Navigating Lifelong Learning
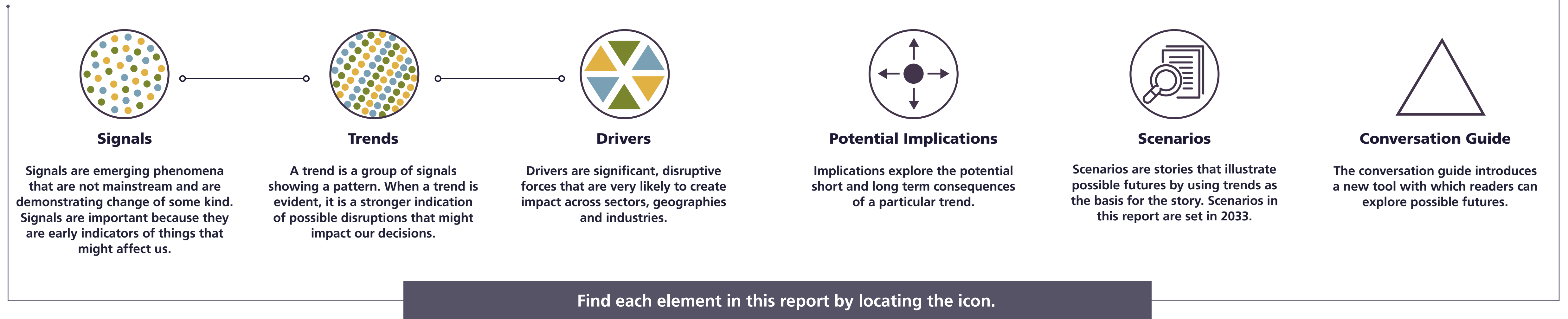
Landscapes

Maps

This report explores:

Navigating Lifelong Learning

Landscapes, maps, signposts, and exploration hubs

Exploration Hubs

Signposts

Navigating Lifelong Learning

This report explores navigating lifelong learning through:

Signals

Signals are emerging phenomena that are not mainstream and are demonstrating change of some kind. Signals are important because they are early indicators of things that might affect us.

Trends

A trend is a group of signals showing a pattern. When a trend is evident, it is a stronger indication of possible disruptions that might impact our decisions.

Drivers

Drivers are significant, disruptive forces that are very likely to create impact across sectors, geographies and industries.

Potential Implications

Implications explore the potential short and long term consequences of a particular trend.

Scenarios

Scenarios are stories that illustrate possible futures by using trends as the basis for the story. Scenarios in this report are set in 2033.

Conversation Guide

The conversation guide introduces a new tool with which readers can explore possible futures.

Find each element in this report by locating the icon.

The *Virtual Learning Strategy (VLS)* is preparing Ontario postsecondary institutions for Navigating Lifelong Learning

The VLS is supporting ongoing and future virtual learning needs at all Ontario Indigenous Institutes, colleges, and universities. The VLS is built on three key pillars:

Being the Future

Being a Lifelong Learner

Being a Global Leader

By applying strategic foresight approaches, the Ontario postsecondary sector can co-create learning ecosystems by monitoring emerging and maturing trends, and identifying future possibilities. This work aligns with the VLS pillar of Being the Future.

What is a *Foresight Report*?

Foresight reports are tools to support the navigation of uncertain and complex futures. Using strategic foresight (i.e., a research-driven, systematic exploration of possible futures), foresight reports help inform present-day decision-making by identifying patterns of change that may have significant lasting impacts for futures.

Why is Strategic Foresight *important* to Ontario postsecondary education?

Strategic foresight supports institutions in navigating transformation by building awareness of some possible forces of change. Strategic foresight can help address immediate and short-term challenges, while articulating long-term visions for systems level evolution.

How do I *use* this Foresight Report?

This foresight report is a high-level overview of maturing trends within the postsecondary education sector. We recommend readers to use this report as a map for further exploration. Readers can click on the links provided to learn more about topics of interest. After exploring trends and implications, this report includes a conversation guide to spark futures-facing conversations and explore gradients of impact. It also includes a series of scenarios set in 2033 as provocations to start those future-facing conversations.

FUTURES INFORMING STRATEGIES OF TODAY

Emerging or maturing trends **today** allow us to imagine possible **futures**.

These futures are useful in informing our **strategies**, while our strategies help inform our actions today.

plausibility
The rings represent the level of plausibility of a specific future outcome, ranging from more plausible towards the inner rings, to less plausible towards the outer rings.

today
action

strategy
near future

futures
far future

Adapted from **Joseph Voros, The Futures Cone**

Why do we use *futures* instead of future?

In foresight practice, we refer to the future in plural.

As we cannot predict the future, there is no definite image or vision of it. Thus, the future will always be an infinite range of possible outcomes rather than a single destination.

FURTHER READING

1 **What is Futures Literacy and Why Is It Important?**
Medium

2 **What is Strategic Foresight?**
Organization for Economic Co-operation & Development
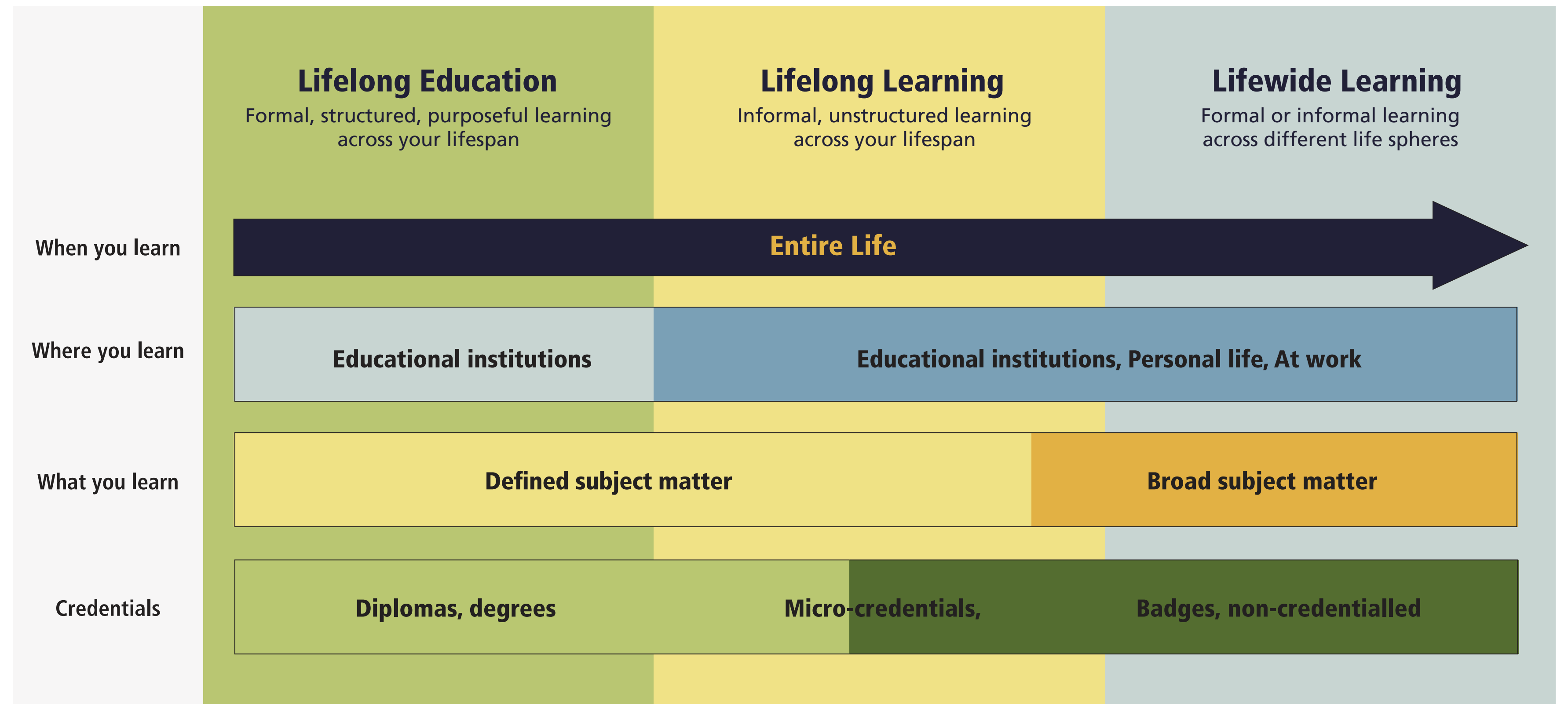
3 **Foresight Reports**
eCampusOntario

Navigating Lifelong Learning

Change is happening at a faster pace; life expectancy is increasing; information is becoming more easily accessible. These and many other factors are creating the need for continuous and diverse learning which, in turn, creates both opportunities and challenges for Ontario postsecondary institutions. One of the main transformations for institutions is that learning stops being a moment in life to become a consistent element of life and the spectrum of offerings and credentialing may look very different in the future.

As the spectrum of learning evolves, it is important to distinguish among three key concepts: lifelong education, lifelong learning and lifewide learning.

	Lifelong Education — Formal, structured, purposeful learning across your lifespan	Lifelong Learning — Informal, unstructured learning across your lifespan	Lifewide Learning — Formal or informal learning across different life spheres
When you learn	Entire Life		
Where you learn	Educational institutions	Educational institutions, Personal life, At work	
What you learn	Defined subject matter		Broad subject matter
Credentials	Diplomas, degrees	Micro-credentials,	Badges, non-credentialled

Forces of change

Canada's **population is aging** and by 2028, 21% of our population will be over the age of 65, likely increasing our healthcare system and costs, changing how we work, affecting immigration policy, physical spaces, and the experience of caregiving.

Digital transformation, the intersection of technology, business, and society, has fundamentally changed many parts of our economy, society, and physical world. This transformation is ongoing and can be expected to continue to affect most future plans.

Climate Crisis will likely underpin many areas of future change. Areas to watch for, and factor into planning, include temperature changes, extreme weather and air pollution impacting food shortages, diseases, human migration, and socio-economic disruption.

FURTHER READING

1 **Education for Sustainable Development 2030**
UNESCO

2 **Six Nations Education Report (Lifelong Learning)**
Six Nations Life Long Learning

3 **The Hybrid Futures**
eCampusOntario

3

Trends and Implications

Demographic and environmental forces of change are contributing to a rapidly changing world and creating a demand for an expanded array of approaches to learning.

In parallel, technological tools are growing in complexity. These two factors impact postsecondary education by expanding the landscape of relevant learning content and requiring a more integrated, flexible way to map learning journeys.

Landscapes:
From academic and professional education to holistic lifelong learning
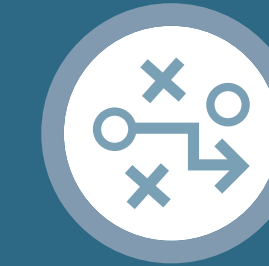
Learning trajectories are moving beyond a primary focus on academic and professional learning to integrate soft skills and personal and social wellbeing. Different technological tools are allowing for the recognition of learning through life experiences outside of formal education. Several institutions are increasing their programming to incorporate these non-academic areas.
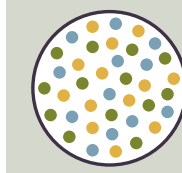
What's happening?

- First year students at York University are introduced to the Pathways to Lifelong Learning program, helping them develop foundational softs skills to support learning across their lifespan.
- Technologies such as xAPI support the recognition of informal learning in lifelong learning journeys.
- Institutions such as Aalto University in Finland help learners map lifewide learning pathways and access a variety of learning opportunities.
- The rise of platforms such as Kidex promote a new understanding of "holistic foundational skills" development from early ages.

Maps
From adaptive learning to adaptive pathways

As AI and machine learning tools are increasingly used to understand the skills needed for the changing employment markets and the passion economy becomes stronger, intelligent systems can be used to help learners map their learning pathways by matching evolving personal interests and contextual needs and opportunities.
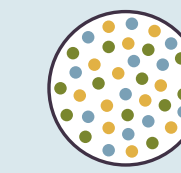
What's happening and what's emerging?

- Tools such as FutureFit AI are using advanced labor market data and machine learning algorithms to identify an individual's 'starting point' in the labor market; recommend best fit career path 'destinations'; build a personalized roadmap of learning, resources, and work opportunities to successfully guide them from point A to point B in their career.
- Companies such as SkillsCV offers candidates skills matching for finding jobs and internships. All vacancies from employers and intermediaries are converted into a set of skills and educational programmes.
- Postsecondary institutions are exploring an "Adaptive Curriculum Generation and Planning Systems" called Curriculum GPS to create optimized and individualized curriculum recommendations to students depending on the students grades, courses studies and time to graduate.
- Platforms such as Leverage Edu provide personalized learner counselling to support learners interested in studying abroad.

Possible Implications

As learning in educational institutions becomes more holistic and across the lifespan, *how might postsecondary education admissions be re-thought?*

As lifelong learning becomes more transdisciplinary and incorporates lifewide soft skills and experiences, *how might assessment and credentialing approaches evolve? How might the recognition of caretaking, health, migration, and other life circumstances become part of admissions and recruitment?*

As lifelong learning becomes more personalized and diverse, *how might cross-collaboration among postsecondary institutions evolve?*

If professional lifelong learning accompanies the learner through different life phases and stages, *what information may help learners integrate their personal journeys with their contextual opportunities and needs and how would they access it?*

Possible Implications

Employment market needs are increasingly informing curriculum development for diverse programs in postsecondary institutions. *How might machine learning and AI technologies impact curriculum development approaches?*

With adaptive systems increasingly reliant on data, *what open data and privacy infrastructures would need to be set in place to allow for meaningful adaptive learning pathways?*

If learning journeys are not constrained to a single geographical location, *what data sharing structures need to be designed for pan-Canadian and international learning pathways mapping?*

With AI, machine learning, and adaptive systems bridging information gaps between formal education and employment, *how might adaptive learning pathways support bridging equity gaps in learning, development, and employment?*
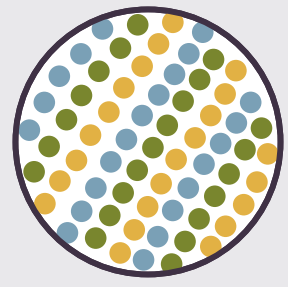
FURTHER READING

1 **Lifelong and lifewide learning**
Research Gate

2 **Curriculum GPS: An Adaptive Curriculum Generation and Planning System**
Complexity

Trends and Implications

As social and economic needs keep changing and demand an expanded array of learnings, and technological tools keep growing in their complexity, the way we certify learning is changing, as well as the platforms and places where learning happens.
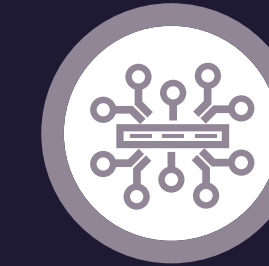
Signposts:
From diplomas to games and tokens

The way we certify accomplishments and progress in learning is changing. Diplomas and certificates that validated an end-of-journey, final outcome of an education program, are increasingly being complemented with smaller and specific validations of through-the-journey learning with gamification and tokenization. Through gamification learning experiences apply game elements and incentives to influence behaviour and motivation in non-game situations. Through tokenization, learning can be validated through tokens, or tangible assets with ownership rights that allow for the secure transfer of data and information.
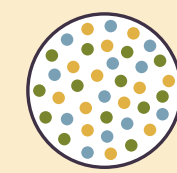
What's happening and what's emerging?

- The University of Toronto, McMaster University, the Massachusetts Institute of Technology (MIT), Tecnológico de Monterrey, Harvard University, and other higher education institutions worldwide formed the Digital Credentials Consortium, an international network of universities with a shared system of traceable digital academic credentialing accessible to employers for verification, including Non-Fungible Tokens (NFTs).
- Platforms such as Knack and pymetrics are using gamified assessments to help learners and recruiters identify their foundational abilities and strengths, interpersonal and collaboration skills, job fit and career direction, among other soft skills.
- As lifelong learning journeys are more flexible and dynamic, schools are increasingly testing a "badge" approach to assessment instead of traditional grading, such as the Democratic Knowledge Project in the USA.
- Platforms like Ed3DAO and The Eduverse help educators learn about web3 and web3-based education and certify their learning journeys through tokens.

Possible Implications

How can tokens and digital credentials be recognized by diverse stakeholders across geographies?

What are the opportunities and limitations of gamification and use of digital tokens for informal learning recognition?

With formal education becoming increasingly unbundled and targeted towards specific skills, how will the transferability of skills be addressed to ensure equity gaps are bridged instead of worsened?

If learning opportunities increasingly involve gamification and digital tokens, what might be the implications for different generations learning across their lifespan?

Exploration hubs:
Learning by scrolling

YouTube's role as an educator accelerated during COVID19, providing formal learning resources to children and upskilling workers seeking additional income. YouTube also drives informal learning with many options for personal development. The role of YouTube as a learning provider could affect postsecondary institutions as it may change learners expectations of educational content and delivery.

What's happening and what's emerging?

- Generation Z is increasingly learning about personal finance from TikTok and YouTube. They are more likely to turn to social media than friends, family, or experts for learning life skills.
- Children aged 3 to 8 are more likely to view YouTube content as more educational, compared to television or non-YouTube videos.
- People turned to YouTube to learn skills to supplement their income and provide a creative outlet. YouTube supported the development of diverse skill sets such as soapmaking, embroidery and cricket farming skills.
- Many people turned to YouTube during the pandemic to increase their personal skills: guitar lessons increased, bullet journalling, Marie-Kondo cleaning, and dalgona coffee
- With the intent of "meeting learners where they are", Arizona State University, Crash Course, and YouTube partnered to offer online, transferable, credit-bearing courses that begin on YouTube.

Possible Implications

Due to YouTube, learners may expect educational content that is more visual, flexible, and delivered in smaller pieces. *How might your institution respond to this shift in learner expectation?*

What are the benefits and risks of your institution (further) integrating YouTube and other social media platforms as sources of academic content?

In some cases, YouTube provides high value, open, and accessible content at minimal cost to the learner. *What is your institution's strategy to addressing this alternative knowledge path?*

How can programs and institutions provide both purposefully educational and serendipitous learning?
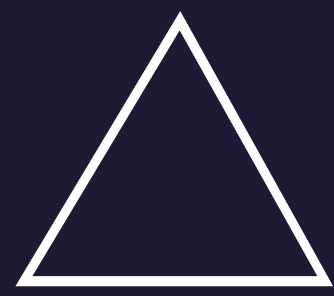
Conversation Guide: Causal Layered Analysis

Causal Layered Analysis (CLA) is a tool that helps us better understand complex social problems or situations. Using CLA we can surface our often unquestioned or unconscious assumptions that underlie the way we frame problems and situations. Those underlying assumptions also form the basis of our decisions related to future planning because they shape our framing of possibilities. Once our assumptions are visible, we have more information and can apply broader strategies to reimagine future possibilities.

The first step is to deconstruct the the situation/problem exploring the five levels of how the situation/problem can be understood. Next, consider: if the situation was improved or the problem solved, what would the foundational myth/metaphor be? Now, reconstruct the story at each level so that they align with the new myth/metaphor.

Complex social problems or situations can be understood at different levels and CLA guides us to explore the problem/situation starting with our surface ideas and moving through to our unconscious perspectives.
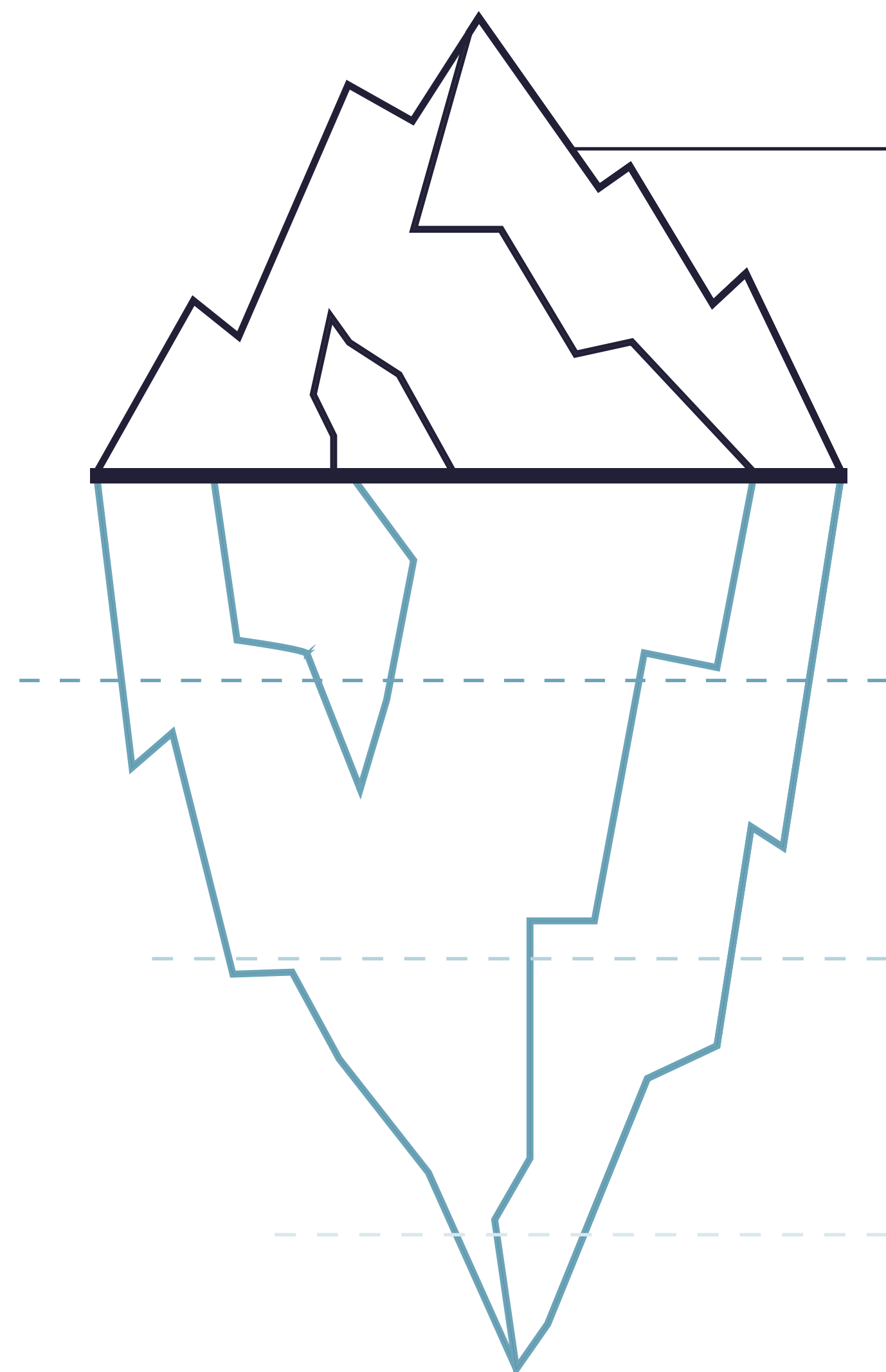
To begin, the **Official, Unquestioned Story** is considered. This version is often found in mass media and casual conversations. It is an uncontextualized version of the problem/situation, likely containing numbers or statistics. It represents the most superficial level of how we frame and express a problem or situation.

Another level of understanding a problem/situation is looking at the **Systems, Policy Story** which considers short term social contexts or causes, such as economic, political, cultural or historical and may question or analyze the **Official, Unquestioned Story**.

An additional version to consider it the **Worldview/Beliefs** that underpin the problem or situation. What do people fear, believe or assume?

Finally, what is the deep rooted concept at the core of the problem/situation? This concept can be expressed as a **Foundational Myth or Metaphor**, likely using emotional or visual language.

FURTHER READING

1 **Causal Layered Analysis**
Metafutures

2 **Prospective and Strategic Foresight Toolbox: Causal Layered Analysis**
Futuribles

Conversation Guide: Example of Causal Layered Analysis

Topic for exploration: A 4 year undergraduate degree, currently a fundamental part of many learners' education paths, may be impacted by the evolving requirements of lifelong learning.

Let's deconstruct and reconstruct assumptions associated with a 4 year degree applying Causal Layer Analysis.

Deconstructed

Official, unquestioned story: Over 80 percent of jobs in four of the fastest-growing occupations—healthcare, STEM, education, and government services—demand postsecondary education.

The greater your level of education, the higher you can expect your salary to be.

Individuals without a degree are three times as likely to be living in poverty.

Systems or policy story: The correlation of income levels and four years degree may be due to selection bias. (Frazis, 1993)

Four year degrees function as a barrier to limit diversity. (Lohr, 2022)

Universalizing education may contribute to a degradation in quality. (Hughes, 2021)

Worldview/Beliefs: Working with your head is better than working with your hands.

You finish your education and then you join the real world.

Education is the basis of societal and personal prosperity.

Foundational myth/metaphor: Reliable path to the good life.

Reconstructed

Official, unquestioned story: 80 percent of people who are highly satisfied with their life participate in lifelong learning.

The key to financial success is holistic learning combining formal and informal learning environments.

Individuals who work in caring professions receive guaranteed income protection.

Systems or policy story: Fundamental overhaul of education credentialling system shifted recognition of knowledge and skills impacting pay rates.
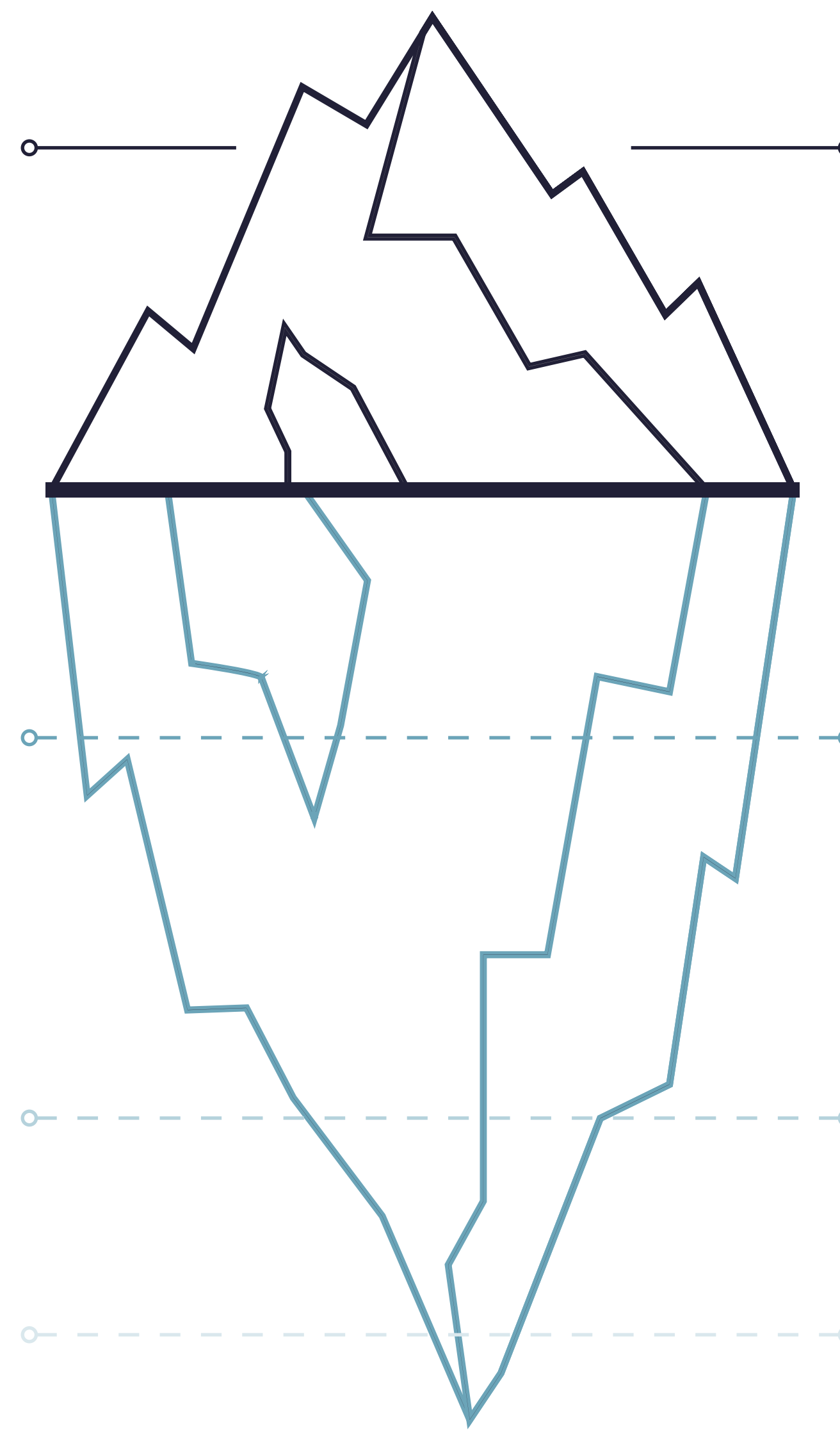
Flexible Educational Delivery Act aligned with diversity and accessibility legislation reduces barriers.

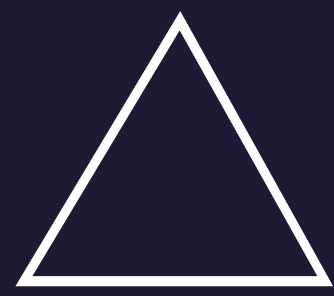**Worldview/Beliefs:** We celebrate many kinds of knowledge and ways of knowing.

Formal education can be integrated at any point in your life.

There are many ways to build a good life.

Foundational myth/metaphor: All roads lead to Rome.

Conversation Guide: Causal Layer Analysis Template — Use with your team!

Is there a complex social situation or problem you would like to understand better? Or are you and your team trying to define a better future? Use the template as a guide to using Causal Layer Analysis to explore your current situation and possible futures.

1 Put the name of your problem or situation here: _____

2 Describe the situation today applying the CLA levels of analysis.

A better vision of the future is achieved by including different points of view. For example, to what would the value of a four year degree look like from the perspective of a successful tradesperson? Or a professionally educated new Canadian struggling to find a job? Or a YouTube influencer?

Level of analysis	How to use it	The situation today	A desired/preferred future
Official, unquestioned story	When people speak in causal conversation about the problem, what do they say? This "official story" will echo headlines and often incorporate statistics or other numbers. Generally characterized by short-term approaches and removed from a broader context.		
Systems or policy story	This level considers the short term social causes of the problem such as economic, cultural, political, and historical. At this level, the numbers of the official story may be contextualized, questioned, or analyzed. Often, this story is articulated in policy documents, academic journals, or editorials.		
Worldview/Beliefs	At this level, the exploration focuses on what is believed, what is feared, and what is assumed within the framework of the problem being explored. This level of problem exploration is unlikely to be found in mainstream publication or conversation.		
Foundational myth/metaphor	Deep rooted concept at the core of the problem. This concept is often expressed as with visual elements e.g. garden of knowledge or emotional language underpinning the complexity or paradox of the situation. The myth might also be expressed as an archetype		
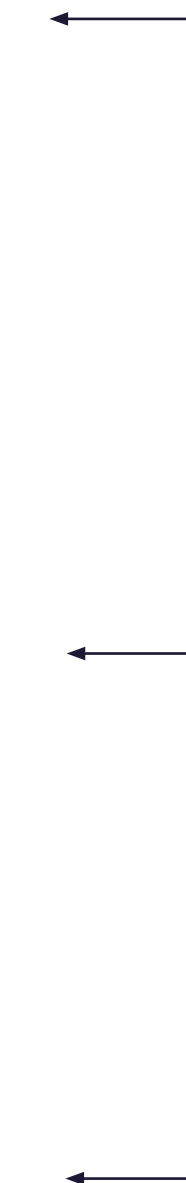
4 Re-imagine the other levels to align with your new Myth/Metaphor.

3 Is there a desired outcome or future you would like to create? If yes, change the Foundational Myth/Metaphor with that future outcome in mind.

FURTHER READING

1 Co-creating Educational Futures
UNESCO

2 My Son Deals in Hamburgers and Other Futures: CLA in Rio de Janeiro
Journal of Futures Studies

Futures Scenarios

Future scenarios, set in 2033, combine possible long-term implications of evidence of change with fictional element to expand our imagination and visualize how trends might evolve into the future. The intention is not to predict what will happen, but to explore how different futures may unfold, challenge assumptions about the present and explore alternative ways to approach innovation in education.

Big Tech's Monopoly of Academic Content

Postsecondary education's reliance on Big Tech for up-to-date, student friendly content has resulted in Big Tech having significant power to increase subscription fees.

Dr. Mariah Black read the update with dismay. Big Tech had substantially increased the subscription fees for postsecondary institutions' subscriptions to YouTube. Dr. Black was worried because Generation Alpha, who were conditioned to watching educational YouTube content as children during COVID 19, expected the University of Futuretown to have highly visual, fast paced timely curriculum and the University relied on YouTube to provide this type of content. While course delivery remained primarily text based with professorial lectures, student feedback had increasingly indicated that YouTube content was the part of the curriculum students found most engaging. University of Futuretown did not have the internal capability to create comparable content on their own and there was no open source alternative so Dr. Black had no content if she cancelled the subscription. Worse, Dr. Black's students were increasingly dropping out of the University to pursue YouTube certifications directly at a cost less than University of Futuretown tuition.

Dr. Black wondered if now was the time to reconsider the pedagogy of how University of Futuretown delivered courses. Maybe the University should develop their own resources, more aligned with YouTube? Or maybe they should double down on traditional delivery since University of Futuretown could never catch up to YouTube since Big Tech so many resources?

In the meantime, Dr. Black felt she had no choice but to pay the increased subscription fees while she considered her options.

How can institutions adapt course content to maintain institutional autonomy as well as relevance?

Many data scientists, not enough nurses

New tech uses AI to map learning pathways that guarantee employment in lucrative jobs creating a reinforcing feedback loop promoting market economy jobs and diminishing resources for education related to other jobs.

Tuition has become so prohibitive, students need to guarantee they will have a well paying job when they graduate. There are new platforms that integrate large amounts of data and tell students exactly what schools, classes, grades, and skills they should have to land these lucrative jobs. Sometimes the classes needed for these jobs are different from those outlined by institutions their degrees and diplomas. As a result, some classes have become extremely popular.

Lin can't believe how in demand their Continuing Education Data Science course has become. Many of Lin's students have signed up for these new classes as AI learning algorithms have consistently identified data science as a critical competency for employment across many sectors. Since the AI algorithm is so accurate in guiding the learning pathway to employment, Futuretown College has tripled the cost for the course and it still has a waiting list.

Lin feels fortunate to be in a field that benefits from a free market labour environment but their partner is part of the nursing faculty and the AI algorithms are guiding learners away from nursing. As a result, the nursing program has received significantly less funding. In addition, nursing does not pay well enough to offset the significant tuition cost. This decline in nursing students and resources concerns Lin because, obviously, we need nurses.

Lin decides on new assignment for their class: how might data be used in the new platform AI algorithm to ensure students can afford education associated with less well paying but important jobs?

How can institutions support education for jobs that contribute to society?

Futures Scenarios

Future scenarios, set in 2033, combine possible long-term implications of evidence of change (trends) with fictional element to expand our imagination and visualize how trends might evolve into the future. The intention is not to predict what will happen, but to explore how different futures may unfold, challenge assumptions about the present and explore alternative ways to approach innovation in education.

Anxiety Friendly Assessment

Flexible education model helps climate migrant pursue education while working full time and supports mental well being, but limited number of professionals to validate skills slow migrant's professional certification.

Unable to remain in his northern Ontario town that was destroyed by forest fires, Arjun relocated further south. Now that he's no longer living with his parents he can't afford to be in school full time. Despite his inability to be a full-time student, Arjun is committed to finishing his training as a certified professional in the reversible economy. During the day, Arjun is employed in a factory re-claiming rare minerals from batteries and on weekends and in the evenings, he is working towards his reversible economy professional designation by completing microcredentials. In recognition of each skill Arjun acquired through his microcredential studies, he receives non-fungible token (NFT) badges that are stored on the blockchain.

Arjun experiences anxiety and in the past, formal exams that require a lot of memorization were very stressful for him. He appreciates a learning environment that assesses his skill and knowledge in smaller increments and without formal examinations. Arjun feels this way of learning is better for his mental health and also an improved way of assessing his skills.

However, acquiring microcredential badges are only part of the designation process. Arjun also needs currently practicing reversible economy professionals to assess, validate his skills, and issue reversible economy professional NFTs. However, there are so many climate migrants from the north looking to validate their skills and only a handful of people with the knowledge and reputation to authenticate Arjun. So he waits and works in the mineral reclaiming factory. While he works, Arjun imagines a day when he has his professional designation and can pay it forward, authenticating others.

How might working professionals and institutions collaborate to build flexible professional certifications?

More Learning, New CV

Professor adapts to social expectations that the pursuit and tracking of learning should include personal interests in addition to formal, job related learning.

Dr. Bhatia has always considered herself a lifelong learner. She returned to school to pursue multiple degrees, culminating with her PhD in Anthropology in her forties but now she is wondering if she's been too focused on formal learning. Perhaps she's neglected exploring personal interests, instead pursuing learning that advances her professional goals. Interestingly, it is her students who have sparked this current idea as they challenged Dr. Bhatia to use her upcoming sabbatical to expand the range of her learning. They checked Dr. Bhatia's virtual CV, saw that it was unidimensional, and are worried about her wellbeing.

So Dr. Bhatia has made a list of things she might explore during her sabbatical: called 'things to learn just because I'm interested in them'. Number one, learn how to breed crickets. There's a course she can take online. Number two, join the kayaking learning community by the lake and receive badges for her skills. Number three, learn a new language with an app. Number four, grow succulents from seed, there are so many plant influencers. Number five, sign up for a crypto investment course and newsletter. And she's just getting started!

As Dr Bhatia considers what she wants to learn, beyond knowledge linked to her job, she realizes there are many things she's learned in her life that weren't recognized by the academe but are knowledge, just the same. For example, she thinks of all the skills she acquired as a mother and as a caregiver to her father, that she's applied to all areas of her life. Dr. Bhatia wonders how she might add this kind of knowledge to her virtual CV.

Dr. Bhatia gets up to make herself a cup of tea, excited and invigorated with the possibilities of what she might learn in the year ahead.

How might institutions support their faculty and staff's lifewide learning?

Navigating Lifelong Learning

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REPORT	FOCUS	FOCUS	FORESIGHT	FORESIGHT	FOCUS	FORESIGHT	FORESIGHT	FOCUS	FORESIGHT	FOCUS	
TITLE	Launching the VLS	Connecting to Create	The Hybrid Futures	Tomorrow's Learners	Ontario Open	Lifelong Learning	Shaping the Future Workforce	Ontario Working Together	Leading Virtual Learning Innovation	The Impacts of the Virtual Learning Strategy	**Next Collection: 2022-2023 Reporting Roadmap**

REPORT	FOCUS	FORESIGHT	FOCUS	FORESIGHT	FORESIGHT	FORESIGHT	FORESIGHT	FOCUS	
TITLE	Launching the Second Round of the VLS	Scaling Ubiquitous Learning	Co-creating Digital-by-Design Postsecondary Education	Connected Education	Teaching and Learning Roles	Navigating Lifelong Learning			**Next Collection: 2023-2024 Reporting Roadmap**