Canadian School System, Covid, Digital Identities & Future - A Thought Paper

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Canadian School System, Covid, Digital Identities & Future - A Thought Paper

Executive Summary

Canadians are living in an age where the incoming technological tsunami wave of AI, AR, VR, bots, genetic engineering, nanotechnology and wireless is driving profound economic, social and political change. The current pandemic simply exacerbates this, leveraging technology to teach and learn, while ensuring social distancing. As a result, to highlight how the Canadian education system needs to change, this paper uses practical examples of Jane Doe entering a school system and progressing through it.

It contains discussion of Jane Doe's legal identities, those of her parents, teachers and fellow students. It shows how Jane Doe requires a legal anonymous identity to function in AI/AR/VR environments. If her full legal identity is required, express parental/legal guardian consent is required.

Before Jane Doe even steps into the school, it proposes doing an in-depth assessment of her. This includes personality, aptitudes, motor, hearing, visual skills, ability to work with others, etc. Based on this, a preliminary digital learning twin for Jane is created, recommending initial learning strategies for her.

Within the classroom, it in the not so distant future, teaching bot assistants will appear. These not only require their own legal identities, but also require standards over what they can and cannot do.

Further, the paper discusses how easy it's becoming for Jane to cheat on assessments leveraging technologies like AI and AR glasses. It proposes mitigation measures.

It discusses how commercial learning systems/technologies, like Google Classroom, Facebook's Oculus, etc. require legal oversight, ensuring the students behavioral/biometric data is expunged from the system when the student leaves the school system.

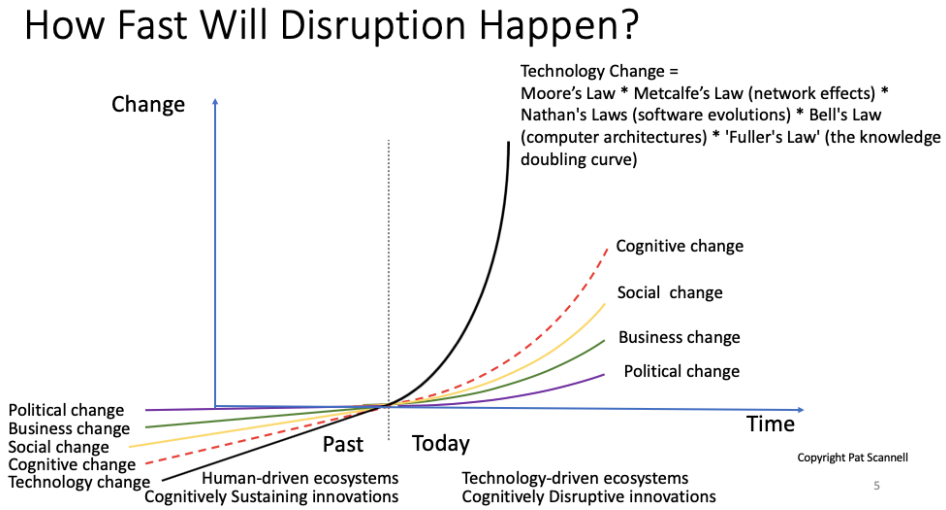
When Jane graduates, it describes how she has control over her legal self-sovereign learning identity, as well as over the data in her learning digital twin.

The paper is practical. Thus, it recommends deliverables for the Canadian education system to reinvent itself in stages by crawling, walking and running.

Finally, the paper acknowledges provinces/territories don't have budgets to do this. Thus, it recommends the federal government step up funding to rethink legal identity, pilot digital learning twins and create standards for bot teaching assistants. By doing so, it will not only solve Canadian education problems, but set Canada up on the world stage to lead in a post-Covid era.

Introduction

We've entering a technological tsunami wave of change composed of AI, AR, VR, bots (both physical and digital), genetic engineering, nanotechnology and wireless. Together, they're creating a pace of change depicted by technology futurist Pat Scannell below:



What Pat's saying is the rate of change is now becoming logarithmic. It exceeds our ability to cognitively keep up with it. I concur.

As someone who's chaired a school district technology committee in the 90's, which led to wiring of the district with fiber, helped build a new school leveraging technology, and been the past President of Skills Canada BC and Skills Canada, I feel the wave of change will also deeply affect schools. The pandemic we're living through will only heighten use of technology to reach and teach students.

I've written more than 30 papers about the effects of technology from the bedroom to the boardroom, with some of them focussing on children. Readers may want to read the following two papers to gain an understanding of the incoming technological tsunami:

- "Privacy Gone – AI, AR, VR, Robotics and Personal Data"
- "I Know Who You Are & What You're Feeling – Achieving Privacy in a Non-Private World"

And then read these two papers about kids (note there is some overlap in the two papers):

- "Young Children's Data Privacy Challenges in the Tsunami Age"
- "Kids' Privacy in a Non-Private World – Why Even Super Hero's Won't Work"

This thought paper focusses on Canadian K-12 schools. I've chosen to do this by using examples of Jane Doe a few years down the road from today.

Jane Does Enrolls in the School System

Jane Doe's parents/legal guardians provide the school with their legal self-sovereign identities (read this presentation to understand LSSI). They then present Jane Doe's LSSI, verifying not only her identity, but who her parents/legal guardians are. Jane Doe's legal identity information is automatically entered into the provincial/local school district's education systems.

Her parents provide their consent for Jane Doe's anonymous legal identity to be used in any AI/AR/VR environment. Any exceptions to this require her parent's consent. Further, they specify the time limits for the use of Jane Doe's identity within the school, e.g. to the end of the school year.

Finally, they provide their consent for Jane Doe's identity data to be used with specific learning systems, e.g. Google Classroom, Facebook's Oculus, etc. They realize this type of data could potentially be used, years after she leaves the school system. to profile Jane and predict her behavior. As a result, they're impressed the school district and the province have negotiated with these commercial entities to not store the behavioral/biometric data on Jane after she leaves the school system.

The next step in the enrollment process is an in-depth assessment of Jane. This includes assessing her aptitudes, motor, sight and hearing abilities, ability to work with others, etc.

All of the initial assessment data is entered into Jane Doe's learning digital twin (read this thought paper where it's described on pages 5-6), which quotes this 1993 innovative paper "Applications of Simulated Students: An Exploration". Her parents/legal guardian's control this until she comes of legal age, after which Jane controls it.

From this, a detailed preliminary learning plan is created for Jane. It involves teachers (both physical, virtual and teaching assistant bots), group work, traditional learning materials such as books, hands on material, and virtual content. All of this is selected based on her initial assessment.

Thus, Jane may require lots of physical teaching interaction or not, depending on her abilities to learn, etc. The learning plan may contain a myriad of different learning resources and strategies, both physical and virtual, along with different combinations of people, to assist Jane in learning.

Jane Enters School

Jane enters the classroom, meets her teacher, the teacher's teaching assistant bot, and her fellow students. The teaching bot and/or sensors in the room, are all able to provide learning data about Jane. As Jane interacts with the teacher, bot and students, there's a constant stream of information flowing into Jane Doe's digital learning twin. Over time, the digital learning twin becomes more knowledgeable of Jane, able to refine its learning predictions, guiding Jane to the best learning outcomes for her.

Note: All students in the classroom, via their parents/legal guardians, have given permission for behavioral/biometric data to be obtained, with strict guidelines on how it's used, stored and expunged.

Jane's Assessments in School

As technology price points drop, the school system has realized students are now able to come to school wearing AI/AR glasses/contact lenses, etc. (examples include Norm Glasses). In the not so distant future, these allow the student to send what they see, e.g. a traditional test, to AI systems which can instantly send back answers, written in the style of the student.

To gain an understanding of this read this Guardian article "AI can write just like me. Brace for the robot apocalypse" written in 2019. Then, read page 10 of this thought paper "Artificial Intelligence and Legal Identification".

Thus, schools must adapt for this using a variety of different options:

- In case where a written assessment is required:
  - The school may place students in a physical room where wireless isn't available
  - Have students working from home, come to a physical place, e.g. a school or a place where wireless isn't available
- Rethink traditional assessment devices using different ways to verify a student has learnt

After telling a relative of mine, who's taught for more than 20 years, about the above, she replied the current education system is akin to trying to put a finger in the dike to prevent the technological flood. She realized, in the end, assessment systems would be forced to change.

Finally, I note that during the time of the pandemic, with students working from home, it becomes easier for them to cheat, leveraging technologies like AI. Thus, Ministries of Education and School Districts must rethink their testing strategies, addressing this by using some of the suggestions above.

Jane Doe's Teachers, Teaching Assistant Bots, et al

Jane Doe might require specialist instructors along her learning path in school. These may range from learning specialists, to people with advanced subject matter content.

The technology allows for many of these people to virtually interact with her. By virtually, I don't just mean on a computer screen using something like Zoom. In the not so distant future, Jane might be wearing AI/AR/VR glasses allowing her to learn physically and virtually at the same time. She might be interreacting with teachers, students and bots, both physically and virtual, whose location might be anywhere on the planet.

The starting point in any interaction is understanding who Jane is working with, and if they're who they say they are. The school systems identity systems must be able to legally verify two things about any identity Jane interacts with:

1. The legal identity of the person
2. If they're a professional of some sort, verify their credentials

Thus, when a teacher, teaching assistant, learning specialist, etc. begins to work with the school system, they'll have to present their LSSI to verify their identities. Next, they'll also have to verify their professional credentials.

Within Canada, the Digital Identification and Authentication Council of Canada (DIACC) has been working on PCTF Credentials (Relationships & Attributes) which begins to allow this to occur electronically. This is excellent, BUT it's not enough. Why?

Technology today allows Jane to interact with learning people all over the planet. Jane Doe could be working with a learning or content specialist in Canada or, on the other side of the planet. Thus, the technology is way ahead of our standards able to effectively function around the planet.

Further, there's bots to consider. Teaching bots et al, all will require legal identity registration. Today, there isn't a system allowing this to occur. It's complicated because virtual bots can be created in one jurisdiction and, in the next instance, be operating in another. That's why this proposal recommends creating a global CRVS system, locally managed, for AI systems/bots.

At the practical level, in Canada, as DIACC standards become accepted, these can be used to verify Canadian's professional roles. Interim identity and role verification processes will need to be developed for learning professionals outside of Canada, as well as for bots.

It's also important to note that when a person loses their professional status, it's instantly communicated to the learning systems. With people and bots now able to work virtually around the planet, it makes this increasingly complicated. How is a school district or province going to know that a teaching specialist on the other side of the planet has lost their professional status and instantly disable access?

Jane Graduates

When Jane graduates from school, she has control over her learning LSSI, plus her digital learning twin data. She can now use this to either prove her education status or, with her consent, release use of the digital learning twin to her future employers or post-secondary institutions. These can now deliver to Jane the best learning content, such that she quickly learns.

Jane's LSSI consent file, has a chronological record of consents given by her parents/legal guardians to the school, learning specialists, systems, et al for her time spent in the K-12 education system.

Crawl, Walk, Then Run

The old education system we experienced as kids, and now look back upon as adults, is on the verge of a major change due to technology and events like the pandemic. I always tell my clients to crawl, walk and then run.

Crawl Stage

We are in the early days of crawling regarding changing the education system:

- Lobby the federal government to fund LSSI across Canada – it rethinks the legal human identities of parents, students and teachers, to global standards, able to put control of their legal identity information in their own hands
- Adopt new consent to global standards, e.g.. Kantara User Managed Access etc.
- Apply new legal standards to commercial enterprises selling into the K-12 education marketplace, ensuring the students' behavioral/biometric data is erased after they leave the school system
- Create common school policies across Canada for students wearing AI/AR glasses/contact lenses and smart clothes, enabling them to not only predict other's behaviors but also potentially cheat on exams
- Begin to rethink assessment devices, acknowledging what my teaching relative told me, i.e. the finger in the dyke won't work mid to long term
- Create standardized interim processes for determining a person's professional credentials not only across Canada but around the planet
- Begin to explore research on creating a digital learning twin
- Pilot use of DIACC's PCTF Credentials (Relationships & Attributes)

Walking Stage

- Adopt the DIACC standards when they are released for professional certification proof
- Develop a legal identity registration system for bots
- Establish Canadian standards for bot teaching assistants (and hopefully broaden this out to other countries), This should include:
    - Guarantees the data taken in by the bot doesn't go from the school system to private companies, without the express consent of the school district and/or province
    - Accepted interaction standards with students
- Pilot teaching assistant bots
- Pilot a digital learning twin program
- Pilot new standardized assessments

Running Stage

- Implement:
    - Bot teaching assistants
    - Digital learning twins
    - New assessment strategies

Summary - Funding All the Above

In the times of a pandemic, provinces/territories don't have budgets able to tackle this. **In this presentation, it recommends the federal government step up and fund creation of a new legal identity system, which provinces/territories can implement.** The same legal identity system created can be leveraged by provincial and territorial education systems.

Beyond the recommendations made in the presentation, **it also makes sense for the federal government to fund innovative programs like a digital learning twin, and to lead on creating new education standards for things like bot teaching assistants**. If the federal government wants to be a planetary leader post Covid, all of these activities position the country in a leadership role on the world stage.

The incoming technological tsunami wave can overtake us, or be harnessed by us to leverage learning. The choice is ours to make.

Note to Reader:

I have been writing about rethinking civil registration systems since 2006

- "The Challenges with Identity Verification"

Over the last year and a bit, I have written 32 papers, including two proposals, on the impacts from the technological tsunami. Here's a listing of them, by subject area, with links to each one:

- Thought Papers
  - Artificial Intelligence & Legal Identification – A Thought Paper
    - Artificial Intelligence & Legal Identification
  - Human Migration, Physical and Digital Legal Identity – A Thought Paper
    - Human Migration, Physical and Digital Legal Identity
  - Digital Twins/Virtual Selves, Identity, Security and Death – A Thought Paper
    - Digital Twins/Virtual Selves, Identity, Security and Death
- Proposals and Discussion Paper:
  - Bot Legal Identity Proposal
    - Proposals for Identification of Bots (Physical and Virtual Robots)
  - Human Legal Identity Proposal
    - Proposals Paper – Incremental Approach to Implementing New Age Legal Identity
  - Background Information on Legal Identity, Data, Consent and Federation
    - Background Information on Legal Identity, Data, Consent and Federation
- Example story of an identity's lifecycle
  - The Identity Lifecycle of Jane Doe
- Technological Tsunami Wave of Change
  - Harnessing the Technological Tsunami Wave of Change
- Legal Privacy Framework for the Tsunami Age
  - Legal Privacy Framework for the Tsunami Age
- One-page summary
  - One Pager - The Age of AI, AR, VR, Robotics and Human Cloning
- Technological Tsunami and IAM
  - Technological Tsunami & Future of IAM

- New age identity, data, and consent
  - Privacy Gone – AI, AR, VR, Robotics and Personal Data
  - I Know Who You Are & What You're Feeling - Achieving Privacy in a Non-Private World
  - Consent Principles in the New Age – Including Sex
  - Policy Principles for AI, AR, VR, Robotics and Cloning – A Thought Paper
  - Legal Person: Humans, Clones, Virtual and Physical AI Robotics – New Identity Principles
- Kids and Parents Privacy
  - Young Children Data Privacy Challenges in the Tsunami Age
  - Kids Privacy in Non-Private World - Why Even Super Hero's Won't Work
  - Children & Parent Privacy in the Tsunami Age
- Robotics, Clones, and Identity
  - Legally Identifying Robots?
  - Rapidly Scaling Robot Identification?
  - Virtual Sex, Identity, Data & Consent
  - I'm Not a Robot
- New age civil registration legal identity framework
  - "Why the New Age Requires Rethinking Civil Registration Systems"
  - "What New Age Civil Registration Won't Do."
- New Age Assurance
  - "New Age Assurance – Rethinking Identity, Data, Consent & Credential"
- Deploying AI, AR, VR, robotics, identity, data and consent in challenging locations
  - "Where Shit Happens"
- Protecting the civil registration/vital stats infrastructure
  - "When Our Legal Identity System Goes, "Poof!"
- New age architecture principles summary
  - "New Age Architecture Principles Summary"
- Leveraging Blockchain and Sovrin
  - **"**A Modern Identity Solution: New Age Vital Stats/Civil Registries, Self-Sovereign Identity, Blockchain, Kantara User-Managed Access & EMP Resistant Data Centres"
- Creating Estonia Version 2.0
  - "Creating Estonia Version 2.0 – Adjusting for Changes From 1999 to 2018"
- New age civil registration/vital stats design, implementation & Maintenance Vision
  - "Guy's New Age Civil Registration/Vital Stats Design, Implementation & Maintenance Vision"

All papers are available off my website at https://www.hvl.net/papers.htm.

About the Author

Guy Huntington is a veteran identity architect, program and project manager who's lead as well as rescued many large identity projects with many of them involving identity federation. His past clients include Boeing, Capital One, Kaiser Permanente, WestJet, Government of Alberta's Digital Citizen Identity and Authentication Program and Alberta Blue Cross. As one of his past clients said "He is a great find, because he is able to do high quality strategic work, but is also well-versed in project management and technical details, so he can traverse easily from wide to deep. With Guy, you get skills that would typically be encompassed in a small team of people."

Guy consults to governments and enterprises on LSSI and how to get ready for the incoming technological tsunami wave.