondary institutions can align with the provincial economic growth strategy and how post-secondary institutions can augment the overall economy, both regionally and provincially.

Action: *Analyze the Economic Impact of PSIs in Manitoba*

In order to develop a better understanding of the post-secondary sector's impact, we will conduct a series of analyses, by gathering data and by consulting with business. We will develop a clearer picture of the overall economic impact of the post-secondary sector within Manitoba as a whole, as well as how post-secondary institutions can further enhance local and regional economies.



Three: Indigenous Inclusion



By 2026 Indigenous Peoples will represent an estimated 18 per cent of Manitoba's population — with First Nations, Métis, and Inuit youth the fastest-growing group. Ensuring their success and inclusion is key to Manitoba's competitiveness and economic growth.

Guided by the Truth and Reconciliation Commission's Calls to Action, PSE presidents have signed on to the Indigenous Education Blueprint. Created in 2016, the Blueprint seeks to address Indigenous engagement and pathways to education. Commitments from the Blueprint include bringing Indigenous knowledge, languages, intellectual traditions, models, and approaches into curriculum and pedagogy; promoting research and learning that reflects the history and contemporary context of the lives of Indigenous peoples; and increasing access to services, programs, and supports to Indigenous students, to ensure a learning environment is established that fosters learner success.

“We have a young, growing, Indigenous workforce, but attainment and labour market participation rates are lower for Indigenous youth; we need to build stronger pathways and focus on creating opportunities.”

Doug Lauvstad

President, University College of the North

The Southern Chiefs' Organization Inc. and Manitoba Keewatinowi Okimakanak Inc. recently partnered with Brandon University's Rural Development Institute (RDI) to research and document Indigenous economic contributions to the broader Manitoba economy. The report demonstrated that in 2016, there was \$9.3 billion in spending by Indigenous businesses, governments, and households and spending on infrastructure.

The RDI report also found that the Indigenous economy has many positive impacts on the Manitoba economy, including:

- **Creating and maintaining over 35,700 jobs**
- **Providing \$1.1B in wages and salaries to workers**
- **Contributing \$2.3B to Manitoba's GDP**
- **Contributing \$231M in taxes (57% federal and 43% provincial)**

This data demonstrates that the current Indigenous economy is significant, and a major contribution to Manitoba, both economically and socially, while also showing the opportunity for PSIs to support further growth.

This information becomes even more interesting when we consider the further economic gains that would occur if we bridged the gap in outcomes between Indigenous Manitobans and non-Indigenous Manitobans. The National Aboriginal Economic Development Board released a study that presents the impacts for Manitoba if these gaps were closed, and First Nations people had

the same opportunities as the province as a whole. They found that:

- **\$729M in additional income earned by more than 81,000 First Nations workers due to an on-par average employment income,**
- **\$957M in additional income earned by 22,548 newly employed First Nations people due to an on-par employment rate and employment income, and**
- **\$2.8B in increased annual provincial GDP due to improved productivity.**

There are significant benefits to working towards greater Indigenous inclusion, ranging from improved social outcomes to increasing Manitoba's competitiveness. One of the most important ways this can be achieved is through education. In partnership with Indigenous communities and organizations, business and post-secondary institutions are making positive steps towards reconciliation and inclusion.

An excellent practical and proven example is the Aboriginal Education Awards Program of the Business Council of Manitoba. The Council, with its partner The Winnipeg Foundation, together with the Government of Canada and the Province of Manitoba, annually provides more than one hundred awards to Indigenous students attending post-secondary institutions in Manitoba as they pursue careers of their choice. The 18-year record of this program delivering more than 2,500 awards valued at \$6 million demonstrates the successful and very positive outcomes that can be achieved through effective partnerships in Manitoba.

Action: *Collaborate to Advance Indigenous Education and Employment*

Building upon the common framework of the Manitoba Collaborative Indigenous Education Blueprint, post-secondary institutions will continue to implement the commitments. Within the unique context of each institution, PSIs are committed to collaborative development, implementation and evaluation of the policies, procedures, and practices of our institutions and the broader community to advance Indigenous education and reconciliation. PSIs, in partnership with Indigenous communities, government, and business, are committed to significantly increasing Indigenous participation in education and employment.



Four: Work-Integrated Learning



The next generation of Canada’s entrepreneurs, researchers, and innovators require a broad set of skills to contribute to and succeed in the global economy. To meet this need, the post-secondary sector is equipping students with career-boosting learning experiences, such as paid co-ops and internships, research projects, and mentorship programs. But there is an opportunity to do more.

Known collectively as ‘work-integrated learning’, hands-on experience — where students learn outside the classroom — is an enhancement to the “traditional” class-based learning model. These experiences give students a greater understanding of the procedures, conduct, knowledge, and practices that are required for participating effectively in the workforce.

Complementing research excellence, work-integrated learning opportunities further enhance the student experience, benefit industry, and ultimately drive increased economic competitiveness. There are many examples of work-integrated learning in the post-secondary sector and we will continue to develop these opportunities. Expanding support for such programs would provide more students and employers with an opportunity to access the benefits of a work-integrated learning opportunity.

The Business and Higher Education Roundtable examined the status of work-integrated learning in Canada, and found that connections between businesses, NGOs, universities, colleges, and polytechnics were of critical importance in building work-integrated learning opportunities for students, and that both post-secondary institutions and the private sector greatly benefitted from work-integrated learning.

Work-integrated learning will also provide tangible benefits to Manitoba’s businesses by providing them with increased access to energetic, knowledgeable, and innovative talent from post-secondary institutions. In a survey conducted by the Manitoba Chambers of Commerce, Manitoba SMEs noted that one of the most common barriers impacting their ability to hire qualified employees is a lack of funds and access to qualified candidates. Work-integrated learning is one pathway for addressing this issue. A successful work-integrated learning program would match students with hands-on work experience opportunities, while also supporting employers by creating a framework that will enable them to find, hire, and further develop qualified employees.

In order to be successful, work-integrated learning arrangements require a mutual understanding of the goals and objectives, oversight, and an agreement about the benefits to students and employers.

Work-integrated learning can take many forms, which the Business and Higher Education Roundtable groups under three “categories”:



Systematic Training

where most learning is done in the workplace (this includes apprenticeships);



Structured Work Experiences

where students become familiar with the world of work as part of a university or college program (this includes co-ops, internships, and field experience);



Institutional Partnerships

which are activities or programs offered by a post-secondary institution that are designed to achieve specific industry or community goals (this includes applied research projects, service learning, and international student exchanges).

Action:

Create a Work-Integrated Learning Initiative

The post-secondary sector recognizes the value of work-integrated learning opportunities for both students and employers. Working with government and the private sector, PSIs will build on the many successful opportunities already developed with businesses with the mutual goal of providing all students a work-integrated learning experience during the course of their education.

Facilitating opportunities for students should be the responsibility of post-secondary institutions, working collaboratively with industry to secure work-integrated placements. A particular focus should be on small- and medium-sized enterprises, which make up 98 per cent of the businesses in Manitoba and employ 75 per cent of the workforce.

The recent success with the reinvigoration of the Manitoba Scholarships and Bursaries Initiative (MSBI) demonstrates interest from the private sector to support the learning experiences of current students. It provides an excellent model for developing a work-integrated learning initiative.

Matching funds to support work-integrated learning could be accessed from different sources, including large employers, government, or other organizations, such as MITACS, which is a federally mandated agency that connects academia, industry, and the world to create a more innovative Canada. RBC’s Future Launch is another good example of the type of program that could be scaled up across multiple businesses.

Five: Manitoba's Economy



A host of recent reports have identified the unique strengths and opportunities of Manitoba's economy. Manitoba has a diverse and resilient economy, strengthened by our province's natural advantages, central location, low business costs, high quality of life, and most importantly; its people. Most recently Manitoba's Economic Growth Action Plan identified a nimble, entrepreneurial, and innovative business community that is cohesive and collaborative as one of Manitoba's advantages.

Manitoba's GDP in 2016 was \$67.86 billion, and the economy grew by 2.2 per cent from 2015 to 2016. Currently, the economy employs 647,200 individuals. Current predictions forecast a total of 168,700 job openings between 2018 and 2024. Of these, sixty per cent (100,800) are expected to require post-secondary education, divided evenly between college and university. These openings will include areas of significant demand, such as: business, finance and administration, management, and sales and service. Whether or not employers can fill these jobs with qualified people will have a significant impact on Manitoba's economy.

12,000 graduates per year

- 14,460 projected job openings requiring ps credentials

- 2,500 deficit of skilled graduates per year

Each year, Manitoba's colleges and universities graduate over 12,000 students, the vast majority of which choose to stay in Manitoba after graduation and contribute directly to our economy and our communities. Given that the projected number of job openings over the next seven years (2018-2024) is approximately 24,100 per year and that 60 per cent of these jobs will require post-secondary credentials (14,460), there is currently a projected deficit of 2,500 skilled graduates per year. Some of the skills gap can be alleviated by attracting skilled immigrants to Manitoba; however, it is important to invest in creating educational opportunities for Manitobans and focus on growing our own talent.

Moreover, the average difference in annual income for a university or college graduate in Manitoba was \$17,149 (Census 2016) when compared to those with a high-school-level education. If the projected job openings are filled with qualified people, the projected increase in wage earnings will be about \$247 million per year, which will result in an increase of nearly \$34 million per year in income taxes for the Province.

In addition to these projected changes within Manitoba's labour market, larger-scale trends are beginning to affect the way we work. The Fourth Industrial Revolution will affect almost every sector of our economy and change the skills and nature of many jobs. This has many potential implications, both positive and negative. The Government of Canada's Advisory Council on Economic Growth identified several areas of the economy that will be strongly vulnerable to disruption and automation.

Key areas of the Manitoba economy, vulnerable to disruption and automation as identified by The Government of Canada's Advisory Council on Economic Growth



When the sectors identified by the Advisory Council on Economic Growth are compared to Manitoba's key economic sectors, over 70% of Manitoba's economy will be affected by automation and digital disruption.

Manitoba's economy is diversified, providing stability and preventing our economy from experiencing the full effects of periodic downturns in the national economy. However, most of our key sectors have been identified as vulnerable to automation. When the sectors identified by the Advisory Council on Economic Growth are compared to Manitoba's key economic sectors, over 70 per cent of Manitoba's economy could be affected by automation and digital disruption. Clearly Manitoba is not immune to disruption.

This presents a unique challenge for Manitobans. Failing to adapt and innovate in the face of change may have serious economic and social consequences in the future. While it is difficult to determine exactly how technological disruption will affect our economy, partnerships and preparation can facilitate the transition to a digital economy and enable us to tap into the opportunities presented by this change and get ahead of the curve.

Of particular note, Manitoba's North is currently going through an unprecedented transformation both in the economy, as the resource sector continues to evolve and communities are forced to adapt, and, in demographics, as a rising, young Indigenous population seeks opportunity and inclusion. In response, the province initiated "Look North" to address northern economic and social development. The final report highlighted the growing need for education and skills programming tied to the economic aspirations of the region's major employment sectors and communities.

As well, the recently released *Manitoba – First Nations Mineral Development Protocol* states that a pre-requisite to advancing the resource sector — and the significant employment and economic opportunities presented therein — is to support the research, education, and training programs required to assist First Nations communities to engage in, and benefit from, resource development. There is

significant opportunity for all PSIs in Manitoba to develop programs and partnerships to support the economic rejuvenation of Manitoba's North, and to partner with businesses and Indigenous communities to advance development and growth throughout the province.

Post-secondary institutions are key drivers in building a resilient economy and workforce and are working with business to innovate, develop, and practice new approaches and techniques, and prepare students for constant change by teaching foundational skills in addition to practical and technical skills suited to one particular line of work. Manitoba employers need qualified, educated, and creative graduates. This is why post-secondary institutions and industry are continually working to increase collaboration to ensure training opportunities meet the needs of both students and employers and to create a workforce of graduates who are ready to tackle tomorrow's challenges and to create opportunities. Post-secondary institutions and the Manitoba business sector will continue to build upon our history of partnership and collaboration in order to strengthen our activities and meet future challenges. Strong partnerships between PSIs and the business sector will help Manitoba develop resiliency and adaptability in the face of massive disruption.

Action: *Develop a Dynamic Labour Market Tool That Recognizes Employer and Graduate Needs*

Post-secondary education helps students develop durable skills, knowledge, and abilities that they will need in their future employment. Employers also need graduates who have the talent they need to take their business in new and innovative directions. Working together with employers and government, post-secondary institutions will work to develop a robust, forward-looking, and dynamic labour market tool that recognizes the unique regional needs of employers and that many of our graduates will have multiple careers, work in small- to medium-sized organizations, and in jobs that we have not imagined yet.

“While we may be unable to predict exactly what the economy and the job market will be in ten, twenty, or thirty years, we should prepare ourselves for the change so that we can be better positioned as a province. And we need to make investments today that plant the seeds of growth for tomorrow's economy.”

Don Leitch
President, Business Council of Manitoba



Six: Understanding Student Pathways

Manitoba's post-secondary institutions deliver services across the province in urban centers and in Northern and rural Manitoba to a growing number of students. The number of students enrolled in Manitoba's post-secondary institutions is growing, rising from approximately 38,000 students in 1999-2000 to approximately 65,000 – 70,000 students today. Mandates of individual institutions vary along with programs and certifications. Students may start in one program only to realize their educational interests or career-training aspirations may be better met at another institution. Movement of students between institutions within the sector is not well understood.

It is also important to engage the K-12 education system, particularly high schools. In order to support students and create pathways to post-secondary

education and the workforce, we must develop a holistic approach that takes into consideration students' primary and secondary education. In this spirit, the post-secondary sector will participate in the Manitoba Commission on Kindergarten to Grade 12 Education.

It is expected that this information will inform discussions about how the sector as a whole can improve student experience, but it is also likely to highlight opportunities to more clearly communicate the linkage between education and potential careers. As the sector changes and as student and industry expectations change, the post-secondary sector in Manitoba is committed to finding opportunities to meet those needs. Better understanding student movement while they are in the sector is a step in that direction.

“It is important for young people to understand the connection between education and career. The K-12 system is part of the solution and we are moving forward.”

Pauline Clarke
Chief Superintendent,
Winnipeg School Division



Sisler High School Interactive Digital Media Program.

One example of an innovative partnership between industry and the education system is the Sisler High School interactive digital media (IDM) program. The program provides students with the creative and technical skills they need to succeed in the video game development industry. Through the partnership, students have the opportunity to connect and learn from industry experts representing Ubisoft Winnipeg, Disney, Pixar, and the Vancouver Film School. This partnership will benefit the digital production industry by increasing the number of graduates with the talent they need to remain innovative. It will also benefit the students themselves – providing them the opportunity to develop the skills they need to thrive in all areas of the economy, not just video game design. The Sisler High School IDM program provides students with applicable skills they can take into different jobs throughout their career.

Action: Track Student Movement and Pathways

In order to provide better support and communicate opportunities with students, we need better data on student mobility and career pathways. Students move around Manitoba's post-secondary system and we currently do not have a way to track this movement at a systems level. Post-secondary institutions and government are working collaboratively with the province on a solution to this data gap. One of the most important factors for future students in choosing a particular area of study is the pathway to potential employment that may result. Yet, in some cases, there is not a clearly understood or linear path. PSIs, in collaboration with employers, can do more to communicate the pathways and potential employment opportunities.



Conclusion

Manitoba's future success depends on its people. Our province has been blessed with many natural advantages, yet we must be strategic, collaborative, and forward-looking if we are to succeed in a world faced with increasing levels of disruption, competition, and uncertainty. Considering our best economic strategies and how we can align our efforts to ensure that we are graduating people with the right mix of experience, durable and relevant knowledge, skills, and abilities is the best way to ensure our continuing prosperity.

The way in which we work together and provide opportunities for current students will set us apart from other jurisdictions. Manitoba is large enough to compete on the world's stage, but we are also small enough that we can build relationships, connect the dots, and achieve a deeper level of collaboration that will produce results. Improving our economic competitiveness is critical to our future prosperity and wealth creation.

Investment in post-secondary education, innovation, and research helps drive economic competitiveness, provides opportunities for young people, and addresses the most urgent issues of our time, like health science, food security, and climate change. Only through investments in post-secondary education do we have the potential to solve these critical challenges while simultaneously training the workforce of the future and shaping the economy. There can be no better investment in Manitoba's future.

There has been significant research and time committed to contemplating and developing our economic strategy; now is the time to put plans into action. Post-secondary institutions will continue working with the Business Council of Manitoba and the provincial and federal governments to implement the calls to action within this report and we will engage others, including large and small employers. Working together, we can and will build a brighter future for all Manitobans and make our province a better place to live, work, and invest.

“Our primary role as post-secondary institutions is to grow leaders who become the entrepreneurs, educators, managers, drivers of creative industries, and computer programmers, among many other careers, that Manitoba's economy needs to continue thriving. We are innovators who value strong partnerships with First Nations, governments, industry, and the non-profit sector so that collectively we can achieve our full potential as a province and a country.”

Annette Trimbee
President, The University of Winnipeg



“It is important for us and for everyone to understand the connections between education and the economy: investment in education equals economic advancement; research equals innovation; and additional opportunities for students leads to greater participation in the workforce.”

David Barnard
President, The University of Manitoba



