

Innovating Education

An Insight Paper Prepared by iHub Learning Inc.

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Innovating Education Introduction

There is an abundance of opinions and positions concerning education and educational reform. These appear in newspaper articles, internet blogs, magazines, academic papers, and arise when discussing with others the importance of providing students with the correct knowledge, skills, values, and attitudes needed for success. Though these opinions and positions may contrast, they do agree on the general need to ‘do education differently’ so that students are prepared to meet the challenges of a future that is wildly different from the past.

This paper suggests that although status quo is not the answer, there does exist a method of finding the best way forward through the disagreements and agreements of educational reform. This journey begins with three important words: why, what, and how.

Why. In the first place, no matter the opinions and positions of the pundit, educational mission statements offer a common backdrop to calls for reform. Like the mission statement of New Brunswick’s Anglophone Education sector, these point to a general desire to prepare students to be lifelong learners, achieve personal fulfillment, and contribute to a just and democratic society. Therefore, when the ‘why’ of education is agreeable, and comes from a place of sincere caring, it creates excellent common ground to begin reform. However, the difficulty is that wishing something genuinely good will materialize does little to supply traction to change.

Therefore, this paper will suggest that no matter the opinion or position in contrast or common agreement, a fundamental point of any scholastic reform must be primarily addressed through questions of **what** and **how**. Specifically, the outcome of any educational reform should begin with a detailed examination of *what* knowledge, skills, values, and attitudes are needed for students to succeed in the future, and *how* education systems can create the opportunities that best engage students’ curiosity and passion through authentic, meaningful activity.

Position versus Insight

Understanding that there are many and varied opinions and positions on educational reform, we at iHub Learning Inc. have kept a statement from the final article of long-time journalist Eric Sevareid top of mind: “retain the courage of one’s doubts, as well as one’s convictions, in this world of dangerously passionate certainties.”

This, therefore, is not a position paper that proposes an exact path for education to meet the demands of the future but is an insight paper that provides an investigation of contemporary research related to innovation in and of education and explores the thoughts, perspectives, directions, and ideas of several authors from across the globe. This insight paper closely examines the motivation to ‘do education differently’ while moving a system forward from past practices, through necessary change, to meet the future of tomorrow today.



This inquiry is framed by the central research question being asked by iHub Learning Inc. this 2018 - 2019 school year. Researchers at iHub Learning Inc. are using the following question to inquire about innovation in and of education:

“How is student and teacher development and demonstration of the Global Competencies¹ affected by the use of experiential, personalized, entrepreneurial, problem and project-based learning methods?”

The Global Competencies are important to Canadian national education, and each provincial and territorial jurisdiction across Canada uses them in different ways. For example, to align these competencies with the New Brunswick context, the department of education has made small changes of language and has situated them on a foundation of literacy and numeracy.

Global Competencies

The Council of Ministers of Education, Canada (CMEC) promote the Global Competencies as an imperative set of knowledge, skills, values, and attitudes needed by all students to meet the future; the six areas of competency are listed below:

- critical thinking and problem solving
- innovation, creativity, and entrepreneurship
- learning to learn / self-awareness and self-direction
- collaboration
- communication
- global citizenship and sustainability

Founded in 1967, CMEC has membership from all 13 provinces and territories and promotes the coordination and understanding of educational issues across these jurisdictions. CMEC takes a strong position on these competencies, and suggests that for all students in Canada the Global Competencies are the imperative future-ready knowledge, skills, values, and attitudes necessary to prosper in an ambiguous and uncertain future:

“There is growing recognition that global competencies promote deeper learning by equipping students with the necessary tools to adapt to diverse situations and become lifelong learners. These key competencies can be interdependent and leveraged in a variety of situations and across disciplines; moreover, they contribute to educational attainment, relationships, employment, health, and well-being outcomes.” ¹

CMEC’s powerful federal stance on the need for students to learn the Global Competencies is a good position from which to understand at least part of the ‘what’ that education systems need to supply students in preparation for the future.



Innovative Learning Methods

At iHub Learning Inc. we are supported by and work in collaboration with Post-Secondary Training and Labor (PETL), the Atlantic Canadian Opportunities Agency (ACOA), and Education and Early Childhood Development (EECD) to examine and research innovation in education and the effect innovative learning methods have on the development and demonstration of the essential Global Competencies.

During iHub's current research cycle, innovative learning methods have been defined as those that are *experiential, personalized, entrepreneurial, problem, and project-based*. Though not necessarily exhaustive, this is a comprehensive list of methods that can be described as innovative in nature, involving the active engagement of students, and is part of the answer to the question of 'how' best to educate students.

In the early stages of research on innovative education, iHub Learning Inc. researchers are finding, like many of the authors cited in this paper, that the use of innovative approaches creates conditions for engaging in meaningful learning. For example, through innovative methods students are challenged to become deeply involved in their own learning, to discover and develop real-world problems to be solved, and to create products, projects, and outcomes that have a positive impact on them, their classrooms and schools, and even the community at large. These methods stimulate engagement, curiosity, and call for students to become active participants in (rather than passive receivers of) their educational process.

Innovative methods require students to work with a critical base-set of knowledge which they must develop and expand upon while they simultaneously engage in authentic applications of their learning. Innovative learning methods are closer to the tasks and activities demanded in real-world situations than they are to passive methods where students sit docilly, receive information, and give it back on tests.

Innovation, Education, & Economy

The Right Honorable David Johnston (former Governor General of Canada) with Tom Jenkins published *Ingenious* in 2017 – a volume of work promoting the many brilliant Canadian innovations that have been widely adopted to make the world a better place.² With permission, the Rideau Hall Foundation commissioned the creation of a set of elementary classroom materials distilled in part from *Ingenious*. Under the title *Education for Innovation* the authors have developed active materials for the classroom and describe that "Innovation is the creation or improvement of a product, or process, which has been implemented to make a positive impact" (p. 8) and that education is the perfect place to inspire learners to create their own innovations.³



Innovation is also recognized as fundamentally important to the Canadian economy. The federally funded organization ‘Innovation Canada’ aids Canadian business innovators: “from funding to expert advice to driving new collaborations, our flagship programs and services are designed to help businesses innovate, create jobs and grow Canada’s economy.”⁴

Closer to home, higher education in New Brunswick is currently working with business and industry on an innovative experiential learning initiative through Future-Ready NB⁵ where students and employers have access to rich learning opportunities and are finding new ways to collaborate with one another. Importantly, this initiative will soon include High School students in New Brunswick.

Three Elements Together

The federally endorsed Global Competencies are considered by the Ministers of Education across Canada to be extremely important to our children’s future. These competencies therefore are one part of the answer to ‘what’ should be taught to provide students with future-ready knowledge, skills, values, and attitudes necessary to prosper in an uncertain future. Further, the innovative learning methods being researched by iHub Learning Inc. represent a potential early answer as to ‘how’ best teach students in active ways that the Global Competencies can be deeply experienced and learned. Consequently, by focusing on innovation (the creation or improvement of a product, project, process, or outcome which has been implemented to make a positive impact) in general, the educational process is able to become targeted in a way that includes innovative approaches, learning methods, and the Global Competencies together.

Innovation in Education	Innovative Learning Methods	CMEC’s Global Competencies
“Innovation is the creation or improvement of a product, project, process, or outcome which has been implemented to make a positive impact”	<ul style="list-style-type: none"> • Experiential, • Personalized, • Entrepreneurial, • Problem and • Project-based. 	<ul style="list-style-type: none"> • Critical thinking and problem solving • Innovation, creativity, and entrepreneurship • Learning to learn / self-awareness and self-direction • Collaboration • Communication • Global citizenship and sustainability

However, change and reform does not occur without motivation. Fortunately, in New Brunswick the educational system is already poised to meet the future and is currently working on several important change initiatives. In the words of Chris Treadwell, the Assistant Deputy



Minister (ADM) of Education in New Brunswick, we must learn to ‘do education differently’ and we must also collectively understand that to make a dramatic and positive pivot ‘education is everyone’s business.’

Motivation to Pivot

What is the motivation to focus on innovation? Why is innovation critical? How and why do policy makers and educators go about innovating education? These questions can be answered in various ways, and the New Brunswick Labor Market Outlook,⁶ supplies a first set of clues in the following statements:

- Of the more than 110,500 job openings forecasted for the coming decade, 29.4% are expected to be in occupations that typically require *a university education or significant work experience*, and almost 32% are expected to occur in occupations requiring some form of *college or apprenticeship training*.
- In this situation, persons seeking jobs are likely to experience less difficulty in finding employment, *provided they possess the skills to match the opportunities in demand*.
- *Education, training, and experience continue to grow in importance* as the world shifts to economies increasingly driven and shaped by advances in knowledge and technology.

The job market in New Brunswick is and will be in the future increasingly in need of skilled workers who have the experience and essential skills to meet advances in knowledge and technology. Though the requirements of future employment are not the entire motivation to reform education, they are an important part of the equation.

Related, Joel Rose in the 2012 ‘Atlantic’ magazine article, *How to Break Free of our 19th Century Factory-Model Education System*, suggests that “the promise of educational innovation is less about processing power and software code and more about the opportunity to release ourselves from general assumptions about how instruction is organized and delivered.”⁷ The motivation to innovate education, therefore, is perhaps more about thinking differently than it is about dismantling or adding superfluously to the many good things we already have in place.

Innovation therefore should be understood to relate to the entire educational process, imbuing each part of it with a leaning towards the curiosity and inspiration that motivates organic change for all participants. With their own opinions and viewpoints, the following is a sampling of authors who add their voice to the motivation to innovate education:

- “The ability to innovate – to create something new and better – is a skill that organizations worldwide are looking for today.” (p. 32)⁸
- “Students have access to better resources online than what teachers could possibly offer. If schools are only about content and information, that reality poses a threat to educational facilities.” (p. 3)⁸



- “With the world changing so quickly, how can we get to a place where schools are experimenting and able to adapt at the rate needed to keep up?” (p. 5)⁹
- “We live in an age when change is accelerating” (p. 11)¹⁰
- “Foundational knowledge and skills need to be taught, but we also need to balance these with the foundational skills we want all students to attain while allowing for authentic application of those skills.” (p.168)¹¹
- “A new vision of what quality education is and what it should offer arises from the data. What emerges is a rich portrait of the student as an engaged and active thinker able to communicate, innovate, collaborate, and problem solve.” (p. 19)¹²
- “The purpose of education is to engage students with their passions and growing sense of purpose, teach them critical skills needed for career and citizenship, and inspire them to do their very best to make their world better.” (p. 44)¹⁴

There are further sources of information to review in the motivation to pivot – these that follow are less positive than those just described. For example, in the New Brunswick Summary Statistics report for the 2017 – 2018 school year, it is reported that 1.4% of our students dropped out of school¹⁵ and that occurs in each school year. Furthermore, taken from the Program for International Student Assessment (PISA), Canada ranks 15th in students feeling of belonging in school and 29th in Student participation.¹⁶ And, this is not just a Canadian trend. Across the globe, in kindergarten and early years roughly 95% of students are engaged in their schooling; by the time students reach grade 11 this has dropped, and only 39% of students are actively engaged in their schooling.¹⁷

It seems possible that there is connection between dropping out, participation, and engagement with how we have done schooling in the past. The consistently increasing gap between status quo methods of education and the dynamic needs of today and tomorrow continues to grow, and this is pointed out with stinging directness by, Fullan, Quinn and McEachen who state that “we can draw a blunt conclusion. There is no reason for the majority of students to take conventional schooling seriously (p. 3).”¹⁷

Understanding the Past, and Education Today

Our present version of education has little resemblance to how humans have been learning from one another throughout the ages. For the purposes of survival and prosperity, early humans needed a deep motivation to learn together in collectives. In so doing humans for millennia innovated and produced authentic and beneficial results and value for everyone in the collective by creating environments where members were able to learn socially and create and pass along knowledge effectively.^{18, 19, 20, 21, 22, 23} In contrast the last approximately 200 years has seen education move from social learning collectives to an isolated system where the assessment of the individual on individual tests is meant to indicate and determine one’s ability to prosper in society.



The difficulty with this evolution in education is elucidated through the words of Noam Chomsky:

"Right now, in recent years, there's a strong tendency to require assessment of children and teachers so that you have to teach to tests. And the test determines what happens to the child and what happens to the teacher. That's guaranteed to destroy any meaningful educational process. It means the teacher cannot be creative, imaginative, pay attention to individual students' needs. The student can't pursue things, maybe some kid is interested in something, can't do it because you got to memorize something for this test tomorrow. And the teacher's future depends on it, as well as the student."²⁴

So, how did society get here? How and why did North American society develop the industrial system of education that began 200 years ago, and which still deeply influences the system we have today?

If we teach today's students as we taught yesterday's, we rob them of tomorrow

John Dewey.

Looking to the history of Western education for some understanding it is clear there was centuries ago a movement to, with the advent of writing, the establishment of formal educational institutions.²⁵ The ancient Greeks saw preparation of the young as a primary concern, the Spartans focused on creating citizens, and Athenian education was typically provided to the wealthy.²⁵ In the West's educational past there were the Romans, the monastic schools, the Roman Catholic church, the Carolingian renaissance, and a variety of dynasties and groups that contributed to our present system.⁴²

All of them in some way formalized what they believed to be the important knowing of their time, and were intent on conveying this information to their students in what can be referred to as 'canons of knowledge' – essentially that knowledge which is officially accepted and approved and which must be known to be an educated citizen.

In early Canadian history priests and eventually new governments of the 1600's and 1700's developed and promoted various canons of knowledge as a way of ensuring important culture, customs, and ideologies were continued. However, by the 1840's the structure of the modern industrial school system began to form. The argument was made at that time that through mass schooling and the standardization of educational curriculum, training, organization, and delivery, society could instill "appropriate modes of thought and behavior into children"²⁶. This was a move directly related to the industrial revolution and the need for workers who were 'standardized' in their experience, skills, knowledge, and values, and who could therefore be placed within various industrial complexes with some common expectation of performance.



This approach to mass education in Canada was similar to the efforts made to develop modern industrial schooling in the United States where in 1843 it was determined that “schools were to become an extension of the factory – an assembly line, systematically churning out students conditioned for their future lives as workers in the industrial machine” (p. 6).²⁷

Two questions arise from the educational direction taken circa 200 years ago: (i) does society currently have, or will it have in the future, a need for a standardized work force; and, (ii) is there a guarantee that there is one standardized canon of knowledge that is sufficient to meet the future?

It is relatively clear that the factory model of the industrial revolution from circa the early 1800’s influenced our current educational model and continues to influence it today. For example, in modern schools there are bells and tones that dictate when to move people from one isolated specialization to another; there is the evaluation and sorting of students and teachers, the standardization of materials, training and teaching methods; and, there is a system of mass inspection at the end of the process.

Consequently, the facts show that although the social learning methods developed through millennia assisted humans to adapt, innovate, and flourish in the collective^{28, 29, 30} our present system of ‘mass schooling’ comes from one designed in the industrial revolution of the 1800’s where standardized workers were created based on a standardized canon of knowledge.

Today, phones and computers supply access to all the data and information one could ever imagine, and this is potentially liberating. In the words of Fullan and Langworthy, “Increasingly, digital access is freeing teaching and learning from the constraints of prescribed curricular content” (p. ii)³¹ And, they further contend that “through the combination of the ‘push’ of traditional schooling that fails to keep students or teachers engaged, and the ‘pull’ of new pedagogies” (p. iii)³¹ the transformation of education is not only possible but inevitable. So, what then is the future of education?

The Future of Education

Whatever the exact future of education, it clearly must address at least (i) student drop-out rates, and diminishing participation and engagement with schooling over time, (ii) the need for students to be appropriately prepared for an ambiguous and acceleratingly uncertain future, and (iii) the contention that there is (or is not) one standardized canon of knowledge that is sufficient to meet this future.

It has been said that we cannot expect fruit trees to blossom if they are planted on asphalt. Oshrey illuminates this point and contends that it is the context of our organizations that is most important to the function of them.⁴¹ For example, an education system either nourishes



the thinking and activity desired, or it does not. No amount of overlay of new programs or great ideas will change the fundamental assumptions and knowledge held within any system.

Therefore, in answer to the question, ‘what is the future of education?’ there is an implicit call to make change at the roots and foundations of the system.

In the following three subsections, the what and how of educational reform will be used as a lens to comment upon questions of (i) engagement (ii) appropriate preparation, and (iii) cannons of knowledge.

Engagement

How students are engaged in education is important to the development and demonstration of important knowledge, values, skills, and attitudes. Glasser’s research on human needs contends that when human beings find positive and pro-social ways to satisfy the needs of (i) survival (ii) love and belonging (iii) power (iv) freedom, and (v) fun, they are happy and fulfilled members of society.⁵¹ This is the same for students and adults in our schools, and if at any age these needs are constrained, things do not go well. In our classrooms, adults routinely create safe environments where students feel they belong. The path to sustained engagement, however, lays in the addition of power and freedom students are provided with their learning, and their ability to have fun while doing meaningful work.

Zmuda suggests that the following mission ensures that student needs are met, and students continue to be engaged throughout their school careers:

“The mission of a 21st century learning organization is to engage all learners in the acquisition of key knowledge and skills and the development of connections so that they can pursue powerful questions, tackle complex problems, collaborate with diverse people, imagine new possibilities, and communicate their ideas.” (p. 2)³²

This mission lends to the use of innovative learning methods and the use of global competencies. During research on engagement Mackenzie refers to the success of an inquirybased educational approach that caused the authorship of a book:

“I saw my students get excited about learning again. I saw my students work together with their classmates toward common goals. I saw my students become leaders and push their classmates to success. I saw them reflect on what worked, what didn’t and what they would do differently next time. Above all, I saw my students LEARN. They demonstrated their understanding in all kinds of ways.” (p. 21) ⁴⁵

Quotes like these are abundant in the literature. Students who acquire and use key knowledge and skills to tackle complex problems are students who can and will reflect on and demonstrate deep understanding of content. The power and benefits of innovative teaching methods is



abundantly documented in the research.^{2,8,9,11,12,13,14,17,31,32,36,40,44,45,46,47,49,50,52}

Directing and allowing students to work on topics important to them clearly supplies the drive necessary to engage learning and ignite passion. Dintersmith suggests that there exists in schooling “unbounded possibilities if we turn our students loose on problems they care about.” (p. 220).⁴⁷ And, Duckworth reports that “what we accomplish in the marathon of life depends tremendously on our grit – our passion and perseverance for long-term goals” (p. 269) and the strengths of will, heart, and mind⁴⁸

At iHub Learning Inc., we ask, “are the innovative methods of experiential, personalized, entrepreneurial, problem, and project-based learning the answer to how to best educate students now and in the future?”

Research states that engagement with schooling drops to 39% globally by grade 11¹⁷ – therefore, is there something in ‘how’ schooling is taught, and learning engaged in this data that supplies clues to the necessary future of education? In part answer, Mackenzie contends that “schooling rarely takes student interests and passions into account.” (p. xi)⁴⁵ At iHub Learning we are keenly interested in the role of innovation in education and are helping to develop New Brunswick centered research that answers important questions about what and how best to act and move forward on a meaningful path to educational reform.

Appropriate Preparation

Knowledge comes from the combination of working to grasp understanding through experience and the transformation that occurs in the learner as a result of reflecting and developing that understanding.⁵² Therefore, it should be asked, “what does (or could) education provide to students that is more than information meant to be memorized and reported back on exams?”

There are at least two parts to an answer. The first part has been covered and addressed in the section related to CMEC’s Global Competencies where it was demonstrated that these competencies are fundamental to all students’ future. Throughout the world, there exist other ways and means of describing these essential competencies, though each is like CMEC’s six. For example, there are what Galinsky refers to as the seven essential life skills every child needs,⁵⁰ Hargreaves and Shirley purport the 6C’s,⁴⁴ and the Apollo Institute has a set of 10 essential skills, as does the world economic forum.⁴⁴

The important point is that Canada has its own highly researched, comprehensive, and agreed upon federal Global Competencies¹ and these are completely suitable to move forward into the future. Hargreaves and Shirley agree and summate this point eloquently by suggesting that whatever way a jurisdiction moves forward, “In every nation, children deserve a curriculum that is varied, complex, challenging, and deep. (p.77)⁴⁴



The second part of an answer points to curriculum, and the question is, “what is a suitable amount of information to be taught directly, and what is a suitable amount of information to be converted to knowledge through immersive, innovative methods?”

Cannons of Knowledge

The second part of the what students should learn in any educational reform is nested in the conceptualization of cannons of knowledge as presented under the heading: the historical review of education. Two questions were posed in that section that ask if society wants or needs a standardized work-force in the future and if there is a guarantee that there is one cannon of knowledge appropriate to future needs.

Wagner and Dintersmith¹⁴ refer to the change of mindset that occurs when educational systems realize that the abundant availability of data and information through digital technology makes the static canons of content from our past less important than the skills of connection, the pursuit of powerful questions, and learning to tackle complex problems etc. They support Zmuda³² in suggesting that deep questions, complex problems, collaboration and communication etcetera are at the root of a workable future for education.

Though knowledge yields competitive advantage³³ in schooling and in the economy, humanity has seen years of exponential growth in technological advances – often referred to as Moore’s law³⁴ In the past, learned teachers and students were able to ‘know everything’ in the canon of knowledge (or a good part of what was accepted knowledge), where today no one could know everything there is to be known, as there is just too large a canon and confoundingly it continues to change and grow with pace.

Some estimations contend that the internet currently holds at least 1.2 million terabytes of information.³⁵ This volume of information produces a paradox best expressed in the form of a question: should education try to teach an ever-growing ‘terabyte canon’ or should it focus on engaging students in the ways and means of accessing and working authentically with information to convert it to useful and adaptable knowledge?

The What and How of Innovation Together

Wagner and Dintersmith suggest that “what matters most in our increasingly innovation-driven economy is not what you know, but what you can do with what you know” (p. 27)¹⁴ Essentially, they suggest that education stop chasing “the standardized test and focus on winning the innovation race. That’s the only race that will matter in the century ahead” (p. 51).¹⁴ Robinson and Aronica further posit that today, “there is really no such thing as an academic subject. There are only academic ways of looking at things. Academic work is a mode of analysis and it can be applied to anything” (p.141)¹³



This begs the question, “what kinds of mental activity are we trying to promote in our students?” (p. 5)⁴⁰ and, is it possible to focus on understanding through active and constructive processes? Ritchhart, Church, and Morrison suggest that understanding is developed through processes such as the following: observing and describing; building explanations and interpretations; reasoning with evidence; making connections; considering different viewpoints and perspectives; capturing the heart and forming conclusions; wondering and asking questions; uncovering deep complexity etc.⁴⁰

The principle goal of education in the schools should be creating men and women who are capable of doing new things, not simply repeating what other generations have done.

Jean Piaget

To this Martin suggests that “If our goal is for students to create better opportunities for themselves and others, we have to step back and allow them the space to explore and learn how to learn.” (p. 143)¹¹ And if we want widespread learner-centered innovation, schools need to have a “shared understanding of the vision, diverse opportunities and support for growth, development and innovation, and systems that foster a culture of collective efficacy to improve outcomes for all students.” (p. 119)¹¹

In New Brunswick’s Education and Early Childhood Development’s adaption of CMEC’s Global Competencies there is at least important addition made by the EECD – the phrase ‘on a foundation of numeracy and literacy.’⁴³ Stating that the important Global Competencies must be understood to rest upon a solid foundation of numeracy and literacy. Similarly, Martin supports that there is the ability to balance engagement and application with a foundation of knowledge:

“Foundational knowledge and skills need to be taught, but we also need to balance these foundational skills we want all students to attain while allowing for authentic application of those skills.” (p. 168)¹¹

Erikson and Lanning support Martin when they refer to the how of concept-based curriculum. They explain, “concept-based curriculum and instruction is inquiry driven and idea centered. It goes beyond the memorization of facts and skills and adds the critical third dimension of concepts and deeper, conceptual understandings” (p. 2).⁴⁹

Researchers agree that there is no one canon of knowledge available or even desirable, but there are foundational knowledges, skills, values and attitudes that must be actively learned through simple and innovative methods to engage students’ deep learning and understanding. Therefore, the literature supports that the ‘what and how’ of the future of education must be well-thought out and based upon foundational knowledges that are delivered and built upon



through various innovative approaches and methods that allow students to pursue their curiosities and passions through engaging activities.

The Role of iHub

Educators know that students will take initiative and engage meaningfully when something matters to them.³⁶ At iHub Learning Inc., we are examining the meaningful application of New Brunswick's ten-year plan⁵³ and how recent changes to graduation policy 316⁵⁴ will affect engagement and drop-out rates. We are also looking to the many excellent educators across this province that are currently innovating education. The approaches and content being used by them may or may not have program titles but dedicated New Brunswick educators are nonetheless working every day to discover and fine tune the best approaches and content available to our students. At iHub we will follow these educators, learn from them, and report our findings through research.

Examples of some of the formally known educational programs we are currently following are makerspaces, learning labs, entrepreneurial ventures, and other experiential learning opportunities such as those supported by iHub Learning³⁷ and Brilliant Labs.³⁸ Further, a brand new and exceedingly successful example of innovation in New Brunswick education is the recently developed and exceptionally run 'real-world-learning' Essential Skills Achievement Pathway programs.³⁹ This promises to be a leading program for our province.

Innovation is occurring in classrooms and schools across New Brunswick, and our role at iHub Learning Inc. is to support and research innovative experiential, personalized, entrepreneurial, problem, and project-based learning methods and learn how these affect the development and demonstration of the Global Competencies. Early results are exceptionally promising, and we will have our first full data-set to report upon by the end of this school year, June 2019.

We look forward to continuing to work alongside global and local educators to address the what and how of educational reform while adding grass-roots New Brunswick innovation to this important conversation.

Conclusion

While there are many, varied, and contrasting opinions and positions each suggesting the correct path to educational reform, there is at least agreement that education does need to be done differently if society is to prepare students for an uncertain future. In exploration of these differences and commonalities, this insight paper supplies three general conclusions:

1. The *why* of education is agreeable and a good foundation to build reform.
2. CMEC's Global Competencies are a solid, research-based answer to part of *what* content must be focused upon in the evolution of education.



3. Innovative educational methods supply a promising research-based answer to *how* education can deeply engage students' in meaningful learning.

Whichever path forward is chosen by policy makers and educators, the fact remains that education currently faces (i) an increasing lack of student engagement; (ii) the dire need to prepare students for a future that cannot be fully conceived of from the present; and (iii) a question of whether or not there is one standardized canon of knowledge sufficient to meet this future.

May the students in our present system of education be well prepared to meet the challenges of an uncertain future that was determined for them by the actions of our collective past.



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