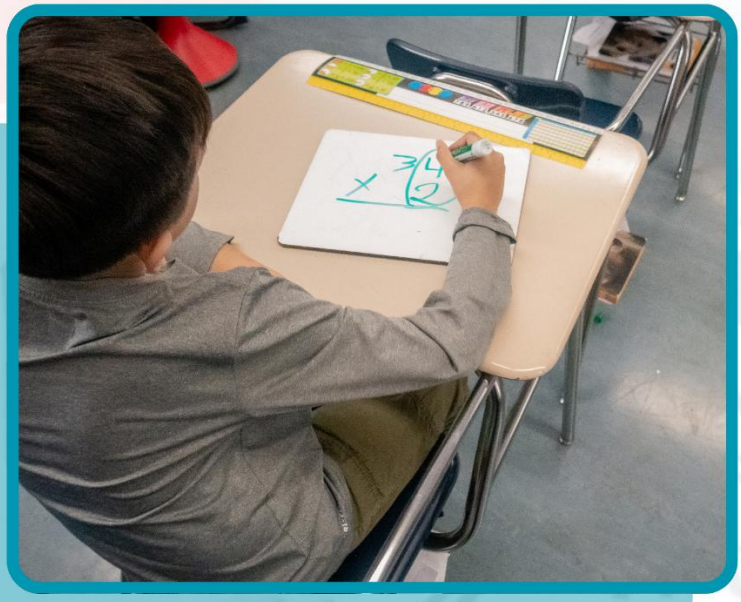
Saskatchewan First Nations Natural Resource Centre of Excellence

SASKATCHEWAN FIRST NATIONS NATURAL RESOURCE CENTRE OF EXCELLENCE

First Nations Workforce Development

On-Reserve STEM Education



Prepared by:

MARCH

January 2026

Foreword

The Saskatchewan First Nations Natural Resource Centre of Excellence (the Centre) was formed by the Federation of Saskatchewan Indigenous Nations (FSIN) in 2009 to provide support and work with all 74 First Nations' communities for creating opportunities for innovative, sustainable, and environmentally responsible development of the natural resources within their lands and territories. By identifying critical gaps in STEM (Science, Technology, Engineering, and Mathematics) education on-reserve, this report highlights both the existing challenges and potential opportunities for nurturing the next generation of leaders and professionals in these fields. The Centre's role can be to provide a platform for shared learning, capacity-building, and innovation, ensuring that First Nations students have equitable access to the tools and resources necessary for success.

This report seeks to elevate the voices and perspectives of First Nations educators, leaders, and students, honoring their experiences and the teachings they bring. It does not attempt to speak for all Nations, as each community carries its own stories, traditions, and realities. Instead, this work is a shared journey to illuminate common challenges and envision pathways forward. The diversity among First Nations is a strength, and this report respects the sovereignty and wisdom that guide each Nation's decisions. At the heart of this work is the understanding that language is life. It is the spirit of the ancestors, speaking through generations. Language carries teachings, ways of knowing, and a distinct understanding of the world. It also connects learners to the land and holds the values that shape First Nations ways of being. To ensure the success of First Nations students, their learning must be centered in the richness of their languages and cultures, nurturing pride, identity, and resilience.

The First Nations' governance and education systems are deeply rooted in the principles passed down through generations. Decisions are not made in isolation but through the guidance of Elders, the wisdom of the community, and the responsibility to future generations. These systems are not static; they adapt and grow, integrating First Nations knowledge with Western tools. Understanding this balance is vital to creating programs and policies that truly serve the First Nations people. This report is offered with respect and a commitment to strengthening the paths that lead to opportunities. By honoring our languages, cultures, and ways of knowing, we aim to support First Nations students in reaching their full potential in STEM fields and beyond, ensuring a thriving future for our communities.

Project Credits and Acknowledgements

Land Acknowledgement

We respectfully acknowledge that this project was carried out on the traditional territories of the First Nations and Métis peoples of Saskatchewan. We are grateful for the opportunity to engage with and learn from First Nations communities whose knowledge, resilience, and leadership continue to shape the province's future.

Statement from March Consulting Associates Inc.

March Consulting Associates Inc. (MARCH) is pleased to provide this report in support of the Centre's initiative to understand the opportunities for First Nations participation in STEM fields. This report represents the findings of a collaborative effort to assess and improve the current state of STEM education in First Nations on-reserve schools across Saskatchewan. It reflects survey insights, roundtable conversations with educators and principals, and an analysis of workforce trends, aiming to support the development of a future-ready First Nations workforce.

Disclaimer

The findings and recommendations presented in this report are based on data gathered during the project period and reflect the perspectives of participants at the time of engagement. While every effort was made to ensure accuracy and balance, the report should be viewed as a snapshot of current conditions rather than an exhaustive representation of all First Nations schools in Saskatchewan.

Acknowledgements

We would like to sincerely thank all individuals and organizations who contributed to the success of this project. Special appreciation goes to the educators, principals, and community members who participated in surveys, interviews and roundtable discussions. Your time, insights, and lived experiences were instrumental in shaping the direction and depth of this report.

We also acknowledge the support of the Saskatchewan Natural Resource Centre of Excellence for guiding this project and creating space for meaningful conversations on education and workforce development.

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Executive Summary

This report examines the quality of STEM (Science, Technology, Engineering, and Mathematics) education in on-reserve K–12 schools across Saskatchewan, highlighting its pivotal role in shaping the future First Nations workforce and promoting First Nations participation in STEM fields. It is a synthesis of survey responses from First Nations schools and students, roundtable discussions with educators, as well as a review of current STEM initiatives and First Nations labour market trends in the province.

While STEM education is increasingly recognized as essential to career readiness in fields like energy, mining, healthcare, and technology, many First Nations students face systemic and structural barriers that limit their exposure to, and engagement with, STEM pathways from an early age. The report also highlights the emerging nuclear industry within the province as a generational opportunity for First Nations communities to participate meaningfully from the ground up, alongside other key industries facing similar growing demands for STEM-trained professionals.

Identified Gaps and Key Findings

Despite promising developments, the study identified several interrelated challenges affecting the state of STEM education in First Nations communities:

1. **School System Structure:** First Nations schools operate autonomously with limited province-wide collaboration. Inadequate access to education data, few industry partnerships, and a lack of coordinated leadership have contributed to STEM being treated as a secondary priority. Additionally, schools are funded based on the number of students on the nominal roll, creating a cycle where under-resourced schools lose students, and therefore funding, making it harder to invest in qualified staff or strong STEM programming.
2. **STEM Content and Curriculum:** STEM content is often perceived as not culturally relevant, and course offerings—especially in higher grades—are limited, thereby narrowing student options for future STEM careers.
3. **Resources and Infrastructure:** Many schools lack essential STEM materials, lab facilities, and access to information about STEM pathways. Opportunities for extracurricular STEM engagements are also limited.
4. **Educator Capacity:** Few teachers have formal STEM training, and access to professional development, particularly culturally relevant STEM training, is sparse. High teacher turnover, which is also linked to housing shortages on First Nations reserves and long commutes, further disrupts program continuity.
5. **Broader Socioeconomic Barriers:** Geographic remoteness, difficult high school transitions, and social challenges contribute to low student engagement and awareness of STEM career pathways.

Key Recommendations

To improve outcomes and build a robust pipeline of First Nations STEM professionals, the report outlines six key, interconnected recommendations. While individual First Nations schools, Education Boards, and industry partners may choose to act on Recommendations 1-5 independently, and will see value in doing so, the report emphasizes that sustained, equitable, long-term sustainable progress requires an inclusive ecosystem approach through a collective effort guided by Recommendation 6 of this report. The details of this recommendation are provided later in this section.

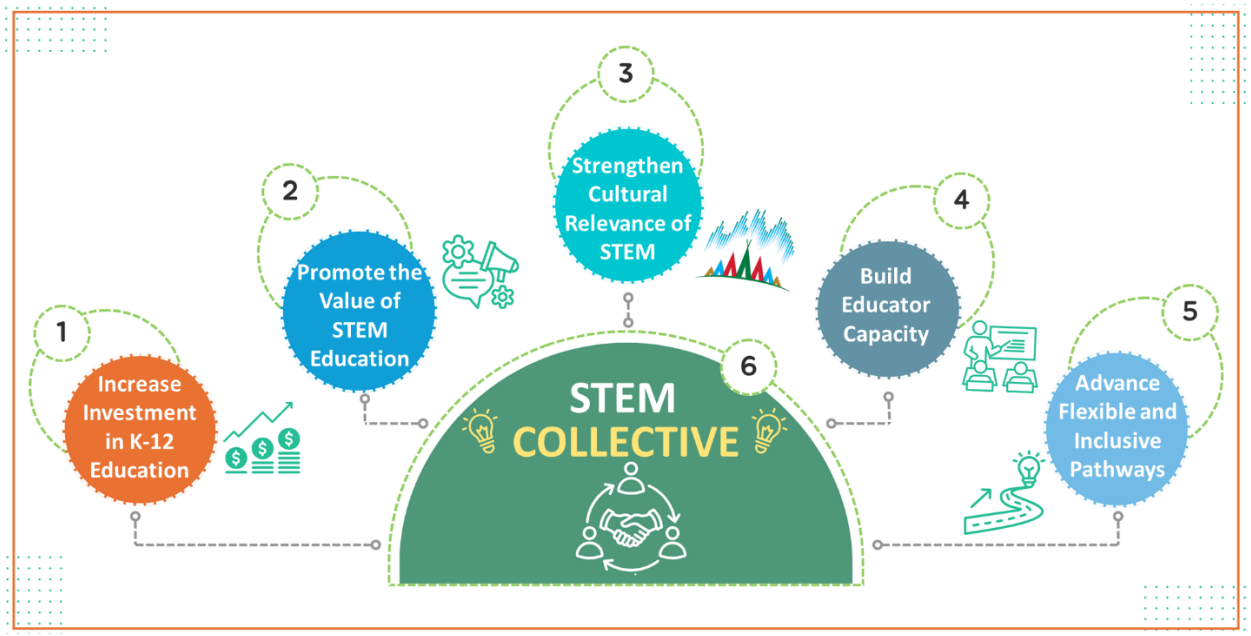

Figure I: Key recommendations from this study

1. **Increase Investment in K–12 Education:** Strengthen the foundation of STEM learning through sustained funding for teaching staff, resources, and infrastructure in on-reserve schools.
2. **Promote the Value of STEM Education:** Elevate STEM education as a shared priority for schools, students, families, and communities through awareness campaigns, leadership engagement, and initiatives that show the relevance of STEM to daily life and future opportunities.
3. **Strengthen Cultural Relevance of STEM Content:** Integrate land-based learning, First Nations knowledge, and culturally grounded approaches into STEM curriculum and teaching practices.
4. **Build Educator Capacity:** Provide access to culturally relevant STEM professional development opportunities and incentives for educators to specialize in STEM fields.
5. **Advance Flexible and Inclusive STEM Pathways:** Support alternate and adult education routes, ensuring that learners of all ages and backgrounds can access STEM careers.

6. **Establish a Provincial First Nations STEM Collective:** Create a First Nations-led STEM education network to coordinate implementation of Recommendations **1-5.** The Collective's mandate would be to:

    a. Provide a shared decision-making platform for First Nations Education Boards, schools, educators, elders, and Knowledge Keepers
    b. Facilitate collaboration among Tribal Councils, regional education agreements (REAs), independent schools, and regional entities
    c. Support data sharing and performance tracking while respecting First Nations data sovereignty
    d. Pool resources, curriculum supports, funding, and educator development opportunities
    e. Act as a central channel for relationships with government, industry, and post-secondary institutions
    f. Ensure that targeted STEM initiatives reach all First Nations schools, mitigating capacity imbalances so no community is left behind
    g. Prevent uneven outcomes by creating a system where there are no "winners and losers," only shared progress across all First Nations communities.
    h. Serve as a backbone structure needed to sustain momentum beyond one-time projects or funding cycles.

By anchoring the ecosystem, the collective ensures the benefits of STEM programming grow across all First Nations communities, not only those with existing capacity or partnerships.

Looking Ahead

This project highlights that meaningful progress in First Nations participation in STEM must begin with system-level reforms to on-reserve K–12 education. First Nations communities in Saskatchewan are at a pivotal moment, where growing labour demands across key sectors, including energy, mining, agriculture, and the rapidly expanding nuclear sector, align with the timeline and opportunity to develop a future-ready First Nations workforce.

First Nations schools, governments, and industry partners may independently begin implementing several of the recommendations in this report, but establishing a First Nations STEM collective provides a strategic structure and the most effective pathway to ensure that STEM progress is coordinated, culturally grounded, equitable, and sustainable.

By walking together—First Nations governments, educators, Elders, industry partners, and provincial and federal governments—and addressing the foundational gaps in STEM education that currently exist in on-reserve schools, we can equip First Nations students not only to succeed in Saskatchewan's growing economy but also to lead as innovators, community builders, and stewards of the land.

1. Introduction

The Saskatchewan First Nations Natural Resource Centre of Excellence is guided by its mandate to support the participation of Saskatchewan's 74 First Nations in the innovative, sustainable, and environmentally responsible development of energy and natural resources within their Treaty lands and traditional territories. This report builds on that mandate by focusing on the critical task of enhancing First Nations workforce participation in Saskatchewan's expanding nuclear, rare earth, and emerging technology sectors.

Goals and Objectives

The goals and objectives of this report are to improve awareness of career opportunities within Saskatchewan's key resource industries and to create pathways for greater workforce inclusion. This document is meant to serve as a foundational building block for future initiatives, which may include the development of specialized programming, advocacy for increased resources, and enhanced educator training. By prioritizing education and career bridging for First Nations peoples, this report intends to lay the groundwork for meaningful progress and enduring partnerships that will benefit First Nations communities across Saskatchewan.

Focus on First Nations STEM Education

A central focus of this report is on the quality of STEM education in First Nations schools in Saskatchewan and the distinct challenges these schools face in preparing students for careers in key industries. STEM (Science, Technology, Engineering, and Mathematics) refers to academic disciplines and career pathways that are critical to innovation, economic development, and community well-being. By understanding and addressing barriers such as resource limitations, access to STEM programs, and the need for culturally relevant curricula, this report aims to bridge the gap between education and career readiness.

2. Methodology

This report was informed by a multifaceted information-gathering process involving both quantitative and qualitative approaches that centered on First Nations' voices, perspectives, and experiences.

The process began with a comprehensive review of publicly available information. This included data and publications from post-secondary institutions, academic articles, government reports, and online sources related to First Nations education and STEM programming. To support this, a survey questionnaire was developed and distributed to all on-reserve elementary and secondary schools across Saskatchewan. The survey was designed to gather relevant information on STEM programming, course offerings, teaching staff, and related school supports. This tool served as a foundational step in collecting current, community-informed data directly from First Nations education systems.

In addition to the survey, dialogue and engagement with key partners and knowledge holders played a central role. The project team held discussions with Subject Matter Experts in Education, representatives from the Federation of Sovereign Indigenous Nations (FSIN), and officials from the Saskatchewan Ministry of Education. These engagements provided diverse perspectives and valuable insight into educational realities across First Nations communities.

To strengthen the relational approach, online webinars were hosted, and an in-person workshop was organized to bring together First Nations educators and stakeholders for discussion and knowledge-sharing. The team also conducted school visits and attended community-based events, such as science fairs organized by the File Hiles Qu'Appelle Tribal Council (FHQTC) and the FSIN, where mini-surveys were carried out with students to help understand their interests and exposure to STEM-related activities.

Survey Breakdown

First Nations Schools Survey	Individual Schools surveyed	Grades Offered			
		K - Gr. 8	K - Gr. 12	Gr. 9-12	Other (Gr. 5-12)
Total (n)	19	3	13	2	1

Science Fair Student Surveys	Students Surveyed	Across First Nations Schools	Students' Grades		
			Gr. 4 - 7	Gr. 8 - 9	Gr. 10 - 12
Total (n)	86	28	45	34	7

All activities were approached with respect for First Nations governance, sovereignty, and lived realities. While this report is focused specifically on First Nations communities and schools, there are instances where the available data sources use the broader term *Indigenous*, which includes First Nations, Inuit, and Métis peoples. In such cases, we have chosen to include the data only when no First Nations-specific breakdown was available and when it was deemed relevant to support our findings. Wherever possible, we distinguish between First Nations and pan-Indigenous statistics. This approach is taken with transparency and in acknowledgement of the distinct identities, rights, and experiences of each group.

Data Challenges & Limitations

One of the most significant barriers to this study was access to data. While the provincial government funded this work through Saskatchewan's Immigrant and Career Training (ICT) department, despite multiple requests, including a formal request for aggregate data from the province, access to relevant data from government sources was not granted. Additionally, early conversations with provincial universities about potential data sharing were ultimately redirected back to the government, citing privacy concerns. While various government entities are permitted to share data with universities (being Crown-funded), they were not willing to extend that same access to this project team.

In parallel, efforts to engage First Nations schools directly through surveys also encountered challenges. Although the school survey remained open for an extended period and multiple outreach attempts were

made, securing participation from a large number of First Nations schools proved to be a challenge. However, science fair surveys and in-person engagements meaningfully broadened the perspectives captured. As shown in Figure 1, these interactions reflect voices from First Nations schools, students, and educators across the province—not clustered in one region—ensuring that the findings are informed by a range of experiences and realities.

While the findings presented in this report provide valuable insight into the state of STEM education in these participating schools, they may not fully represent the broader realities across all 87 First Nations schools in the province. The limited participation, along with gaps in communication, lower response enthusiasm, and difficulties accessing school-level data, highlight systemic barriers that continue to affect data sharing, collaboration, and transparency in on-reserve education.

These limitations do not undermine the importance of the findings. Rather, they emphasize the need for stronger data partnerships, increased transparency, and a more collaborative framework that respects data sovereignty while enabling informed, community-led improvements to STEM education. Building these pathways is essential for painting a clearer, more complete picture of the STEM education landscape in First Nations communities.

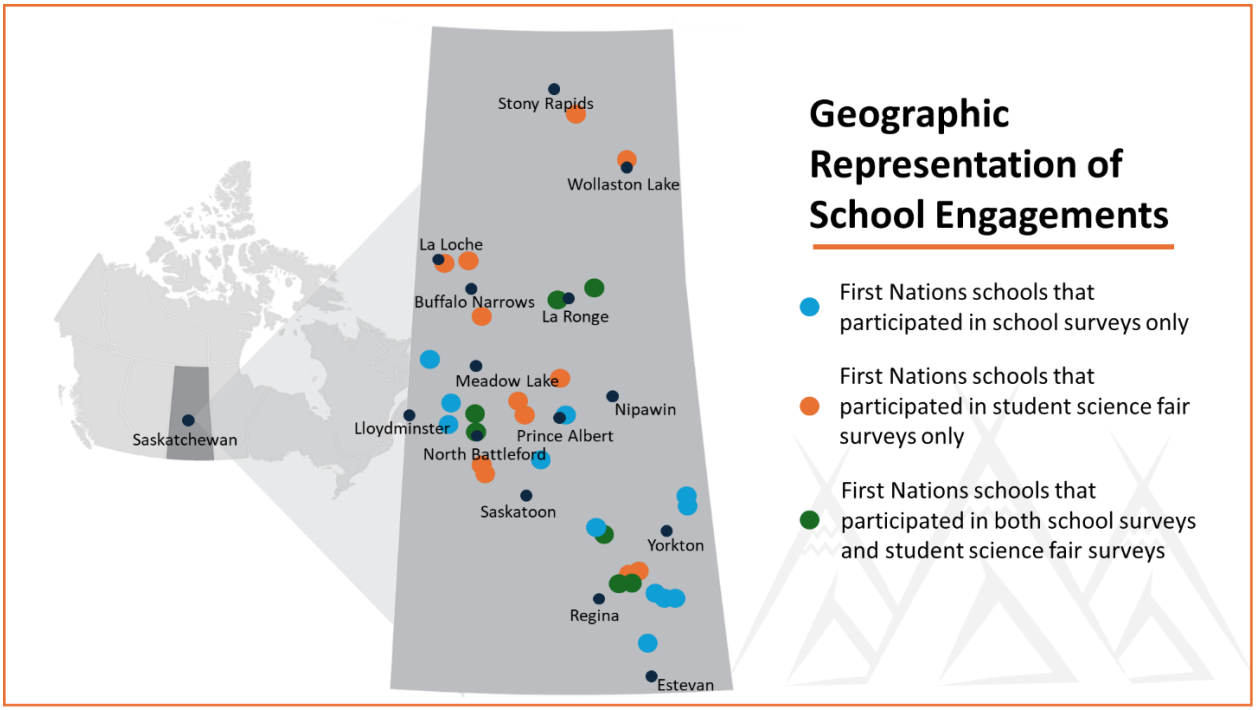

Figure 1: Geographic representation of school engagements for this study

3. Background Information

While workforce demands are shifting across the country, the growing First Nations population, combined with resource sector needs in Saskatchewan, presents both urgent challenges and meaningful opportunities for First Nations living in the province. Labor shortages in key sectors, including the upcoming growth in the nuclear energy industry, have created space for First Nations participation and leadership. However, ongoing systemic barriers continue to limit access to training and employment, particularly in STEM fields. For First Nations people in Saskatchewan, this moment offers the chance to engage in emerging sectors in ways that support community well-being, build local capacity, and advance self-determination. Moving forward requires a close look at the current realities of First Nations STEM education and its critical role in preparing youth to access and thrive in these career pathways.

Workforce Demands in Saskatchewan

Saskatchewan is experiencing unprecedented economic growth, driven by record-high capital investments in key sectors and increasing workforce participation. In 2022, Saskatchewan led other provinces in real GDP growth with a 6% increase compared to the previous year, and exports hit a record $52.6 billion in the same year, emphasizing its growing prominence in global markets [1]. By August 2024, Saskatchewan's employment had risen to 612,600 people, a 3.2% increase from the previous year, surpassing the national average growth rate of 1.6% [2]. A labor demand outlook study projects 119,070 job openings between 2024 and 2028, driven by both economic growth (36%) and replacement demand due to retirements (64%) [3]. This paints a clear picture: Saskatchewan's labor market is not only expanding but also experiencing turnover that will necessitate a new influx of skilled workers across multiple industries, particularly in key sectors like mining, oil and gas, critical mineral processing, and utilities, where STEM skills are essential.

Saskatchewan's rapid economic expansion means more residents will have access to high-quality jobs. However, this growth also exposes gaps in the availability of skilled labor as employers are challenged to recruit and retain workers with the technical expertise required to keep pace with the province's economic growth. As these industries expand, a more robust approach to workforce development is essential to avoid shortfalls in key sectors. This need is even more urgent with the rise of new energy sectors, particularly nuclear, which presents both a major economic opportunity and an overlapping demand for STEM-educated talent.

First Nations Participation in the Labor Force

First Nations participation is a critical factor in Saskatchewan and Canada's broader workforce strategy, particularly as economic growth rates continue to trend positively. Although numerous initiatives aim to increase First Nations participation in the workforce, the challenge lies in ensuring that First Nations people are prepared to take advantage of these opportunities. Education barriers, particularly in STEM, remain a significant challenge. Apparent gaps persist in First Nations participation in STEM-related industries compared to other industries.

> *"About 4% of Canadian adults are Indigenous, but the percentage of Indigenous people working in science, technology, engineering and math (STEM) is less than 2%."* – Conference Board of Canada [4]

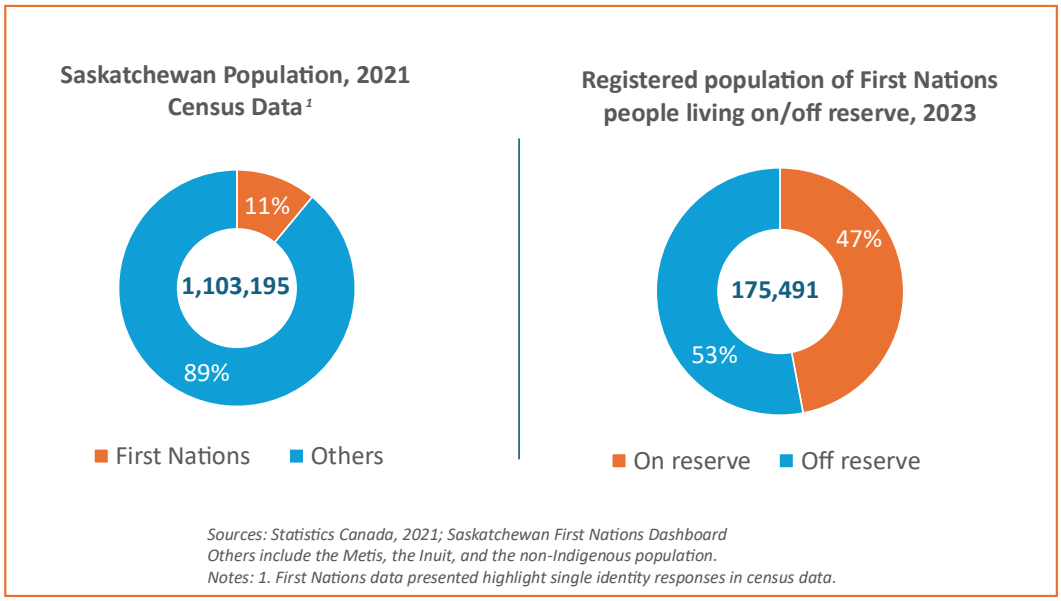

Figure 2: Demographics of First Nations People in Saskatchewan [5], [6].

First Nations peoples tend to have lower participation rates and higher unemployment rates in the labour market, especially in occupations requiring higher levels of education [7]. This points to the need for targeted educational initiatives in STEM fields to prepare First Nations workers for opportunities in various sectors.

Currently, the First Nations peoples and economic development organizations developed by the First Nations are deeply involved in the resource extraction industries in Saskatchewan, particularly in uranium mining. However, First Nations participation in highly skilled roles, especially in other resource sectors, nuclear and emerging sectors, remains low. For instance, only 3% of the nation's nuclear workforce is Indigenous [8]. This disparity highlights both a challenge and an opportunity. As Saskatchewan transitions to clean energy, including nuclear projects like SMRs and micro-reactors, there is a significant potential and a rare opportunity to increase Indigenous participation in the nuclear industry from the ground up.

> *"If we want our kids to have active opportunities in these sectors, we need to engage in developing K-12 education on reserve."* – Sheldon Wuttunee, CEO of the Centre.

STEM education is essential to long-term First Nations participation in high-skill, high-demand industries. Developing accessible, culturally relevant, and well-supported STEM programming at the foundational

level, particularly in K-12 education, can equip students with the confidence, knowledge, and tools to pursue future opportunities. Doing so not only supports reconciliation efforts but also strengthens Saskatchewan's workforce, ensuring a more inclusive and sustainable economic future for all.

Nuclear Energy: A Key Opportunity

Special emphasis has been placed in this report on the nuclear power sector, as the growing nuclear industry in Canada, specifically in Saskatchewan, has been identified as a key opportunity for First Nations to participate in.

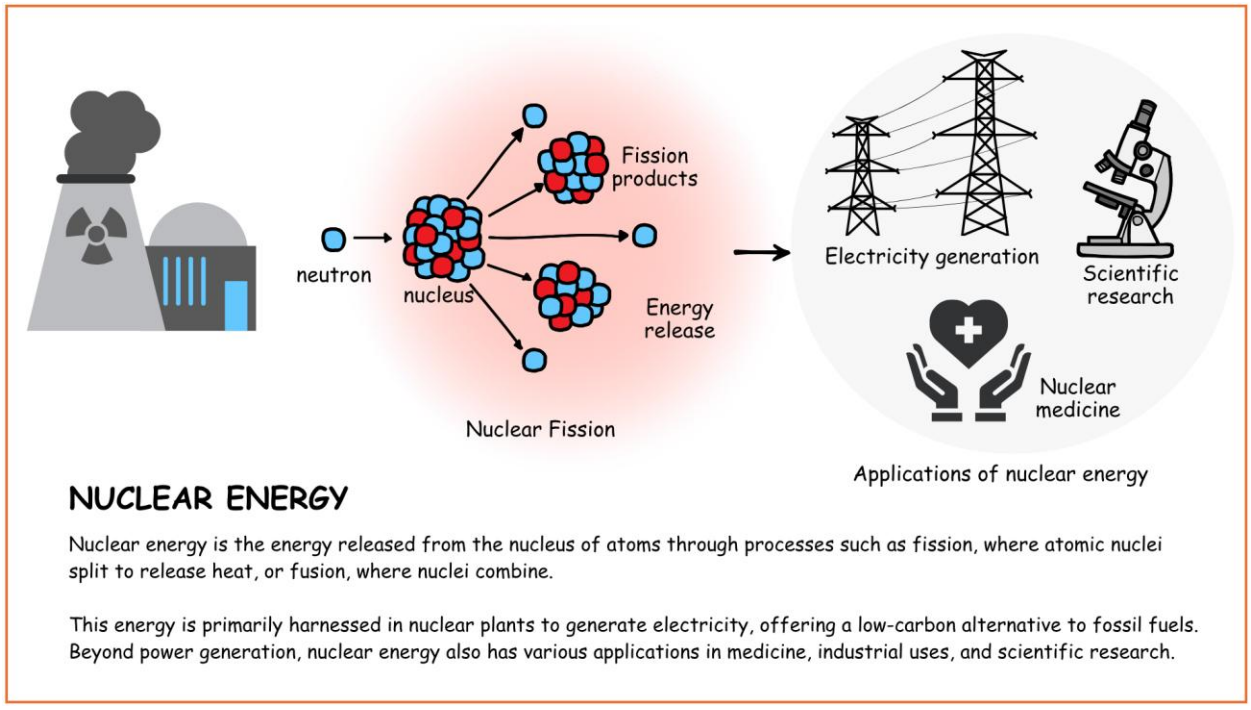

Figure 3: Nuclear Energy

As Canada moves to decarbonize its economy and enhance energy security, the nuclear power sector is emerging as a key driver of economic growth and environmental sustainability. With its active involvement in global climate policies, Canada is committed to phasing out fossil fuels, tripling its nuclear generating capacity and achieving net-zero emissions by 2050 [9], [10]. Substantial investments are being made to refurbish and increase the power output of existing nuclear plants and advance new technologies such as small modular reactors (SMRs). Notably, this expansion is not limited to provinces with existing nuclear facilities; other provinces are now considering nuclear energy as part of their clean energy transition.

Saskatchewan has a well-established presence in the nuclear industry, being the second-largest supplier in the world of the uranium required for nuclear fuels. The province of Saskatchewan is anticipated to

become a nuclear power operator within the next decade as well, as nuclear energy is emerging as a critical component of the province's clean energy future and broader economic development strategy. The provincial utility, SaskPower, plans to deploy four BWRX-300 SMRs to meet future power demands. The industrial and mining sectors are also considering high-temperature reactors to power their operations. The Saskatchewan Research Council (SRC) is working with Westinghouse to explore the deployment of eVinci microreactors for off-grid mines and remote communities. These developments promise significant economic benefits by creating high-quality jobs, improving energy infrastructure, and supporting the province's clean energy goals.

However, the emerging nuclear sector shares a workforce challenge with many of Saskatchewan's other industries – the need for skilled, STEM-educated workers. Approximately 89% of jobs in the nuclear sector are high-skill positions requiring either university degrees or technical trades expertise [11]. The nuclear sector already employs 89,000 Canadians, a 17% increase since 2019, and as the industry grows, the demand for trained professionals will rise exponentially [12]. In Saskatchewan alone, an estimated 2,500 to 3,500 nuclear professionals and tradespeople will be required to support nuclear deployments in the province, with as many as ten times more people required for other nuclear projects in Canada alone [8].

With most nuclear projects in Saskatchewan still a decade or more away, today's First Nations K-12 students are well-positioned to become tomorrow's nuclear workforce. By investing now in strong STEM education and career guidance, these students can be prepared to step directly into the industry as it evolves, turning this future long-term opportunity into long-term impact for their communities.

Overlapping Demand for STEM Talent Across Saskatchewan Industries

The expansion of the nuclear sector, alongside existing industries, will further strain the already competitive labour market in the province, making a strategic workforce development plan increasingly vital to meeting the workforce demand. While nuclear energy and its related fields present significant opportunities, they are part of a broader STEM landscape in Saskatchewan that includes industries such as mining, oil and gas, agriculture, and manufacturing. These sectors are closely connected through their shared reliance on a STEM-educated workforce. Careers in engineering, automation, materials development, environmental monitoring, and health care are in growing demand across these fields, and many of the core competencies, such as problem-solving, technical skills, and systems thinking, are transferable. Investing in STEM education will help Saskatchewan develop a skilled, versatile workforce to meet the needs of its growing technology-driven economy, while also creating new opportunities for First Nations youth to enter and lead in these industries.

Background - First Nations Education System

There are currently 87 First Nation-operated elementary and secondary education programs in Saskatchewan. These schools are governed by their respective Nations and reflect the inherent and Treaty rights of First Nations to control their own education. Based on Indian Control of Indian Education, each First Nations school has the authority to design and deliver curricula that incorporate First Nations languages, cultures, and community priorities, often guided by Chiefs and Councils [13].

At the same time, many of these schools choose to align their programs with provincial education standards, particularly at the high school level, where students are expected to meet outcomes comparable to those in provincially run schools. This alignment enables students to work toward recognized credits, assessments, and graduation requirements, which is an important consideration for those pursuing post-secondary education or employment. Support for this alignment is provided through the Federal Elementary and Secondary Education Program, which funds on-reserve education.

While First Nations schools maintain full autonomy over their education systems, they also work alongside regional support organizations via Regional Education Agreements or Tribal Councils, which offer capacity-building services, professional development, and funding coordination. These partnerships are voluntary and designed to enhance, not replace, community control over education.

Funding Structure

First Nations schools on reserve in Saskatchewan are federally funded through Indigenous Services Canada (ISC), primarily based on student counts recorded in the Nominal Roll. This funding supports core operations, while additional federal programs like Jordan's Principle or High-Cost Special Education may be accessed for specific student needs.

Each school is autonomous and community-led, with no centralized school board overseeing First Nations education. Decisions about budgeting, programming, and priorities are made at the local level, reflecting the values, priorities and goals of each Nation.

Some Nations choose to collaborate through Regional Education Agreements (REAs), such as the Treaty Education Alliance, which provides shared services and supports while respecting the self-governance of each Member Nation. REA helps enhance access to resources, training and assessments, but each school within the alliance maintains its own leadership and authority. This structure reflects the inherent and Treaty right to education, grounded in local control, community vision, and cultural relevance.

Governance and Autonomy

First Nations in Saskatchewan exercise their inherent and Treaty rights to education through locally governed schools, typically overseen by the Chief and Council. This structure ensures that educational decisions are made within the community, reflecting each Nation's unique languages, cultures, and priorities.

While there is no centralized school board for on-reserve education, our research found that First Nations can and do collaborate with regional organizations through Regional Education Agreements (REAs) or Tribal Councils. These entities provide support services, including funding navigation, teacher training, and curriculum development, without compromising the autonomy of individual schools.

Curriculum and Graduation Requirements

First Nations schools in Saskatchewan have the autonomy to develop and deliver locally determined curriculum that reflects their unique cultures, languages, histories, and values. This autonomy supports

the inclusion of land-based education, Elders' teachings, First Nations languages, and cultural practices - elements that are vital to student identity and community strength.

As noted before, many on-reserve schools choose to align portions of their curriculum with the provincial education system, especially at the high school level. This strategic decision allows students to earn recognized secondary credits, meet graduation requirements, and pursue post-secondary opportunities. This ensures that First Nations students have a chance at similar opportunities as their counterparts across the province and other national post-secondary institutions.

4. STEM Education

The What and the Why

STEM education is the integration of four disciplines of science, technology, engineering, and mathematics into a cohesive learning experience based on real-world applications. Ideally, STEM education can be approached in a way that fosters curiosity, problem-solving, critical thinking, and innovation, equipping students with scientific knowledge that applies to everyday life.

For First Nations communities, the connection to STEM is not new. Long before encountering formalized STEM disciplines from Western institutions, First Nations peoples had been applying STEM in their everyday lives. Examples include leveraging the medicinal properties of plants, designing aerodynamic tools, building durable and portable homes like tipis, and developing seasonal calendars based on astronomy and ecology. STEM has always been embedded in First Nations culture and way of life.

Today, we have the opportunity where STEM education can offer First Nations youth opportunities to reclaim and reframe these ancestral knowledge systems within modern contexts. By connecting STEM with culture and land, students can see themselves not only in science textbooks or labs, but as part of a long lineage of innovators, scientists, engineers, physicians and stewards of the land.

STEM education can also offer practical and economic benefits to First Nations people, including greater career options, higher earning potential, increased representation in key industries, and the ability for communities to lead in addressing local and global challenges, such as clean energy and water stewardship, digital transformation, and healthcare.

The Journey from Start to Finish

STEM education is not a single course or subject; it is a continuous journey that begins in early childhood and shapes students' paths into adulthood and employment. However, this journey doesn't unfold the same way for everyone, especially in First Nations communities. Gaps in resources, guidance, and access to STEM-specialized teachers often mean that students' experiences with STEM vary significantly between schools. The following describes the typical stages of a STEM education journey, while also noting some realities based on survey responses from First Nations schools and students in Saskatchewan.

Early Years and Elementary (K-Grade 8): Sparking Interest

Elementary school marks the first formal stage in a child's learning journey. In early grades, students are introduced to basic concepts in science and math through observation, play, and foundational problem-solving. Ideally, from kindergarten to Grade 2, students build essential reading and number skills, both of which are critical foundations for future STEM learning.

However, beginning in Grade 3, students face a notable shift in how they learn. As one educator put it:

> *"The transition from Grade 2 to Grade 3 represents a key shift in learning, as students move from learning to read to reading to learn" – Deni Miclea, Registrar and Director – Student and Educator Services, Ministry of Education*

This crucial transition can be challenging for many students, especially those with literacy gaps. Without adequate support, this shift can lead to frustration or disengagement from school, including STEM, and in some cases, is an early off-ramp from the education system.

STEM instruction becomes more structured as students progress to the upper elementary grades. Rather than focusing on specialization, the goal is to cultivate excitement and familiarity with STEM concepts, encouraging students to explore how these subjects connect to their communities, the land, and their daily lives. However, findings from school surveys revealed that student interest and performance in STEM during these years are average or below grade-level expectations (see Figure 4).

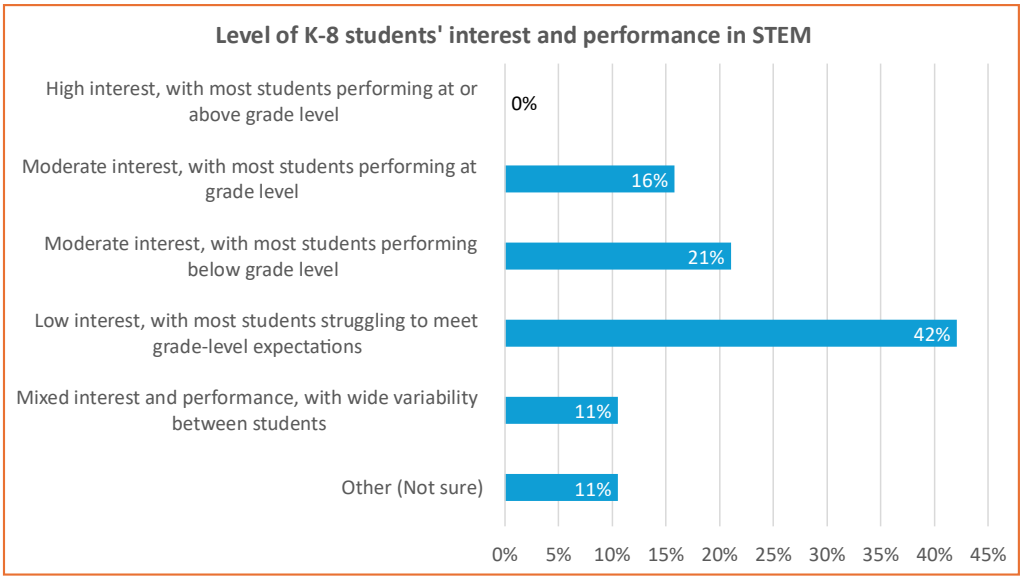

Figure 4: Educators' views on students' interest and performance in STEM subjects [FN schools survey]

These findings present a significant concern as early interest and confidence in STEM are essential in maintaining engagement as students progress through the education system. Further, survey results from science fairs indicate that many students in Grades 4 to 7 enjoy STEM subjects and express a desire to

continue learning in these areas. However, enthusiasm often declines in later grades. Discussions with project team members and roundtable conversations with educators revealed that this drop-off may be attributed to several factors, including inconsistent support systems, limited access to hands-on or advanced STEM content, and broader disruptions, such as the impacts of the COVID-19 pandemic, which weakened academic progression and reduced opportunities for experiential learning.

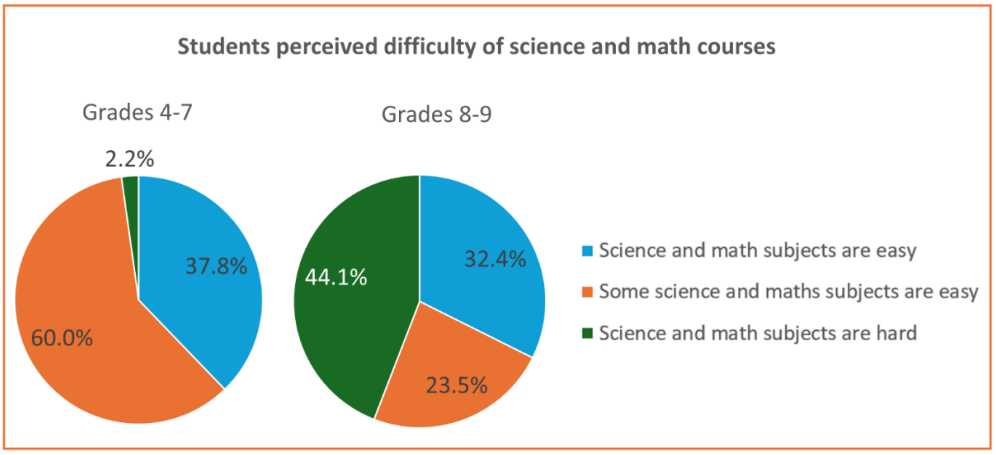

Figure 5: Students' perceived difficulty of STEM subjects in elementary grades [FN science fair surveys]

The structure of the current education system was also raised as a concern by educators. At the First Nations Natural Resources and Energy Forum 2025 plenary session on STEM education, one speaker remarked:

> *"The education system is not designed to meet the needs of our (First Nations) beliefs; it's designed to prohibit that as students get older. The current system is designed to wean students off curiosity as they advance through grades." – Pat Bugler, CEO, Treaty Six Education Council*

To ensure long-term engagement in STEM, students' natural curiosity in the early grades must be nurtured and not treated as an irritation or distraction. Stimulating imagination and curiosity at this stage is essential to setting the tone for future success. As such, meaningful changes are needed to better support students in these critical early years, both in content delivery and in aligning educational approaches with First Nations worldviews and learning styles.

Secondary Education (Grades 9-12): Defining Pathways

The transition to high school marks a significant shift in both the depth and direction of student learning. Students move from general science classes in the elementary grades to discipline-specific courses such as Biology, Chemistry, and Physics, each offering a deeper exploration of theoretical concepts and practical problem-solving.

At the same time, this is a pivotal period where students begin to define their personal interests and career aspirations. Students begin selecting specific courses that influence their post-secondary options.

In Saskatchewan, high school graduation requires students to earn 24 credits across various subject areas and grade levels (see Table 1 for the graduation requirements set by the provincial Ministry of Education).

Table 1: Saskatchewan Ministry of Education Graduation Requirements for Grades 10 – 12 [14].

Categories	Grade 10	Grade 11	Grade 12	Total Credits
English Language Arts	1 credit	1 credit	1 credit	3
Mathematics	1 credit	1 credit		2
Science	1 credit	1 credit		2
Social Sciences	1 credit	1 credit		2
Health Education/ Physical Education	1 credit			1
Arts Education/ Practical and Applied Arts	2 credits: A Wide variety of courses offered			2
Financial Literacy	1 credit: Financial Literacy at level 10			1
Elective Courses	4 credits at level 10, 20 or 30 and 7 credits at level 20 or 30			11
Minimum Cumulative Credits for Each Grade	8 Credits Gr. 10 Total Credits	16 Credits Gr. 11 Total Credits	24 Credits 5 must be Level 30 Gr. 12 Total Credits	**24** **Total Credits**

*Regular (English) Program stream

Students interested in STEM must perform well in subjects like mathematics and science to keep doors open for future pathways. However, survey responses from educators revealed that most students are not academically prepared for high school STEM subjects. At the same time, many students are unaware of how high school course choices impact post-secondary options and career pathways in STEM.

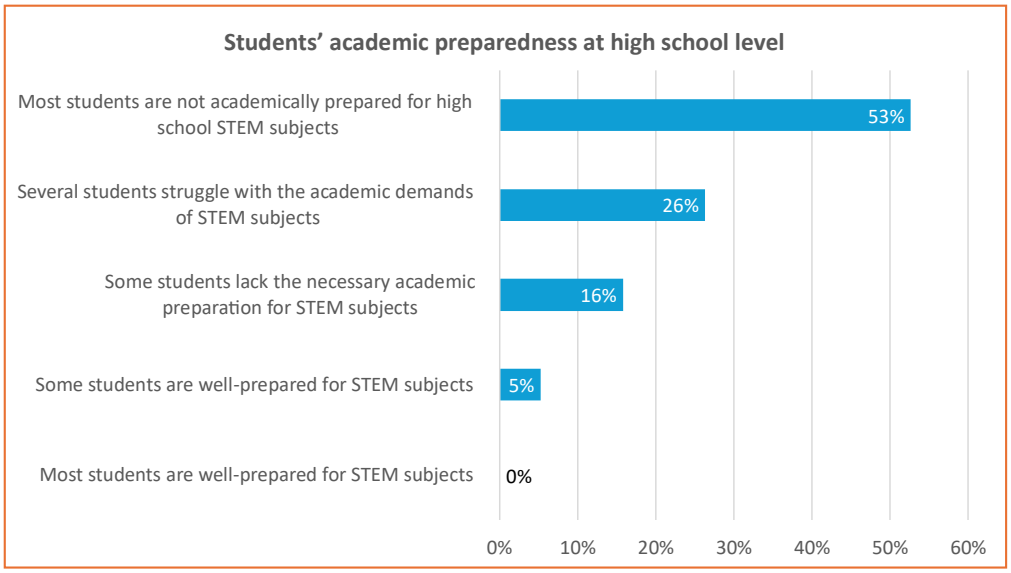

Figure 6: Educators' responses to students' academic preparedness [FN school survey]

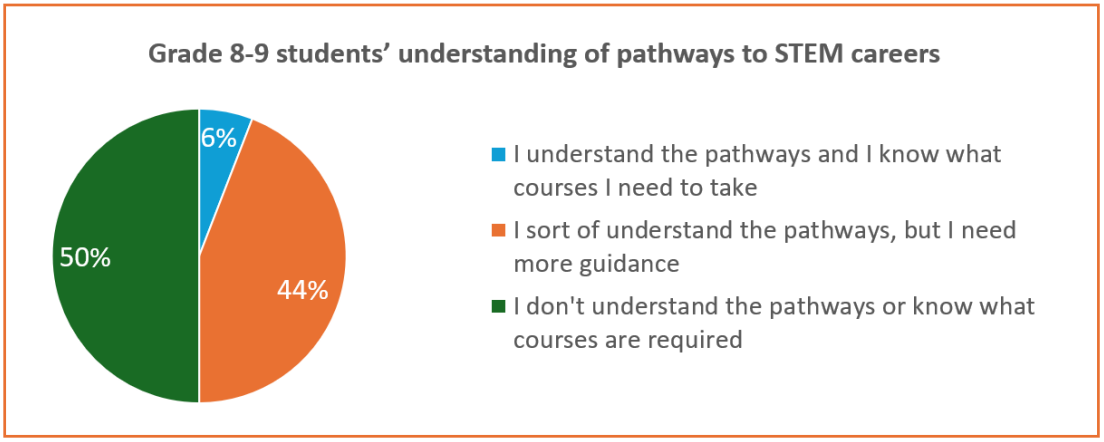

Figure 7: Students' familiarity with STEM education pathways [FN science fair surveys]

For example, recent changes in Saskatchewan's graduation requirements now allow students to graduate without taking 30L mathematics; however, students pursuing specific post-secondary STEM programs may still be required to take these courses for admission [14]. Additionally, making informed course selections in Grade 10 is critical, as these choices can significantly affect a student's ability to access higher-level STEM courses. The following section presents a case study to illustrate how early academic planning and choosing the right prerequisite courses can directly influence a student's eligibility for post-secondary STEM programs.

Case Study: The Impact of Course Selection in Grade 10

Consider a student interested in pursuing a career as an engineer. This career path typically requires a Bachelor of Science in Engineering degree from a post-secondary institution. Gaining admission into engineering programs, such as those offered at the University of Saskatchewan (USask) or University of Regina (U of R), requires specific Grade 12 courses. For the College of Engineering, students must complete:

- Pre-calculus 30,
- Physics 30,
- Chemistry 30, and
- One other approved 30L subject.

Let's focus on the possible mathematics and science course pathways shown in Figure 8 by working backwards from right to left. To take Pre-calculus 30, the student must have completed Pre-calculus 20, which in turn depends on selecting the correct math stream in Grade 10. If the student opts for Workplace and Apprenticeship Math 10 or Foundations of Math 20, they may unintentionally close the door to an engineering program.

Similarly, Physics 30 and Chemistry 30 require Physical Science 20 as a prerequisite for science. If the student selects another 20L science course instead, they will be unable to enroll in either Physics 30 or Chemistry 30 in Grade 12.

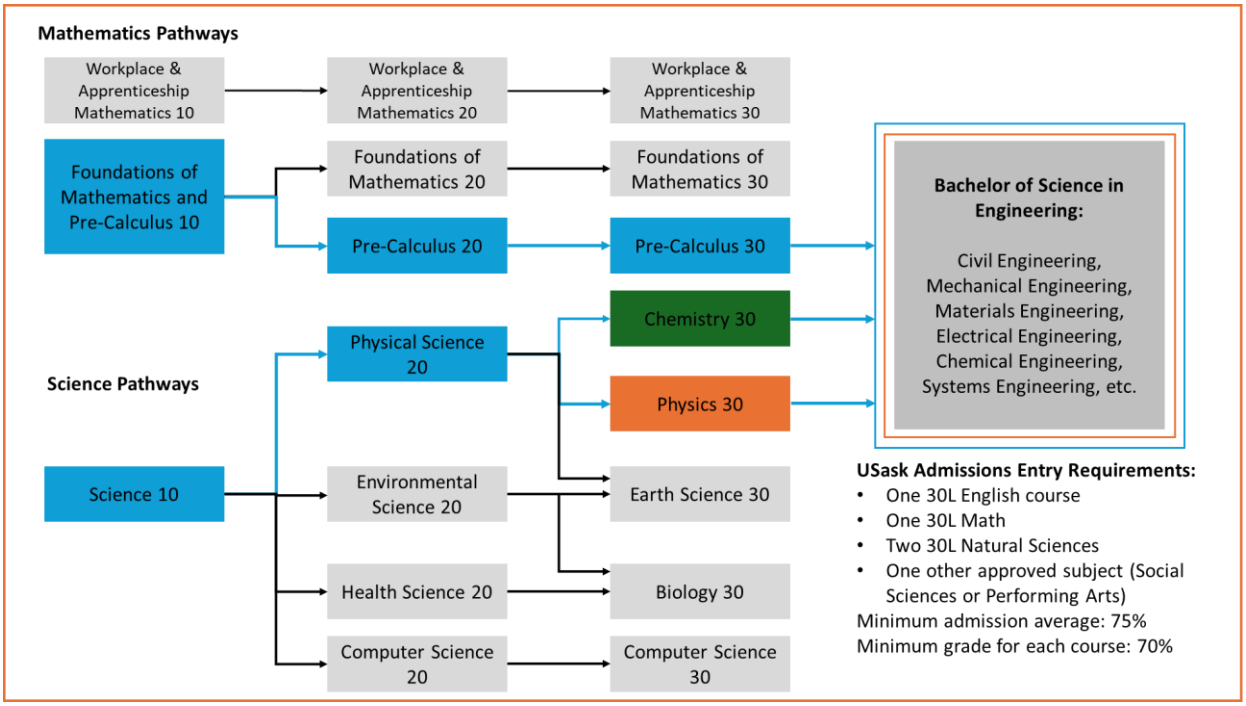

Figure 8: Mathematics and Science Course Pathways to College of Engineering, USask [15]

This case study underscores the crucial importance of making timely, informed course selections. Students may not know what they want to do in Grade 9, and their decisions in Grade 10 may result in them missing out on specific career options. To support successful transitions into high school and STEM pathways, career guidance should begin before Grade 9. Introducing students to potential career paths, especially in STEM fields, helps build motivation and informed decision-making. When students see role models who reflect their own identities, understand what STEM careers involve, and can connect their interests to meaningful learning paths, they are more likely to stay engaged and feel confident as they move through high school and beyond.

Post-Secondary Education: Specializing in a STEM Field

After high school, students enter a stage of specialized education aligned with their chosen STEM career paths. This can take many forms, including:

- **University Degrees** (e.g., engineering, nursing, environmental science, computer science)
- **College Diplomas or Certificates** (e.g., health technology, water resource management, lab tech.)
- **Trade and Apprenticeships** (e.g., welding, electrical, instrumentation, power engineering)
- **Training Programs and Bridging Programs** (often offered through community colleges or industry partnerships)

This phase requires students to apply prior foundational knowledge and build advanced skills in a specific STEM field. It is also where connections to the workforce are built through internships, research projects, co-op placements, and industry engagement.

Alternate Pathways

It is important to note that course decisions made in high school do not permanently limit future options. Students who are not fully informed about course pathways or post-secondary requirements still have opportunities to upgrade or complete missing prerequisites after graduation, through approved online platforms like Saskatchewan Distance Learning Centre (Sask DLC) [16] or through bridging programs offered by post-secondary institutions. However, these alternative routes can introduce delays, added costs, and narrower options, especially when students lacked early support or foundational skills in STEM subjects.

Importantly, the K-12 track isn't the only path to STEM education or STEM careers. First Nations individuals who did not follow a traditional academic pathway can re-engage with STEM through adult basic education or vocational and technical programs offered by various colleges. These alternate pathways provide valuable second-chance opportunities to enter the STEM pipeline. That said, these alternatives are not full substitutes for a strong K-12 foundation. Early academic preparation in the formative years, particularly in math and science, is critical and builds the essential cognitive and conceptual skills needed for success in STEM.

Other Contributing Factors to a Student's STEM Journey

While the STEM journey often appears to follow a classroom-based path, many other factors contribute to a student's success. These include:

- **Educators**: Access to teachers who are qualified, confident, and enthusiastic about STEM subjects, especially those who understand and respect First Nations perspectives, makes a significant impact on students' academic performance and overall journey.
- **School Infrastructure**: Safe, well-equipped schools with laboratories, learning technologies, and STEM-related materials support deeper learning and experimentation.
- **Community and Cultural Support**: Parental involvement, community encouragement, and local role models in STEM fields reinforce the message that these careers are both valuable and attainable.
- **Access to Information**: Early awareness of career options, course requirements, and educational pathways helps students to make informed choices. Career counsellors play a huge role here.
- **Economic and Social Factors:** Transportation, internet access, food security, financial stability, and other socio-economic factors play a role in determining whether students can fully engage in their education. These systemic issues must be addressed to support a student's academic journey.

This STEM education journey, from curiosity in elementary school to specialization in post-secondary education, is complex, but it is one that many First Nations students interested in STEM must navigate successfully. With the proper support, information, and opportunities, more First Nations youth can

pursue meaningful STEM careers that benefit their communities and contribute to shaping a more inclusive, innovative future.

The following charts are provided for informational purposes and are intended to support the reader's understanding of key context and data presented in this report.

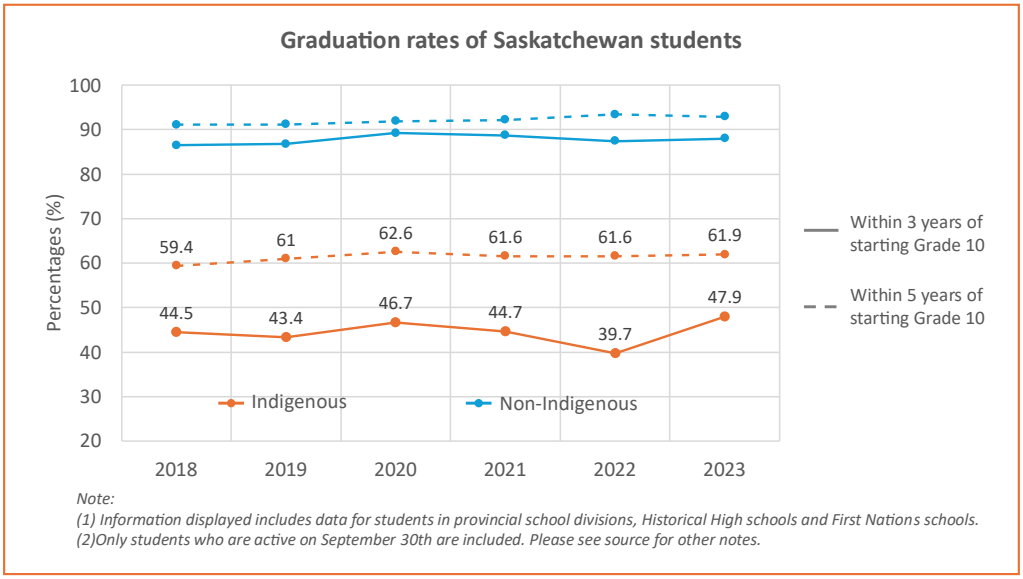

Figure 9: Graduation rates of Saskatchewan First Nations and Indigenous students [17]

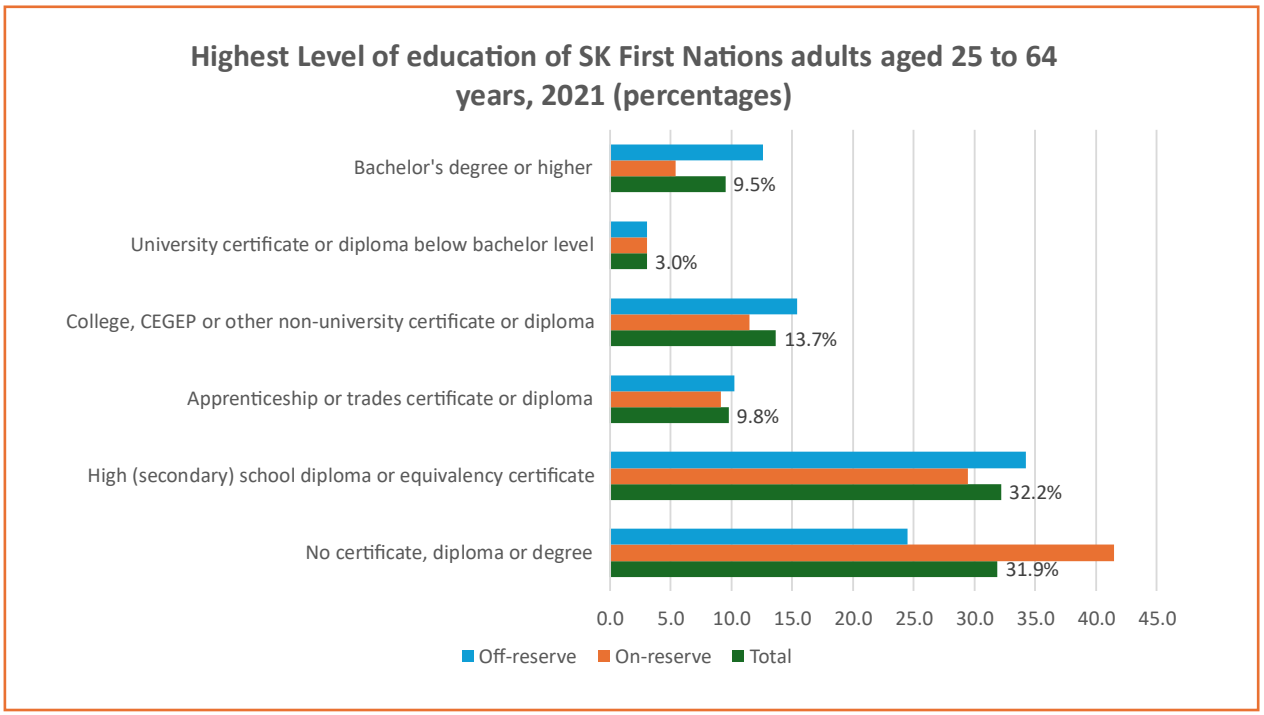

Figure 10: Level of Education of Saskatchewan's First Nations adults. Source: StatsCan [18]

Best Practices in STEM Education

Land-Based Learning

The What

Land-based learning is a holistic approach centred on learning *from* and *with* the land. The land, in this context, encompasses all aspects of the natural world, including plants, animals, ancestors, spirits, natural features, and the environment (air, water, earth, and minerals) [19]. Unlike Western education, which often separates theory from environment, land-based learning is experiential, relational and culturally relevant. It brings students outside the four walls of a classroom and engages them in practices that have sustained First Nations communities for generations, such as harvesting food and medicines, constructing traditional shelters, and observing natural cycles. For First Nations students, this pedagogical model strengthens identity, builds self-esteem, and reinforces cultural continuity [19]. By learning through observation, participation, and storytelling, students connect more deeply to their heritage while also acquiring skills that prepare them for modern careers.

Making the Connection: STEM through Land-Based Learning

Land-based learning also serves as a powerful bridge between First Nations and Western knowledge systems. These are not only cultural practices, but rich experiences embedded with what people today call STEM. Rather than placing First Nations knowledge outside or beneath Western science, land-based STEM education encourages a respectful integration of both, opening space for new perspectives, innovations, and solutions to today's complex challenges. *A good practice is to first teach a concept from a First Nations perspective, then translate it into Western scientific language. For instance, when describing an eddy along the river for placing a fishing net, educators can initially point out the currents, the movement of debris and sediment in the water, the likely path of the fish, the condition of the riverbank, the impact of passing boats, etc., from a First Nations point of view. Once the students understand the concept in this context, it can then be explained in Western scientific terms, such as flow rate, velocity, resistance, and turgidity* [20].

Land-based learning is already gaining traction in Saskatchewan schools. Educators highlight that students retain more of what they learn on the land, and that land-based education helps students make meaningful connections between school subjects and real-life experiences [21]. As one educator told CBC News [21], *"Land-based education for all is a tangible form of reconciliation."* In a time of reconciliation and environmental urgency, land-based STEM education offers a path forward, one that respects First Nations' knowledge, connects learners to their surroundings, and prepares them for futures rooted in both tradition and innovation.

Existing Initiatives and Special Programming

Across Saskatchewan, several organizations offer initiatives and special programming that support STEM education and career awareness for youth. The following examples highlight existing opportunities that

can be leveraged or adapted to support in-school learning and enhance on-reserve First Nations workforce development.

- ***Saskatoon Industry Education Council (SIEC) and Regina District Industry Education Council (RDIEC)*** **-** SIEC and RDIEC act as vital connectors between education and industry, helping students explore and prepare for careers in STEM and other high-demand fields. Through specialized programming, hands-on learning opportunities, and industry partnerships, they empower youth with the skills, knowledge, and experience needed for the modern workforce. Their initiatives support career readiness and foster meaningful pathways from classroom to career [22], [23].
- ***SK Science Centre and Nutrien Wonder Hub*** **-** The Saskatchewan Science Centre and Nutrien Wonder Hub provide engaging, hands-on STEM learning experiences that spark curiosity and creativity in children and youth. Through interactive exhibits, workshops, and educational programs, both organizations promote early interest in science, technology, engineering, and math in fun and accessible ways. They play a key role in building foundational STEM literacy and inspiring future innovators across Saskatchewan [24], [25].
- ***Saskatchewan Mining Association (SMA)*** **-** The Saskatchewan Mining Association (SMA) supports STEM learning through educational resources, teacher workshops, and programs that promote careers in mining. They partner with schools and organizations to provide curriculum-aligned content and opportunities that include Indigenous perspectives, helping First Nations youth explore and pursue STEM-related careers in the mining industry [26].
- ***Ag in The Classroom (AITC)*** **-** Ag in the Classroom (AITC) Saskatchewan promotes agriculture education by providing STEM-focused resources and hands-on learning experiences for students across the province. They collaborate with Indigenous communities and schools to deliver programming that connects agriculture, science, and technology, encouraging First Nations youth to explore careers in agri-food and environmental sciences [27].
- ***American Indian Science and Engineering Society (AISES)*** **-** The American Indian Science and Engineering Society (AISES) is a nonprofit organization dedicated to increasing the representation of Indigenous peoples in STEM fields across North America. Through culturally relevant programs, mentorship, scholarships, and community events, AISES supports First Nations students in Saskatchewan and beyond, fostering pathways into science, technology, engineering, and math careers. Their website is host to a number of valuable STEM resources and publications that seek to aid students throughout their STEM journey [28].
- ***Keeper of My Home (Derived from My Home Is My Tipi)*** **-** KMH is a digital educational resource for Indigenous peoples that works toward improving awareness of Indigenous housing, health and safety. KMH has been designed for First Nation Kindergarten to Grade 12 students attending schools on-reserve. KMH is based on and evolved from My Home is My Tipi, a housing resource kit for Saskatchewan First Nation schools [29].

Extra-curricular STEM Program

Some STEM programs supporting extra-curricular activities for students include STEM-focused youth camps such as:

- ***Educating Youth in Engineering and Science (EYES)*** – a non-profit organization working as part of the University of Regina. EYES is dedicated to promoting STEM subjects to youth throughout Southern Saskatchewan. It offers summer camps, all-year-round programs and scholarships/bursaries to students (Target grades: Gr. 1-9) [30].
- ***USask Sci-Fi Science Camps*** - STEM program for youths organized by USask. They offer classroom workshops, community programs, science clubs, and hold eight weeks of camps at the College of Engineering during the summer months. It is not entirely free, although financial aid is available [31].
- ***Actua (Indigenous STEM - In-STEM)*** **-** Canada's largest STEM outreach organization. Represents a national framework of 43 universities and colleges that engage youths aged 6-26 in STEM learning experiences [32].

5. STEM Careers and Opportunities

As technology continues to evolve and reshape industries, careers in STEM are becoming increasingly essential. In Saskatchewan, these careers span critical sectors such as energy, health, mining, and agriculture. For First Nations communities, participation in STEM provides opportunities for stable employment and career advancement. These careers offer more than just personal success; they also provide the tools needed to protect and manage the environment, improve healthcare access, and develop sustainable infrastructure, all of which contribute to the well-being of families, communities, and future generations to come.

Despite the numerous opportunities that exist in a variety of industries, survey responses indicate that many First Nations students are uncertain about pursuing a STEM career, with most expressing unfamiliarity with what these careers involve or how to access them. This uncertainty points to broader issues, such as limited access to career counselling, few visible role models in STEM, and a disconnect between STEM learning in school and its real-world applications. Helping students see the relevance of STEM, through mentorship, community connections, and early guidance, can be a powerful step in closing this gap. This section outlines various pathways into STEM careers, offers insight into current First Nations labour force participation, and highlights career opportunities within Saskatchewan's key industries, including the emerging nuclear sector.

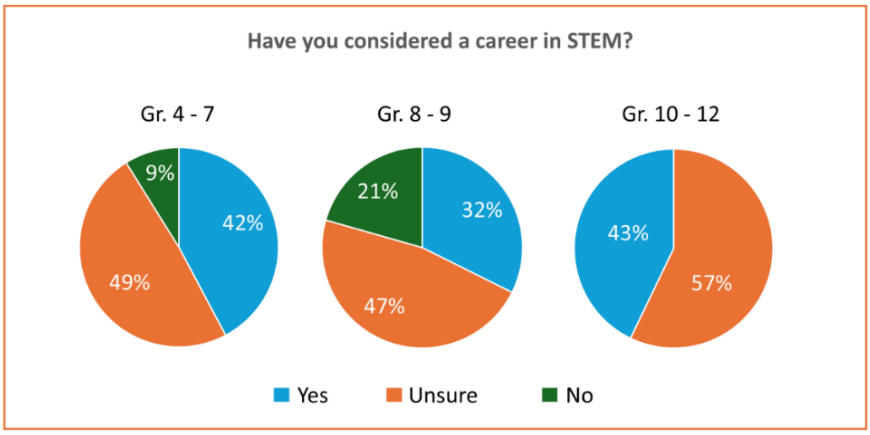

Figure 11: Students considering STEM careers in the future [FN science fair survey]

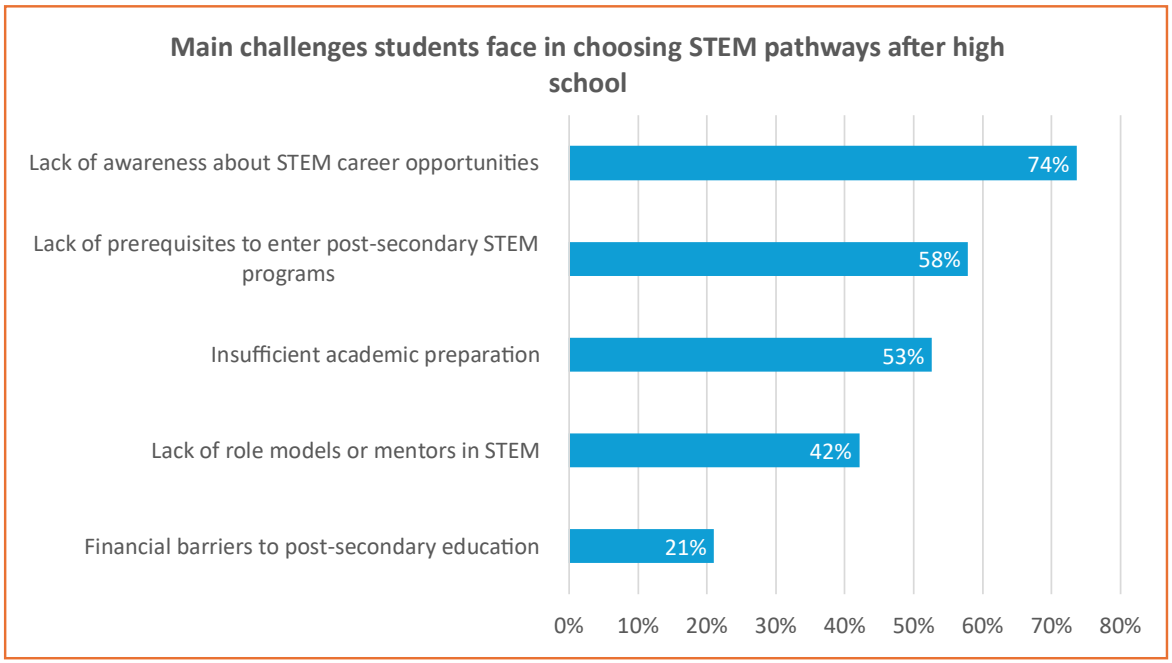

Figure 12: Challenges students face in choosing STEM pathways after high school [FN school survey]

Becoming a STEM Professional

A STEM professional is a skilled individual who utilizes scientific and technical knowledge to address real-world problems, foster innovation, and enhance systems. First Nations students aspiring to become STEM professionals have various pathways available to them after high school, each requiring different levels of education and offering unique career opportunities. These pathways are outlined below:

Stream 1: Direct-to-Work STEM Careers

- **Education Required:** High school diploma or equivalent with optional short-term certifications or hands-on training.
- **Typical Duration:** A few months
- **Careers:** Laboratory assistants, equipment operators, and technical support roles, etc.

Stream 2: Skilled Trades Careers

- **Education Required:** Apprenticeship-based programs or trade schools.
- **Typical Duration:** 2-4 years (depending on trade)
- **Credentials Required:** Industry-recognized certifications such as the Red Seal.
- **Careers:** Welders, millwrights, crane operators, HVAC technicians, etc.

Stream 3: Applied STEM Careers

- **Education Required:** Diploma or certificate from a polytechnic institution like Saskatchewan Polytechnic. Students gain hands-on experience through co-op programs or internships.
- **Typical Duration:** 1-2 years
- **Careers:** Engineering technologists, instrumentation technicians, environmental monitoring specialists, etc.

Stream 4: Advanced STEM Careers

- **Education Required:** University degree (Bachelor's, Master's, or PhD). Students are mandated to participate in internships or co-op placements for practical experience.
- **Typical Duration:** 4 – 6+ years
- **Careers:** Engineers, computer scientists, environmental scientists, research scientists, etc.

Current Outlook: First Nations Labour Force and Participation in STEM

Figure 13 shows employment data for First Nations people in Saskatchewan. It highlights higher participation in non-STEM-related fields, such as business, management, public administration, education, and social sciences. However, there is a mixed participation in STEM fields across the various career streams described above. Apart from health-related occupations, First Nations participation remains low in advanced STEM fields, such as engineering, mathematics, physical sciences and technology. On the other hand, there is relatively higher participation in applied STEM careers and skilled trades.

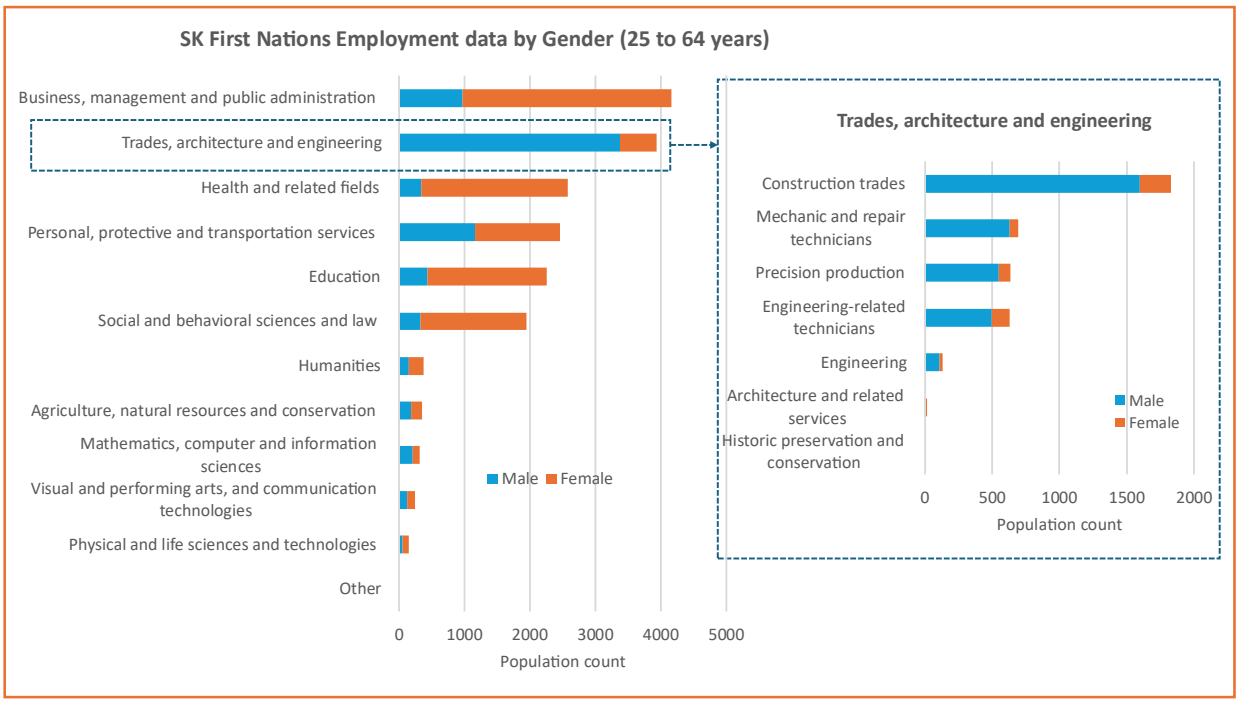

Figure 13: Saskatchewan's First Nations Employment Data. Source: StatsCan [33]

Factors influencing career decisions for Saskatchewan First Nations people

Through interactions with various key informants and participants in this study, the project team identified the following as key factors that may be influencing career decision-making among First Nations individuals:

- **Financial Need:** Shorter post-secondary programs or direct-to-employment options offer a route to immediate income, which may be more appealing to students looking to support their families quickly.
- **Community Needs and Location:** Many students aim to serve the specific needs of their communities and choose to pursue careers in healthcare, trades, education, or public services. In some cases, students may prefer to remain in or return to their home communities, which may limit their career options to roles that are locally available on-reserve or nearby.
- **Academic Preparedness and Perceptions:** A student's performance and confidence in key STEM subjects can strongly influence their career direction. If advanced STEM fields are perceived as overly difficult, students may steer toward less academically intensive or more familiar STEM streams instead. In some cases, students may not have had access to certain key courses in their on-reserve high schools, which can hinder their ability to meet the requirements of advanced STEM programs.
- **Role Models and Representation:** Seeing successful First Nations professionals in various STEM roles can inspire students to believe that similar futures are possible. When role models are absent or concentrated in only one stream (e.g., health or trades), students may not be exposed to the full range of STEM careers or envision themselves in advanced roles, such as engineering or research.
- **Access to Guidance and Information:** Many students face gaps in career counselling, post-secondary planning, and understanding of course requirements. Without timely guidance, students may miss

critical steps in their academic journey, such as selecting the right high school courses, which can ultimately narrow their career options.

STEM Career Opportunities in Saskatchewan

Saskatchewan's growing economy presents opportunities in both traditional and emerging STEM sectors, some of which have been highlighted below.

Nuclear sector

Saskatchewan is preparing to expand its nuclear industry, from uranium mining and milling operations to the future deployment of SMRs and microreactors. While these developments are still at least a decade away, they present a valuable opportunity to build a skilled workforce, including First Nations students currently progressing through the education system.

A workforce study conducted by MZ Consulting estimates the province will need between 2,500 and 3,500 nuclear professionals and skilled tradespeople to support these developments [8]. The study categorized Saskatchewan's nuclear workforce needs into six major areas:

1. **Program Preparation**—This includes roles responsible for licensing, regulatory compliance, environmental assessments, public relations, and project planning.
2. **Engineering**—This encompasses roles from various disciplines, including civil, mechanical, electrical, and nuclear engineering, as well as materials science, nuclear physics, and chemistry, all of which are essential for designing, building, and maintaining nuclear facilities.
3. **Project Management and Oversight**—This includes roles responsible for project coordination, vendor relations, engineering procurement, and construction (EPC) oversight.
4. **Skilled Trades**—The construction and maintenance phases rely on highly skilled tradespeople, including welders, millwrights, crane operators, pipefitters, and construction specialists.
5. **Operations and Safety** – Once operational, nuclear facilities require a range of personnel, including reactor operators, instrumentation technicians, radiation protection specialists, environmental scientists, and quality assurance professionals, to ensure safety and efficiency.
6. **Supply Chain and Logistics**—This includes roles responsible for procuring, purchasing, and transporting specialized equipment and materials to ensure project completion on schedule.

The above categories illustrate that, although the nuclear industry appears quite specialized, it actually encompasses a broad array of STEM-related job opportunities. While some roles require advanced degrees, many can be pursued with a college diploma, apprenticeships, or trade certifications. Although specific positions will necessitate training and licensing tailored to the nuclear sector, as required by authorities like the Canadian Nuclear Safety Commission (CNSC).

Other STEM-Related Career Opportunities in the Province

Beyond the emerging nuclear sector, Saskatchewan offers numerous STEM career opportunities in other industries that have long been key to the province's economic growth like:

- **Mining** - Geologists, mining engineers, safety specialists;
- **Oil and Gas** - Petroleum engineers, pipeline technicians;
- **Critical Minerals** - Materials scientists, process engineers;
- **Agriculture** - Precision agriculture specialists, soil scientists;
- **Manufacturing and Automation** - Robotics engineers, quality control specialists;
- **Internet Technology (IT)** - Data Scientists, Artificial Intelligence specialists, Cybersecurity Specialists, IT project managers;
- **Healthcare** – Doctors, medical laboratory technicians, Registered Nurses (RN), pharmacists, etc.

As mentioned earlier, these STEM fields require even more First Nations representation and participation. The advantage of STEM education is that it is applicable across various industries, allowing STEM professionals to easily transition into new roles within different industries, albeit with some specialized training.

Education Levels and Employment Outcomes

Higher levels of education are strongly correlated with improved employment prospects. While several reports and publications highlight the disparity in employment rates between Indigenous and non-Indigenous people, recent census data show that employment rates increase for all individuals as their level of educational attainment increases.

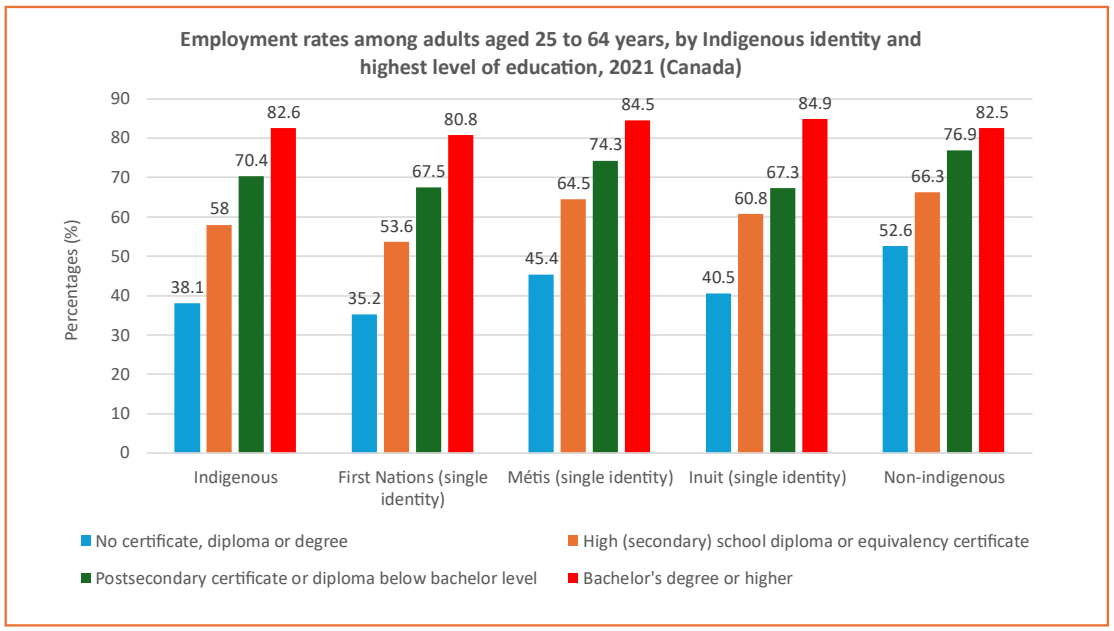

Figure 14: Employment rate data for Canadian adults aged 25 to 64 years. Source: StatsCan, 2021 [7]

Figure 14 shows that while the non-Indigenous population had higher employment rates across all education levels, the gap begins to close as education levels increase and eventually levels off at the highest attainable level of education. Simply put, First Nations individuals with a bachelor's degree in STEM-related disciplines are far more likely to be employed in professional occupations, while those with less or no formal education face much greater barriers to employment [7].

Walking the Path: A First Nations STEM Leader

Sarah Gauthier – *Interdisciplinary Leader Bridging STEM, Policy & Land Stewardship | Consultant*

For many First Nations students, the path to a STEM career can feel uncertain. But across Saskatchewan, there are First Nations professionals who have walked this very path – navigating school, finding inspiration, overcoming challenges, and building fulfilling careers in STEM.

One such leader is Sarah Gauthier, a nīhithaw iskīw (Woodlands Cree woman) and member of Lac La Ronge Indian Band, rooted in the Treaty 6 and Treaty 10 territories. With undergraduate degrees in Microbiology and Civil Engineering, and a master's in civil engineering specializing in water resources, Sarah has built a dynamic career as a consultant, engineer, educator, and governance leader. She is currently pursuing a Ph.D. in Public Policy, with a focus on community-centred research that integrates First Nations knowledge into environmental decision-making.

Sarah's path reflects a powerful blend of technical expertise, cultural grounding, and forward-thinking leadership. Her story reminds students that culture, history, and lived experience are strengths, not barriers, on the path of STEM success. By sharing who she is, why she chose this path, and how her career has evolved, she helps make the invisible visible.

> *"As someone who spent a lot of time outdoors growing up, I developed a deep curiosity about and care for our natural world. My upbringing and family history, along with STEM education (in the 'Western' sense) and career have allowed me to continue to be curious about the world and to share my enthusiasm and curiosity with my children and the next generation."*
>
> *– Sarah Gauthier*

This profile represents one of many voices we hope to continue highlighting in the future, as more First Nations professionals lead the way in STEM fields. It reinforces the message: *"Your path may be unique, but you are not alone."*

Transitioning from School to Work

Successfully moving from the education system into the workforce is a pivotal step in the career journey. For First Nations individuals, this transition can be influenced by access to job opportunities, employment readiness, and availability of supportive programs.

Initiatives Supporting Transitions to Employment

A number of programs and partnerships across Canada and within Saskatchewan aim to support First Nations individuals as they transition from school to work. Some of them are discussed below.

National and Broader Initiatives

- ***Indspire's Rivers to Success (R2S) Indigenous Mentorship Program*** - A national mentorship program supporting First Nations, Inuit, and Métis students across three life stages: high school (group support and planning), post-secondary (one-on-one mentorship and academic strategies), and career transition (job search and career advice). R2S offers culturally grounded support to help students achieve success while maintaining their identities [34].
- ***First Nations and Inuit Summer Work Experience Program*** - Funded by Indigenous Services Canada (ISC), this program provides Indigenous youth with valuable summer employment opportunities and valuable work experience to build employability skills and explore careers. It supports early exposure to the workforce and helps youth transition into further education or long-term employment [35].
- ***First Nations and Inuit Skills Link Program*** - Also under the ISC, this program is part of the First Nations and Inuit Youth Employment Strategy, which offers career exploration, co-op placements, STEM-focused activities, and mentorship opportunities to First Nations and Inuit youth. These opportunities are designed to help youth develop employability skills, gain practical work experience, and overcome barriers to employment. The program is accessible to eligible First Nations and Inuit communities, governments, organizations, schools, and employers across Canada [36].
- ***Indigenous Skills and Employment Training (ISET) Program*** - The ISET Program is a national initiative aimed at reducing employment and skills gaps between Indigenous and non-Indigenous populations. It provides funding to over 110 Indigenous service delivery organizations across Canada, enabling them to design and deliver job training services tailored to the unique needs of First Nations, Inuit, Métis, and urban/non-affiliated Indigenous communities. The ISET Program also funds training initiatives that align with local labor market needs, including those in STEM fields [37].

Some Saskatchewan-Based Initiatives

- ***Dziret'ai Pilot Training Program –*** This program is a fully funded aviation initiative in Saskatchewan aimed at empowering First Nations people from northern and remote communities, particularly in the Athabasca Basin, to become professional pilots. The program supports participants through four key phases:
    - Elevated Skills Program – begins September 2024
    - Pilot Training – begins January 2025
    - Graduation – June 2026
    - Rise Air First Office – starting July 2026

  Participants receive academic upgrading, flight training, accommodations, and cultural support from Elders and Knowledge Keepers. Upon completion, graduates will earn their commercial pilot licenses and transition directly into aviation careers. It is delivered by Ya'thi Néné Lands and Resources (YNLR), in partnership with Rise Air, an Indigenous-owned airline. It is supported by the Government of Canada (through PrairiesCan), the Government of Saskatchewan (Ministry of Immigration and Career

Training), and industry partners including Cameco, Orano Canada, SSR Mining, Northlands College, and the Prince Albert Grand Council. Flight training is conducted at Mitchinson Flight Centre in Saskatoon [38].

- ***BHP Potash Academy Program*** - BHP's Pre-Employment Training Program, delivered in partnership with Carlton Trail College, is designed to build inclusive pathways into Saskatchewan's growing mining sector. Through a combination of job readiness training and industry-specific instruction, the program supports individuals with little to no prior experience in mining—including First Nations people—by equipping them with the foundational skills needed to pursue long-term careers in the industry. A key component of the program, Mining Essentials, was developed by the Mining Industry Human Resources Council in partnership with the Assembly of First Nations, ensuring cultural relevance and accessibility for First Nations participants [39].

Looking to the Future

While many industry-led initiatives are commendable and have helped some First Nations graduates enter the workforce, they remain only part of the solution. Most current initiatives focus on post-secondary students or recent graduates, helping a limited number of individuals transition to employment. However, without addressing the root causes of First Nations underrepresentation in STEM, the system will continue to graduate students underprepared for the demands of STEM fields. As a result, the gap persists, and many promising students are left behind.

This approach essentially papers over the cracks. To shift long-term outcomes, industry participation must extend beyond meeting Diversity, Equity, and Inclusion (DEI) targets or hiring quotas. The most meaningful impact lies in supporting schools and communities in building strong STEM foundations early (K-12). This may include investing in First Nations schools and classroom resources, supporting teachers' professional development, enabling hands-on, land-based STEM activities, and enhancing the visibility of role models and career awareness.

This work should also involve sustained partnerships—not isolated projects. Industry participants can help co-develop long-term relationships with schools, sponsor experiential learning opportunities, and align investments to community priorities rather than external timelines.

By helping First Nations schools develop early STEM programming rather than supporting downstream interventions, industry becomes a true partner in building First Nations' talent. Supporting foundational change will create a stronger, better-prepared generation of students who can thrive in STEM pathways rather than merely be placed in them.

It should be noted that *considerations on how industry can further support effective transitions from education to STEM employment are addressed in Section 6 (Recommendations) of this report. The proposed recommendations are framed within feasible, collaborative implementation approaches.*

6. State of STEM in Saskatchewan First Nations Schools: Gaps and Opportunities

This section examines the key challenges and barriers impacting STEM education in First Nations on-reserve schools across Saskatchewan. Drawing from surveys of schools and educators, as well as feedback from students at science fairs, the analysis highlights recurring themes affecting student outcomes and participation in STEM learning. It concludes with some recommendations to strengthen STEM education outcomes in First Nations communities.

Core Systemic and Structural Barriers

The current state of STEM in surveyed First Nations schools was described by most educators as still developing, but limited by several key factors, some of which are outlined under five (5) broad categories below.

1. SCHOOL SYSTEM STRUCTURE

The structure of education delivery across First Nations in Saskatchewan reflects a high degree of local autonomy, which is both a strength and a challenge when it comes to consistent and coordinated advancement in STEM across all First Nations schools.

a. **Autonomy without system-wide coordination –** Many First Nations operate their education systems independently, with each community determining its own priorities, curriculum adaptations, and programming. While this allows for cultural and local relevance, it also means that a unified vision or strategy for STEM learning across on-reserve schools does not exist at this time. A few schools within Regional Education Authorities (REAs) benefit from some level of shared planning and support, but this is not widespread.

b. **Limited access to education data –** There is no central, public source of information on the state of STEM education across First Nations schools in Saskatchewan. First Nations own their own data, which is an important and sovereign right, but in practice, this means that data on student outcomes, teacher qualifications, course offerings, or educational programming is often fragmented, unavailable, or inconsistent. This makes it challenging to identify trends, advocate for funding, or develop targeted responses to community needs.

   Systematic data collection and use can help communities and education leaders identify what's working and what needs improvement. Without reliable and accessible data, opportunities for evidence-based decision-making and long-term planning in STEM are limited.

c. **STEM as a secondary priority –** Survey data suggest that many schools view STEM as important, but not urgent (see Figure 15). Foundational reading and literacy often receive the majority of attention and resources, partly due to targeted early learning initiatives. While these are critical areas, limited early exposure to math, science, and hands-on problem-solving experiences can hinder STEM engagement and confidence.

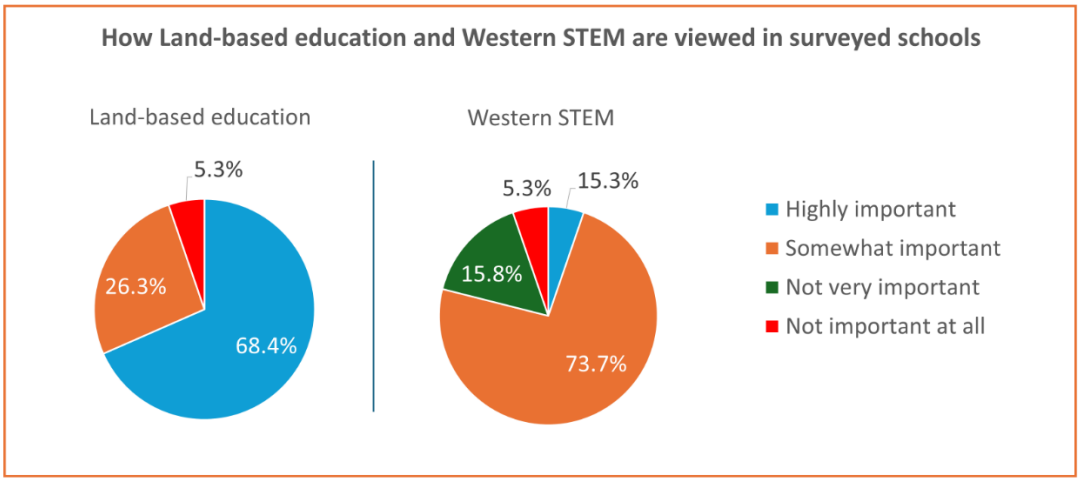

Figure 15: Views on Land-based education and Western STEM in surveyed schools [FN school survey]

d. **Limited community engagement** – While some schools benefit from strong community involvement, others reported more limited engagement with parents, Elders, and local leaders. Educators emphasized that when the community is involved, students are often more motivated and feel a greater connection between their education and their culture. However, past trauma, particularly those related to residential schools, can make school environments feel unsafe or uninviting for some community members. One educator, Andrew Starblanket (Cowessess Community Education Centre), provided an example of an elder's experience entering the school environment, where the smell of cleaning chemicals during a school visit triggered memories of their residential school experience.

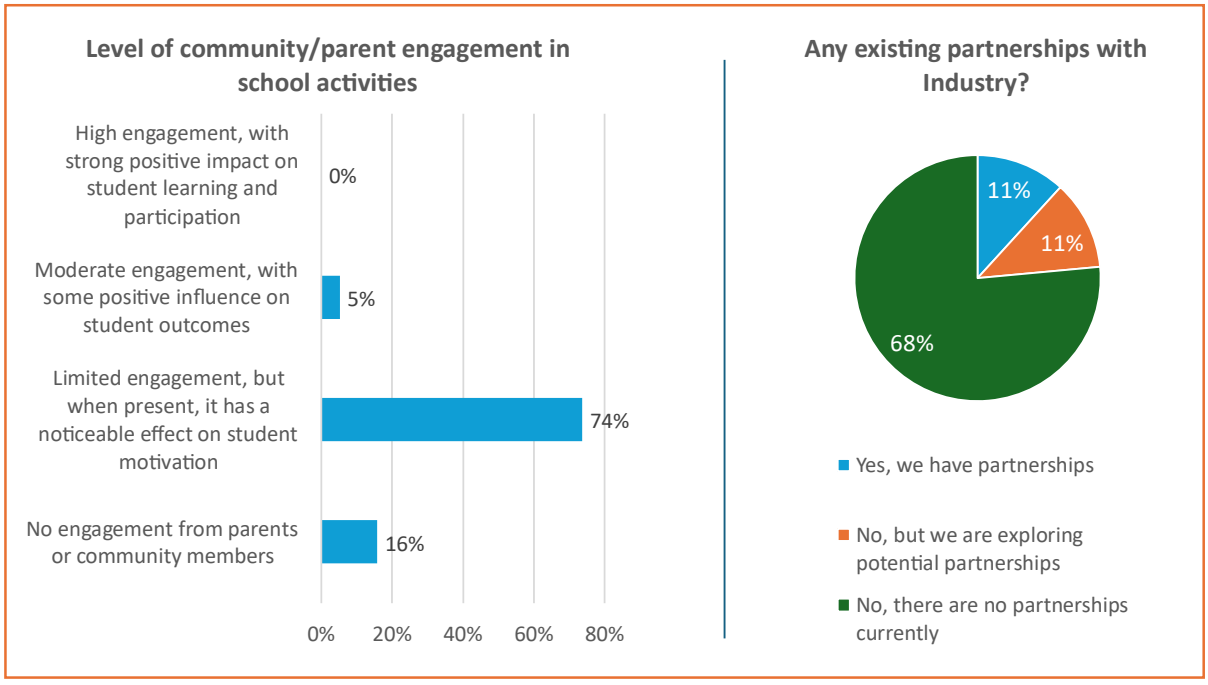

Figure 16: Community engagement and partnerships in surveyed schools [FN school survey]

e. **Limited partnerships with industry and post-secondary institutions** – Partnerships with industry and post-secondary institutions also vary widely. Without central coordination, building partnerships with industry or post-secondary institutions is often left to individual schools or teachers. This creates uneven access to opportunities, mentorship, experiential learning, funding, and future-focused programming. Some schools have established connections that allow for mentorship, career talks, or access to facilities, while others have had fewer opportunities to develop these relationships. Schools may not have the capacity, connections, or time to develop these opportunities consistently; many are also unaware of these opportunities. These partnerships are essential for expanding students' awareness of what's possible in STEM and accessing essential information vital to success in STEM.

f. **Funding Structures –** On-reserve schools in Canada receive federal funding through Indigenous Services Canada (ISC), largely based on student enrollment as reported in the Nominal Roll. This funding model inadvertently contributes to a "Catch-22" scenario. Due to limited school resources, lack of specialized programming, or perceived quality differences, many families choose to send their children to nearby provincial schools. However, when students leave the reserve school system, the school receives less funding in subsequent years due to reduced enrollment on the Nominal Roll. The drop in funding further hampers the school's ability to improve programming or upgrade infrastructure, pushing even more students to leave.

   Importantly, this reduced funding also affects a school's ability to hire and retain competent teachers, particularly those qualified in STEM subjects. Lower funding may result in less competitive salaries, fewer professional development opportunities, or an inability to offer full-time positions, all of which deter experienced educators from committing to long-term roles in on-reserve schools [40].

2. STEM CONTENT AND CURRICULUM

a. **Limited culturally relevant curriculum content** – Educators consistently expressed concern that the STEM content in the curriculum they teach, often feels disconnected from the First Nations cultural context and students' lived realities. While many schools strongly value land-based learning, there are limited frameworks in place to integrate this with formal STEM education in a way that feels authentic and engaging.

b. **Limited course offerings –** Access to STEM courses remains limited in many on-reserve high schools. While over 70% of the surveyed schools with high school programming offer subjects like Biology 30 and Foundations Math 30, only 12% offer Chemistry 30 and Physics 30, both of which are prerequisites for many STEM careers and post-secondary programs. In several cases, these courses are only available on a rotating basis due to staffing or scheduling constraints. Other reasons cited for rotational offerings include limited interest and low enrollment in these courses, as well as a lack of teaching resources and equipment.

3. RESOURCES AND INFRASTRUCTURE

a. **Limited Access to STEM Resources and Teaching Supplies** – Most schools reported having access to devices, such as tablets, laptops, and computers, that support digital learning. However, there is limited access to hands-on STEM resources, such as science laboratories, robotics kits, and creative maker spaces, which are key tools for engaging students in experiential learning.
b. **Limited Access to Information** – Due to limited STEM resources, teaching staff, and industry partnerships, most schools have limited access to important information on STEM opportunities. As a result, students are typically left with little to no knowledge of STEM education and career pathways.
c. **Limited extracurricular STEM activities** – Many schools also noted that extracurricular STEM activities, such as engineering challenges, after-school projects, are minimal, with land-based learning, ceremonies and science fairs being primary activities reported.

When asked about barriers to expanding these resources, schools cited several issues, including the absence of specialized STEM educators or support staff to facilitate these activities, limited physical space, outdated equipment, constrained budgets, or a focus on other extracurricular activities like sports.

4. EDUCATOR CAPACITY

A significant theme emerging from the survey responses was the need for increased support and professional development for STEM educators. Several schools indicated that they were unable to offer certain courses due to a limited number of teachers and the absence of educators with the necessary STEM accreditations.

a. **Low educator confidence** – Many teachers do not have formal training in science or math and report feeling less confident in teaching STEM subjects. Some educators mentioned that STEM content can be challenging to deliver due to materials or classroom supports that are not user-friendly; however, while acknowledging the need to update STEM documents and resource kits for better usability, this challenge in interpreting STEM materials may persist if teachers without STEM backgrounds are required to teach STEM subjects.
b. **Low STEM motivation** – When teachers are unsure of the subject matter or don't feel supported in delivering STEM content, they may be less motivated towards STEM and more inclined to guide students toward easier course options, for instance, suggesting a student takes Workplace Math over Pre-calculus, due to perceived less difficulty, even if it narrows the student's future STEM opportunities.
c. **Limited STEM-dedicated staff and supports** – Schools also noted the absence of dedicated STEM coordinators, guidance counsellors, or lab technicians. These support roles are critical for helping students explore STEM career pathways, plan their course selections, and access hands-on learning.
d. **Limited Professional Development Opportunities** – Professional development opportunities focused specifically on STEM were also limited. Over 70% of schools indicated they had not received recent STEM-specific training or workshops.
e. **High teacher turnover** – High teacher turnover remains one of the most pressing challenges facing on-reserve schools, particularly in STEM subjects, where continuity and consistency are essential. This

instability in teaching staff disrupts the flow of instruction, leads to frequent re-teaching or gaps in curriculum coverage, and ultimately affects student confidence and learning outcomes. Turnover is closely tied to systemic issues. Many teachers either commute long distances from nearby towns, resulting in burnout and limited after-school involvement, or face limited amenities and housing options when attempting to live on-reserve. These conditions make it challenging to attract and retain skilled educators.

Additionally, on-reserve teachers are typically employed directly by the First Nation, with oversight often falling under a Chief's and/or Council's Education portfolio. These teachers do not have any protection from teaching unions like their counterparts in provincial systems, which can make teaching on-reserve not as appealing. Without system-level strategies to support teacher retention, building and sustaining momentum in STEM programming becomes challenging.

It is worth noting that some of the above issues aren't unique to First Nations schools; they also exist in the broader provincial educational systems. Research shows that teachers are more likely to emphasize STEM in the classroom when they have received formal STEM education or training. A national study by Actua [41] found a strong correlation between a teacher's exposure to STEM training and their confidence or commitment to teaching it. This supports what we observe in Saskatchewan on-reserve schools: when educators lack specialized training or professional development in STEM, they are less inclined to fully incorporate STEM into their teaching.

Why are there so few STEM-specialized educators?

Many educators teaching STEM in First Nations schools today do not have formal STEM backgrounds. This is not due to a lack of dedication or capability, but rather a combination of structural and systemic factors within Saskatchewan's teacher education pathways.

To become a certified teacher in Saskatchewan, individuals must: complete Grade 12 or equivalent, earn a Bachelor of Education (B.Ed.) degree, and obtain certification from the Saskatchewan Professional Teachers Regulatory Board (SPTRB). During the B.Ed. program, students often select a "teaching stream" such as sciences, humanities, or arts. However, once SPTRB-certified, educators can be assigned to teach outside their original stream. This flexibility means teachers who initially pursued non-STEM areas, due to personal interests or perceptions of program difficulty, may still end up teaching STEM courses.

One key consideration is that compensation for teachers is generally tied to education level and experience, not their subject area. As a result, there's little financial or institutional incentive for teachers to choose more rigorous STEM specializations during their studies.

For First Nations educators, most enter the profession through Indigenous teacher training programs such as the Indian Teacher Education Program (ITEP) at the University of Saskatchewan or similar programs at the University of Regina and the First Nations University of Canada, such as the Bachelor of Indigenous Education, SUNTEP, or NSITEP. These programs provide critical cultural grounding, land-based learning, and field experience tailored to Indigenous communities. However, they often do not include structured opportunities to specialize in science due to course scheduling constraints and limited access to STEM electives. As a result, while graduates are well-prepared to teach in culturally responsive ways, they may

not have the formal science background required to confidently deliver advanced STEM content in the classroom.

This dynamic has contributed to a shortage of educators with formal STEM training in on-reserve schools, a situation that impacts both the educators' confidence and the depth of content delivered in STEM subjects.

5. BROADER ISSUES - SOCIO-ECONOMIC AND GEOGRAPHIC CHALLENGES

Some of the broader realities faced by students in on-reserve communities continue to impact their STEM education. For example, irregular attendance and limited access to stable housing can affect students' ability to consistently participate in learning. Educators also spoke about students arriving in high school with foundational learning gaps, sometimes due to "social passing" or inconsistent instructions in earlier years.

a. **Remote location** – Schools in remote locations often face additional logistical challenges. Accessing materials for STEM projects or coordinating with outside experts can be difficult when supplies, services, and support are far away. Teachers who do not live on-reserve often face long commutes, adding stress and reducing flexibility for extracurricular involvement.
b. **High school transitions** – For schools that only offer elementary education, students typically leave the community to pursue high school or post-secondary opportunities. This transition can be difficult, especially without strong support systems in place. Students may experience social or emotional stress in unfamiliar environments, affecting their engagement and success.
c. **Social challenges** – Educators also referenced challenges in the broader social context, such as youth pregnancy, poverty, food insecurity, substance use, and mental health issues, as additional pressures that can make it harder for students to focus on school.

Recommendations

It is important to note that many of the identified gaps are deeply interconnected. Limited course offerings, for example, often stem from low student interests, and educator shortages linked to school system structure, contract conditions, and sometimes geographic barriers. Similarly, low student engagement in high school STEM can be attributed to earlier academic struggles, limited exposure to career pathways, and resource gaps in earlier grades. These compounding factors create an environment where students, educators, and communities do their best with limited support, and addressing a single issue often requires action across multiple areas.

The report presents six key recommendations to address the gaps and barriers identified in the earlier section, as shown in Figure 17. These recommendations aim to strengthen STEM education outcomes for First Nations students in Saskatchewan's on-reserve schools. They are grounded in survey findings, round-table insights, and the expressed needs of educators and communities. Each recommendation area

outlines practical steps to support more culturally relevant, accessible, and future-oriented STEM learning.

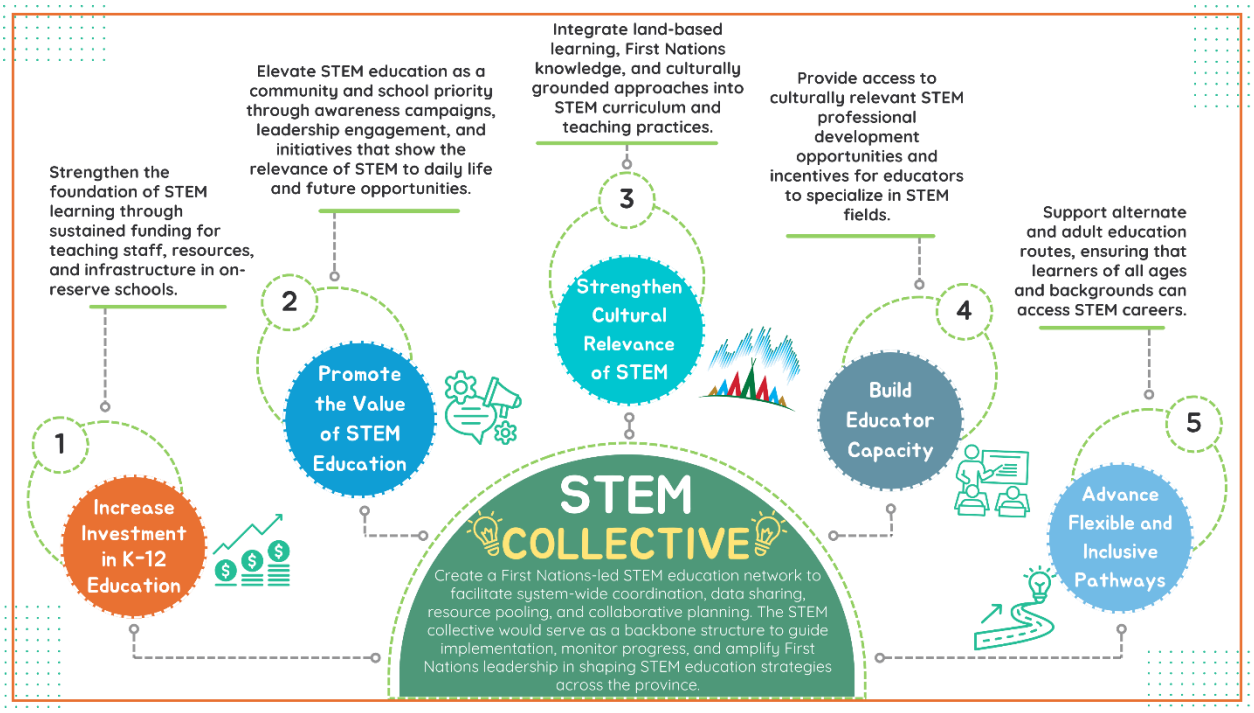

Figure 17: Key recommendations from this study

While **Recommendations 1 to 5** may be adopted individually by First Nations schools, Tribal Councils, REAs, and industry partners, the actions, such as investing in on-reserve education and educator training, enhancing cultural relevance, or expanding STEM activities, can yield meaningful local benefits. However, for lasting, sustainable impact of subsequent interventions, the report highlights that a coordinated effort will be required, as described in **Recommendation 6 for** establishing a STEM Collective. In this way, Recommendation 6 is not intended to replace the other recommendations; rather, it is proposed to amplify, strengthen and sustain them over the long term.

RECOMMENDATION 1: INCREASE INVESTMENT IN K-12 EDUCATION

K-12 education is the foundation from which future STEM learners and professionals emerge. For First Nations students, meaningful investment in on-reserve K-12 education is critical. Without a strong STEM foundation at this level, later interventions, such as post-secondary scholarships or career-entry promotions, have limited long-term impact. Students must first be academically prepared and aware of the opportunities that STEM fields offer.

Currently, many federal and industry initiatives tend to focus on post-secondary levels or workforce entry. While these are valuable, they often overlook the root of the challenge. If foundational STEM learning is

under-resourced, the system will continue to produce Grade 12 graduates who are underprepared for advanced STEM pathways, creating a cycle of repeated downstream interventions.

Schools need adequate, sustained funding for STEM resources, infrastructure, and most importantly, for hiring and retaining qualified K-12 educators. With respect to "Treaty Right to Education" and the concept of "Indian Control of Indian Education [13]," First Nations leadership can choose to pursue this funding independently through federal and provincial governments, or by forming partnerships directly with industry and post-secondary institutions. This approach may work for individual schools or education authorities seeking immediate support. However, a stronger, more coordinated impact can be achieved by aligning investments across all First Nations in the province, as proposed in Recommendation 6 of this report. Regardless of the route to access funding, a collective call for action is being requested from both government and industry partners. Support must extend to the early stages of learning if we are to truly accelerate STEM programming and outcomes in First Nations communities.

RECOMMENDATION 2: PROMOTE THE VALUE OF STEM EDUCATION WITHIN SCHOOL AND COMMUNITY PRIORITIES

When STEM education is valued and prioritized in First Nations communities, students are more likely to stay engaged, persist through challenges, and pursue opportunities in STEM-related fields. The following actions can help embed STEM as a visible and meaningful priority across school cultures and community settings.

a. **Promote awareness of the value of education** – Facilitate forums among Tribal Councils, REAs, and independent First Nations schools to promote awareness of the value of education and present a case on the benefit of coordination on education, especially in STEM. Awareness campaigns should point out the long-term benefits of cooperation and emphasize the importance of putting politics aside to focus on securing the future of young First Nations students. A good example of such a collaborative First Nations education system can be found in British Columbia, as shown in the figure below.

   The First Nations Education Steering Committee (FNESC) in British Columbia facilitates a province-level REA, under the BC Tripartite Education Agreement, bringing together over 130 First Nations in B.C. to collaboratively guide K-12 education. This arrangement enables collective data-sharing, unified advocacy, and shared planning. This results in stronger STEM strategies and better support systems for students, demonstrating the power of pooled data and coordinated vision across many communities.

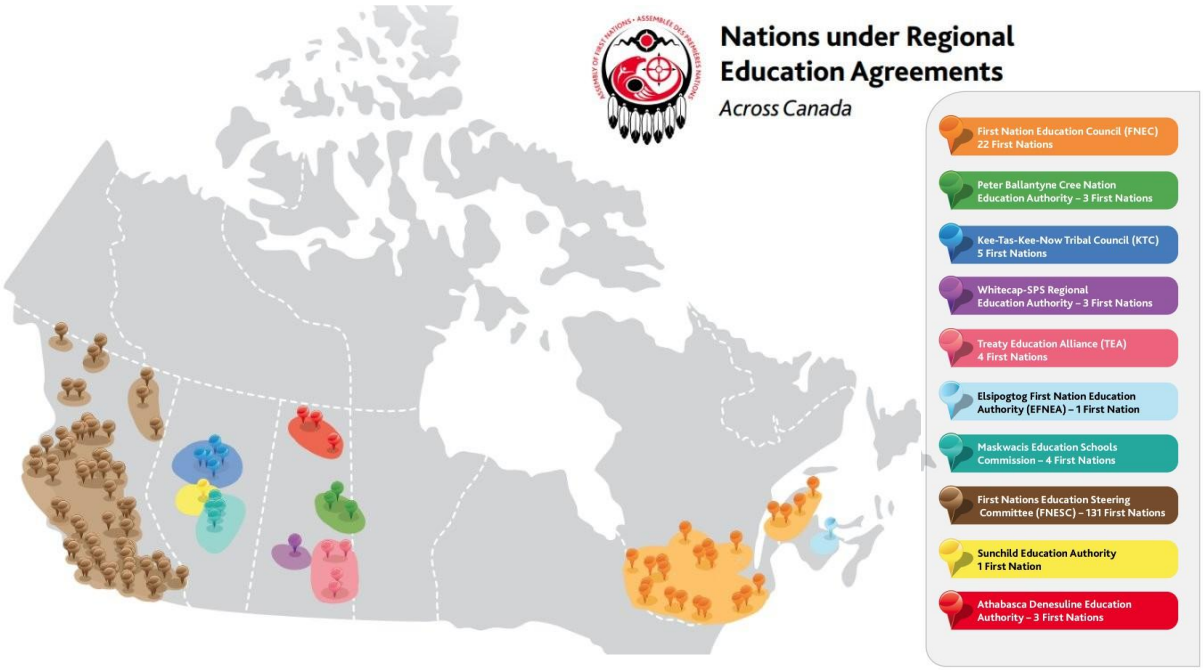

Figure 18: A landscape of First Nations under Regional Education Agreement [42]

b. **Enhance data gathering and utilization** – Promote ethical data governance models that respect First Nations ownership while enabling aggregated insights to guide resource planning. Schools should be encouraged to use data on attendance, course offerings, and student outcomes to identify gaps and inform interventions.
c. **Embed STEM values across the system** – Work with First Nations leadership and school boards to position STEM not as an "add-on," but as a core part of First Nations education that builds self-reliance and innovation. Developed initiatives should reframe STEM education as a tool for community empowerment and environmental stewardship. Initiatives could include hosting community-STEM nights, land-based science fairs, and parental engagement events to spotlight real-world applications. These initiatives could leverage local role models working in health, engineering, and environmental fields to inspire students and caregivers. This is already the case in some on-reserve schools.
d. **Balance foundational literacy with STEM exposure** – Encourage early integration of hands-on science and numeracy activities alongside reading-focused interventions. Science inquiry should be included in the earliest grades to spark curiosity and confidence in students as they advance through the educational system.

These actions could be further supported through the formation of a STEM Collective, as outlined in Recommendation 6, which would provide a coordinated, First Nations-led structure to convene schools, leadership, and community partners, similar in function to the FNESC model in British Columbia. Such a collective would enable shared priorities, collaborative planning, and consistent promotion of STEM values across communities while respecting local autonomy.

RECOMMENDATION 3: STRENGTHEN THE CULTURAL RELEVANCE OF STEM CONTENT

To make STEM more meaningful and engaging for First Nations students, it is essential that content reflects their perspectives and beliefs. As one educator noted,

> *"STEM courses should integrate more traditional and land-based teachings to deepen engagement and allow students to connect back to the land."*

While First Nations schools are required to meet provincial learning outcomes, they retain autonomy over their curriculum and how content is delivered. There is flexibility to integrate cultural perspectives, Elder's teachings, land-based learning and community knowledge to make STEM subjects more engaging and relevant to their daily lives without replacing provincial curriculum standards. This approach maintains alignment with provincial STEM standards while contextualizing learning to reflect their experiences and community knowledge.

a. **Develop culturally relevant STEM content** – First Nations schools can enrich existing STEM courses with community-driven content that reflects First Nations experience, such as seasonal cycles, water monitoring, traditional engineering and design principles, plant science, and land stewardship. This work would be led by First Nations educators and supported by local input from Elders and Knowledge Keepers, without requiring provincial curriculum changes.
b. **Leverage curriculum development flexibility** – Because First Nations schools are not bound by the same lengthy approval pathway as provincial schools, they are well-positioned to pilot and deliver culturally relevant STEM enhancements to their curriculum. These efforts may be developed locally by schools, coordinated regionally through educational boards, or strengthened in partnership with relevant organizations. For instance, with respect to developing a First Nations workforce for the nuclear industry, once the value of STEM education and the importance of nuclear energy in today's world have been successfully shared with the First Nations communities as per Recommendation 2, First Nations schools could partner up with organizations like the Canadian Nuclear Association (CNA) to adopt existing educational resources and develop age-appropriate materials to teach about mining, radiation, energy, and nuclear science. Provincial systems may become partners where interests align, but curriculum adaptation remains First Nations-led and community-driven.
c. **More STEM extracurricular activities –** Educators and students noted that extracurricular STEM activities, such as coding clubs, science fairs, and hands-on projects, help bring STEM to life. Many First Nations schools do not have access to existing extracurricular STEM programs and resources in the province (see Section 4), and some available options are not culturally relevant. Increasing access to these programs and adapting programs through a First Nations lens can help deepen learning beyond the classroom, especially in remote or smaller schools with limited resources.

RECOMMENDATION 4: BUILD EDUCATOR CAPACITY AND CONFIDENCE IN STEM

Having STEM educators with the right STEM skills plays a vital role in shaping student outcomes.

a. Introduce targeted incentives for STEM-specialized teachers – Incentives are needed to encourage teachers to go through STEM streams in their educational pathways to becoming teachers. This may

include exploring bursaries, scholarships, or salary supplements for teachers who obtain STEM qualifications and commit to teaching STEM subjects in First Nations schools.

b. **Develop a STEM Cohort within ITEP or equivalent programs –** Partner with institutions like USask to pilot a STEM stream within ITEP that allows teacher candidates to take focused science and math courses. This will include addressing scheduling and course access barriers to support students through this pathway. This cohort should also offer academic supports (e.g., tutoring, mentoring) to encourage success in STEM specializations.
c. **Support Re-skilling and Up-skilling** – Beyond graduating teachers with the right STEM qualifications, teachers currently in service with non-STEM backgrounds, who find themselves teaching STEM subjects, should be offered pathways to obtain STEM accreditation. This may include partnering with post-secondary institutions like USask or UofR to develop micro-credential programs focused on foundational math and science to help in-service educators build their STEM content knowledge and earn credentials while continuing to work. Additionally, educators should have access to STEM-focused professional development (PD) opportunities to refresh or upgrade their STEM knowledge.

Balancing Reskilling with Educators' Realities

The truth is, many teachers are already stretched thin managing existing responsibilities, such as lesson preparation, extracurricular activities, reporting, and more, often without adequate compensation. It's no surprise that many educators across Saskatchewan are calling for better pay and recognition of the extensive off-the-clock workload. For First Nations schools seeking to enhance STEM teaching through reskilling and upskilling, it is crucial to acknowledge these realities. Educators who have expressed a need or desire to grow their STEM capacity must also be supported in balancing that growth with their full-time teaching duties. Some recommendations to support educator development include:

- Paid release time for professional development, especially for STEM-focused training
- Online and flexible PD formats to reduce travel and time burden
- Summer STEM initiatives or learning retreats that offer immersive, culturally rooted STEM upskilling
- PD funding grants specifically for STEM education courses or workshops
- Administrative support for managing class time or sharing teaching load while educators engage in training

By supporting teachers in practical, flexible ways, First Nations school systems can strengthen their STEM teaching capacity while respecting educators' time, effort, and well-being.

RECOMMENDATION 5: ADVANCE FLEXIBLE AND INCLUSIVE STEM PATHWAYS

Supporting alternate and mature learners is an essential part of ensuring that STEM education is inclusive and accessible throughout all stages of life. Many individuals who may have left school early due to youth pregnancy, caregiving responsibilities, or other life circumstances may show interest in re-engaging with learning, especially when clear and supportive pathways are made available. Creating adult-entry STEM

learning programs, through community-based learning hubs, virtual courses, or short-term certificate programs, can help reconnect these learners to new opportunities. First Nations schools and education partners can work with authorized post-secondary institutions that deliver Adult Basic Education (ABE) and Essential Skills for the Workplace (ESWP) programs in the province [43], and ensure that culturally relevant STEM content is considered in these programs.

RECOMMENDATION 6: ESTABLISH A STEM COLLECTIVE TO ENABLE SYSTEM-WIDE COORDINATION

While individual First Nations schools may choose to advance STEM independently, longer-term transformation will require coordinated, system-wide efforts. A practical next step is to create a First Nations–led STEM Collective—a provincial network that connects First Nations schools and education systems, Tribal Councils, REAs, educators, Elders, industry partners, governments, and post-secondary institutions.

By centralizing efforts, the STEM Collective would become the backbone of many recommendations outlined in this report. Rather than isolated efforts where some schools advance and others fall behind, a collective ensures that knowledge, resources, and opportunities are shared, and that students across all First Nations can benefit—regardless of geography, school size, or available local resources. It would also provide a mechanism for monitoring progress, sharing learnings, and sustaining improvements over time.

Key functions and benefits of a STEM Collective include;

a. **Foster cross-school collaboration -** A key benefit of such a collective would be its ability to foster collaboration across schools by forming a provincial STEM educator network. This network would allow teachers to share instructional strategies, culturally relevant lesson plans, and successful classroom practices in STEM, creating an environment of collective learning.
b. **Enable peer mentorship and professional learning communities** - For early-career educators or those new to STEM, the collective would provide mentorship opportunities by connecting them with more experienced peers. This type of peer support would be especially helpful in addressing the high rates of teacher turnover seen in some communities, ensuring that good practices and tools are not lost when staff transitions occur.
c. **Coordinate collective professional development (PD) and resource development** – The STEM Collective would also coordinate professional development and support resource development across schools. Rather than every school trying to independently address professional learning or access to tools, the collective could host shared PD sessions and help co-develop teaching materials that reflect both the provincial curriculum and First Nations ways of knowing. Resources such as lab kits, coding tools, or science experiment materials could be pooled and scheduled for use across schools. This would make hands-on learning more accessible, especially in smaller or remote communities.
d. **Act as a data collection and learning hub** - Another important function of the collective would be to serve as a data coordination and learning hub. It could support respectful and sovereign data collection related to STEM education, for example, tracking student participation, attendance, or areas of interest, and use these insights to inform decisions, identify gaps, and support continuous

improvement. All data collection would remain under the control of First Nations communities, but the collective would provide a means to identify broader trends while preserving local ownership of information.

e. **Build bridges to role models, careers, and industry** - The collective would also act as a conduit for access to industry, post-secondary institutions, and First Nations professionals in STEM fields. For many schools, especially those in rural or remote areas, it is difficult to build these kinds of relationships independently. A collective effort would streamline access to mentorship, guest speakers, hands-on experiences, and guidance on pathways. This could play an important role in making STEM feel more visible, more possible, and more connected to students' futures.

f. **Leverage the Centre's EXPORT platform for digital access and visibility** – In terms of tools and visibility, the collective could leverage the EXPORT platform as a digital hub. Through EXPORT, the collective could host a number of resources such as an interactive map of STEM career pathways linked to high school course requirements; digital profiles and videos of Indigenous role models in STEM; a virtual STEM career guidance tool for students and educators; and even an "online STEM career counselor" to provide guidance on academic planning, scholarships, or post-secondary options.
Note: *EXPORT is a digital platform developed and owned by the Centre of Excellence, designed to support First Nations workforce and economic development. It enables First Nations communities to share employment and training opportunities, access labour market data, and host customized tools and resources tailored to community priorities.*

g. **Facilitate digital cohorts** - Finally, the collective could expand access to high-level science education by enabling multi-school digital cohorts. This would allow students from different communities to join as a cohort online to take 30-level courses like Physics 30 or Chemistry 30 — subjects that may not be offered regularly in every school due to staffing or scheduling limitations.
This initiative does not have to be created from scratch. Distance learning initiatives such as the Saskatchewan Distance Learning Centre (SaskDLC) already offer online courses, and the STEM collective can collaborate with such institutions to create First Nations cohorts within programs. In addition to sharing resources across multiple institutions, these students would also provide vital support to each other.

In short, the STEM Collective would not only create an environment of shared learning and mutual support, it would also serve as a culturally responsive, system-wide strategy for strengthening STEM learning opportunities for First Nations students in on-reserve schools in Saskatchewan.

7. Conclusion

The findings and perspectives shared in this report reflect a critical moment for First Nations education and workforce development in Saskatchewan. As STEM education remains a key pathway into emerging sectors, particularly in nuclear energy, rare earth elements, and advanced technologies, ensuring First Nations students are prepared, supported, and inspired to pursue these fields is both urgent and necessary. The current state of STEM education in First Nations schools reveals promising efforts rooted

in culture and community, but it also underscores the need for stronger collaboration, sustained investment, and responsive programming.

Moving forward, it is essential that provincial and federal governments, industry leaders, and post-secondary institutions work in direct partnership with First Nations communities and organizations, including the Saskatchewan Natural Resource Centre of Excellence, to co-develop targeted investments in STEM programming, culturally responsive curriculum, teacher training, and career exposure opportunities.

A key next step is the creation of a dedicated STEM Collective, a coordinated body that can serve as a central channel for many of the recommendations outlined in this report. This collective could facilitate system-wide coordination among First Nations schools, support data sharing, align programming with labour market needs, and amplify First Nations leadership in STEM education. By bringing together voices from education, government, industry, and community, the STEM Collective would help ensure that change is not only strategic but also sustainable and community-driven.

With significant opportunities on the horizon, particularly in Saskatchewan's growing nuclear and innovation sectors, now is the time to lay the foundation for meaningful and lasting change. By walking together through partnerships among governments, industry and First Nations, Saskatchewan can build a future where opportunity, innovation, and First Nations knowledge are not only connected, but inseparable.

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