Leveraging Technology Plan

DECEMBER 2024

New Brunswick / Nouveau Brunswick

TABLE OF CONTENTS

"Leveraging technology for learning and personalization."

EXECUTIVE SUMMARY

The **Leveraging Technology Plan** outlines a comprehensive vision to equip educators and learners with the digital competencies needed to thrive in a rapidly evolving digital world. Aligned with New Brunswick's educational priorities, the plan aims to integrate technology seamlessly into teaching and learning, fostering critical skills such as digital literacy, creativity, and problem-solving while emphasizing personalized learning solutions.

Vision and Goals

At its core, this initiative envisions educational environments where technology is a tool for empowerment rather than an end goal. The three primary objectives include:

1. **Digital Literacy:** Building foundational skills in alignment with the New Brunswick Digital Literacy Framework.

2. **Technology Integration:** Embedding digital tools to enhance pedagogy, collaboration, and problem-solving.

3. **Personalized Solutions:** Tailoring resources to meet individual needs, optimizing teaching and learning experiences.

Guiding Principles

This "living document" is driven by principles of equity, inclusivity, continuous professional growth, and alignment with universal design frameworks and local cultural perspectives. It stresses that while technology enables transformation, the focus must remain on learning and student outcomes.

Implementation and Impact

The plan is a practical resource for educators and educational leaders, offering tools to align technology integration with educational goals. By using this plan:

- **Educators and leaders** can leverage the provided frameworks and role-specific digital literacy profiles to identify strengths, address gaps, and set measurable goals.
- **Principals** can align digital literacy and technology integration initiatives with school improvement plans, addressing priorities such as promoting student engagement and enhancing learning.
- **District leaders** can create systems for supporting schools in implementing equitable and inclusive technology practices, ensuring alignment with district objectives.

For more guidance on navigating this plan, refer to the **How to Use This Document** section.

The Leveraging Technology Plan invites all participants in New Brunswick's education system to engage in thoughtful, intentional, and collaborative efforts to harness technology's potential. Through shared responsibility, the plan seeks to prepare students and educators to meet the challenges and opportunities of the digital age, fostering lifelong learning and innovation.

VISION

To equip educators and learners with the knowledge and skills needed to be successful in an evolving digital world.

PURPOSE

To **integrate technology** for **personalized solutions** that meet individual needs and create **digitally literate** learners and educators.

We will do this by:

1. **DIGITAL LITERACY:** Equipping every learner with digital literacy skills as defined by the New Brunswick Digital Literacy Framework.
2. **TECHNOLOGY INTEGRATION:** Embedding technology seamlessly into pedagogy and practice. This includes leveraging digital tools for critical inquiry, creativity, collaboration, and problem-solving.
3. **PERSONALIZED SOLUTIONS:** Leveraging technology to meet individual educator and learner needs and optimizing time for teaching and learning.

GUIDING PRINCIPLES

The following points will guide decision-making and serve as a philosophical compass to remain focused on the three goal areas.

- Learning is foremost, not the technology.
- Digital literacy is embedded into all curricular areas supporting the **Holistic Curriculum Framework**.
- The plan reinforces **The New Brunswick Digital Literacy Framework**.
- Digital literacy is inclusive and exists within a context of **Social Emotional Learning** and **Universal Design for Learning in New Brunswick**.
- **Wolokehkitimkil, Kelu'lk kina'masuti, Wabanaki Wholistic learning Framework** perspectives are respected and authentically embedded.
- All educators require equity of access to technology and professional learning.
- Expectations exist for all education staff for professional use and continued growth in integrating technology.
- Ongoing committed infrastructure resourcing (human and capital) is required to support the learning.
- The plan is responsive, evolving, and a "living document".
- The plan aligns with the renewed direction, key foundational documents and policies within the Anglophone Sector of the Department of Education and Early Childhood Development (EECD) in New Brunswick.

INTRODUCTION

To focus on creating environments where learners thrive, Building a Better Education System: Long-Term Recommendations For New Brunswick's Anglophone Education System invites all members of the education system to "leverage technology to enhance learning and personalization." Digital technologies are electronic systems used to create, store, process, and transmit information. Common examples include laptops, tablets, and cell phones, however new devices and software applications are evolving rapidly, and are revolutionizing education. Learners now have the world at their fingertips, and it is essential that educators respond by engaging with technology to foster the development of digital literacy skills, personalized academic growth, online collaboration and communication, global perspectives, and personal wellness.

Educators today serve as mentors and facilitators, inspiring exploration, innovation, creativity, critical thinking, and problem-solving alongside their learners. The meaningful and seamless integration of technology enhances the educational experience and reinforces each construct within the New Brunswick Global Competencies. It creates opportunities for increased personalization and should augment efficiencies without increasing screen time. However, while offering endless positive possibilities, learners also need to be cognizant of potential cybersecurity challenges that can negatively impact their personal safety, identity, and well-being. Educators need to support and explicitly teach the responsible use of technology, and the critical thinking required for learners to successfully flourish within this new reality.

HOW TO USE THIS DOCUMENT

This document is an entry point for educators and school and district-based leaders to discover the Leveraging Technology Plan and determine pathways for moving forward. As this is a long-term vision, this initial guide will be followed by further tools and resources to address specific components of implementation. Some of the key features include:

- Expectations for Teaching and Learning describes the conditions necessary for an inclusive learning environment supported by technology and outlines Pedagogical Frameworks to guide integration. The Digital Portraits detail specific expectations for each role (learner, educator, and leader) as well as for the learning environment.
- The Implementation section recommends specific steps for successfully realizing a technology integration plan at the district and school levels.
- Review of Impact provides guidance for determining the impact of the integration efforts.
- Next Steps for Getting Started answers the "Where do I start?" question for both educators and leaders.
- The Supplemental Resources and References provide links to additional reading and resources, including one-page "snapshot" documents of this plan for educators and leaders.

EXPECTATIONS FOR TEACHING AND LEARNING

Evolving Education Through Technology

Learning with technology compels us to expand our definitions of teaching, learning, and education. The historical image of a teacher at the front of the room as the sole disseminator of knowledge is no longer valid, nor preferable. The learning environment now consists of adults and youth collaborating to co-construct meaning and connection from a variety of sources within and outside the walls of the school. All educators require equitable access to technology professional training and growth opportunities, regardless of their role within the system or location within the province. Wherever possible, other professionals and paraprofessionals that support learners should be included in plans for acquiring and supporting technology integrations. The more inclusive the process, the greater the chance of achieving successful outcomes for all involved.

As the role of educators shifts, developing a growth mindset is essential; it recognizes that technology skills are a dynamic continuum, where consistent effort, curiosity, and the willingness to learn lead to growth. By understanding that tech skills evolve over time, individuals can cultivate resilience, adapting to challenges rather than being daunted by them. This mindset not only empowers educators but also encourages students to embrace technology with confidence, knowing that growth is always within reach.

Deep learning is often experiential and can happen anytime, anywhere, in a real or virtual world. Thoughtful integration of technology into the learning experience expands the opportunities for exploration, curiosity, creativity, critical thinking, innovation, and affords learners the chance to collaborate to solve complex real-world problems that are meaningful and personal. Conversely, implementing technology for technology's sake is not effective and does not meet the needs nor expectations of digital literacy and/or personalizing learning.

Finally, the integration of Generative Artificial Intelligence (AI) offers transformative potential for enhancing learning and pedagogy. Artificial Intelligence (AI) is a branch of computer science dedicated to creating systems that emulate human intelligence. It enables machines to analyze patterns, make predictions, and in the case of generative AI, produce new content or outputs. The scope and sophistication of AI's capabilities are expanding rapidly. Today, AI is woven into many technologies used in our everyday lives, reshaping how we work, learn, and interact.

The New Brunswick Digital Literacy Framework

Districts, schools, educators, leaders and learners are at different stages regarding expertise, attitudes, and support of integrating technology. Schools will need to self-assess their current strengths and determine any potential gap areas. The New Brunswick Digital Literacy Framework defines digital literacy as: "The harmony of digital skills, attitudes, and behaviours that help learners achieve their goals and become thoughtful and able citizens that contribute to the betterment of society and the common good." The Framework identifies desired learner outcomes and assists schools to self-assess how they are supporting their learners to "**use**, **understand**, and **create**" with technology. It comprises six components that are interconnected and work together as a holistic approach to digital literacy education. In no particular order, these include:

- Digital Citizenship
- Digital Health and Wellness
- Critical Thinking and Meaning Making
- Creativity, Design, and Problem Solving
- Communication and Collaboration
- Computational Thinking
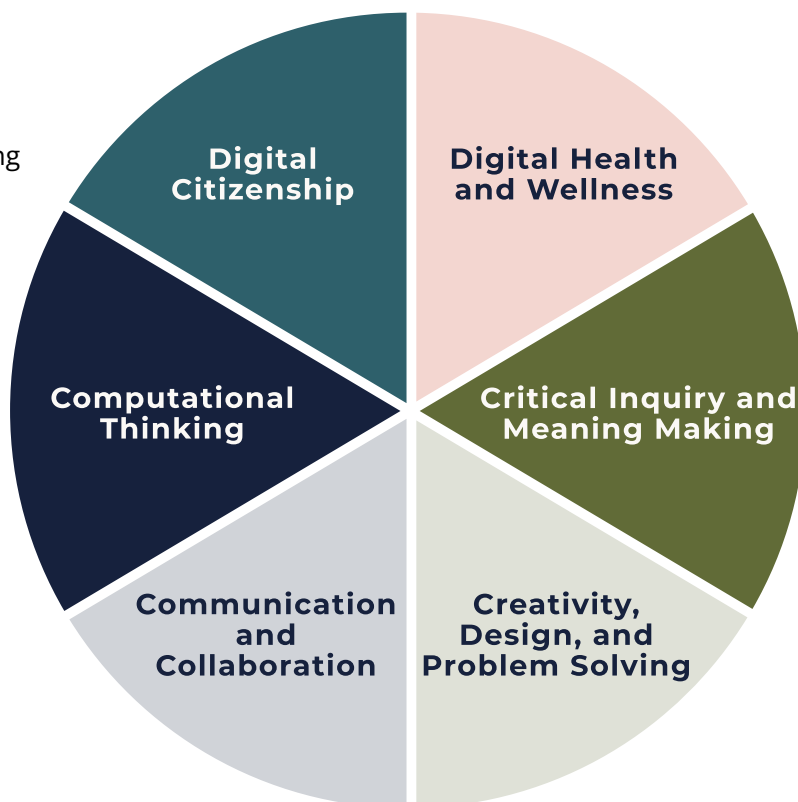
Recommended Approaches to Generative AI

The New Brunswick Department of Education and Early Childhood Development's **Recommended Approaches to Generative Artificial Intelligence** provides a framework for integrating AI into K-12 education. This approach emphasizes AI as a tool that complements human processes, enriches innovative teaching practices, and strengthens human connections. Key priorities include fostering AI literacy for educators and learners, safeguarding privacy and security, and promoting collaboration among educators, administrators, students, and school communities. By adopting these guidelines, the education system can harness AI's potential while maintaining a focus on ethical and inclusive practices.

There are several additional frameworks and tools to assist educators in analyzing their own capacity to integrate technology, the content they are teaching, the ways they teach the content, and the tools they use to support how they teach. Some examples can be found in the **Pedagogical Models of Technology in the Appendix.**

Overcoming Challenges and Defining Expectations

As schools reflect upon strengths and gaps, it would be prudent to note potential stumbling blocks that could hamper well-intended initiatives in actioning the vision forward. While integrating technology for both professional and personal use can ultimately save time and streamline workload issues, it can initially be overwhelming and challenging depending on experience, knowledge, access, and confidence. Similar to other sectors, there is an expectation that educators are digitally current and maximizing efficiencies while improving life chances for learners. To achieve the desired outcomes for students, it will be equally necessary to provide parallel supports for adult learners, enabling educators to integrate technology for:

- Communicating with students and families
- Collaborating with colleagues and building community
- Creating learning materials that reinforce the **New Brunswick Global Competencies**
- Designing real-world learning experiences that foster creativity, critical thinking, and problem-solving
- Exploring and reviewing learning resources
- Personalizing learning
- Documenting learning
- Operationalizing required digital educational tasks

Digital Portraits

The Leveraging Technology Plan is an aspirational overview that lays the foundation to **integrate technology** to improve **digital literacy** and **personalized solutions** in support of the collective priorities of numeracy, literacy, and well-being. Likewise, the **Portrait of a Learner in New Brunswick's Anglophone School System** represents the inspirational vision to "develop self-determined and capable learners who can take action in improving their lives and the lives of others." The Leveraging Technology Plan aligns with the premise of The Portrait of a Learner and expands it to explicitly focus on the "digitally literate, equipped, and supported" aspect of integrating technology into learning for each key role:

- Portrait of a Digitally Literate Learner
- Portrait of a Digitally Literate Educator
- Portrait of a Digitally Literate Leader
- Portrait of a Digitally Supported Learning Environment

Each portrait paints a picture of what digital literacy looks like, accounting for role, environment, implementation, and impact. The portraits do not reference specific technologies, as they are constantly changing, and the focus is on the learning goal. The choice of technology must be determined to fit needs and desired outcomes. Its impacts must be carefully considered, as some technologies, such as Artificial

Intelligence, can affect how learners interact with the content, communicate with others, and alter the original goal. The expectations, desired actions, and outcomes for teaching and learning have been adapted from the ISTE Standards (International Society for Technology in Education 2024) and the European Commission's work on digital education, to fit the New Brunswick context. These comprehensive standards are grounded in current research to support excellence in "learning, teaching and leading in the digital age".

Portrait of a Digitally Literate Learner

Capable Learners, as described in the Portrait of a Learner in New Brunswick's Anglophone School System, are "literate, globally competent, and have disciplinary competence." "Self-determined learners feel autonomous, competent, and related to others." The table below describes the competencies, activities, and attitudes needed to prepare learners to be digitally capable.

DIGITAL LITERACY	• Model digital citizenship locally and globally through the safe, legal, and ethical use of technology • Manage personal data and online presence to maintain digital privacy and security • Demonstrate awareness and understanding of the impact of data collection technology that tracks online navigation • Develop age-appropriate knowledge, skills, and attitudes to use and troubleshoot technology tools and operations • Transfer and apply current knowledge of technology and tools to explore new and emerging technologies • Evaluate the accuracy, perspective, credibility, and relevance of information, media, data or other resources • Recognize the rights, responsibilities, and opportunities of living, learning, and working in an interconnected digital world
INTEGRATION	• Create meaningful connections or conclusions derived from information found in digital resources • Use digital tools to develop cultural understanding and global awareness by engaging with others to broaden perspectives • Collaborate and contribute with others to produce original works or solve problems • Use a design process (prototyping) to develop computational thinking strategies to identify, understand, and solve problems
PERSONALIZATION	• Engage in self-reflection to determine relevant technologies or tools for improved learning and educational pathway planning • Leverage technology to articulate and set personal learning goals and monitor progress • Use technology to seek feedback that informs and improves learning • Identify and engage with assistive technology to support the unique and diverse needs of the individual learner • Engage with technology to demonstrate and communicate their learning in a variety of ways • Monitor the use of screen time and reflect upon personal well-being

Portrait of a Digitally Literate Educator

If our goal is to create digitally literate learners, it warrants focus on further developing digitally literate educators. The skills, competencies, and mindsets needed for integrating technology for personalized learning require the willingness to learn alongside and explore new and emerging technologies, even though they may be unfamiliar and cause initial discomfort. The table below describes the actions of a digitally literate educator.

DIGITAL LITERACY	• Model and facilitate effective use of current and emerging digital tools for communication, monitoring, and instruction • Model and mentor safe, legal, and ethical digital literacy practice • Engage in continuous professional learning related to the use of digital tools and resources • Implement current research-based strategies supporting improved student learning outcomes and digital identity • Model, protect, and promote management of student privacy and personal data • Support the troubleshooting of technology issues
INTEGRATION	• Facilitate learning with technology to support student achievement in literacy, numeracy, and well-being • Collaborate and co-learn with students to explore new digital resources • Apply instructional design principles to customize innovative digital learning environments • Encourage learners to positively contribute to and responsibly participate in the digital world • Establish a culture of curiosity and critical thinking regarding the use of technology • Create learning opportunities that incorporate a design process and computational thinking to innovate and solve problems • Model and encourage creativity to communicate ideas, knowledge, or connections • Use assessment data to monitor and guide learner agency and progress, and communicate with learners, families, and education partners • Manage the use of technology and student learning strategies in digital platforms, virtual environments, hands-on makerspaces, and in the field
PERSONALIZATION	• Leverage technologies to manage and support workload • Design authentic, learner-driven activities and environments that support inclusive practice • Design learning opportunities aligned with curriculum to maximize active, deep learning • Support equitable access to educational technology, digital content, and learning opportunities to meet the diverse needs of all students • Leverage technology to maximize opportunities for individualized pacing and feedback • Use collaborative tools to expand authentic, real-world learning experiences by engaging with others, locally and globally • Encourage learner use of technology for self-reflection and demonstration of competency • Use technology to design and implement various formative and summative assessments that provide timely feedback and inform instruction

Portrait of a Digitally Literate Leader

School-based (formal and informal), district, and system leaders serve as champions for integrating technology for learning and personalization. They pave the way for success, supporting the adult and student learners alike by strengthening opportunities to engage with technology, providing time and resources for professional learning while removing any potential or existing barriers. They encourage and model risk-taking while reinforcing the need to create safe, secure digital environments. The table below highlights some of the impactful actions and competencies that can drive progress.

DIGITAL LITERACY	• Provide and support ongoing staff professional learning on using technology to meet student learning needs • Model and cultivate responsible online behavior, including the safe, ethical, and legal use of technology • Champion and promote current emerging technologies for learning, pedagogical innovations, and research-based practice • Promote a growth mindset of continuous improvement regarding the use of technology for student achievement • Reinforce the need for staff and student adherence to laws, policies, and procedures that govern privacy protection and security regarding the use of technology (i.e., Policy 311, RTIPPA, etc.)
INTEGRATION	• Shape, advance, and accelerate a shared vision for empowered learning with technology • Identify expectations for technology use in schools • Provide all learners (staff and students) with equitable access to the technology and connectivity necessary to participate in authentic and engaging learning opportunities • Collaborate with rightsholders to develop, implement, and maintain a sustainable technology environment • Encourage and model the use of technology for staff
PERSONALIZATION	• Support educators in using technology to meet the diverse learning, cultural, and social-emotional needs of individual students • Support the development and use of learning assessments that provide a personalized, actionable view of student progress in real time • Empower educators to apply current research, collaborate, build leadership skills, and pursue personalized professional learning with technology

Portrait of a Digitally Supported Learning Environment

This "Portrait" is somewhat different in its description. It paints a picture of what one would observe if walking into a technology-integrated learning environment. In other words, what would we be looking for if we were "leveraging technology for learning and personalization?" What would be the "look fors?" While learning is foremost, improved outcomes for all learners (students and adults alike) cannot exist without a well-equipped, supported learning environment and coordinated infrastructure. This entails a collaborative approach to provide the necessary tools to enable seamless and purposeful technology integration throughout all levels of the system.

DIGITAL LITERACY	• The appropriate technology hardware and software tools are implemented to support the acquisition of skills and knowledge for the learning task • There are sufficient access ports and bandwidth to support complex collaborative online settings • Appropriate firewalls and cybersecurity measures are in place to protect safety and identity • Secure web portals are provided to house digital learning resources • Exemplars are posted of digital literacy
INTEGRATION	• Alignment exists between hardware and software that complements the desired learning outcomes • Technology is visible in the environment (via devices or imagery) • Furniture choice and arrangement supports collaboration • Exemplars are posted of technology-enhanced student products (virtual and real) • There is accessibility to create, use, and understand material • There are alternative methods for assessment practices utilizing technology
PERSONALIZATION	• There are prompt feedback mechanisms on learning and meeting learning objectives • Self-reflective tools are available • Every learner (adult and student) has access to appropriate technologies, both in the school-based learning environment and at home • Every learner has connectivity both in the school-based and home environments • Learners can access and activate specialized hardware and software to support their unique learning needs

IMPLEMENTATION

The Leveraging Technology Plan is part of a long-term vision for New Brunswick's Anglophone system and will require commitment and a coordinated effort for success. Each role within the system (learner, educator, leader, and district) will be accountable to contribute to supporting the initiative within their sphere of responsibility and influence. Educators and information technology experts working together will strengthen the value, coherence, and alignment in support of learning.

Implementation will occur over time, therefore establishing S.M.A.R.T goals (specific, measurable, achievable, relevant, time-bound), with accompanying roles and responsibilities will reinforce momentum and growth, while still allowing for the ability to pivot should flexibility be required. The following high-level recommendations and strategies will enhance the implementation process.

ACTION
✓ Establish an overarching **Leveraging Technology Plan Committee** inclusive of stakeholders and rightsholders groups to provide recommendations and oversee long-term implementation, including regular review and assessment of the plan. A Terms of Reference could outline specific details such as committee representation, goals, roles, oversight, etc.
✓ Establish one or more **Focus Groups** to oversee pedagogical strategies, practice, curriculum implementation, resources, professional learning, and minimum standards.
✓ Choose an **assessment tool** for educators, schools, and districts for planning, creating direction, measuring strengths, gaps, and growth. The assessment tool should allow for differentiation between roles (i.e., teachers, educational assistants, school leaders, etc.) to meet the unique needs of the user.
✓ Create an overall **communication strategy** to share information internally and with the public.
✓ **Allocate funding** to sustain a consistent and predictable budget to support all aspects of implementation, including hardware procurement, replacement and/or renewal, software, licensing, infrastructure, human resources, etc. Stakeholders and rightsholders may want to consider budget recommendations, formulas or minimum thresholds regarding equity for a digitally supported learning environment.
✓ **Recruit and retain skilled and sufficient Assistive Technology specialists and IT professionals** to support technical infrastructure troubleshooting and inclusive practice.

✓ Reinforce continued consistent, responsive delivery of **technical support** procedures and protocols.

✓ **Review** hardware, software, cybersecurity, privacy infrastructure, etc. **on an annual basis.**

✓ Review educational **policies and procedures** to ensure they align and reflect the goals and values of the Leveraging Technology Plan.

✓ Strengthen a **leadership network** for sharing of effective practices in managing and integrating technology.

✓ **Establish Key Performance Indicators** (KPIs) to regularly **monitor and assess the progress of implementation** and adjust as necessary. KPIs could be created to align with each portrait as well as being school-based and district-based.

REVIEW OF IMPACT

"How will we know we are making a positive difference?" This key question should inform the direction as schools and districts move forward. The Leveraging Technology Plan is a long-term, significant investment of human and capital resources that will require a cycle of ongoing monitoring and support to maintain momentum and address potential challenges as they arise. Schools and districts need to find meaningful ways to review and assess the impact of their actions to determine priorities and adjust accordingly. For example, educators are encouraged to access the self-assessment tools to track their own implementation strategies and personal progress over time. School leaders should review their School Improvement Plans to seek ways to seamlessly leverage technology to enhance and support their existing goals and actions. The nature of technology, warrants that this work will evolve over time and never be truly "done" but will need to remain a focus to keep moving.

NEXT STEPS FOR GETTING STARTED

A [curated collection of resources](#) has been assembled to enrich ongoing professional growth to leverage technology for learning and personalization. These resources are designed to support individuals regardless of skills, experience, role, or location, and will be expanded based on need and feedback. Short, one-page "snapshot" documents have been created for educators and leaders to quickly access the gist of the Leveraging Technology Plan and available supports. Some good first steps:

EDUCATORS could review the [one-page Educator snapshot](#) document and then do a self-assessment, reflecting on professional goals and practice.

SCHOOL LEADERS could also review the [one-page Leader snapshot](#) document and do a self-assessment. In addition, they could explore a whole school assessment tool to identify strengths and determine entry point priorities for incorporating technology to enhance learning. This could include a review of the School Improvement Plan noting where the Leveraging Technology Plan goals and actions are already embedded and where they could be bolstered.

DISTRICT LEADERS could follow suit, applying the same concepts on a larger scale. They should review the current infrastructure supports and structures, district policies and procedures, budgets, as it relates to the Portrait of a Digitally Supported Learning Environment and the Actions for Implementation within the plan.

Finally, the Leveraging Technology Plan is an exciting forward-thinking initiative to position New Brunswick's youth, and the adults supporting them, for the future. Please access the **https://plhub.nbed.ca/leveraging-technology/** to learn more and get started!

APPENDIX: SUPPLEMENTAL RESOURCES AND REFERENCES

NEW BRUNSWICK KEY DOCUMENTS AND POLICIES

[Building a Better Education System: Long-Term Recommendations For New Brunswick's Anglophone Education System](#)
A guiding long-term plan to transform the Anglophone school system focusing on the collective priorities of literacy, numeracy, and well-being.

[Policy 311 Information and Communication Technologies (ICT) Use](#), New Brunswick Department of Education and Early Childhood Development (revised January 2024)

[Empowering Digital Learners to Create a Brighter Future: A New Brunswick Digital Literacy Framework](#)
A foundational framework to support NB learners to use, understand, and create using digital technology. (August 2022) Matt McGuire, McKenna Institute, University of New Brunswick

[Recommended Approaches to Generative Artificial Intelligence](#)
The New Brunswick Department of Education and Early Childhood Development's framework for integrating AI into K-12 education (July 2024)

[Portrait of a Learner in New Brunswick's Anglophone School System](#)
A foundational document describing an aspirational vision of the skills and competencies of a New Brunswick graduate.

[New Brunswick Global Competencies](#) describes the foundational skills required in the 21st century in literacy, numeracy, and core learning subject areas.

[Policy 322 - Inclusive Education](#)
NB policy that establishes and describes the requirements to ensure NB public schools are inclusive.

[The Holistic Curriculum](#)
The curriculum framework supports the enacted curriculum by setting standards that help educators adapt and respond to their context and the needs of their learners. The enacted curriculum encompasses the framework; the decisions, intentions, and skills of educators; the learning environment, relationships and instructional methods; and the interests, motivations, and contributions of learners.

[Wolokehkitimkil, Kelu'lk kina'masuti, Wabanaki Wholistic Learning Framework](#)
The Wabanaki Wholistic Education Framework is useful in de-centering dominant perspectives and honouring Wabanaki education.

[Social Emotional Learning](#)
Social and Emotional Learning (SEL) skills help us manage our emotions and relationships so that we can make better decisions and develop a sense of resilience. SEL is an important part of all New Brunswick classrooms, in all subjects, during every school day. The Collaborative for Academic, Social and Emotional Learning (CASEL) have developed five competencies that comprise SEL: self-awareness, self-management, social awareness, relationship skills, and responsible decision making.

[Universal Design for Learning in New Brunswick](#)
Universal Design for Learning (UDL) is an approach to teaching and learning. This evidence-based framework considers the why, what, and how of learning, and can help educators to design flexible and accessible learning environments. It also considers the who of learning, enabling culturally responsive pedagogy.

PEDAGOGICAL MODELS OF TECHNOLOGY: APPROACHES, FRAMEWORKS, AND RESOURCES

Technology Integration Standards

European Education Area for Teachers, Trainers and School Leaders
The European Commission's work on digitally literate teachers

ISTE Standards (2024) International Society for Technology in Education, iste.org.

ISTE has created standards for "learning, teaching and leading in the digital age". The standards are separated for students, teachers, leaders, and coaches. These standards are comprehensive and grounded in current research yet written in accessible vernacular.

PISA 2022 ICT Framework
OECD provides this framework to member countries to aid in gathering data to understand student access and use of ICT and understand the policies across the OECD membership.

UNESCO ICT Competency Framework for Teachers
Comprehensive framework including Policy framework, Competency framework, and Implementation guidelines.

Frameworks for Assessing Technology Integration

PICRAT
PICRAT Matrix is used to help integrate technology into practice. "PICRAT enables teacher educators to encourage reflection, prescriptively guide practice, and evaluate student teacher work" per the **paper** outlining PICRAT model.

SAMR
The SAMR model is named after the four degrees of integration of technology; Substitution, Augmentation, Modification, and Redefinition.

TPACK
Framework which identifies three areas of knowledge and their overlap for successful technology integration in the classroom.

The TPACK Framework Explained (With Classroom Examples)
Web article published April 20, 2022 – an instructional technology integration framework that considers technological, pedagogical, and content knowledge.

Technology Integration Framework
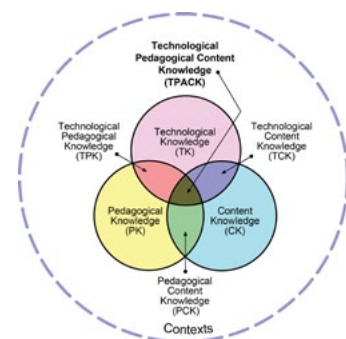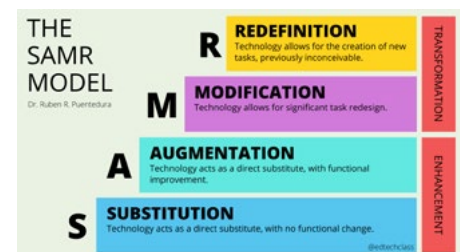Web article published by Stanford Teaching Commons – explains the TPACK model.

Triple E Framework (Engage, Enhance, Extend)

A framework for educators to measure how well technology integration helps student engage in, enhance and extend learning goals.

Technology Implementation Matrix (TIM)
Model to help implement use of education technology in the classroom.

Educational Frameworks and Approaches

ADKAR: Using the ADKAR Change Management Model

Charlotte Danielson Framework for Teaching (updated in 2022) website.

Computational Thinking
Problem solving process developed from computer application development characterized by breaking problems into small, simple steps.

Design Thinking
A mindset and approach to problem-solving based on human centered design which is solution-based.

SAMR and TPACK: Two Models to Help With Integrating Technology Into Your Courses
University of Calgary Resource Library website article, by authors Dr. Tyson Kendon, PhD and Lorelei Anselmo.

The SAMR Model Explained (With 15 Practical Examples)

The Science of Learning (2015) published by Deans for Impact.

NB RESOURCES FOR TEACHERS:

Leveraging Technology PL Hub: https://plhub.nbed.ca/leveraging-technology/

NBED Digital Learning SharePoint: https://nbed.sharepoint.com/sites/DigitalLearning

Centres of Excellence: https://centresofexcellencenb.ca/

NB Curriculum: https://curriculum.nbed.ca/

Leveraging Technology Plan:
A Snapshot for Teachers

PURPOSE: To **integrate technology** for **personalized solutions** that meet individual needs and create **digitally literate** learners and educators.

GUIDING PRINCIPLES

Technology impacts virtually all aspects of our daily lives. Schools need to help learners **use**, **understand**, and **create** with technologies to solve problems, while staying safe and acting ethically. The plan is built on the following ideas:

- Learning is the focus, not the technology.
- Digital literacy is embedded into all curricular areas and reinforces existing educational priorities.
- Equitable access to resources and professional learning support must be provided.
- The plan is responsive, evolving, and a "living document".

GETTING STARTED

This plan builds on what you as a teacher already do. It paints a picture of what it looks like to be a digitally literate educator supporting the collective priorities of numeracy, literacy, and well-being. You can review the actions described in the Portraits on the next page and find examples illustrating how to implement them by addressing:

- How am I already incorporating technology to achieve the learning goals for my students?
- How could I expand my use of technology to further enhance learning?
- How could I use technology to improve my work/life balance?

A curated collection of resources has been assembled to support your ongoing professional and personal technology learning journey. Completing a self-assessment would be a good first step to reveal strengths and determine priorities for incorporating technology to enhance your practice. While it is critical to support students, there is a need to equally support the educators working with them. Please go to **https://plhub. nbed.ca/leveraging-technology** to learn more and get started!

"Leveraging technology for learning and personalization."

PORTRAIT OF A DIGITALLY LITERATE EDUCATOR	PORTRAIT OF A DIGITALLY LITERATE LEARNER

🌐 DIGITAL LITERACY

• Facilitate effective use of digital tools for communication and instruction. • Pursue ongoing professional learning in digital tools and resources. • Mentor on safe and ethical digital literacy practices. • Implement research-based strategies for improved student learning and digital identity. • Promote and protect student privacy and data management. • Assist with troubleshooting technology issues.	• Be a good digital citizen by using technology safely and ethically. • Keep personal information private and secure online. • Understand how technology collects data about your online activity. • Develop the knowledge and skills to identify and fix problems related to technology tools and processes. • Use what you already know about technology to explore new tools and gadgets. • Check if information and media are accurate and trustworthy. • Understand your rights and responsibilities in a connected digital world.

INTEGRATION

• Use technology to enhance student achievement in literacy, numeracy, and well-being. • Collaborate with students to explore new digital resources and customize learning environments. • Encourage responsible participation in the digital world. • Foster a culture of curiosity and critical thinking about technology. • Create opportunities for design processes and computational thinking to solve problems. • Model creativity in communicating ideas and knowledge. • Use assessment data to monitor learner progress and engage with families and partners. • Manage technology use in various learning environments, including makerspaces.	• Make meaningful connections or conclusions from information you find online. • Use digital tools to learn about different cultures and global issues by connecting with others. • Work together with others to create new ideas or solve problems. • Use a design process to think critically and solve problems.

👤 PERSONALIZATION

• Use technology to manage and support workload. • Create authentic, learner-driven activities that promote inclusion. • Design curriculum-aligned opportunities for active, deep learning. • Support equitable access to technology and learning resources to meet diverse needs of all students. • Utilize technology for individualized pacing and feedback. • Use collaborative tools to enhance real-world learning experiences. • Encourage students to use technology for self-reflection and demonstrating skills. • Implement formative and summative assessments using technology for timely feedback.	• Think about how you can use technology to improve your learning and plan your education. • Use technology to set personal learning goals and track your progress. • Seek feedback through technology to help improve your learning. • Find and use assistive technology that meets your individual needs. • Use technology to show and share what you've learned in different ways. • Keep track of your screen time and think about how it affects your well-being.

"Leveraging technology for learning and personalization."

Leveraging Technology Plan:
A Snapshot for Leaders

PURPOSE: To **integrate technology** for **personalized solutions** that meet individual needs and create **digitally literate** learners and educators.

GUIDING PRINCIPLES

Technology impacts virtually all aspects of our daily lives. Schools need to help learners **use**, **understand**, and **create** with technologies to solve problems, while staying safe and acting ethically. The plan is built on the following ideas:

- Learning is the focus, not the technology.
- Digital literacy is embedded into all curricular areas and reinforces existing educational priorities.
- Equitable access to resources and professional learning support must be provided.
- The plan is responsive, evolving, and a "living document".

GETTING STARTED

This plan builds on what you as a leader already do, creating the conditions for adult and student learners alike to amplify opportunities to engage with technology within a professional and safe environment. It paints a picture of what it looks like to be a digitally literate leader supporting the collective priorities of numeracy, literacy, and well-being.

You can review the actions described in the Portraits on the next page and find examples illustrating how to implement them by addressing:

- How am I already championing the use of technology to enhance learning?
- How am I removing barriers and creating efficiencies for staff?
- How am I promoting a growth mindset where staff are comfortable taking risks?
- How am I modelling and expanding my use of technology for learning and work/life balance?
- How can this be incorporated into our School Improvement Plan?

A curated collection of resources has been assembled to support you in leading and leveraging technology. Completing a self-assessment would be a good first step to reveal school / district strengths and determine priorities for incorporating technology to enhance practice. While it is critical to support students, leaders recognize the need to equally support the educators working with them. Please go to **https://plhub.nbed.ca/leveraging-technology** to learn more and get started!

"Leveraging technology for learning and personalization."

PORTRAIT OF A DIGITALLY LITERATE LEADER

DIGITAL LITERACY

- Provide and support ongoing staff professional learning on using technology to meet student learning needs
- Model and cultivate responsible online behavior, including the safe, ethical and legal use of technology
- Champion and promote current emerging technologies for learning, pedagogical innovations, and research-based practice
- Promote a growth mindset of continuous improvement regarding the use of technology for student achievement
- Reinforce the need for staff and student adherence to law, policies and procedures that govern privacy protection and security regarding the use of technology (ie: Policy 311, RTIPPA, etc.)

INTEGRATION

- Shape, advance and accelerate a shared vision for empowered learning with technology
- Identify expectations for technology use in schools
- Provide all learners (staff and students) with equitable access to the technology and connectivity necessary to participate in authentic and engaging learning opportunities
- Collaborate with rightsholders to develop, implement and maintain a sustainable technology environment
- Encourage and model the use of technology for staff

PERSONALIZATION

- Support educators in using technology to meet the diverse learning, cultural and social-emotional needs of individual students
- Support the development and use of learning assessments that provide a personalized, actionable view of student progress in real time
- Empower educators to apply current research, collaborate, build leadership skills and pursue personalized professional learning with technology

"Leveraging technology for learning and personalization."