

A Montessori Approach to Workforce Development and Future-Ready Adult Learning

By Rania Younes

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Land Acknowledgement

I acknowledge that the land on which I live and work today is rich in the history and modern traditions of many First Nations and Métis peoples. The lands spanning the region from Lake Ontario to the Niagara Escarpment are steeped in Indigenous history of peoples from the Anishinaabeg to the Haudenosaunee and Métis.

This territory is mutually covered by the *Dish with One Spoon Wampum Belt Covenant*, an agreement between the Iroquois Confederacy, the Ojibway, and other allied Nations to share peaceably and care for the resources around the Great Lakes.

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Abstract

This research explores principles from the Montessori method to inspire a guiding framework that can be employed to enhance the delivery of adult upskilling and re-skilling initiatives. Humanity is witnessing a technological revolution and recovering from the ongoing global pandemic that began in 2020. The effects of COVID-19 extended far beyond physical health, impacting labour market conditions and exacerbating stresses on labour shortages and labour skill gaps. This means that workforce innovation will be critical for economic recovery. Workforce innovation and development involves testing, sharing, and implementing new approaches to employment and training initiatives.

More than 100 years ago, amidst the rapid social and economic change that was taking place across Europe, Maria Montessori envisioned a new kind of education that could play a part in a broad social innovation program. She opened the first Casa dei Bambini (Children’s House), aiming for the recovery of an entire community in San Lorenzo, Rome. At the time, San Lorenzo was known as the “shame of Italy”; with the introduction of the Montessori method, it soon became a beacon of hope for the community and the world. The Montessori Method was built on six primary principles: observation; freedom with limits; respect; hands-on learning; independence; and a prepared environment that is designed for children to choose freely from several developmentally appropriate activities. For Montessori, education (which she conceived of as active learning experience in the form of work) was integral to the growth of the child and the formation of a new world. This core philosophy is not restricted to children, however; Montessori’s core principles have been explored in adult learning; as part of designing and delivering healthcare programs for older adults around the world; and in language and social programs for adults at risk of social isolation in Europe. This major research project will focus on exploring how the core principles of the Montessori Method can be applied to support future-ready adult learning to inspire workforce innovation and development in Canada.

With a goal of supporting upskilling and re-skilling design innovation, and of prioritizing skills-training and development offerings for groups who face the greatest number of barriers (including racialized women and skilled recent immigrant talent), this study uses a heuristic inquiry approach to explore the question of how employment and skills training programs might learn from, and leverage the core principles of, the Montessori method to respond to and meet the skills gaps and labour shortages in Canada. Through a literature review and Causal Layered Analysis (CLA), this research project offers a Montessori-inspired, principle-focused guide to supporting future-ready adult learning environments.

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To my life partner, my children, family members and friends who shared my highs and lows through this learning journey: Thank you for believing in me, for pushing me out of my comfort zone, and for your kind patience and support through it all.

Dedication

*To my daughters, and all girls and women out there who dare to speak up
and challenge the status quo to make the world a better place.*

*To my father, and all fathers who see their daughters and commit to being champions
of their dreams and ambitions because they have faith in brighter futures.*

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Chapter One – Introduction

This project poses the research question: How might employment and skills training programs learn from, and leverage the core principles of the Montessori Method to respond to the skills gaps and labour shortages in Canada? Furthermore, the project intends to explore how core principles extracted from the Montessori method can offer improvements to adult learning with a mind to developing a more resilient and future-ready workforce.

Labour shortages across all sectors in Canada have hit historic high records, with more than half (56.1 percent) of Canadian employers saying that their current workforce is not fully proficient to perform jobs at the required level. Employers have highlighted that job applicants are significantly lacking in both ability and experience (hard and soft skills) and are reporting that they are receiving extremely few applicants (Statistics Canada, 2022). Skills-related job vacancies in 2020 are costing Canada as much as \$25 billion in losses and about 1.3% of its GDP (Gabler, 2022).

Both skills gaps and skills mismatch have been identified as primary barriers to future economic prosperity, and labour markets are seeing a need for people to be trained and retrained on a continuous basis throughout their careers. There has been a faster adaptation of technology sped by the global COVID-19 pandemic, which revealed a digital divide and exacerbated digital literacy gaps. At the same time, under-represented equity-seeking groups in the workforce continue to face morbid systemic workforce integration barriers. Experts are calling for effective workforce development strategies that need to i) adopt different approaches to education and training and go beyond developing technical skills to address confidence-building and resilience, ensuring that training is suited to the learners varied needs; ii) actively ensuring equitable participation in the workforce, through connecting and matching underrepresented worker groups with employers (FSC, 2021).

In his book *21 Lessons for the 21st Century* published in 2018, author Yuval Noah Harari anticipates the rise of what he referred to as a “useless class” by the year 2050, in a world in which automation and AI technologies outperform both the physical and cognitive abilities of humans. Consequently, creating new jobs and retraining people to fill them will not be a “one-time effort,” and even if we stay on course in constantly inventing new jobs to retain a workforce, the worry that then comes about is whether or not humans will have the emotional stamina required for such endless cycles and the upheavals of learning and constantly acquiring new skills to remain relevant in the job market (Harari, 2018).

In the early 20th century, amidst the rapid social and economic change taking place across Europe, Dr. Maria Montessori envisioned what she referred to as “Cosmic Education”—a new form of education that would play part in a broader social innovation program. This Montessori method called for reform in education and society through the scientific study of “Man the Unknown” (Montessori, 1955). Montessori built on physiological and psychological work available at the time and arrived at what she referred to as a “scientific method of education” that would assist human development and hopefully result in the betterment of mankind (Montessori, 1972). Her method works by integrating the growth and development of the mind, body, and spirit of the child to bring forward a healthy and resilient state of being, and by fostering life-long learning. She urged parents and educators to rid themselves of preconceived notions about, and prejudices towards, childhood, thereby allowing children to reveal their unseen powers and boundless capabilities in the construction of what she referred to as the “Man in Formation.” Montessori was an educator with original ideas, a great philosopher and a true humanitarian, who believed that the world was a purposeful place, that all things are interconnected, and that Cosmic Education provides a way to restore harmony and order and is a method that can empower students with the knowledge they need to transform the world. The core philosophy Montessori introduced is not restricted to child education, and has been explored in adult environments, specifically in designing and delivering healthcare programs for older adults with dementia, and in experimental attempts to actualize the Montessori Method in adult learning, which are documented online in a report published in 2015 by the Montessori Method for Orienting and Motivating Adults (MOMA) European project committee.

Given my desire to combine my professional and personal experience, my diverse skills, and my passion for systemic design and social change, it made sense to use a heuristic inquiry approach to conduct this research. I believe this can lead to ideas that will inspire solutions and opportunities in the employment and workforce integration space that can have a positive impact on the wellbeing of societies at large. My experience in the Strategic Foresight and Innovation (SFI) program at OCADU was one big sensemaking exercise for me. Indeed, I enrolled in this program with that exact intention: to make sense of the world around me, and to gain greater clarity about my journey and purpose in it.

For the first seven years of my professional life, I was in the advertising and market research field. When I came to Canada, opportunities in my field were not accessible to me, so I opted to re-skill for better job opportunities and obtained a diploma in Montessori Education. Being introduced to this philosophy has changed me in numerous ways, and I remain conscious of where and how Montessori has affected my outlook on work, play and life in general.

Heuristic inquiry is a distinct method in which the lived experience of the research becomes the main focus of a study, “and is used as an instrument in the process of understanding any given phenomenon” (Brisola, 2016). Over the last decade, I worked with skilled immigrants, helping them to settle and integrate economically in their new home of Canada. As an immigrant myself, I believe labour-market integration is fundamental if immigrants are to adapt to and become part of their new country’s economic and social fabric. Over the years, I have observed that employment is often considered to be the single-most important factor in settlement and integration.

The majority of immigrants to Canada are invited through the Federal Skilled Worker (FSW) program, which takes into account a combination of factors, including age, level of education, language proficiency, work experience, and connections to Canada (Government of Canada, 2022). However, these factors do not necessarily predict how well immigrants actually integrate or fare in the labour market. Labour market outcomes for recent immigrants have been improving substantially, but under-utilization of skills remains a huge problem (Statistics Canada, 2022). Re-skilling and upskilling opportunities are offered to immigrants and other racialized groups as a way to address and overcome under-utilization and low participation rates in the labour market but, according to qualitative studies I reviewed, interviews I conducted with subject matter experts, and observations I have made over the years working with immigrant populations, recent immigrant experiences with employment and upskilling programs have been frustrating, and meaningful employment outcomes have been few. Refer to Appendix G to see direct quotes from skilled immigrants from a research paper I reviewed that explored their experiences, and another that I co-principalled that investigated barriers to job market integration.

The overarching contribution of this work calls for a “Whole Human Design” approach to workforce development tactics and strategies, which can help drive social and economic healing and transformation. Like the Montessori Method, Whole Human Design recognizes the uniqueness of every person, and the human elements that affect happiness and the ability to thrive. After this review and synthesis, further research may be completed to assess the tactical and practical implementation of the findings. In her book *The Formation of Man*, Dr. Montessori writes, “It is not necessary that the whole work of research be accomplished. It is enough that the idea be understood, and the work be taken in hand following its indications” (Montessori, 1955). I look forward to sharing the knowledge gained from this work to the wider Justice, Equity, Diversity, Inclusion and Accessibility (JEDIA) space.

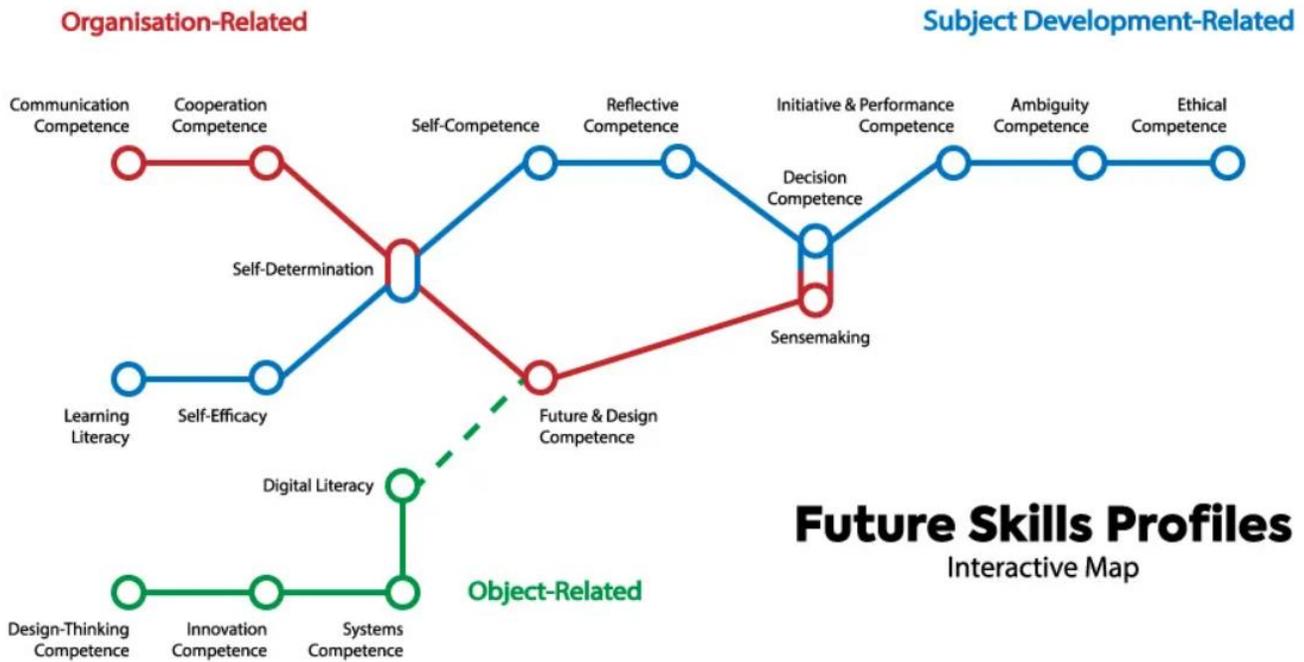
The Research Question

Considering today's unprecedented labour shortages in Canada, fast-changing labour market needs, and the gaps arising in future skills, this research explores the primary research question: ***How might employment and skills training programs learn from, and leverage the core principles of, the Montessori method to respond to and meet skills gaps and labour shortages in Canada?***

- What are the core principles and successes of the Montessori method?
- Can the Montessori approach be applied to adult learning spaces?
- Are there best practices for application with adults? What were the results?
- How can Montessori inspire or offer a solution to today's workforce development challenges?

The school system and post-secondary education institutions have a leading role to play in preparing and equipping generations to come with required future skills. In this research, however, I purposefully and specifically want to focus on adult learning efforts (upskilling and re-skilling) that build on previously acquired labour skills and experiences within the existing and widely diverse labour force in Canada. Figure 1 provides a number of skills that have been consistently identified globally, as crucial skills needed in the future. Driven by several powerful global technological, social, and economic drivers, the world is experiencing fundamental changes in job markets, and research on future skills is a hot topic in Canada and around the world. Most future skills identified focus on cognitive and motivational competencies that require a high level of independence (self-act), and social and emotional skills, which are value-based, hard to train but can be acquired in the learning process. Efforts and work are being invested in education reform and re-imagining school systems, many have closely explored how Montessori can be leveraged as an innovation for building future skills, but very few have explored the method for adult re-skilling and upskilling opportunities. How we work and contribute to the labour market is changing at a very rapid pace, and therefore adult workers are at risk of being overlooked and marginalized in terms of jobs and development opportunities, especially those who already face barriers to labour market participation.

Figure 1
Future Skills Profiles Interactive Map.



Source: Future Skills: [The future of learning and higher education webpage](#), 2020. Go to link and hover over each skill to learn more.

The Heuristic Inquiry Approach

What is heuristic inquiry?

The term *heuristic* is derived from the Ancient Greek word *heuriskein*, meaning “to discover” or “to find.” The book *Heuristic Inquiry: Researching Human Experience Holistically* presents the approach as a distinctive, “phenomenologically aligned, experiential, and relational” qualitative research approach that is also rigorous and evidence based. It is an exploratory process that invites self-reflection, self-discovery and self-transformation while seeking knowledge, meaning and growth (Sultan, 2018).

The method started as an informal approach to research that was formalized in 1961 with the publication of Clark E. Moustakas’s book *Loneliness*, in which the author “used his personal knowledge of and his relationship with loneliness as foundation to explore the phenomenon in others.” This inquiry method acknowledges the human experience, honours “felt sense” and self-dialogue, allows for a focus on relationality, and encourages integration and connectedness in assessing any phenomenon. At the same time, it adheres to a rigorous process of referral, consultation, and collaboration throughout the inquiry. This allows researchers to learn from and

compare their experiences and understanding, and progress towards constructing new understandings of the phenomenon and their experiences of it in concert. From there, the researcher brings the information back for processing and sense-making, leading to “more cohesive understanding.”

“In a sense, heuristic research is both art and science,” one that has also been identified as an autobiographical approach to qualitative research in the contexts of education research and the social sciences. It is inspired by several theories and knowledge bases of philosophers and psychologists such as Buber and Husserl, and especially influenced by Michael Polanyi, a researcher who stressed “tacit knowledge as the basis of all other forms of knowledge.” Tacit knowledge is that implicit form of knowledge that comes from a deeper level of consciousness and to which a single or even a specific number of sources cannot be fully attributed or articulated. Therefore, a heuristic inquiry is a non-reductionist, holistic approach to research that focuses on meaning rather than measurement and recognizes experiences rather than behaviours. (Sultan, 2018, p.3-15). I am fully aware and keen to probe, explore, bring to the surface and merge the tacit knowledge I bring to the topic given my years as a Montessori practitioner, an immigrant, my history of involvement in influencing policy in the field of immigrant inclusion, and a designer.

Why a heuristic inquiry?

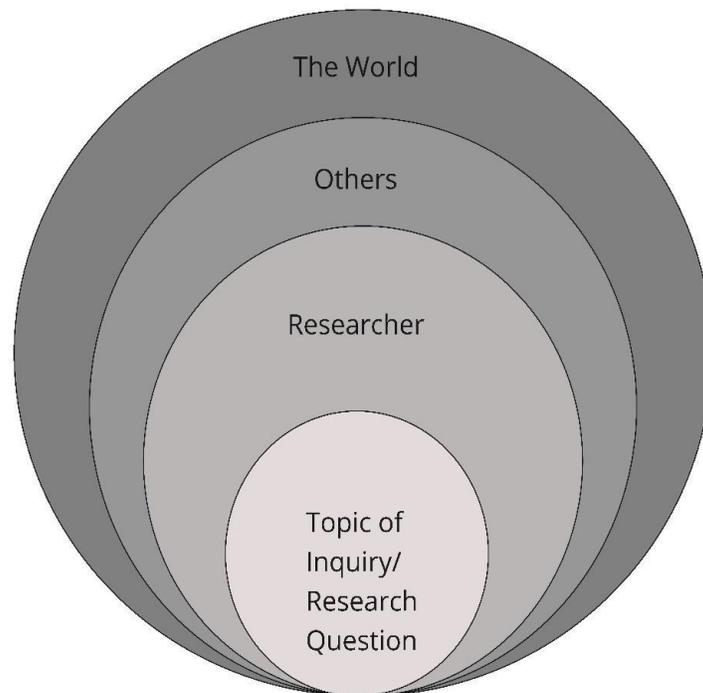
The purpose of heuristic inquiry usually involves investigating a particular subject within a “purposive sample of individuals,” from which the experiences are not separated from the individuals, including the researcher (see Figure 2). Research questions are usually open-ended and invite further debate, dialogue and areas for elaboration and exploration, rather than offering or withholding confirmation. It emerges from the “researcher’s initial engagement with a topic of extreme interest through an autobiographical experience that, though it is internal and personal” to the researcher, may carry potential “social and universal significance.” The research questions become almost like a personal calling, and the researcher’s urge to find answers must be set aside so they can “embody and live the question fully.” This immersive process demands patience and comfort with ambiguity, which is a focal aspect to the approach, thus making the researcher a *learner of* rather than an *expert in* the subject being explored. The process requires passion, curiosity, imagination, and vulnerability to pursue; it requires the engagement of all senses, intuition, thoughts, feelings, and full awareness throughout “the search for the qualities, conditions and relations” that motivate the research question. For these reasons, Moustakas describes “the process being rooted in experiential time, not clock time,” because the researcher collects information and acquires knowledge, allows for the incubation of knowledge, and allows themselves to move back and forth between being close to and distant from the research question. “It is a non-linear process of questioning, seeking, waiting, incubating and receiving,” and this can surely bring about a considerable amount of

fear and anxiety as the researcher navigates ambiguity but can yield fascinating results if they are “truly willing to surrender to the research process.” It is almost like a “rhythmic dance” of toggling between the immersion and incubation processes, whose flexible movement is usually guided by the researcher’s “internal subjective experience,” which in turn guides the “organic emergence of new knowledge” from which arises the process of illumination, discovery, understanding and “transformation within all who come into contact with it.” (Sultan, 2018, p. 9-19).

I have personally observed this in many forms in my research journey: in the number of twists and turns my findings have taken, guiding me to new literature and related topics that were not part of my initial hypothesis or research plan; in where I landed in my final implications; and even in observing how some research participants reconsidered and reformulated their knowledge and work in their fields based on newfound knowledge they acquired during their participation in research activities. These research activities were generally participatory in nature, and most participants who followed up with me after interactive sessions and interviews acknowledged their appreciation for having gained new or different perspectives on the work they were doing, even if this simply a change in the ways they viewed their own work and contributions after interviews and workshop discussions.

Figure 2

Topic of Inquiry/ Research Question as a Lens for Being, Relating, and Knowing



Source: Heuristic Inquiry: Researching Human Experience Holistically, by Nevine Sultan, 2018, p. 12. Copyright 2019 by SAGE Publications, Inc.

Underlying all this are the individual and collective beliefs, values and assumptions of the researchers, co-researchers, readers of the findings which are linked by cultural norms and practices, language, and other social structures. By this token, discovery is not created only through structured, goal-oriented objective stance, but through the scintillating hope of empathic relationships and enable new knowledge to emerge uninhibited and uncensored, or even serendipitously. In this respect, heuristic inquiry fosters the possibility of community and communion and through those constructs (paradoxically), the validation of personal experience and identity. (Sultan, 2018, p.13)

As such, the true purpose of a heuristic inquiry is to employ self-inquiry and ongoing dialogue with others to uncover underlying meanings of human experiences and reconstructing new meanings and implications that can enrich those experiences within a given phenomenon being observed. This is why I was specifically interested in exploring this approach to my research.

So why future-ready adult learning? Why Montessori? And why me?

*“What in your life is calling you,
When all the noise is silenced,
The meetings adjourned...
The lists laid aside,
And the Wild Iris blooms
By itself
In the dark forest...
What still pulls on your soul?”*

— Jalaluddin Rumi

I have taken a heuristic inquiry approach to this research because of a desire to combine, connect and make sense of my professional and personal lived experiences. I want to use my diverse skills and passion for systemic design and social change to address the growing employment and workforce integration barriers that impact the wellbeing of many of our societies today. As a skilled immigrant to Canada, coming with high and bright hopes of a better quality of life and better prospects, I was faced with (and still face) multiple barriers as a visible minority, an immigrant, and a woman – barriers that were inexplicable and very perplexing to me. Openings for jobs requiring my skill set existed in the market, but my foreign credentials (a Bachelor of Arts in Mass

Communications) and international work experience across the Middle East and North Africa (MENA) region deemed me non-relevant to prospective Canadian employers in my field of training and expertise. I was not able to integrate into the workforce through meaningful work that made use of my skill set; I moved from one survival job to the next and took all the advice provided by employment programs, friends, and neighbours very seriously to build up my “Canadian experience” but, as the evidence out there indicates, I am falling behind, like many other immigrant women¹.

In the summer of 2004, I enrolled my daughter in a Montessori pre-school. All I knew of Montessori then is that it is a non-traditional method of schooling that accommodates different learning styles and fosters creative thinking. I attended an information session for parents and fell in love with the classroom environment the moment I stepped foot in the classroom. I was informed in conversation with the school’s director that this program focuses on character-building rather than anything else, and I didn’t want anything more for my child. After my toddler daughter started settling into the program, I took every opportunity to volunteer at the school and enjoyed every minute. As an immigrant struggling to integrate into the workforce, some of the most recurring advice I received was to re-skill into a sector with high job demand and a more inclusive population focus. Early Childhood Education (ECE) was one of those options at the time. I never saw myself as a teacher, but I could see myself in a Montessori environment, so I enrolled at the Foundation for Montessori Education in Toronto and completed my Association Montessori Internationale (AMI) diploma in 2007.

Exposure to, and understanding of, the Montessori pedagogy changed me, my outlook, my worldview and my understanding of the world and my purpose within it. I taught in classrooms for three years, but I took the Montessori principles and experiences with me everywhere. I found ways to integrate them into my home environment and personal activities, in my relationship management, and even in the ways I organized and developed activities within immigrant communities to help newcomers settle and integrate into their new life in Canada. Most importantly, since I was starting to lose my sense of purpose and belonging after failing to find my place in society, practising the Montessori method helped me find the resilient and curious learner in me again. I learnt to prepare, gear up and embrace the twists and turns of life – which is not to say that they are ever easy or easier, but I am somehow more prepared, willing, and able to weather storms, even if only because I usually feel motivated and curious by what I may end up learning by the end of it all.

¹ TRIEC Bridging the Gap, a report published in 2022, indicated evidence of high unemployment rates among immigrant women, double wage penalties compared to their Canadian counterparts when they find employment, and various discrimination issues at the workplace that hinder career advancement. You can read the full report online: <https://triec.ca/research-and-insights/bridging-the-gap/>

I mean, if the Montessori method was able to help me truly understand and learn the concept of algebra and complex equations such as $(a + b)^3 = (a + b)(a + b)(a + b) = a^3 + 3a^2b + 3ab^2 + b^3$ represented in a binomial cube (a Montessori math apparatus), nothing in this world can stop me! But, beyond the aesthetic beauty of a Montessori environment, beyond the brilliant simplification and presentation of complex concepts in sensorial formats, beyond the calming social cohesion among the student groups and everything else that may impress about the Montessori Method, I had a strong conviction that the concept of Cosmic Education, which Dr. Maria Montessori introduced to the world 100 years ago, extends far beyond classroom walls, and far beyond school-aged children, Her lectures, books and philosophy are appreciated by renowned psychologists, social services professionals working with families, and organizational behaviour experts, all of whom strive to explore and answer a fundamental question: How do we develop human potential? (*Optimizing Intelligences: Thinking, Emotion, and Creativity [Video]*, 1998). The pure beauty I most appreciate about the philosophy Montessori offers the world is its grounding in a human-focused approach. As I ventured into new career pathways, which led me to immigrant workforce integration efforts, I still found Montessori relevant. I find a more pressing need today to connect the dots in a rapidly changing world that is slowly recovering from a global pandemic – a world in which jobs, skills, workplaces, and expectations at work are fast changing, shifting, and having an impact on the skills Canadians require for employment and the way they develop those skills. The COVID-19 pandemic has exposed many disparities and areas of challenge and opportunity that call for all of us to do better as human beings. Effective integration into the workforce to address the labour market gaps. The Montessori method might be able to offer a solution, or at least an inspirational nudge towards solutions. Since I have lived through and been impacted by workforce challenges and living practice of the Montessori method, I found a heuristic inquiry most fitting for my research quest, due to its flexibility which makes it highly adaptable, “thus, ideal for researching a diversity of topics across disciplines and phenomena that are vague or difficult to observe, measure or document” (Sultan, 2018, p.22).

Limitations of heuristic inquiry

Heuristic inquiry comes with its limitations as all research methods do. Mostly due to its creative and intrinsically intuitive nature “it is not for the object folks, nor is it for those who are not creative.” While many qualitative methods require “bracketing” the researcher’s experience to keep personal bias, motives, and values aside, this method of inquiry values the researcher's experience, interest and values rather than restricting the inclusion of these elements in the research. It allows the researcher to bring their authentic self to the process and be present and aware that new knowledge is being constructed together with others involved, through the conscious observation of the self and others throughout the research process.

The inquiry process can also create roadblocks in defining and refining the research question due to its flexibility, and I did experience that in my inquiry journey. It also carries the risk of not finding “illumination,” feeling lost in the data, and lacking the courage to find the hidden trails along the pathway to knowledge. It may not yield any new definitive information, and findings may not necessarily result in social action or change, yet it welcomes questions that have not been asked or explored, questions that have been shunned, “neglected or avoided in research (and in society) and [it] embraces populations that have been oppressed, discriminated against, or marginalized” (Sultan, 2018, p.22). I needed this flexibility in my inquiry process not just to understand the labour shortages, but to explore how it relates in the context of systemic marginalization of racialized groups, immigrants, women, youth etc.

Research Design and Methodology

In answering and exploring my research question using the heuristic inquiry approach, I wanted to make sure I stayed true to the experiences of people, including myself, to relational aspects, to dialogue and debate between published work reviewed and research participant views. Throughout the inquiry process, I remained aware of my engagement with the topics explored, my personal fears and hopes for the future, and keen interest in exploring the tools and methodologies I was introduced to in the SFI program. Most importantly, I wanted to make sure there was a balance between my personal investment in the topic and the existing evidence to remain as objective as possible. My intent was to challenge myself and what I knew of the topics involved, seek knowledge, learn something new, and find deeper purpose and intention in the social projects I am involved with. I was very aware that I was not just seeking evidence; I was seeking purpose and change that are informed by facts and evidence.

Literature Review

I started by reviewing and analyzing literature from multiple disciplines to understand and frame the Canadian labour shortage issue in terms of scope, causes, implications and possible solutions, and specifically how immigration is framed as a solution to the shortage. Along the way, I came to recognize the global scope of the labour problem but remained focused on Canadian solutions and relevant applications. I searched for words that included labour shortages, labour skills gaps in Canada, future skills, labour shortage solutions, future skills development. I kept notes and researched further into some of the drivers and trends that emerged in readings, and compiled a list of the most relevant and interconnected trends observed – see Appendix B.

In parallel, I delved back into the Montessori resources I had collected since my Montessori studies started in 2005 and took a deeper dive into the development of, and the philosophy underlying, the Montessori method,

and researched its application in adult learning. This included most of the books and lectures published by Dr. Maria Montessori, key Association Montessori Internationale (AMI) publications and references, my old observation and class notes and my essays and teaching albums required to complete my AMI Montessori diploma.

I completed a first round of literature review to shape and scope my topic of interest but continued to research and review other sources and materials as further relevant and related topics emerged during research interviews and from observations and conclusions, I had noted in my research journal.

Practitioner and subject-matter-expert interviews

After the initial comprehensive literature review, I conducted interactive group workshops with practitioners of the Montessori method. To qualify to participate in the two-set workshops, practitioners needed to be AMI graduates with at least three years of experience practising in a Montessori learning environment. A total of five practitioners participated in the workshops. The first group workshops focused on identifying key Montessori principles that might apply in adult learning environments, exploring relevant activity ideas and experiments, and together imagining how they can apply and affect re-skilling and upskilling adult learning experiences. This was a critical way for me to compare theory and literature findings to actual human experiences and diverse practitioner observations of how the Montessori method can extend to environments other than child-centred environments.

The first set of group workshops inspired the exploration of future scenarios, as participants started imagining a future without jobs and new forms of human purpose other than what we refer to today as “work” or “jobs.” A second round of literature review developed from here, for which I focused on search words that included “the future of work,” “future jobs” and “future of unemployment.”

The second set of workshops were a mix of individual and group workshops, mainly to accommodate conflicting schedules among participants. In this workshop, participants were introduced to Yuval Noah Harari’s future scenario from his book *21 Lessons for the 21st Century* (discussed in Chapter Three), and were asked to comment on how they felt, whether they agreed or disagreed with Harari’s views, and how the application of Montessori principles discussed in the first workshop might help us better prepare for such a future scenario.

After the updated literature review, practitioner workshops and bringing together the first draft of causal layered analysis, I interviewed five subject-matter experts with expertise in labour-market information, labour

and immigration policy, employment programming, leadership development and Emotional Intelligence and Intercultural Intelligence coaching. The purpose of these semi-guided interviews was again to add a human experience element and depth to the data and analysis collected to this point, and to shed light on or bring attention to any ideas or assumptions that had not surfaced so far.

Research Journal and Context Mapping

Throughout my inquiry, I kept a research journal to note and organize my thoughts, ideas, and relational observations. My journals serve two purposes: the first is to organize and code reviewed concepts and information to inform analysis and implications, and the second to capture, make sense of, and move my personal knowledge to build relations between concepts. I visualized and articulated thoughts using causal loops, mind maps and diagrams, some of which are presented in Appendices C and D. My journals included impressions from the literature I reviewed, workshop and interview notes, reflections from past experiences during my Montessori practice and involvement with immigrant and refugee economic integration, various books I read in the past that inspired me, moral questions that puzzle me, relevant trends observed from readings and interviews, and ideas I would like to explore further in spaces of practical application. There were times and segments in my journals where I rambled on and found it challenging to stay on course and not get swept away with many interrelated topics and deeper issues. Context mapping served as a helpful reflective tool that kept my findings grounded in experience and, as much as possible, balanced with evidence.

Causal Layered Analysis

To synthesize and present my implications, I used the Causal Layered Analysis (CLA) framework, a tool focused on “opening up the present and past to create alternative futures” (Inayatullah, 1998). CLA is situated in critical futures research, an approach that disrupts power relations and challenges predicting definitive futures, allowing for an expanded range of scenarios and transformative actions “as a way to conduct inquiry into the nature of past, present and future” (Inayatullah, 1998). I used the CLA framework to lay out, side by side, a present problem (labour shortages) and how a past solution (the Montessori method) might offer guiding principles to help reframe the future of adult upskilling and re-skilling for a more resilient and future-ready workforce.

The research design and methodology described above allowed me to define a process true to the heuristic inquiry approach, maintaining rigour, deliberate planning, and creative investigation. I refer to creative investigation as a fundamental aspect of design – that is, to see things in a new and non-traditional way, finding new angles and unique solutions to complex problems.

Chapter Breakdown

In the chapters ahead, I present context findings from the past, present and expert visions for the future ahead. The present context in Chapter Two explores the current labour-market shortages, what is happening, why it is happening, mainstream solutions posed in public forums and discussions, and who in particular is falling behind and how. Chapter Three explores the future context; it introduces Yuval Noah Harari's future scenario of the "useless class", and various other expert opinions and impressions regarding the future of jobs and work. The past context, discussed in Chapter Four, examines the philosophy behind the Montessori method, its guiding principles, and its applications in adult learning environments. The finding implications in Chapter Five presents the Causal Layered Analysis and how Montessori method principles can inspire solutions through Whole Human Design and a humanity-focused lens. In Chapter Five, I also propose five Montessori-inspired principles to be considered in designing and developing upskilling and re-skilling programs and initiatives.

Conducting this research has been a journey of personal illumination, growth and hope for me. I look forward to sharing and expanding my knowledge of the topics I have explored, and to continue learning and exploring the topic of adult cosmic education, and cognitive and spiritual development.

Chapter Two – The Present Context

Canada is experiencing a “historic labour shortage.”

Place: Canada, North America

Year: 2022

In this chapter, I present literature findings and subject-matter-expert opinions around the present context of labour shortages in Canada, what is happening, why is it happening, if and how COVID-19 played a role in exuberating and amplifying some of the market-related trends, mainstream solutions proposed in public forums and discussions, and who in particular is falling behind along the way, and how.

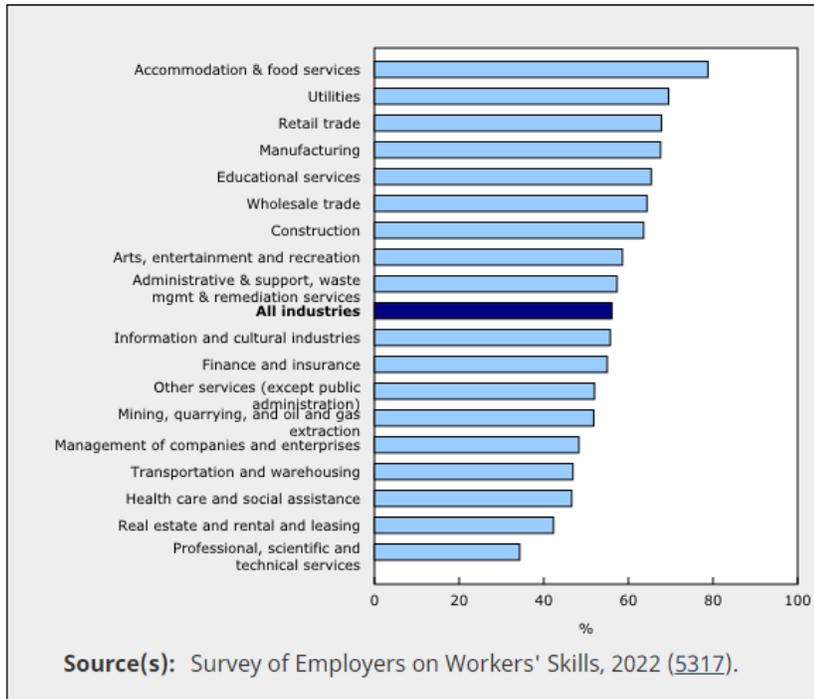
In 2021, over half (56.1 per cent) of Canadian employers said that their current workforce was not fully proficient to perform jobs at the required level, according to a StatsCan report. And more than two-fifths (44.5 per cent) said that it is proving difficult to find candidates who have the skills needed to do the jobs at the required level (Statistics Canada, 2022). Companies have highlighted the fact that job applicants are significantly lacking in ability and experience, in both hard and soft skills, with many employers reporting that they are seeing very few applications. According to the Conference Board of Canada, skills-related job vacancies in 2020 are costing Canada as much as \$25 billion and about 1.3% of its GDP (Gabler, 2022).

We might wonder, how much of this is due to the COVID-19 pandemic? At the peak of the pandemic (March and April 2020), more jobs were lost in Canada than in the past three recessions combined. By the end of the summer of 2020, most of these losses had been recovered, but by the fall of that year, the rate of employment gains slowed, employment losses continued, with heightened impact on youth, low-wage workers, women, racialized groups, and recently landed immigrants (Nguyen & Kostopoulos, 2022).

While COVID-19 may have exacerbated labour shortages and skills gaps, Canada has been experiencing an acute shortage of workers since the onset of the pandemic (Steele, 2022). These unprecedented labour shortages occurred across every sector, and especially in construction and manufacturing. These shortages have been mainly due to an aging population and low birth rates. Since 1990, the size of the working-age population (ages 15–64) has been in decline and projections for 2035 and 2050 showed this trend is set to continue, with the ratio of working-age individuals to the rest of the population expected to fall to 1.6:1 by 2050 – a 26 percent decrease. A report published by the Canadian Federation of Independent Business indicates that, by 2030, the working-age population will decline from 66 per cent to 61 per cent of the total population.

Figure 3

Percentage of businesses that reported skills gap in their workforce, by sector



Source: [Survey of Employers on Workers' Skills, 2021](#), published by Statistics Canada

Beyond disrupting the economy and leading to high levels of unemployment, the pandemic has also resulted in a shift in economic activity, bringing forward new employment opportunities in healthcare, education, technology services and other sectors. In part this is due to demographics; for example, in the healthcare sector, the pandemic has prompted many baby boomers to exit the labour force on early retirement. From another angle, according to a KPMG 2021 *Business Outlook Poll* of more than 500 small and medium-sized businesses, Canadian businesses are struggling to find the required manpower to fuel their digital growth.

'From digital storefronts to online signatures, the pandemic has forced countless companies to move much more of their business online....and while 90 per cent of companies surveyed said they are investing in re-training their own employees, that won't be enough....employers need to innovate and re-think their business models, which will also require access to global talent to fill highly specialized roles,' said Armughan Ahmad, Managing Partner and President of KPMG Digital in Canada to Global News (Alini, 2021).

While automation and digitization trends were already contributing to structural changes in Canada's labour market before the pandemic, the COVID-19 outbreak may have simply accelerated these trends. The exact extent and impacts of these evolving automation and digitalization shifts need to be closely monitored to

understand how they will change the nature of work and job opportunities in the Canadian labour market (Frank & Frenette, 2021). Canadians and organizations that support them currently find it difficult to access labour market information or find that such information is not tailored to meet their individual needs (Betsis & Willcox, 2021). In the wake of COVID-19, decision-making has become increasingly difficult and career development practitioners are continuously coping with urgent, escalating client needs. COVID-19 has been described as the “great disruptor” and the “great leveler”; the challenges and opportunities it brings about call for all of us to do more to address rising disparities and growing system tensions.

Solutions presented across literature reviewed

Immigration has been widely recognized across various literatures as part of the solution to labour shortages, mainly in response to the aging population. “Whatever growth has come in the millennial and Gen-Z workforce has been because of immigration”; additionally, immigrants have increased labour productivity, opened new markets to Canada, and driven greater diversity of thoughts and ideas that have catalyzed growth and innovation. While many employers remain hesitant to hire immigrants and can be quick to dismiss their non-Canadian experience, “which only narrows the available pool of experienced hires” (Nguyen & Kotsopoulos, 2022), local, national, and sector-led active and growing efforts are being made to address severe shortages. I have been privileged to have had the opportunity to be an active contributor to many employer-informed projects, pilots, and initiatives that aim to improve employment outcomes for immigrants and support a stronger Canadian economy, including efforts being led by the collective and individual organizations within the Immigrant Employment Councils of Canada (IECC) (IECC website, 2022), and that are funded and supported by provincial and federal governments. Some of those recent pilots and experimental prototypes currently underway are fully focused on working with local employers struggling with labour shortages and skills gaps, such as the Toronto Region Immigrant Employment Council’s (TRIEC) *Effective Employer Engagement in Newcomer Skills Development Programs*, and the Immigrant Employment Council of BC’s (IEC-BC) *Engaging Tech Employers: Moving from Intent to Action* and *Engaging SMEs: National Business Networks and Local Design Perspectives*, funded under the Immigrant Refugee and Citizenship Canada (IRCC) Service Delivery Improvement (SDI) fund. A full list and description of the projects underway can be found on the Knowledge Mobilization for Settlement website (Campana, 2022).

Until momentum from the collective efforts (above) pick up and prove successful in improving workforce integration and labour-market attachment for incoming immigrant populations, the country is still experiencing unprecedented labour shortage. Immigrants are not the only underutilized demographic; other groups continue to face systemic workforce integration barriers and challenges. Focused efforts need to be invested in to include

and encourage groups with low participation rates in the labour force. Unemployment rates for youth in Canada increased since the COVID-19 breakout compared to Germany, Ireland, and the United Kingdom (Statistics Canada, 2022). Indigenous and other racialized groups generally have below-average participation rates, and even variation in unemployment rates across regional labour markets. There are several other types of workers in the labour force that have been rapidly replaced by automation and technology (e.g., cashiers, travel agents, administrative legal jobs) that are finding it difficult to remain relevant in a fast-shifting labour market (Oschinski & Nguyen, 2022). Addressing barriers to labour force participation for under-represented groups is not only important for the overall well-being of these populations, but also to ensure that employers have access to a wider pool of candidates to hire from.

Insights from interviews with experts

Interviews with labour market experts confirmed most of my literature findings and added significant depth. Data collected and studied over the years has long indicated and forecast shortages of workers, generally due to an aging population, and specifically in sectors and occupations that require workers in skilled trades, various levels of essential workers and positions that require low skills. Subject matter experts provided a unique perspective on how the current shortages have been greatly uneven, and that is the reason why it has felt intense, causing increased stress on both workers and employers to find and match up with each other.

We talk about labour shortages as if they are general, that they are everywhere, I think there is a paucity of data to support that, there aren't labour shortages everywhere, there's mostly labour shortages in people's minds, because of mindsets and its complexity, the complexity behind understanding our aging population, the complexity and biases in our hiring practices, the difficulties there are with proper HR management. There are many barriers in the system, and [they] are on both sides of the labour market. [It's] not just that we haven't got the people trained in the right way, there is definitely something there, but there are also barriers in the system around how we employ people. – Labour Market Expert, Greater Hamilton Area.

The pandemic may also have also given us a point in time where a lot of things came together, or came all at once, and by doing so it accelerated the trends that experts interviewed were already looking at and following, it was a catalyst for everything to happen and meet all at once, possibly because it created such a temporary disruption, and suddenly everyone's attention was captured and focused on issues that were already in the making. An aging population was highlighted again as the key driver behind current shortages.

We will probably continue seeing that for at least 10 years... we are probably not even seeing

the full context of what is really happening because people are at work. If you look at most indicators, unemployment is not really that high, but that doesn't mean we are not at loss in productivity, because people are not trained enough either....it's something that we're trying to study now, because people are lacking some skills we're not as productive and as efficient as we could be as an economy – Labour market expert, Quebec.

During the heat of the lockdown, there were a lot of people from the older demographic who stepped out of the workforce and took early retirement. With many working years under their belt to help support their retirement plans, and simply could not make the cognitive leap into new work conditions, learn new tools etc.

We are about to hit an absolute tsunami in the next 5 to 7 years in Canada because of mass retirement if we don't figure out how different segments of the labour market fit into that, how both sides of the labour market work, how education fits in, and how other social services fit in and how immigration fits in. – Labour Market Expert, Greater Hamilton Area.

The primary or most popular way to address the aging population challenge has traditionally been immigration, but immigration has not necessarily been connected to the pace of labour market integration, it has been more focused on the broader macro-economic indicators, such as population levels and GDP growth, but there hasn't been a strong strategic link between the number of immigrants we are bringing in and the needs of the labour market.

If you don't advance labour-market integration, things will become worse – incoming immigrants will find it more difficult to integrate – and if the pace is increasing and if the immigration levels are increasing without successful labour-market integration, the challenges will be more disproportionate..... Traditionally, the immigration system has been designed to focus on what Canada needs (in population growth) and not so much from the point of view of how do we ensure every immigrant can reach their full potential in the labour markets... focusing on economic immigration of not just the principal applicants, but looking at spouses, looking at families... the settlement sector has focused mostly on the first job in Canada, any job, most become survival jobs, but what happens afterwards? What's the potential? Because if we help them reach that potential, that's going to benefit the Canadian economy in the longer term... the system needs to be better designed from the user perspective from the immigrant's perspective – PhD researcher, immigration and labour-market integration.

A gap in skills *and* a mismatch in skills became highly evident during the pandemic. The percentage of highly educated workers (those with postsecondary education) continues to increase, and the economy needs and will eventually need even more skilled trades workers, to a great degree in certain regions and sectors.

The education system is increasingly seen to be disconnected from the labour market. While the labour market is evolving in a way where different skill sets are being valued....on the education side, there is still a big emphasis on university degrees. While that may have been meeting the labour market needs in the early 2000s, I think increasingly we are seeing a much more dynamic, diversified labour market where a bachelor's degree doesn't have the same kind of benefits. – PhD researcher, immigration and labour market integration.

If we look at job vacancies, there are mainly low-skilled jobs, they are in larger volumes, food, accommodation, retail, those are not skilled work... at the same time, we have workers who are super-educated, and the percentage of those with postsecondary education is increasing so it's ... a timeline mismatch. The economy will eventually need more of those skilled workers, maybe to some degree in certain regions or certain sectors than others. – Labour market expert, Quebec.

Some skills were found to be greatly lacking as well, especially soft skills and lifelong learning. These skills are now valued more and more by employers because it is more difficult to 'train' soft skills, as compared to any technical skills that may be needed on the job.

Literacy levels are falling, and it's not just about reading, writing and so on, it's about being able to communicate complex ideas, being able to communicate nuances, being able to understand what you're reading with a critical mind – all these things require a high level of literacy which, if we look at the statistics, we are not there....it is very difficult to think about lifelong learning without the basics of literacy – Labour market expert, Quebec.

The education system, however, is not solely focused on the employability factor, and while it is not necessarily the only purpose of the education system (pre- and post-secondary), the future of work and labour market needs are changing so fast that the disconnect between education and the labour market is rapidly growing. Employer efforts, most notable in the tech sector at companies such as Google and Shopify, have already started to focus some of their hiring efforts on high-school students to get them engaged as early as possible;

some companies in the United States have been working at the middle-school level (Moran, 2019).

An interesting observation highlighted by some of the experts I spoke with is that the pandemic seems to have made some people a bit braver, be it in gaining the courage and motivation to make a career shift, or to re-evaluate their work and employment conditions in general. In Quebec, for instance, experts noted a shift of workers across sectors and type of work, where a wide movement of workers between sectors, mainly people leaving food and accommodation, and retail work, and going into professional services was seen. This caused many job vacancies in sectors that are not able to compete because they offer lower wages, long commutes, and no work-from-home options.

This displacement of workers is putting stress on the system right now... and the shift across sectors and occupations has worked for the worker population because with the labour shortages, employers in various sectors seem to have lowered their expectations or job requirements, so we've seen that they are recruiting candidates who have for example only 70–80 percent of the job requirements, they don't have everything they (employers) need, but they'll hire and train them because it's so hard to find workers. – Labour market expert, Quebec.

Many were seen to have re-evaluated the fact that they are asked to share a huge proportion of their lives at work, as well as what their employment and work conditions had cost them financially, socially, mentally, and emotionally. When the responses to the pandemic made daily life so different, some started to look more closely at their lives and reconsider their personal relationships to work. Some who had worked for years in industries that were temporarily closed – such as the food, accommodation and casino industry, for example – realized they could shift into other industries and took the opportunity to cross over into other sectors or make different work arrangements that worked better for them.

We have not yet looked into the data to understand and explore the ways in which people are engaging with employment and what they think about it by age. We've seen the younger folks maybe making different types of work choices – maybe they are working in the gig economy and we don't count that data really – we see we have a shortage of labour, but people may actually be really busy, they're just not working in the system, so there could be that. ... then you've got groups of people that are in the so-called demographic age group of peak employment, whether they're men or women, where we see low participation rates. How come, right? Then you start peeling that back and then it's who's in that group that has a barrier that may be solved by another part of our social

network system, for example, childcare, healthcare, eldercare etc., so who are the people that are not in the workforce because the workforce and the employment regimes that we work in may not align with where they are at with their lives? ..It's not that they don't want to work, it's just not supporting how they're living and I think that those are some of the more interesting aspects of how we need to move forward – Labour Market Expert, Greater Hamilton Area.

Increasing the labour participation of women, disadvantaged and BIPOC groups who traditionally have been more excluded from labour markets – is another point that echoed throughout my literature review findings. However, all experts interviewed recognized that there remain many challenges to overcome. Past efforts and progress have mostly concerned entry-level jobs, with less focus on middle-management jobs. Representation for marginalized and typically excluded groups is lacking in senior management positions and up the career ladder to C-suite positions.

To sum up the expert interview impressions, data and research post pandemic long anticipated shortages, the pandemic merely accelerated and magnified the issues (Braham & Homsy, 2021). An aging population, technological advancement and a growing disconnect between the labour market and the education system were bound to meet and clash at some point. Also, more work needs to be considered and explored on how work and our relationship with work as a society crosses over with other social services and social elements that can be causing systemic challenges for workforce participation. Efforts for inclusion in the labour force of groups who have been typically excluded from the labour market need to be rethought across all sectors and across all levels within organizations, to expand and diversify the available talent pool.

Much of what I read in the literature I reviewed, and what I heard from experts I interviewed, made a lot of sense to me and was, sadly, somehow relieving. What I have been closely following in the news, and what I read and monitored in emerging research work, kept me up many nights and confused me more as I watched this “historic labour shortage” unfold. As a racialized immigrant woman, employment and underemployment challenges and barriers for youth, racialized groups and new Canadians have not subsidized to an equally responsive degree. See Table 1 below on unemployment rates by immigration status vs. Canadian-born and allow me to stop here for a moment and share my lived experience, which may help paint a picture.

I came to Canada as a skilled immigrant in 2002 with seven-plus years of professional experience from the multi-national, corporate world of products and consumer goods across the MENA region. I had experience

managing highly recognized global household brands, across diverse, high-volume markets. Every time I applied for a job in Canada, however – from mid- to entry-level opportunities – my skills and experience were deemed non-relevant due to a lack of Canadian experience. If and when I was ever called to a job interview, I provided “recognized credentials” and was happy to hear reassurance from the interviewer that my expertise was comprehensive and impressive, but I never got calls back. When I resorted to employment support programs, I was told the problem was that I was “overqualified,” and that I needed to dumb down my experience. As I settled and built up my social connections bit by bit, I was consistently advised to re-skill to any high-demand sector that would be “forgiving” and more “accepting” to visible minority women (yes, I am quoting the words used).

Fast forward eighteen-plus years: labour shortages are still on the rise, and immigrants coming to Canada *still* face perplexing barriers to employment; many like myself get trapped in a vicious cycle of underemployment that ultimately leads to de-skilling. The StatsCan annual unemployment rate for immigrants recorded in 2021 ranged from 9.8 to 8.4 per cent compared to 7 per cent for their Canadian-born counterparts. Historically, the unemployment rate in Canada averaged 7.64 per cent for the last 5 decades (from 1966 until 2021), reached an all-time high of 13.7 per cent in May of 2020, and currently stands at 5.7 per cent as of September 2022 according to Stats Canada labour force survey. The *Employment Gaps and Underemployment for Racialized Groups and Immigrants* published by Ng & Gagnon in 2020 highlighted the fact that recent census data have provided a more complete picture on underemployment, with racialized minorities and immigrants experiencing greater un- and underemployment, and indicated that immigrant women experience even more barriers and poorer outcomes than immigrant men, despite numerous policy initiatives, government, and various social service provider programming. As an Arab Canadian, I was mortified to see the unemployment rate for Arab Canadians stubbornly stood at 17.9 per cent (see Table 2), while the national unemployment rate had decreased to 9 per cent in October 2020, but I was not really surprised, as I had worked closely with hundreds of Arab youth and newcomers to Canada over the years to help grow their networks and advance their professional opportunities. Arab Canadian *women* experienced even higher rates of unemployment at 20.3 per cent, the second-highest unemployment rate amongst visible minority women groups. This is especially alarming because, as I have witnessed, and as research consistently indicates, lengthy spells of unemployment eventually push people into precarious employment and set in motion the process of deskilling. This leads to long-term economic scarring, especially for those new to the labour market (Arulampalam, 2001). So here we are, saying the growing shortages are due to a lack of skills, but that they are also contributing to the de-skilling of skilled labour because we are failing to integrate immigrants effectively into the workforce (see Figure 4 for a causal loop visualization of the immigrant de-skilling process).

Table 1*Labour force characteristics by immigrant status, annual*

Geography ²	Canada (map)				
Labour force characteristics	Unemployment rate ³				
Age group	15 years and over				
Immigrant status	2017	2018	2019	2020	2021
	Percentage				
Total population ⁴	6.4	5.9	5.7	9.5	7.5
Landed immigrants ⁵	6.8	6.1	6.0	10.4	8.4
Immigrants, landed 5 or less years earlier	10.4	9.4	9.5	13.5	9.8
Immigrants, landed more than 5 to 10 years earlier	7.2	6.4	6.5	11.7	9.7
Immigrants, landed more than 10 years earlier	6.0	5.4	5.0	9.5	7.8
Born in Canada	6.2	5.7	5.5	9.1	7.0

Note: Source - Statistics Canada, 2022 [Labour force characteristics by immigrant status, annual](#).

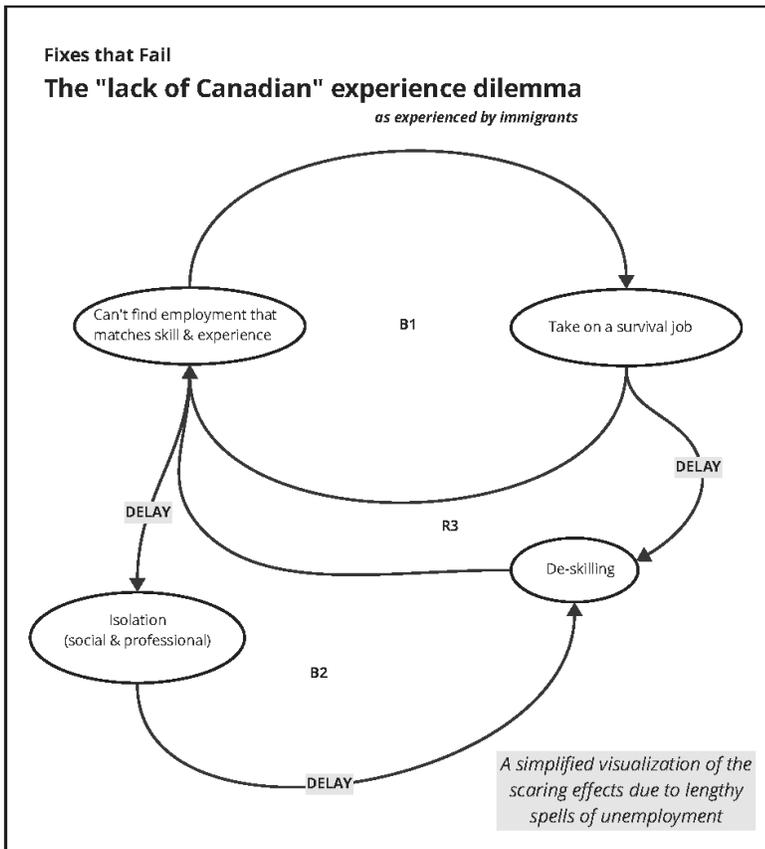
Table 2*Unemployment rate by visible minority status, August 2020*

	%
Not a visible minority or Indigenous	9.4
Filipino	12.7
Chinese	13.2
Latin American	13.9
South Asian	14.9
Southeast Asian	16.6
Black	17.6
Arab	17.9

Note: Source - Statistics Canada, 2020. [Labour force Survey, Supplement August 2020](#).

Figure 4

The "lack of Canadian experience" dilemma



Note: Causal loop (visual) representation of the scarring effects due to lengthy spells of unemployment

I still try to make sense of those perplexing tensions and disparities. I find they create and fuel damaging economical, societal, and political issues. I have delved deeper into and engaged more with the immigrant employment readiness and labour market integration space for over eight years now, working within the larger immigrant welcome and inclusion ecosystem, trying to be part of the solution. Having witnessed and lived the settlement experience within the system as an immigrant, I can say that Canada is no doubt doing better now when compared to the past decade at least, but having also worked closely with immigrant populations, I also see that the effort and progress are still not matched with the growing labour gaps Canada is currently experiencing.

Present context in summary

Rapid technological and economic changes are leading to unprecedented labour shortages in Canada. The problem is ongoing for the majority of Canadian employers, with skills gaps and skills mismatch being reported across various sectors. Though experts have indicated that none of this is new, unexpected, or surprising, all agree that COVID-19 played a role in disrupting and accelerating some of the drivers and trends that will transform and

redefine the worker, industry skills, jobs, and the nature of work as we know it today. While immigration and increasing labour force participation for under-represented groups has been identified as part of the solution to these shortages, many immigrants and racialized groups are still overlooked, under-utilized, and falling behind in participation and advancement in the workplace. COVID-19 has been referred to as the great leveler and revealer. Beyond exposing many social and economic disparities and biases, lockdown, mass layoffs and resignations almost created a wrinkle in time and space that provided many people a moment to stop, pause, reflect, and re-evaluate their work and life goals and priorities. The pandemic has also driven many businesses to reconsider and reframe how they do business, how they relate to their employees, and how they engage with their customers, immediate community, and other stakeholders. The gaps within and across systems were amplified and made more visible, calling for us to collaborate more effectively, and to rethink and redesign better policies and systems to address rising disparities and growing system tensions.

Chapter Three – The Future of Work

The rise of the “useless class”

Place: Across our home planet, Earth

Year: 2050

“When you grow up, you might not have a job”

- Yuval Noah Harari, *21 Lessons for the 21st Century*, Chapter Two

The topics, trends and discussions observed in the previous chapter prompted me to look further into the shaping future. In this chapter, I introduce a future scenario that anticipates the rise of a “useless class”: I also look at other expert opinions and impressions on the future of jobs, skills, and work.

When I started this research project, I was driven by my observations of a problem, and the possibility of exploring a re-skilling and upskilling solution that is inspired by Montessori pedagogy. During the interactive workshops with the Montessori practitioner community, one of the participants raised a very interesting view: *“If Montessori principles were to be successfully incorporated in adult upskilling programs, people would be happy, content and productive, even if there is no work.”* This comment prompted workshop participants to continue exploring how a future with no work or without jobs might look and, furthermore, led me to Harari’s foreseeable vision of the future of work and employment.

In his book *21 Lessons for the 21st Century*, Harari explained that we may be on the verge of a “terrifying upheaval.” Fear of automation leading to massive unemployment has been a hot topic for a while, even though, as Harari notes, since the beginning of the Industrial Revolution, every job lost to automation has led to the creation of at least one new job. Yet, he believes, there are good reasons that machine learning (Artificial Intelligence and Blockchain) can be a “game changer.” In the past, the machine competed with humans in physical abilities, leading to an enhanced quality of life. Service industries emerged and humans were able to utilize their cognitive abilities (learning, analyzing, communicating) and “above all understanding human emotions.” Artificial Intelligence (AI) is now starting to outperform humans in these abilities and even in tasks that supposedly require intuition. The year 2050 may well be “characterized by human-AI cooperation rather than competition”; however, that will probably demand high levels of expertise and will continue widening the skills gap. Harari anticipates that this may well bring about the rise of a “new useless class”; consequently, creating new jobs and retaining people to fill them will not be a “one-time effort.”

Even if we can constantly invent new jobs and retain the workforce, we might wonder whether the average human would have the emotional stamina necessary for a life of such endless upheavals. Change is always stressful and hectic world of the early 21st century has produced a global epidemic of stress...By 2050, not only the idea of a job for life but even that of a profession for life might seem antediluvian (Harari, 2018, p.32)

Even if we find ways to stay on course with constantly inventing new jobs to maintain a workforce, he noted worry and concern about whether humans may possibly have the emotional stamina required for such endless cycles and upheavals of acquiring new skills and transitioning into more than one career.

We will probably need far more effective stress-reduction techniques to prevent the human mind from snapping.... The rise of a useless class might emerge due not merely to an absolute lack of jobs or lack of relevant education but also to insufficient mental stamina. (Harari, 2018)

In 2016, a study quoted by the Pew Research Center found that “one more robot per thousand workers reduces the employment to population ratio by about 0.18-0.34 percentage points and wages by 0.25-0.5 per cent,” opinions of labour market experts solicited in 2014 gauging if AI and robotics would generate more jobs than they would destroy, 48 per cent envisioned more jobs will be lost than created and 52 per cent envisioned more jobs will be created than lost. Since then, the future of jobs has been a globally prioritized topic at major conferences, with researchers and business experts calling for policy reviews and market-based solutions “to address the loss of employment and wages forecast by technologists and economists.” Changes in educational and learning environments were identified as a key theme, and a necessary factor for ensuring that people remain job-ready in future labour forces. Jobholder surveys in the United States found that 87 percent of workers “believe it will be essential for them to get training and develop new job skills throughout their work life in order to keep up with changes in the workplace.” The Pew findings pose a central question as to “whether formal and informal learning structures will evolve to meet the changing needs of people who wish to fulfill the workplace expectations of the future.” Just over 1,400 technologists, scholars, practitioners, strategic thinkers and educators surveyed in the summer of 2016 found that 70 per cent were optimistic that emerging learning structures will be successful, while 30 percent were not as optimistic, as they believed “adaptation in teaching environments will not be sufficient to teach new skills at the scale that is necessary to help workers keep abreast of the tech changes” (Rainie & Anderson, 2017). Table 3 highlights five major themes about the future of jobs and training in the rising

technological revolution; three of the five are hopeful and two raise concerns. At the hopeful end, findings suggested that the training ecosystem will evolve and bring innovation in formats. With the rise of online and hybrid learning, workers and employees will be expected to learn and develop continuously, through self-directed courses in the form of augmented reality (AR), virtual reality (VR) and artificial intelligence (AI). Universities will still exist, possibly playing a different and special role in preparing people for life, and credentialing systems will expand and diversify, mostly driven by employer needs. Emotional Intelligence (EI), critical thinking, creative problem solving, adaptability and resilience will be the most valued skills in job markets, and apprenticeships and mentoring will be the most common practical and experiential learning methods. Themes presented in the Pew research findings indicated that training and learning system development and expansion will not catch up at the needed pace, mostly due to the current system's dependency on political will and funding, and the lack of individual *interest* in and *will* to engage in self-directed learning. Ultimately, the worker populations are expected to surpass job openings in millions, bringing rising stress predominantly to capitalist systems.

The Pew research themes lead nicely into Harari's call to action, in which he states that the first step required to tackle this daunting future scenario, is to acknowledge that the existing social, economic, and political models, and the economic and social systems inherited and in place will not be adequate to deal with the challenges anticipated ahead.

We need to develop new social and economic models as soon as possible. These models should be guided by the principle of protecting humans rather than jobs.... We should focus instead on providing for people's basic needs and protecting their social status and self-worth. (Harari, 2018)

As I continued my research, I came across more and more published works sharing similar views to Harari. Simply put, all agree that there won't be jobs for humans in the way we think about or experience jobs and work of today. Humanity will have to pursue meaning and purpose through other means to sustain a thriving civilization.

Table 3

Major Themes about the future of jobs training in the tech age

Five major themes about the future of jobs training in the tech age

HOPEFUL
THEMES

Theme 1 The training ecosystem will evolve, with a mix of innovation in all education formats

- More learning systems will migrate online. Some will be self-directed and some offered or required by employers; others will be hybrid online/real-world classes. Workers will be expected to learn continuously
- Online courses will get a big boost from advances in augmented reality (AR), virtual reality (VR) and artificial intelligence (AI)
- Universities still have special roles to play in preparing people for life, but some are likely to diversify and differentiate

Theme 2 Learners must cultivate 21st-century skills, capabilities and attributes

- Tough-to-teach intangibles such as emotional intelligence, curiosity, creativity, adaptability, resilience and critical thinking will be most highly valued
- Practical, experiential learning via apprenticeships and mentoring will advance

Theme 3 New credentialing systems will arise as self-directed learning expands

- While the traditional college degree will still hold sway in 2026, more employers may accept alternate credentialing systems as self-directed learning options and their measures evolve
- The proof of competency may be in the real-world work portfolios

CONCERNS

Theme 4 Training and learning systems will not meet 21st-century needs by 2026

- Within the next decade, education systems will not be up to the task of adapting to train or retrain people for the skills that will be most prized in the future
- Show me the money: Many doubts hinge upon a lack of political will and necessary funding
- Some people are incapable of or uninterested in self-directed learning

Theme 5 Jobs? What jobs? Technological forces will fundamentally change work and the economic landscape

- There will be many millions more people and millions fewer jobs in the future
- Capitalism itself is in real trouble

PEW RESEARCH CENTER, ELON UNIVERSITY'S IMAGINING THE INTERNET CENTER

Note: Source: Pew Research Center, 2017, [Five major themes about the future of jobs training in the tech age](#).

What other experts say about the future of work

The book *Disrupting Unemployment* presents a compilation of visions of an innovation-for-jobs economy, based on the ideas of various leaders in the economic advancement and technology fields. In the book, contributions made by Jurvetson and Islam from Draper Fisher Jurvetson (DFJ), an American venture capital firm focused on investments in enterprise, consumer and disruptive technologies, anticipate that even highly skilled jobs in the field of engineering, medicine, healthcare and science will be disrupted by automation and AI.

We will automate engineering, we will automate diagnosis, and we will automate discovery of scientific principles. In this future, where the marginal cost of labour is

zero and where companies have reached new bounds of profit maximization, both the microeconomics of individual companies and the macroeconomics of the global economy will be completely upended. Maslow's hierarchy of needs—food, shelter, health care, education—will be free for everyone forever. (Jurvetson and Islam in Schmidt et al., 2016, p.94)

In the world we know today, work and jobs power the global economy, so as these trends completely disrupt our notion of jobs, the debate today should be centred around “humans needing meaning in their work, even though it may no longer be for employment.” As the nature of jobs and work takes a new form in the future, we know from all the past and present unemployment disruptions that humans will remain beings that crave purpose and deriving it from their actions. Employers around the globe are realizing this as late millennials enter the job market with different expectations, looking for a different work experience, interested in more than just salary, benefits, and job security, and more to be a part of something with a mission that brings about real change in the world they are inheriting today. Finding meaning through non-traditional forms of work will become paramount as employment will not be necessary for most humans. (Schmidt et al., 2016, p.99-101)

Generally, when I shared Harari's future of work views and the scenarios outlined above with subject-matter experts and at the interactive workshops with the Montessori practicing community, none of them found his future scenario outrageous or unimaginable and all agreed the future of work does hold tremendous unknowns with rise of automation and AI, but a few had doubts on the anticipated pace and the timeline. Most participants agreed with the certainty that some of the jobs today will no longer exist and that new ones will emerge. This has happened in the past and will continue to occur as we evolve and innovate, but with that, organized and thoughtful efforts in re-training and re-skilling must be prioritized.

I think it's inevitable that we're going to be seeing certain jobs and things not done by humans, automation will become far more prevalent, that does mean you will have many people that will require re-skilling, because some jobs will not exist even in the near future... but I believe it has always been this way, there have always been new jobs being created, they will just look different this time, and that does point to a couple of things, one is we have to get much better at defining what skills are needed, how they translate across different jobs and occupations, how they are built over time and in context of one's work life, and figure out the interventions that have to happen in order for people to continue participating and navigating the world of work, I think there will be an interesting intersection between how we work in community, I'll put it this way, how we work, whether we're paid or not.” – Labour Market Expert, Greater

Hamilton Area.

What makes this current labour disruption different than any that may have preceded it is how uneven it is impacting different industries, sectors and even specific occupations. This is also making it difficult to pinpoint and identify the specific skill sets and articulating the features of skills in shortage. How fast the change will happen, how far or soon Harai's imagined scenario will be realized varied in perspective. Some participants believed that is already happening today, some agreed with his anticipated timeline (by 2050), and others saw it much farther in the future (50+ years).

During our lifespan, I think it is going to be very uneven. In a study I recently worked on with colleagues on future proofing essential work, our findings show which jobs are particularly vulnerable to automation and technology, for instance, general farm workers are vulnerable to automation, but when you look at nurses, there is no immediate threat.. it may be true for some jobs but not for all of them, it is not possible, technology won't grow at that pace. – PhD immigration and labour market integration researcher.

Imaginations of future scenarios of work may vary in detail, but all agree that work and jobs will look very different than they do today. Sven Littorin, a Swedish former politician who oversaw major reform in Swedish labour policy in the early 2000s, argues that, regardless of what many may think is happening in the global economy today, what is absolute is that “fewer jobs will be needed to produce the same things we have become used to consuming.” He believes that “we have to get accustomed to the fact that “the job is dead, long live work!” He referred to various reports from 2016 that predicted 40 percent of jobs we know of today will disappear in the coming years, but his thoughts focused on whether policy makers are prepared for, concerned with, or preoccupied by this undoubted future.

*And even if they did [turn attention to current work policies], their policy measures would be completely useless. How do you manage a structural change of this magnitude within today's prevailing systems and theories? Better public employment services? Better functioning unemployment insurance systems? A tax deduction? A subsidy? Rubbish. We have to rethink and deconstruct most of what we know about labour market policy-making to fit a future that is coming faster than we could ever predict. Can this be done within the system? No. I would argue that the silos of government and the iron triangles outside them are too strong.
(Schmidt et al., 2016, p.106)*

The views of the labour market experts I interviewed aligned with Littorin's. Within the Canadian context, funding schemes between federal and provincial governments are complicated: while employment insurance programs are managed by the federal government, funding is transferred to provincial governments to manage most unemployment programs. These programs are very narrowly limited in definition and would require a lot of legal work to widen their scope and nature to help people through unemployment; they also vary across provincial governments. Education, though disconnected from employment, is a provincial responsibility, so this adds to the complexity of the system as well.

Greater collaboration is needed, and there is an element of speed that needs to be considered because it takes very long to adapt the big machines of education and the big machine of employment insurance programs, all very heavy boats that are difficult to move at the same time. The private sector is moving forward, and the needs are changing, so there is an element of speed that needs to be probably better managed and prioritized. – Labour market expert, Quebec region.

Government and employer collaboration is much needed at this point, because in such a competitive labour market where there are shortages, it is hard for employers alone to make that future investment, the upskilling efforts required will take time to show returns. – PhD immigration and labour market integration researcher.

Therefore, collaboration across and between all government levels and employers is much needed to drive change. Workers and employers (businesses) will need support to get through the post-pandemic impact on the economy and jobs and prepare for a strong and sustainable recovery. At the same time, labour market imbalances are persistent and must be addressed to future-proof the economy. Rigid and outdated policies that hinder labour market participation and create barriers for different worker groups, along with limitations set by regulators in specific sectors, need to be addressed in anticipation of the new reality ahead of us. There needs to be a collective focus on improving access to, and availability of, a qualified workforce. This requires, first and foremost, the recognition that the existing shortages in specific sectoral or regional labour will be a major obstacle to the delivery of services and the development of the Canadian economy (Braham & Homsy, 2021).

Subject matter experts also raised the need to spark culture change and a mindset shift to encourage and value individual lifelong learning investments. To remain competitive in today's job market, individuals may need to put a current job on hold and take the time to commit to courses or new studies that will contribute to updating their credentials and skills. While that may hugely benefit the employer in the long term, not a lot of employers

accommodate or support such individual choices at all levels of an organization, and if an individual chooses to leave the job to upskill, with the hopes of applying to a new job after completing these studies, the gap year(s) is not yet widely appreciated or accepted by employers. At the employer end, companies or organizations that do invest in management and skills training often reserve that training to the management or leadership level, even though upskilling today is found to be needed at every level of an organization.

Emphasis on Emotional Intelligence (EI) and Intercultural Intelligence (ICI) skills training in the context of essential future skills was also raised by subject matter experts during interviews. As explained and presented by a certified leadership coach interviewed, the notion of EI was popularized in the 1990s by psychologist Daniel Goleman and is known as the ability to understand and manage one's own emotions, as well as recognizing and influencing the emotions of others. EI consists of different dimensions (self-awareness, self-regulation, motivation, empathy, and relationship management).

[EI] influences every single action and decision you make throughout the day, every day of your life, every single one of them. It is not limited to your intellectual knowledge, not about how much you know, it is about your social emotional learning that you have acquired throughout your existence, in and out of school and formal learning environments. – Leadership development coach specializing in Emotional Intelligence and Intercultural Intelligence.

Emotional intelligence will be a key requirement in workspaces. It will be difficult for machines to mimic this human characteristic, and even if they can, human-to-human element cannot be replaced... so any job that requires a specialized skill set requires emotional intelligence and strategic decision making. Strategy also requires that human mind element, understanding and recognizing emotions, that will be very hard to replace, at least in the near future. – PhD immigration and labour market integration researcher.

ICI was another repeatedly identified need for future workforce resilience raised by the experts I interviewed. ICI is the ability to function in and navigate culturally diverse settings, which makes it even more important in a country like Canada, where immigration is seen as one of the key solutions to address the issues resulting from an aging population. ICI consists of a set of skills that enable individuals to understand and navigate the shifting waters of diversity in an increasingly complex world. They are skills that focus on turning any diverse team into an inclusive one, in which every individual feels seen, validated, and valued, regardless of where they come from or what their past or current experience is. ICI is based on interculturalism while cultural intelligence is based on multiculturalism (Sousa et al., 2019). ICI recognizes individual "self-cultures" and not

necessarily national or ethnic cultures; it recognizes individual human stories, journeys and experiences. In other words, ICI helps develop the skills required to move past or beyond recognizing and accepting differences of other (separate) cultures in the workplace, to promoting dialogue and “intergroup harmony,” “cultural mixing, and the sense of belonging together.” (Verkuyten et al., 2019)

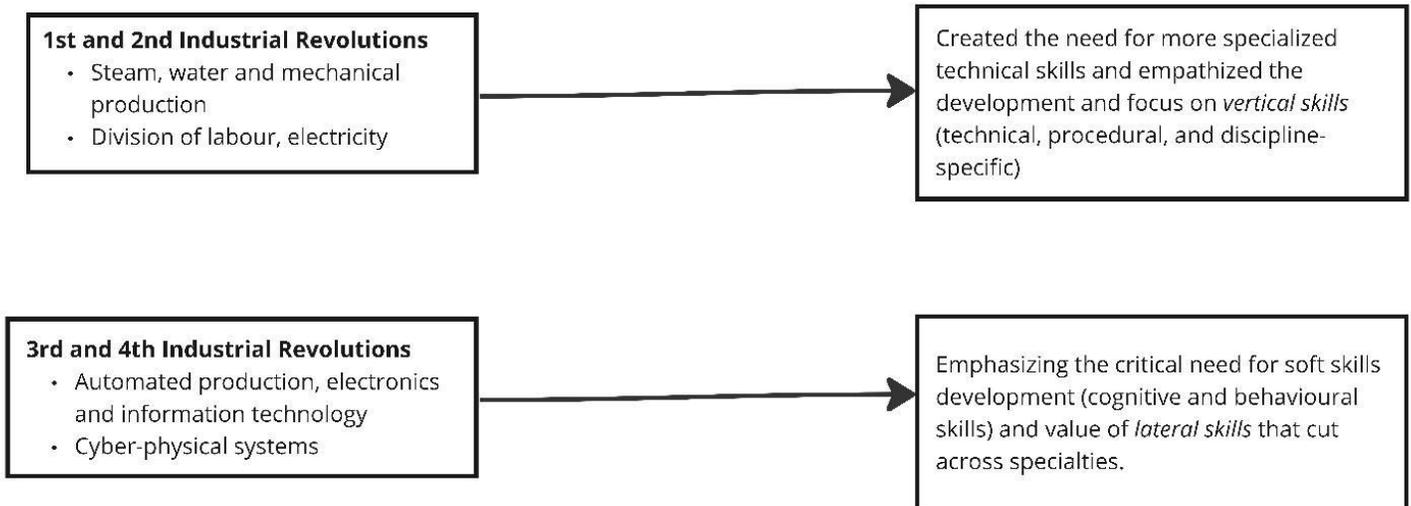
From my readings and interview discussions, I think we are probably standing at a critical point in time where everything and anything is possible; where we steer from this point in time will make all the difference. We are currently witnessing a technological revolution that will greatly change and transform the way we participate in work, the way we relate to one another, and how we live together on this planet. Though how it will unfold is still uncertain, the scale, scope, and complexity of the transformation ahead of us will be challenging on many levels and will require an integrated and comprehensive response of governments (local and global), public and private sectors, academia, and civil society. The disruption brought about by the COVID-19 pandemic was merely a warm-up to what might be ahead, and that means we must be vigilant with regard to comprehending and acting upon the lessons we have learnt. From my personal point of view, the pandemic is a reminder that as humankind we are very adaptable, despite how difficult change may seem at first. But it also magnified and highlighted disparities and biases, and I am not sure we responded well or fast enough on that front. Given the fundamental changes anticipated with the current technological revolution, I fear the struggle will not be about keeping or finding jobs to make a living, it may very well be about maintaining our humanity to maintain a living.

In 2016, Klaus Schwab, Founder and Executive Chairman of the World Economic Forum, published an article describing the current technological revolution as the Fourth Industrial Revolution. The first revolution mechanized production through the use of water and steam power; the second brought about mass production through the use of electric power; and the third automated production through the use of electronics and information technology. Since the middle of the last century, the “Fourth Industrial Revolution [has been] building on the Third...and is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres.” Those who have gained from this fourth revolution so far, however, have been those with access to the digital world, which, while it holds promising potential to open new markets and drive economic growth globally, “could yield greater inequality, particularly in its potential to disrupt labour markets.” Schwab explains that technology may very well be one of the main reasons behind income stagnation and decrease “for a majority of the population in high-income countries: the demand for highly skilled workers has increased while the demand for workers with less education and lower skills has decreased. The result is a job market with a strong demand at the high and low ends, but a hollowing out of the middle” (Schwab, 2016). His explanation largely aligns with and confirms observations around the uneven gaps and shortages reported by the

labour market experts I interviewed. Overall, Schwab notes that, beyond economic disruption, the greatest societal concern this revolution may bring about is increased inequality. I share his concern wholeheartedly.

Figure 5

Skills in demand as a result of each Industrial Revolution



*Note: Depiction from my research journals of the skills in demand that emerged after each industrial revolution, as explained by Schwab in 2016, *The Fourth Industrial Revolution: What It Means, How to Respond*. World Economic Forum Blog Post.*

We need to prepare and brace for fundamental technological, economic, and social change. Readings I reviewed by historians, economists, and politicians, and research participants I interviewed all acknowledged the scale and scope of change ahead of us. What will it take to be prepared?

- Businesses will need to rethink how they do business, challenge their current assumptions about workers, consumers, and profit models, and stay committed to innovating at all levels.
- Governments (including legislators and regulators) will need to explore new governance models and collaboration approaches with businesses and civil society. They need to prove capable of embracing anticipated disruptions, adopting agile governance methods, becoming better at demonstrating transparency, changing their current approaches to public engagement and policy making, and adopting agile governance models.
- Individuals and communities will need to invest in and prioritize mental and emotional resilience. Advances occurring in biotechnology, AI and blockchain are pushing and will continue to expand our moral and ethical boundaries and compel us to rethink and redefine what it means to be human, driving us into a more intense revolution of the spirit.

Future context in summary

Every industrial and technological revolution humanity has witnessed has come with its challenges and opportunities, with the loss of jobs and the creation of many new ones and has for the most part contributed to the general enhancement of human lives. Nevertheless, there are many reasons to believe that the coming tech revolution will be different and spiritually intense as technology and machines become highly competitive and start to outperform humans in cognitive and emotional management abilities. This will fundamentally change and transform the future of jobs and training and will challenge and put stress on many of the current social, economic, and political systems that are in place. The opportunities are endless, but the room for innovation and reform is opening much more slowly than is needed and anticipated all around the globe. Action and change are required at the societal, organizational, and individual levels. As we make decisions that will impact the future of humanity, we must stop and look closely at lessons learnt from our past revolutions and evolutions. In the next chapter, I discuss pedagogy introduced by Dr. Maria Montessori that was centred around the child, how it evolved into a movement for social change, and what can we learn from its guiding principles.

Chapter Four – The Montessori Context

A movement that called for social change

Place: Italy, Europe

Year: 1900s

"An education capable of saving humanity is no small undertaking; it involves the spiritual development of man, the enhancement of his value as an individual, and the preparation of young people to understand the times in which they live."

–Dr. Maria Montessori, Education and Peace

In this chapter, I discuss the philosophy behind the Montessori method, its guiding principles and its application in adult learning environments. More than 100 years ago, amidst the rapid social and economic change taking place across Europe, Dr. Maria Montessori (1870–1952) envisioned a new kind of education that could play part in a broad social innovation program. She opened the first Casa dei Bambini (Children’s House) aiming for the recovery of an entire community in San Lorenzo, Rome. She continued to work and observe children aged 0 to 6 from around the world and, with her background as a physician, Montessori built on selected contemporary physiological and psychological scientific work and arrived at what she refers to as a “scientific method of education” that can assist human development and result in the betterment of humankind (Montessori, 1972). Her method works on integrating the growth and development of the mind, body and spirit of the child in order to develop a healthy state of being. She constantly urged parents and educators to rid themselves of preconceived notions and prejudices regarding childhood in order to allow children to reveal their unseen powers and boundless capabilities in the construction of a human adult. Her firm belief in, and respect for, the child’s capabilities are reflected in the quote engraved on her tombstone: “I beg the dear all-powerful children to unite with me for the building of peace in Man and in the world.” (Note, as we dive into the Montessori philosophy and approach, that translations of and quotes from the work of Montessori often refer to “Man,” and, in reference to the universal child, employs masculine pronouns; these should not be taken as gender specific as their intent is to acknowledge all humankind and all children.

Montessori was not just a brilliant scientist and an original educator; she was a great philosopher and a humanitarian who believed that, in order to help and advance humankind, one has to understand humankind. To her, a child is a human in the making, and their sound development ultimately aids them in adapting to their environment and the world in which they live. Her definition of “adaptation” is merely the feeling of happiness and satisfaction that gives the child a “sense of security,” an “inner equilibrium” of their soul. All human beings

are driven by inner needs and tendencies that, upon fulfillment, bring them to that state of inner equilibrium, allowing the spirit to reveal its creative abilities. For example, if one is deprived of the basic need of food, all mental and physical energy will be channelled towards satisfying hunger; only once one has satisfied this need will they be able to focus their energies on a higher or more advanced purpose, such as finding and creating measures and tools that will help them maintain a good or constant supply of food (Montessori, 1956). But humans are not limited to fulfilling basic needs. Montessori always affirmed that a human being is a totality of body, mind, and spirit. The real qualities of the human spirit and intelligence gives humans superiority over all other earthly creatures, and those unique human qualities reveal themselves upon the fulfillment of human tendencies. Those spiritual urges that aim to nourish the mind and spirit tend to surface once the basic needs (food, water, air and shelter) are met.

Understanding the nature of humans

Montessori identified various human tendencies that exist from birth. They exist to varying degrees among individuals, but they most certainly direct humankind and are very much reflected in our achievements. The first of these tendencies is that of *order*, which simply means humans needs to understand their environment to adapt to it, and to be able to determine their *orientation* within that order to be able to *explore* any given environment further. They also have a compelling tendency to *communicate*, to understand and to be understood by others. There is also the tendency to *take action* in a given environment rather than waiting for things to happen, and to *manipulate* and gain control of that environment. They tend to *give purpose* to life through purposeful work and through *repetition*, again to aid further understanding of an environment and to allow them to seek precision. This tendency to *exactness* brought forward *abstraction* and that ultimately moves humankind towards achieving *self-perfection* which does not just imply mastery over the environment, but also mastery over oneself (see Figure 6). All these tendencies have been driving humankind since the dawn of time to the present day, nourishing humanity's intelligence, and spirit; bringing forth its development. Once we have recognized and developed respect for those human tendencies, we should be able to channel our efforts to aid those compelling urges rather than force their direction or place obstacles in their path. In fact, the essence of Montessori's method revolves around identifying and answering the child's inner tendencies that assume different aspects by the aid of what she calls the "sensitive periods".

Figure 6

The Human Tendencies

The Human Tendencies as identified by Dr. Montessori

Order	Looks for order to understand environment
Orientation	Seeks to understand relationships of things to another
Exploration	Seeks to understand through exploration to learn and adapt
Communication	Seeks to express self and understand what others have to say or give
Manipulate	Is active not passive, has a desire to control
Repetition	Keen to learn and do better
Activity	Seeks to move, do and act
Work	Engage in purposeful activity
Exactness	Seeks precision and perfection
Abstraction	Ability to imagine, ideate, creative invention
Self-perfection	In order to master environment, one needs to master-self

Note: Visual synthesis of Human Tendencies as identified by Dr. Maria Montessori.

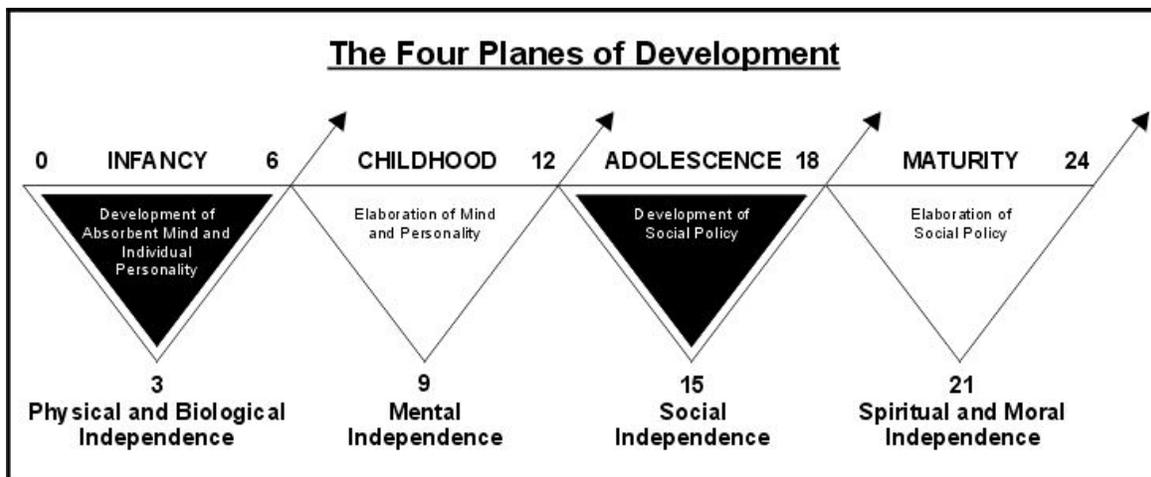
Understanding the periods of growth and development

While her most notable work highlights the importance of the first six years of life, Montessori identified and mapped out four planes of development from birth to adulthood. The immense developmental changes that take place on each plane are almost like successions of births, where one psychic individual ceases and another is born. The first is the period from ages 0 to 6 (further subdivided into two periods, from 0–3 and 3–6) and is mainly characterized by the transformation a child undertakes from being nothing (a weak, helpless, mute being) to becoming something (a walking, talking, self-sufficient being). During this period, an adult cannot exercise any influence on the unconscious state of mental absorption, which will be discussed further in due course. The second period is that of the ages 6–12, when the child has developed intelligence and character and is ready to explore and understand their world further; it is a period of overall “serenity and docility”. The third period, from ages 12–18, is another transformation stage, both physically and mentally, during which the child moves from being a child to becoming a young adult. This period is marked by character instability, indiscipline, and rebellious tendencies.

The fourth period, from ages 18–24, is the period of maturity, when the young adult is admitted into full adulthood. It is a period marked by stability of character, moral conscience, and a firm feeling of responsibility (for self and humanity) (Montessori, 1946). Montessori found that each of these planes has its own set of specific needs that require developmental need satisfaction in order to move forward successfully into the next phase; in other words, for successful rebirth into the following plane. The behaviours vary from one child to another, but the characteristics of each stage are almost constant across the board. Unresolved conflicts or deviations that occur at any stage are carried over to the next plane, which in a sense will present a greater strain or challenge on the child in trying to meet their new developmental needs.

Figure 7

The Four Planes of Development



Note: Source- [The Child's Development webpage](#), 2022, from the Association Montessori International (AMI USA) website.

Years later, a student of Montessori, Erik Erikson (1902–1994), a German American developmental psychologist and psychoanalyst known for his theory of the psychological development of human beings, built further on those planes of development. Erikson earned a certificate from the Maria Montessori School in Florence–Italy before embarking on training in psychoanalysis at the Vienna Psychoanalytic Institute. In his work, he expanded the four planes from birth up to 65+ years and centred them mostly around psychosocial development. For each plane, Erikson’s theory specified a developmental stage and strength – similar to Montessori’s sensitive periods – but he also identified the “weaknesses” of each stage (Mooney, 2013). I have included other famous Montessori alumni in Appendix H for some fun facts, and mostly to demonstrate how her work has influenced and impacted change makers across time.

Figure 8

Erik Erikson's Stages of Psychosocial Development

Psychosocial Stages: A Summary Chart				Age	Conflict	Important Events	Outcome
Infancy (birth to 18 months)	Trust vs. Mistrust	Feeding	Hope	Adolescence (12 to 18 years)	Identity vs. Role Confusion	Social Relationships	Fidelity
Early Childhood (2 to 3 years)	Autonomy vs. Shame and Doubt	Toilet Training	Will	Young Adulthood (19 to 40 years)	Intimacy vs. Isolation	Relationships	Love
Preschool (3 to 5 years)	Initiative vs. Guilt	Exploration	Purpose	Middle Adulthood (40 to 65 years)	Generativity vs. Stagnation	Work and Parenthood	Care
School Age (6 to 11 years)	Industry vs. Inferiority	School	Confidence	Maturity (65 to death)	Ego Integrity vs. Despair	Reflection on Life	Wisdom

Note: Adapted from [Erikson's Stages of Development by K. Cherry, 2022](#), A brief summary of the eight stages.

Understanding the formation of intelligence and character

In the development of her method, Montessori claimed that human intelligence and character clearly mark the superiority of humankind to all other living beings. This intelligence and character are formed through a child's constructive activity during the Spiritual Embryonic period. Once they start to clearly emerge in a child (usually around the age of 6), we can say the child is ready to start "practising" being an adult human, which is usually the time a child is admitted into the school system. Montessori believed a child develops intelligence and character when they are provided the opportunity to develop *movement, language, independence and a grounded connection to their surroundings*. (Montessori, 1972)

Montessori believed that **movement** allows a child to experience the world around them, allowing them to effectively build their intellectual abilities. Like most other living beings, humans have a constant urge and need to move. As identified by Montessori through the study of the sensitive periods, a child has a powerful need to move. Montessori believed that only through coming into contact with "real factors in life" are we eventually able to build abstract thoughts and creative abilities. Movement is not only important for strengthening the physical form but is vital for the mental and spiritual development of a child. It can ultimately have an immense impact on the development of a child's character and personality. The more movement (active experiences) the brain can record, store, recognize and eventually control, the more coordinated and balanced a child will become. Being able to unite body and mind is a great achievement that produces concentration, which plays a key role in bringing the child to the state of "normalization," as we will discuss further on. When given the appropriate freedom, the child will also begin developing the *Will*. "It is through movement that the Will realizes itself," and it is the adult's

inhibiting and controlling of the child's movement that will weaken and break this *Will*. With the freedom to move, a child will naturally find obstacles in their way, but unless they are allowed to resolve the challenges they meet, they will never learn how to accept the consequences of their actions, nor will they assume responsibility for their actions. When given the freedom and space needed to practise and perfect movement, the child will ultimately be capable of responsibly manipulating movement (body) and the *Will*. This is a form of intelligence expression. At the point when they are capable of controlling body movement, they are also capable of inhibiting it, which is a higher form of movement, they will then prove they are capable of perfecting their capabilities. (Montessori, 1972, Chapter 15)

Language (symbolic language) has long allowed humans to express themselves, express thoughts; it helps to translate thoughts into reality and transmit them across time. Language affects civilizations, and civilizations have their effect on language. It is an expression of a kind of super-intelligence that is unique to man. Language aids the development of a child's intelligence and character simply due to the fact that it allows them to connect with their environment on a different level every time they increase their capability to use it. It helps them relate to their environment and the people around them. "Yet no one pauses to admire the marvellous work of a child, from being mute at birth to being a fluent speaker of their mother tongue language by the age of 3–4. We often disregard a child's effort and take it upon ourselves to constantly correct them and, even worse, send them off to school to learn the alphabet at the age of 6 (Montessori, 1967). In her books and many public lectures, Montessori consistently warned adults of the impact their responses can have on a child, urging them to remember that their response will be an experience the child will eventually respond to.

Humankind is born to be independent or to develop **independence**. A vital force from within, known as the "horme," which is active and which guides humankind towards independence. The force and urge for independence stimulate the child to perform different tasks. When completing tasks with no interference or interruption from the surrounding environment, the child is observed to experience joy in life, which is reflected and seen in their expression of enthusiasm, positive outlook, and state of happiness. A happy, healthy child will always tend to gravitate towards independence. A child who avoids independence has been 'deviated' or set of course and will always expect less of themselves. Having said that, independence needs to be practised to make it perfect; it needs to function in order to grow. A child who is well exposed, free to obey their hormone free to work purposefully (move) and free to choose will develop a strong solid will for independence. When a child is aware of the range of their capabilities and of their self-sufficiency, this brings forth *self-dignity*. Practical life class activities offered in the Montessori environment actively direct the child towards independence. A mixed-age environment and a limit on materials in the classroom go further towards making them realize that they are an

independent being within an interdependent society. They soon learn to love and protect this “social cohesion”, a quality many adults lack in the present day according to Montessori. Through carrying out tasks towards independence and self-perfection, a child comes to teach themselves self-discipline. By practicing self-discipline, they eventually reach the highest form of obedience – spontaneous obedience – when the child chooses to subjugate their own will to the will of another. I personally believe this is also the highest form of self-perfection and self-control. But many adults do not believe a child is able to reach this higher form of self-control, let alone try to believe that it was the child who brought themselves to this state. Montessori identified this child as a “normalized” child.

Montessori believed a **normalized child** is a child who finds connection with their surrounding environment. This state of normalization usually comes from constant connection to the real environment and constantly carrying out purposeful activities. To help a child achieve this normalized state, they need to be provided with the space and time to carry out their work cycles, they need to be allowed to concentrate and to avoid interruptions. They should be free (given appropriate choices) to move around and experience what life has to offer them. Having closely studied and practised the Montessori method, I believe that what the translated work of Montessori refers to as “a normalized child” is close to what we know today as a “grounded child” (or person). She observed that a child who is deprived of liberating opportunities (uninterrupted work cycles) tends to disconnect from the real world or environment around them, believing that it (the environment) is hard or stressful to handle. They will turn to a fantasy world to find peace, behind a psychic wall that they will build around them, attach themselves to an adult in their life, develop an irrational fear, a desire for power, a desire for “things,” or develop an inferiority complex. Such deviations can have a harmful effect on a child’s development and their state of physical and mental well-being, especially if they are carried over to adulthood. Fortunately, a child’s deviations can be corrected and brought back into a grounded course if they are provided with the opportunity to participate in a prepared environment suited to their developmental and emerging needs.

The Montessori method provides a purposefully **Prepared Environment**, an environment that is suited to the needs of the child and that is equipped with various activities, that answers to and fulfills their developmental needs, and that acts as a bridge to help them cross over comfortably and safely from child to adult. It provides them with freedom to move, sensorial explorations, order and logic, child-sized but real furniture that makes them feel in control, built-in-control of error material that helps them realize on their own what they need to do to perfect a certain skill or task, a real functioning society (three year age mix between students in environment), almost like a real-life simulation of the culture in which they live, and one characterized by a beautiful, uncluttered space in which to carry out their learning tasks. The prepared environment includes a learning director. Montessori

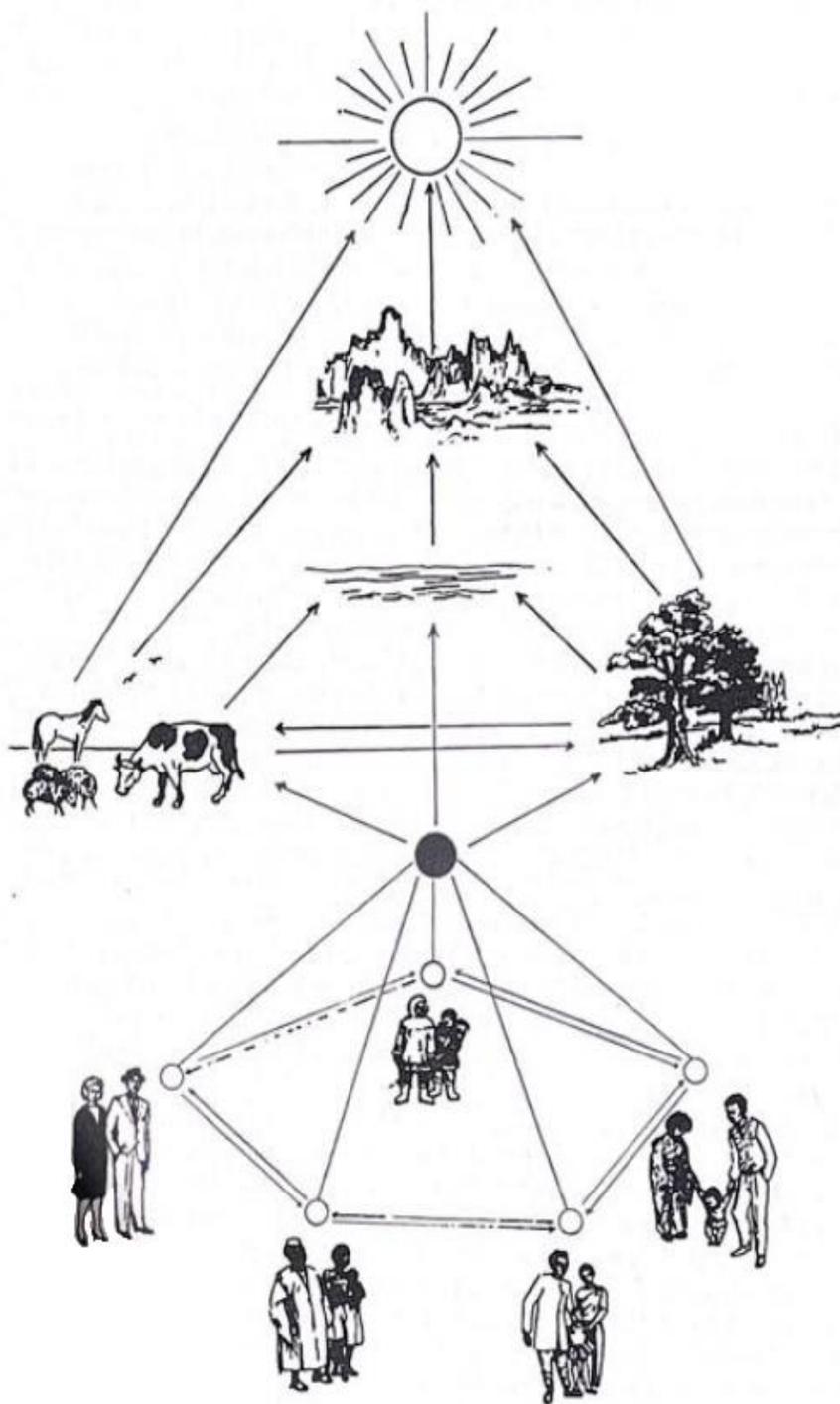
strongly believed that an adult who will assume responsibility for directing the learning experience must first come to peaceful terms with themselves. They need to rid themselves of all their misconceptions of childhood and the nature of a child. They must learn to sense a child's need for development, come to appreciate the child's work in constructing themselves, and, more importantly, believe in the child's power in "constructing the man" (Montessori, 1976). The learning director must be willing to prepare the environment the child needs, to protect it, to protect the child's need and right to development, and to accept the responsibility of becoming part of this environment themselves.

Cosmic Education

*The consciousness of knowing how to make oneself, how to help humankind in many ways,
fills the soul with noble confidence, almost religious dignity – Maria Montessori*

Cosmic Education is what happens within the prepared environment. Montessori believed that we must not only bring the current world to the child, "but also bring a clear picture of mankind in the world" – how the world functions, how we are affected by it – and build awareness of how we affect it as well (Montessori, M. Jr., 1956, p.2). Montessori saw any ecosystem as an interacting community composed of living and non-living elements (Figure 9), and this guided the themes and subjects introduced to the curriculum, which are intended to bring together the child's awareness of their environment, who plays a role in it, and how they do so. The concept behind the interdependency chart provides the child with an organizing framework (and a holistic system's view) for the knowledge and information that they have gathered during their learning in the prepared environment. It is a concept most appropriately introduced in classes of children aged 9–12, when they have had sufficient time to formulate and come to understand the meaningful ideas of an ecosystem and its interdependencies. Montessori's philosophy and vision encompass space and time: a child learns to understand the world both in its evolutionary development and in its ecological functioning. And while the curriculum is never fully comprehensive, concepts are introduced to present children with keys to understanding and connecting with the world. "The child's Cosmic Task is to construct the human being itself, construct a man who will build peace, a man who is adapted to the world in which he lives." Cosmic Education ultimately leads to creative attempts for a new and different kind of human living, fosters responsible participation, and empowers students with the knowledge to transform the world (Grazzini, 2013). Montessori believed that children are the hope for bettering futures for humankind, that we should not insist they learn to be *just like us*, when we can aid them in "constructing a new man" that is able and confident to offer new, fresh, and agile solutions and opportunities to the world.

Figure 9
Chart of Interdependency



Source: *The Human Tendencies and Montessori Education* by Mario Montessori, 1956. Copyright by AMI, 2003.

With the fast-evolving technological advancements occurring in our world today, humankind has become confident of our capabilities, but also very dependent on our technologies. The result of this pride and exaggerated confidence is reflected in the ever-growing dependency of youth on their parents and states of authority to act on their behalf, in the growing number of deteriorating emotional and mental well-being in our societies, and in the ongoing hate, discrimination, oppression, wars and conflicts between societies.

Application in adult learning environments

We should seek “means that will enable the adults of tomorrow to live in peace with themselves and their world” (Montessori, 1976, p. 75)

The core philosophy Montessori introduced to the world – her belief in and hope for humanity – is not fundamentally restricted to children and child education. Generally, the assumption that different styles are required for teaching adults versus children is based on “informed professional opinion; philosophical assumptions associated with humanistic psychology and progressive education; and a growing body of research and theory on adult learning, development, and socialization” (J. Collins, 2004). The Montessori method has been explored in adult environments, more specifically in designing and delivering healthcare programs for senior adults with dementia, and experimental attempts (documented in a book report published online in 2015) to actualize the Montessori method in adult learning, and the results of application in seven European laboratories and experiences.

In 2013, the Montessori method for Orienting and Motivating Adults (MOMA) project was launched and funded with support from the European Commission. Designed by the Lifelong Learning Programme of the European Union, it was explored as a learning method for adults to become actively involved in the learning process. The initiative was implemented in European countries including Germany, Italy, Lithuania, Portugal, Romania, Spain, and the United Kingdom, (Aini & Sakina, 2020). The project created experimental laboratory environments that engaged adults from vulnerable social groups in learning activities that aimed to motivate and empower them to participate in society, using the core principles of the Montessori method. The European project committee initiated participatory and cooperative learning labs that provided activities with:

- High levels of participant engagement and empowerment through a rigorous and fun process that gave participants control over tasked projects.
- Encouraged group communication, amplification of ideas where participants are asked to share and seek feedback on their ideas within a group.

- Promoted development of positive attitudes through group-work and listening skills, development of self-esteem and motivation.

The project focused intently on social integration and access to education for disadvantaged and marginalized adults by offering personal, social, and self-management skills training that applied core principles of the Montessori method. As part of an EU platform for initiatives that address poverty, the project aimed to provide support and opportunities for non-traditional and disadvantaged adult learners, specifically to develop and advance new skills and jobs for disadvantaged groups.

In its report, published in 2015, the committee noted that the project was considered a first attempt to adapt Montessori principles for adults at risk of marginalization, considering their isolation and social circumstances as an "invisible disability" that creates more compounded barriers to their labour integration efforts. The report noted that socially marginalized adults have diffident attitudes towards formal education environments and referred to studies that indicate that formal education environments risk being non-inclusive when the personal and social backgrounds and experiences of adults are not considered (Boldrini & Bracchini, 2015). Montessori principles the Montessori method for Orienting and Motivating Adults (MOMA) model incorporated included the Absorbent Mind, the Prepared Learning Environment, Experimentation and Exploration, Observation, and Independence. The Montessori practicing community workshops raised the same principles.

The Absorbent Mind as applied to adult learners

Montessori believed the child is a sensorial learner with a gift of the Absorbent Mind, which allows them to "absorb" learning from their direct environment naturally and spontaneously, without a conscious effort. The MOMA model recognizes the state of the "conscious absorbent mind" as an active trait in adults. They learn using their senses and by retaining information and conceptualizing it. The committee report pointed to recent findings that indicated the attention of the adults greatly increase "if the senses are involved in the learning activity". As adults we tend to learn in different ways including visual (stimulation by images, auditory (learners by sound), and tactile of kinesthetic (learners through touching, feeling and experiencing) (Boldrini & Bracchini, 2015, p.7-9). To that front, MOMA model recognizes that adult learning needs to include "active" rather than "static" activities.

One of the key differences between children and adult learners raised in workshops with the Montessori practicing community, revolved around the concept of the Absorbent Mind. Children are born with an innate curiosity, a desire to learn and need to explore, and the freedom of choice they are provided in a Montessori environment feeds that motivation and drive to learn. The practicing community discussed how in an adult

learning environment, we need to recognize that motivation becomes more artificial, and focus on encouraging learners to find inner discipline and mental resilience, help guide them to establish their mental and emotional anchors that will ground them in the face of the personal and professional upheavals.

“Many people are feeling irrelevant today, for many reasons that even beyond their workplaces, times are changing too fast, probably for adults more specifically, children usually catch up faster.... We tend to keep true to working with human tendencies with children, and for some off reason we divert away from that human nature as we grow older, even though we are still human as adults, maybe this needs to change.” – Montessori practitioner, OH, USA.

The personalization and co-design of the educational space and experience is one of the main principles of the Montessori approach, proposed through the means of authentic learning. This term is connected to wider educational and instructional techniques that focus on connecting adult learners to real-world issues, problems, and applications. Authentic learning essentially implies that adult learners “are more likely to be interested in what they are learning... if what they are learning mirrors real-life contexts, equips them with practical and useful skills, and addresses topics relevant and applicable to their lives outside the school environment” (Boldrini & Bracchini, 2015, p. 20). It is also worth noting that “personalization” is not the same as “individualization.” Personalization requires the active involvement and direction of the learner, while individualization allows the instructor to tailor the curriculum based on individual interests and abilities (Boldrini & Bracchini, 2015, p. 65).

Prepared Learning Environment

As mentioned previously, a key principle in the Montessori method is the prepared environment – a learning space that allows for freedom of physical and psychological movement, so addressing the human’s natural tendency and desire to learn, and that successfully nurtures and assists with the learning process by providing the right environment and the appropriate materials. The MOMA model considered the learning environment specifically in terms of organized space and time for adult learners. When adults learn, “they create their own world” and narrative from their new learning experience (Boldrini & Bracchini, 2015, pp.7-9). Adult learning requires building on prior knowledge and experience, “using methods that treat learners with respect, and recognizing that people have different learning styles and have a variety of responsibilities and time commitments” (J. Collins, 2004). A study that explored the impact job-readiness programs have on the identity of unemployed adults, concluded that job-training programs need to provide a space for learners to reconnect with their prior learnings and identities as active learners, and allow for opportunities that “make plans on developing their future identities... as learners reflect on past identities they further begin to imagine possible and future

identities as they interact with the physical space and others within the space” (Adkisson, 2016).

“A well-prepared, learner-centred environment is a sensorial one, which reflects beauty, simplicity, and order. Montessori learning environments tend to be “attractive, welcoming, and conducive to learning.” The environment that the MOMA model promoted for adult learners was built around two main principles: physical and socio-cultural. The physical environment includes welcoming objects and arrangements, such as chairs arranged in a circle or around a table; access to a library, information resources and labs; and open spaces that encourage “movement and exchange of ideas.” The socio-cultural aspects are provided by the learning facilitator through “modelling, coaching, scaffolding (and fading)” and by participatory assignments in which the learners are asked to articulate, reflect, and explore (Boldrini & Bracchini, 2015, p. 31). This approach allows the learning facilitator to foster a cognitive “apprenticeship framework, usually useful when an instructor or trainer needs to teach a complex task. Apprenticeship is the way we learn most naturally. It characterized learning before there were schools, from learning one’s language to learning how to run an empire.” Cognitive apprenticeships invite and encourage the learner to become the expert, “so that students may better acquire true expertise and robust problem-solving skills, as well as an improved ability to learn throughout life” (A. Collins et al., 1991)

Experimentation and exploration

Building on the human tendencies described earlier, adult learners need to be involved and encouraged to create their own way of learning, and empowered to activate their previous knowledge and personal values (orientation). Like children, adults tend to be curious by nature and mostly stimulated through the senses (exploration). Including sensorial activity in the learning environment was found to be highly effective and strategic for establishing and developing “proper and permanent skills in the adult-learners.” Connecting learning activities to real-life practical thinking and tools instated a pleasure of acquiring new knowledge and abilities. This was most evident in lessons in which adults learn to use new technologies; once provided with learning opportunities and access, they use the new technology more frequently (manipulation and repetition). (Boldrini & Bracchini, 2015, pp. 7–9).

In a Montessori environment, reflection is central to the experiential learning process. Montessori did not commonly use the term “reflection” in her writing, yet “she was a model leader in her own right, a student of observation and human behaviour” (Damore & Rieckhof, 2021). In Montessori learning environments, groups learn more about issues and causes and devise local and relevant solutions through participation in group research, investigation, and discussion. In the process, students learn about themselves and their abilities in retrospect, such that reflection is built into the learning process. On a wider scale, this “process of working and

achieving things together can strengthen communities, build confidence,” problem-solving skills, capacity, and the ability to collaborate, and expand “consciousness, awareness and critical appraisal.” This approach empowers adult learners to “tackle challenges both individually and collectively” (Boldrini & Bracchini, 2015, p. 22).

The MOMA model also acknowledges that “knowing” is different from “doing,” so “adults need to know how to transfer knowledge and skills learned in one setting and successfully apply them in a variety of situations.” Therefore, learning activities are always based on practical and real scenarios to apply and develop applicable and creative problem-solving skills (Boldrini & Bracchini, 2015, p. 49).

Observation

“Some educators and trainers oftentimes unconsciously tend to become the centre of the learning environment; constantly directing and giving solutions and instructions instead of” directing the learner to suitable development activities and allowing them to arrive at their own conclusions and find their own solutions. Montessori directors of learning are trained to practise observing learners. Similarly, adult learning trainers need to “be able to step back, provoking the idea of researching the solution, taking into account what the adults knew before the activity and what they are expecting to know after.” The MOMA model promotes the idea of a “community of learners,” so that the trainer or learning director is not the keeper or “owner of knowledge”; rather, they are the facilitator of learning and knowledge exchange within the environment (Boldrini & Bracchini, 2015, pp. 7–9). Adult trainers and educators need to recognize that “adults often learn collectively from each other” (J. Collins, 2004); therefore, creating, and curating opportunities for learners to gain knowledge collectively becomes part of the learning experience. In 1991, Lave and Wenger developed the notion of the Community of Practice (CoP), in which learning occurs through socialization, visualization, and imitation, and through the exchange of knowledge and skills among practitioners (old and new) (Boldrini & Bracchini, 2015, p. 73). In the interactive workshops I conducted, Montessori practitioners noted a similar concept, by creating a “Community of Belonging” for learners to grow and learn from through social exchange and observation.

Independence

Achieving the independence of learners is always a goal in a Montessori environment. This promotes self-confidence and self-esteem within the learner and nourishes the love of learning. The MOMA model recognizes that “being independent for an adult means being able to keep social relationships and the opportunity to keep a social role in the community... to express their autonomy, the adult has to be able to express their social skills.” By empowering their “will and ability to learn, the adults, like renewed children, will show their own way to

knowledge, their innovative thinking, and their limitless curiosity.” The beauty of the Montessori method is that it can help “develop a sense of freedom,” which is facilitated and encouraged through individual freedom of expression. Competences acquired through the individual freedom of expression include storytelling, relational abilities, managing of emotions, the ability to work in a group, and the development of a strong sense of self-esteem (Boldrini & Bracchini, 2015, pp. 13–20). During the workshops I conducted with Montessori practitioners, participants noted the need of creating an emotionally safe environment, where adult learners feel safe to be who they are and express what they aspire to achieve – in other words, a space free of judgement.

Allowing for and maintaining a safe space where learners can be vulnerable is essential. Vulnerability brings joy, and when you find and experience that emotional joy in being vulnerable, it is almost like your mind becomes vulnerable and open to learning anything. - Montessori practitioner and teaching coach

In 1947, Irving Lorge suggested that to engage the adult learner effectively, “you have to teach to what adults want,” and adults want a) to gain something, b) to be something, c) to do something, and d) to save something (Edmunds et al., 2002).

European laboratories results and experiences

The goal of the MOMA model laboratories conducted in countries across Europe was to verify the very first impact of the ideas elaborated at the theoretical level above, and to provide evidence if and how the Montessori principles may apply to adult learning environments. The labs specifically involved groups that are struggling with social integration: Roma adults living in a marginalized area, immigrant women at risk of social isolation, long-term unemployed and unschooled women are examples of some of the groups involved.

The experiments carried out by the European committee demonstrated that Montessori principles applied with success to the adult learning programs designed and concluded that longer-term impacts on adults require more time and further expansion and application. The report included detailed descriptions and the outcomes of all seven experiments, including testimonials from participating learners, and a facilitator guide to the areas and competencies that were to be acquired by learners in the experimental programs (see Appendix E).

Interactive workshops with the practicing community

I came across the MOMA committee project work much later in my research investigation and after completing the first set of interactive workshops with Montessori practitioners. Two group workshops were

conducted in the summer of 2022; follow-up individual workshops took place in the fall of 2022. Workshop invitees were Association Montessori Internationale (AMI) graduates who have been practising for at least three years. A group of five practitioners participated throughout the research project (which included two workshops in total), two of the participants are also teacher trainers and directors of training at the Foundation of Montessori Education (FME) in Toronto. Interactive workshops included guided participatory discussions and group interactive activity tools to capture and articulate the participants' views and discussions. In the first workshop, we focused on articulating Montessori method principles that would apply in adult learning environments, and on imagining a world with Montessori-inspired adult learning opportunities. The second focused on discussion and reaction to Harari's anticipated vision of the future of work and how Montessori principles can play a part in transforming the future of adult learning and re-skilling.

Interestingly, the workshops echoed and validated many of the MOMA model approaches and experiential initiatives. I have included the interactive group board in Appendix F and summarized the discussion themes, ideas and experiments the participants discussed, and the outcomes they imagined if Montessori principles were applied to adult upskilling and re-skilling programs. The table below presents the workshop findings and summaries in terms of ideas for application in learning environments, design guidelines for learning activities, imagined outcomes, and who needs to be involved to make it possible.

Table 4

Summary of ideas and concepts shared by Montessori practitioners during research interactive workshops

Ideas for application	Design experiments	Imagined outcomes
<p><i>Building an environment where:</i></p> <ul style="list-style-type: none"> • Adult learners are welcomed and respected for the potential and unique background they bring to the environment • Learners play part in building their learning goals and pathways • Learning is facilitated through role modeling, mentoring, observation and information exchange and collaboration among the learner community, and learning by doing (active) 	<p><i>Design activities that:</i></p> <ul style="list-style-type: none"> • Set learners up for success and not failure (to encourage self-motivation and discipline) • Make it less frightening to experiment, leave room for error and growth from self-reflection • Establish routines that allow for repetition to help learners grasp and master new concepts • Include life skills and not just technical/hard skills 	<p><i>Adults who are:</i></p> <ul style="list-style-type: none"> • Adaptable and resilient (mentally and emotionally) • Healthy and happy • Confident and curious • Empowered and optimistic • Lifelong learners willing to take chances who feel that they can manage change – people who are not afraid to live differently • Active citizens of the world who find purpose in life

<ul style="list-style-type: none"> • Learners are given the opportunity to learn and practice observation, intercultural skills, communication skills, supported with reference and tools to build and strengthen language and financial literacy • Activities are purposeful, relevant, and related to their lives outside of learning environment • Activities are sensory-driven, appeal to sense and develop their sense of place, time, culture (experiential in nature) – design with the isolation of quality in mind to help learner heighten their sense to emerge fully in learning concepts • Activities promote and encourage self-expression, sharing within groups, self-confidence, self-direction, and self-motivation 	<ul style="list-style-type: none"> • Include activities that inspire learners to learn about themselves and where they struggle – encourage them to track their own progress rather than comparing themselves to others to facilitate growth • Include role play, job shadowing and storytelling opportunities • Include activities that help learners explore, understand, and translate their existing and newly acquired skills <p>Invest and train facilitators who:</p> <ul style="list-style-type: none"> • Believe in human potential and genuinely support individual growth and group growth • Meet the learners where they are and are trained and comfortable working with a blueprint rather than a rigid curriculum • Are keen observers of the human spirit and trained to recognize and match learners to well suited opportunities at the right time 	<ul style="list-style-type: none"> • At peace with themselves (satisfied) and the environment and world around them <p>Who would be involved to play part to make this possible:</p> <ul style="list-style-type: none"> • Governments and private funders • The education system in general • Employers and workplace leaders – they need to be champions of people transformation and development • Subject matter experts in the labour market, human capital, and human development (career and mindset coaches etc.), emotional support workers – navigating change can and will be hard for many • Individuals – there needs to be a mind culture shift that values learning and chooses to seek learning at all stages
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Note: Summary of ideas and concepts collected in the interactive workshops conducted with Montessori practitioners in the summer of 2022.

Past context in summary

More than a century ago and amidst social and economic changes that may have been equal in magnitude to what we are facing today, Dr. Maria Montessori envisioned a better future for humanity that can be realized through education. Her pedagogy centred around human needs and tendencies, as she believed human development can happen through understanding the nature and potential of being human, and recognized the importance of developing the mind, body, and spirit for the complete and balanced formation of, and fulfillment for, the human species. Her core philosophy and her belief and hope in humanity are not fundamentally restricted to children and child education. Through scientific observation, Montessori recognized that human intelligence and character is a powerful inner energy that can be developed and nourished through prepared and purposeful activity. She believed and demonstrated with her philosophy and method that humans have an innate curiosity and desire to learn and grow, and if provided with the appropriate materials and environment specifically designed for their unique needs, human beings tend to exhibit a spontaneous desire to learn. Practical experimentation using Montessori method principles in adult learning spaces have been few but have initially proved successful in initiatives designed for at-risk and marginalized groups. Montessori practitioners agreed that almost all Montessori principles and methods can apply and support the development of competencies and skills in adult learning environments. Bringing forward and activating the concept of Montessori's Cosmic Education in adult spaces simply means we must purposefully aid adult learners in gaining self-awareness and self-understanding to be able to reconstruct their purpose and goal as the world changes around them, as humans are wired to find and pursue purpose. Ultimately, in understanding ourselves we gain the power and ability to grow ourselves, and in turn we can re-imagine and better the environment and world we live in. In the next and final chapter, I present a side-by-side CLA analysis of the present and past contexts to incite a way forward for training future ready adults. As we step into times where continuous learning and re-skilling will be required, I identify and propose five Montessori-inspired guiding principles for enhancing adult upskilling and re-skilling initiatives.

Chapter Five - The Finding Implications

“Innovation does not occur in a vacuum; it is a combination of ideas from before.”

Quoted from the chapter contributed by Jurvetson & Islam (Schmidt et al., 2016, p. 97)

In this chapter, I share the finding implications from the Causal Layered Analysis framework and how the Montessori method is built on principles of Whole-Human Design and through Humanity-Focused lens. Based on all the literature I reviewed and the interviews I conducted, I identify and propose five Montessori-inspired principles to be considered in designing and developing upskilling and re-skilling initiatives and learning environments.

Causal Layered Analysis

For the findings presented in this chapter, I used the Causal Layered Analysis tool to lay out side-by-side (see Figure 10) the layered depth of causes, paradigms and metaphors of labour-market shortages, to the Montessori method philosophy and principles. As mentioned in Chapter One under my research design, the power of CLA is that it guided me in unpacking the deeper meanings represented in the present problem and past innovation to allow for creating alternative futures, “the challenge is to conduct research that moves up and down these layers of analysis and thus is inclusive of different ways of knowing” (Inayatullah, 1998). The first layer, the “litany,” recognizes a given event, issue or trend seen or heard in the news, for example. The second layer down looks at social causes – economic, cultural, political, and historical factors related to the first layer. It comes from the interpretation of the quantitative data that supports the litany, usually analysis articulated by policy institutes, news editorials, etc. System actor roles and interests are often explored at this layer. The third layer, the “paradigms,” goes deeper into the structure and discourse and worldview underpinning the causes to find deeper structures that do not depend on who the actors are. Unpacking deeper assumptions beneath the issue here becomes important in order to reflect on efforts that can help “re-vision the problem.” At this layer, one can explore how different discourses may “cause or mediate the issue but constitute it, how the discourse we use to understand is complicit in our framing of the issue” (Inayatullah, 1998, p. 820). The fourth layer of analysis, the “metaphors”, uncovers the deeper stories behind the paradox – the unconscious dimensions that ultimately need to be addressed. I wanted to dive deeper into what the present problem context really means to our society, what is at stake and, at the other end, reflect more deeply on how the Montessori method can offer value and insight to help prepare and brace us for a possible future scenario that puts our sense of humanity at risk. Most academic analysis tends to focus and stay within the second layer, and occasionally step into the third. CLA flow and integration between layers adds depth and richness to analysis and allows for “different ways of knowing” and therefore allows for a wider and unconventional area for creative problem-solving (Inayatullah, 1998, p. 821).

In Chapter One, findings indicated that the COVID-19 global pandemic was a key driver in exacerbating pre-existing labour-market gaps, and emerging economic and social trends observed, created new inequalities, and amplified existing disparities. At the surface, we see that economic growth and job security is at risk but, as I looked more closely at the causes behind the shortages, I found that pre-existing skill gaps are growing, and under-representation of various equity speaking groups is still evident in low participation levels. This poses a growing risk of social isolation and a lack of a sense of belonging in society. As I delved deeper into the causes of the skills gap and skills mismatch, several underlying social causes emerged. An aging population, and early mass retirement that was triggered by the pandemic, along with indicators of low wages and poor work conditions that are discouraging labour market participation in specific sectors struggling to find workers. The pandemic also accelerated the adoption of automation and technology, and amplified gaps in digital literacy, increasing a digital divide among populations and communities. Immigration is constantly being called on as a key solution and driver for population growth, but barriers persist around recognition of foreign credentials and work experience , affecting participation levels and causing talent de-skilling due to extended spells of unemployment and the lack of opportunity for immigrant workers to utilize and develop the skills they bring with them. These underlying causes bring grave risks to the mental and emotional well-being of a large and growing number of people within our population, and affect many other social systems, including healthcare, social and welfare services, etc. The COVID-19 crisis was an unfortunate pandemic that took the whole world by surprise, but it also showed us that we need to do things very differently. It highlighted gaps that have been ignored in our education and healthcare systems, to name a few; forced many of us to re-evaluate some of our work conditions and personal decisions, pushed many businesses out of the market and drove many others to consider new business models and, sadly, uncovered many negative human biases, charged irrational fears against certain groups of people, and amplified inequalities. This experience has been the ultimate stress test for our sense of humanity, connection and empathy towards one another and the environment we live in.

But change and disruption were well on their way before the pandemic due to accelerated technological progress and new innovations. In Chapter Two, I shared expert opinions and discussions around anticipated future scenarios of work and employment, and how they will affect how we participate and live. While every industrial revolution humanity has experienced changed aspects of our way of life, the current technological revolution is anticipated to “fundamentally alter the way we live, work, and relate to one another” (Schwab, 2016). Business, economy, and social-development experts have highlighted the need for new social and economic models that catch up and address the disruption new technologies continue to cause, transforming the way we live, work and play. This will not just require institutional systems change; it also calls for societies and individuals to reflect on and re-evaluate the values they hold. Most experts agree that the rise of AI will make the lives of many people

better, but a main concern is how those advances in AI will affect what it means to be human, to be productive, to contribute to society, and to exercise free will.

In the end, it all comes down to people and values. We need to shape a future that works for all of us by putting people first and empowering them. In its most pessimistic, dehumanized form, the Fourth Industrial Revolution may indeed have the potential to “robotize” humanity and thus to deprive us of our heart and soul. But as a complement to the best parts of human nature – creativity, empathy, stewardship – it can also lift humanity into a new collective and moral consciousness based on a shared sense of destiny. It is incumbent on us all to make sure the latter prevails. (Schwab, 2016)

In the early 1900s, Dr. Maria Montessori introduced a “child-centered” method of education to the world. It promoted the idea that children should have the freedom to build their own knowledge. In Chapter Three, I present the ways Montessori developed her method through the scientific study of children, understanding human tendencies, and facilitating education as an aid and preparation for adult life. In her book *Formation of Man* (published in 1955), Montessori noted that the study of the human spirit, namely the study of psychology and the subconscious, has been mostly focused on studying deviations and “mental diseases” rather than on exploring the full potential of humankind. In a powerful statement in one of her speeches, she confronts us with a reality that remains true today: “Whilst the hidden potentialities of nature have been explored and exploited to their very utmost, the abyss of man’s subconscious has not yet been scanned. Man, as a spiritual being, has been left to the mercy of outer circumstances and is on the way to becoming a destroyer of his own constructions” (M. Montessori, 1955, p. 10).

While her early work focused on educating young children, in the 1920s her study and work expanded to adolescence. She instigated the *Erdkinder* or “children of the earth boarding schools where learning for young adolescents is facilitated through working and living in a school community, participating in real-world activities such as farming or marketing their own created goods. While Montessori is known for her contributions to education, she was also able to demonstrate how human development occurs through work and purposeful activity. She believed that by experiencing human interdependence, students learn how society is organized and develop the skills needed to meet the world’s challenges in a proactive manner (Montessori, 1976, pp. 6–11). Montessori lectured and published writings on peace education, a result of having witnessed two world wars; “she was not able to study all aspects of human development... several of her ideas were inferred from her own experiences, others were conclusions based on her work or conjectures based on intuition, it is for this reason that the term *blueprint* has been used with regard to her theoretical formulations” (M. M. Montessori, 1976, p.

6). Education for peace and social justice is very much an integral part of Montessori's philosophy; had she lived longer, we may have ended up with a blueprint for adult upskilling curriculums.

I have no doubt that if she would have lived longer, she would have ventured into methods of educating the adult; this would have been a natural progression to her work, and that is what allowed many others to build on the blueprints she provided. – Montessori teacher trainer and practitioner, ON, Canada

Montessori called for a “universal movement for human reconstruction” aimed at helping humans preserve their balance and psychic health to bring balance into our world. In the words of her son Mario Montessori in 1955:

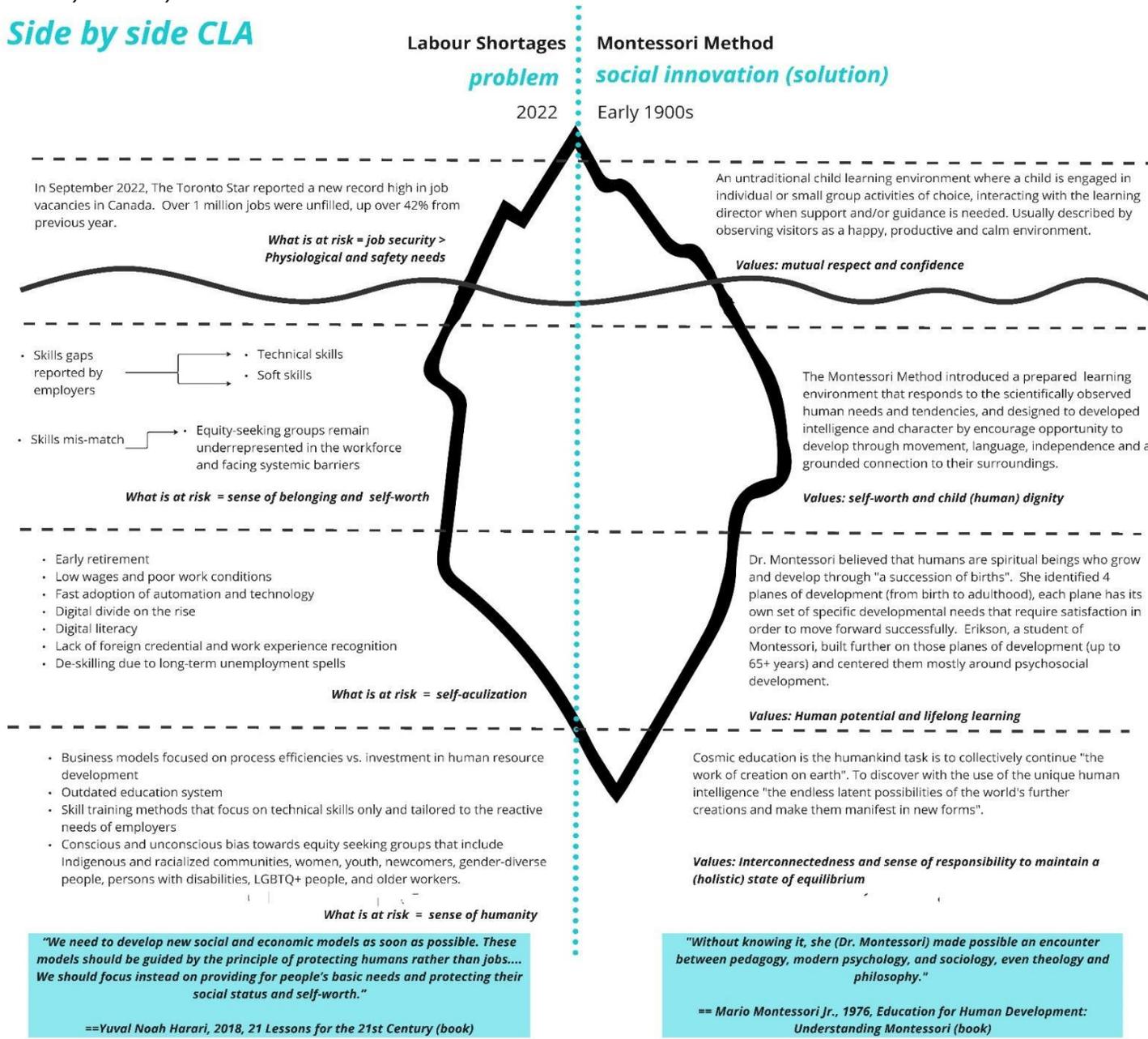
This movement is not limited to any one nation nor to any particular political trend, because it aims at the simple realization of human values and that is what is of primary interest over and above all political or national differences. The conceptions of the old schools, where teaching continues in the same way as in times profoundly different from ours, are clearly inadequate in view of the aims of the new movement we have outlined above. Education now becomes a social and human endeavour of interest to all. It must be based on psychology in order to safeguard the individuality of the child. It must furthermore be oriented towards a clear understanding of our civilization so that the personality defended against the disorder of circumstances may become a human being conscious of his real position in history. Evidently a syllabus or curriculum arbitrarily drawn up cannot ensure the culture we need today. There is need of a syllabus which can give an understanding of the conditions of man in modern society with a cosmic vision of history and the evolution of human life. What purpose would education serve in our days unless it helped man to a knowledge of the environment to which he has to adapt himself!” (M. Montessori, 1955, p. 11)

When reviewing my side-by-side CLA in figure 10, I invite you to read the layers of each context analysis from top to bottom first, then come back to each layer and note the problem risks and Montessori values (in bold) within each layer. You will see that the unique success of Montessori's method is that she designed a solution that is humanity-focused and a curriculum that is built on the principles of Whole Human Design.

Figure 10

Causal Layered Analysis

Side by side CLA



Events and trends: What is happening? What are we seeing and hearing in the news?

Causes: What is causing the events?

Paradigms: What assumptions, beliefs and values are underpinning the social causes?

Metaphors: What are the beliefs that are keeping the paradigms alive?

Note: Side by side synthesis of research project findings and implications.

Whole Human Design and a Humanity-Focused Approach

What I have specifically admired and learnt to appreciate over my years as a Montessori practitioner is that Montessori's work was driven by her strong belief in the potential of humankind. Montessori was calling for the study of humans to unlock their potential, at a time when the research and work of psychologists was focused on the study of human deviations (behavioral deviations and mental disorders). Today, her principles have expanded beyond child-learning spaces and ignited a movement for Social Emotional Learning (SEL) that has been growing through the work of educators, psychologists, behavioral and organizational scientists and business leaders (Litovsky, n.d.), and that has influenced renowned work like that of Dr. Daniel Goleman, a psychologist and science journalist, who wrote the first and most influential book on emotional intelligence); and Mihaly Csikszentmihalyi, a psychologist who recognized and named the psychological concept of "flow," a highly focused mental state conducive to productivity (Optimizing Intelligences: Thinking, Emotion, and Creativity [Video], 1998).

As a designer, I have learnt to value Montessori's approach to Whole Human Design, which seeks to solve and address the needs of users "in the context of their whole humanness."

"Designing for a user is like designing for one leaf of a tree; designing for a user in the context of his/her humanness is to connect that leaf to its branch, the trunk, and its underlying root structure. This is done by creating a 'Whole Human Needs List' that attaches a user's needs to his/her greater human needs (the Human Elements)." (Klein, 2018 p.114-115)

In reviewing the principles of Whole Human Design, we see that many of them mirror the principles of the Montessori method. the Whole Human Design method recognizes the uniqueness of every human and the unity "of 'Human Elements' that affect our happiness and ability to thrive. It refuses a "universal definition of humanness" and sees untapped potential in every human, and states that, by their nature, humans are unfinished products (self) driven by self-actualization. Borrowing from Existentialist thought, this method defines "Being" as a state of discovery, an exploration of and journey to self-creation (Klein, 2018). Montessori believed children are a unique being capable of constructing their character given the right environment, a prepared environment was designed to meet human tendencies and developmental needs, allowing the child to independently reveal and develop their own abilities and potentials.

The Montessori classroom is referred to as the prepared environment, the space is often neutral in theme, open-plan, and has a distinct sense of order, beauty and harmony. Everything in space has a purpose and a place. The prepared environment is designed specifically to bring about self-awareness and self-worth, and to protect the dignity of the child to propel confident and grounded human beings into adulthood. At the same time, Montessori believed humans are spiritual beings that are almost never complete, transitioning from one

spiritual plane to another to fulfill their ultimate human potential through contributing to their living environment. Also, just as humanity-centred design seeks solutions for improving lives, expanding to consider the societal level and highly complex, interrelated issues “that are most often tangled up in large, sophisticated, ‘human-caused’ systems” (Interaction Design Foundation, 2022), Montessori’s concept of Cosmic Education recognizes the complexity and interconnectedness of our world, and the unique role of human intelligence to create and maintain a state of equilibrium (Grazzini, 2013). Present and future contexts demand a new model of social and economic reform and development; more specifically, humanity-focused models to guide and lead our new and future way of life that will take new shape and form through the ongoing technological revolution. The principles of the Montessori method can provide us with a starting point for workforce development and adult skills learning and development environments.

A Montessori principled approach to adult learning and skills development

As Mario Montessori described in his book *Education for Human Development*, over the years the Montessori method provided a blueprint for educators and psychologists from around the world for a non-traditional approach that focuses on fostering a child’s sense of independence and personal development in a learning environment. Typically, principles-driven initiatives “operate in dynamic environments striving to meet and serve the diverse needs of diverse participants” (Patton, 2018, p. 16). Today, a principles-driven approach is much needed in a fast-changing and evolving labour market. In very simple terms, Montessori believed that learning should be accomplished through problem-solving, within a community setting, and where instructors or teachers are guides to and facilitators of learning. In 2013, the Montessori Method for Orienting and Motivating Adults (MOMA) project attempted to scan contemporary evidence-based adult learning and development theories and compared them to the key principles that guide the Montessori pedagogy. In reviewing MOMA’s initial report and consulting with Montessori practitioners, I conclude and propose five guiding principles to consider in adult workforce development initiatives.

Principle 1: Respect and account for individual experiences and human potential

Adults enrolled in re-skilling or upskilling initiatives bring unique sets of individual experiences, a variety of skill sets, and the potential to uncover and discover new talents and abilities. Leveraging participant diversity is essential to cultivating learning and development opportunities for the individual and the group (learning community).

Principle 2: Learning through the senses and building on transferable skills

Recent discoveries reveal that adult attention is heightened through the senses. Just as children learn through play, adults learn faster and better through sense-making and problem-solving activities that

are linked to real-life contexts, activities that require them to activate their knowledge and their personal values. Understanding and encouraging learners to capitalize on their learning styles and building on past experiences through hands-on activities fosters problem-solving and creative thinking. Competency-based education is better for adult learners, allowing them to learn and develop at their own pace, and it corresponds with the concept of independence that is a core element of the Montessori philosophy.

Principle 3: The Prepared Environment

A well-prepared environment that is conducive to learning is whole-human centred, welcoming, and it stimulates the senses. It provides well-chosen, relevant materials and activities that are built around two main principles, which are physical and socio-cultural. Activities should be purposefully selected and curated by the learning facilitator to encourage sharing, movement, the exchange of ideas, and repetition so learners can find comfort and joy in mastering a skill. It should also be time organized to respect and facilitate balance between life, work and learning time. Both virtual and physical spaces should account for social networking to facilitate the exchange of information and the creation of a community of learners. The environment should facilitate opportunities for learning through practical apprenticeships and structured mentoring plans.

Principle 4: Foster independence and self-autonomy

Being independent for an adult means being able to maintain social relationships and the opportunity to retain a social role in the community. Allowing learners to learn from their own discoveries and draw their own conclusions is important to keep them engaged and motivated throughout their re-skilling journey. They need to be able to discover their selves and find new meaning and purpose to maintain motivation and commitment. Initiatives need to allow space for learners to contribute to their learning plans, and facilitators should be able to step back and provoke ideas for researching solutions. As Irving Lorge theory explains, adults usually want to gain something, be something, do something, and/or save something; as such, learning facilitators need to fully understand and identify the learner's needs for best results.

Principle 5: Auto-education and self-direction

Adult learners are more likely to be interested in what they are learning if the tasks they are assigned have purpose and are aligned with their personal values and individual abilities. Learning opportunities and materials should be designed with auto-correction or education, allowing learners to draw their own conclusions and find their own ways to process and comprehend new concepts and skills. Again, they are better prepared to succeed if what they are learning mirrors real-life contexts, equips them with

practical and useful skills, and addresses topics that are relevant and applicable to their lives outside the learning environment.

In summary and in personal reflection

To sum up, in this chapter, I have shared how I used the CLA framework tool to unpack the deeper meanings and implications of a problem that irked me, and an education philosophy and practice that evolved to become a social movement. Employers and labour-market indicators are under stress due to labour shortages, yet the problem is not that we do not have enough workers, the problem is that the labour force generally lacks the skills needed for available jobs, and employers lack the will and know-how to challenge and address hiring biases and systemic barriers facing equity-seeking groups in the labour market. Everyone is panicked and focused on “business” gaps and profit losses rather than solving for people development and investment in human capital and improving labour-market dynamism. COVID-19 forced us to stop and face some harsh realities, but what will it take to prioritize redesigning work, and rethinking incomes and worker support and development? Some people are still debating whether the rise of AI will be good or bad for humanity; it can be either or it can be both. The real questions, discussion and action areas should address how we will safely embrace AI and rapidly evolving technologies, and how we will deal with job cuts. How will we protect workers? How will we ensure the continuous development of people? It is ironic that technology was meant to enhance human life, while today it feels the main purpose of technology is to increase business profits rather than anything else. The problem we are facing with labour shortages needs to be reframed as an opportunity to re-centre our intentions and redefine our sense of humanity. The rise of social enterprises is a promising signal that we can and will find our way to safety, but we will need to act faster, collaborate effectively across social and business systems, and prioritize an approach for Whole-Human Design. In doing so more than 100 years ago, Dr. Montessori changed education forever when she proposed a revolutionary child-centred education model. And, just as the Montessori method invites learners to explore and find their purpose in the larger worldview and encourages us to be curious and creative students, we need to find ways to extend that kind of education method to all humans, children and adults alike.

Conclusions and Further Research

“I am confi-dent that man will, as he has in the past, find a new way of describing his place in the universe — a way that will satisfy his needs for dignity and for purpose.” – Herbert Simon, Nobel laureate in economics and co-developer of the first computer program to defeat a human at chess.

This research set out to explore and identify principles from the Montessori Method that can inspire a guiding framework to enhance the delivery of adult upskilling and re-skilling initiatives. The speed, scope, and system impact complexities of current breakthroughs in automation and digital transformation are unparalleled compared to previous industrial and technological revolutions. The pace was further aggravated by the COVID-19 global pandemic, disrupting almost every industry around the world, reshaping entire systems, creating entirely new ways of consumption and contribution, and forever changing the personal and professional ways of life. It was almost as if this pandemic was the universe’s way to bring our attention to what is ahead of humanity. The technological revolution we are witnessing will inevitably force governments to reimagine how they govern, businesses to reconsider how they do business, and individuals to rethink their personal values and living priorities. It will no doubt offer opportunities that will enhance the life of humans, just like other revolutions before it. But it also has the potential to bring forth more social tensions through greater disparities and inequalities, more specifically for its potential to disrupt labor markets and future jobs, mainly affecting racialized groups and individuals at risk of isolation.

Experts across multiple disciplines recognize that existing social, economic, and political models, and systems in place will not be adequate to deal with the challenges it can bring forth. Research findings indicate that jobs as we know them today will cease to exist, and future skills are shifting and evolving in nature. Problem-solving, creative (lateral) thinking and other soft skills in general are in high demand in almost all workplaces and improving Emotional Intelligence (EI) is becoming more important than ever to succeed in work and life. Re-skilling and upskilling opportunities have typically focused on hard or technical skills and have not necessarily been accessible to all. Existing employment and social services were designed to support job transitioning rather than job or career development. Therefore, there is a need to invest in testing and implementing new holistic approaches to employment and training services to advance workforce innovation for equitable economic participation, whether that be through equitable job access or supporting readiness for new evolving forms of work participation. And there is no doubt a need to reimagine ‘work’ together as a society.

In the early 1900s, amidst an industrial revolution, Dr. Maria Montessori introduced a child-centered pedagogy, based on scientific observations and the study of human tendencies. Her principled method emphasized independence, freedom within limits, and respect for a child’s natural psychological, physical, and social development. Her method is based on individualized instruction and self-paced learning in a prepared

environment that is designed to facilitate learning, connection to community and heightened awareness to the interconnectedness among all living beings. The Montessori approach was radical at the time because she demonstrated to the world how a cast aside and overlook population (children), are capable of immense transformation through education. She believed in the child's ability to develop talent rather than focusing on innate talent and developed materials and activities for them to explore and master newly acquired skills and talent.

Following Dr. Montessori's approach and faith in humanity, this research project investigated how the Montessori method can be leveraged to inspire a Whole Human Design approach to adult learning spaces that allows them to develop and acquire future ready skills. Building on her constructivist approach and firm belief that humans naturally seek to construct their intellect and want to purposefully acquire skills that lead to independence, regardless of their culture or economic background, I have concluded and proposed five guiding principles to consider in adult upskilling initiatives.

- 1. Respect and account for individual experiences and human potential** allowing adult participants to utilize and offer their individual experiences, existing skills, and potential abilities within the larger learning community.
- 2. Learning through the senses and capitalizing on transferable skills** to facilitate a faster and richer learning experience. Adult attention is heightened through sensemaking and working through relevant problem-solving activities linked to real life contexts.
- 3. A Prepared Environment** (physical and socio-cultural) offers a welcoming and conducive Whole-Human centered learning environment that is designed to stimulates the senses, with purposefully selected activities that encourage sharing, movement, exchange of ideas, and repetition.
- 4. Foster independence and self-autonomy** through encouraging social interactions, observation, and for participants to create and maintain a social role in the community. Unlike traditional learning settings, instructors take on the role of learning facilitator or coach to guide the learning process.
- 5. Auto education and self-direction** allow adult learners to draw purpose and find alignment between their personal values and individual abilities. Learning opportunities and materials should be designed with auto correction or education, allowing learners to draw their own lessons and find their way to process and comprehend new concepts and skills.

Implications from this research aim to encourage and [SS3] invite government, policy makers, adult upskilling, and employment re-skilling program designers to explore and examine Humanity-Focused models to

help address labour market shortages and investment in human capital development. [SS4] I started my journey on this research project to identify guiding Montessori method principles that can be leveraged and applied in adult skills training environments. The path to understanding the underlying issues to the present labour shortages problem cascaded into deeper meaning and uncovered themes of how we relate to one another in a world that is changing much faster than we are evolving as spiritual beings. And in my journey to revisit and reformulate the Montessori principles to fit the needs of adult learners, I remembered and rediscovered how this method was centered and designed around universal and intrinsic human tendencies. Montessori believed we came to this world coded with unchanged human tendencies that help us survive and adapt in a particular time and environment, all we need to do is stay in tune and in touch with that human code. This makes the Montessori method timeless; it is not static, it is human-focused and therefore remains relevant and applicable in many forms. Dr. Montessori defined her method as “an aid to life” and saw education as a means to find lifelong purpose and peace. In reading many of her books and lectures, I have always been amazed and impressed by her wisdom and explicit warning statements for humanity that without investigating and mastering human “inner energies” (human awareness), mastering the “external world” will amount to nothing. To me that basically means that if we fail to understand ourselves, what we stand for and what we are capable of, peace and balance cannot be achieved in this world. As much as we invest in external comforts and technological advancements to better human lives, we need to invest in human spiritual advancement and evolution. We must move forward into the future with conviction that every individual on this planet is deserving of a peaceful and dignified living, and to achieve that, we will need to invest in the development of our “inner energies”. The “inner energies” Montessori alluded to in her work over a century ago, match up to what the study and science of Emotional Intelligence is now growing to be, the ability to master oneself in order to master one’s experience of the world.

The developed CLA framework in this research project can invite further research on various elements within the layers unpacked within each context. There is a need to consider and explore an approach in Whole-Human Design in workforce development, workplace civility programs, and across our social service systems. Guiding principles proposed in this study can also be further developed into sector specific pilot activities and evaluated to further investigate and observe best practices and lessons learnt in workplaces and other adult upskilling programs. Throughout this [SS5] investigation, I have connected with a few social enterprises that are interested to proceed in testing and evaluating the application of the proposed guiding principles, to enhance talent training and workforce development programs they have in place and advancing their social impact goals. Expanding on Montessori method activities that focus on developing Emotional Intelligence (EI), Intercultural Intelligence (ICI) and character building for adult learners is also a possible area for further investigation and analysis.

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Appendix A - Glossary of Terms

Recent landed immigrants: Landed newcomer immigrants who have been in the country for 5 years or less.

Digital divide: uneven access to reliable, high-speed internet, broadband and digital devices (hardware).

Digital literacy: having the skills required to live, learn, and work in a society where communication and access to information is increasingly through digital technologies like internet platforms, social media, and mobile devices.

Racialized groups: encompasses all people that are non-Caucasian in race, also referred to as visible minorities.

Arab Canadians: term that includes people who live in Canada and come from the 22 member states of the Arab League.

MENA region: an acronym in the English language, refers to a grouping of countries situated in and around the Middle East and North Africa.

Visible minority: In Canada, the Employment Equity Act defines visible minorities as "persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour". The visible minority population consists mainly of the following groups: South Asian, Chinese, Black, Filipino, Arab, Latin American, Southeast Asian, West Asian, Korean, and Japanese.

Workforce Development: generally, describes a labour market strategy that includes both employment and training services.

Workforce Innovation: involves testing, sharing and implementing new approaches to employment and training services.

Workplace Innovation: is a type of workforce innovation. It is the testing, sharing and implementation of new approaches to work organization, management practices and job design that leads to better use of workers' skills and more learning in the workplace.

Labour Shortage: happens when the demand for workers for a particular job is greater than the supply of workers who are qualified, available, and willing to do that job. During a labour shortage, the labour pool is low, recruiting qualified workers is difficult, filling open positions takes longer, and the retention rate is poor. Employers may need to pay higher wages and improve benefit packages to attract and retain employees.

Flow: a state of flow is a human mental state in which a person performing an activity is fully immersed in a feeling of energized focus, full involvement, and enjoyment in the process of the activity.
Emotional Intelligence

Skills: developed capacities that an individual must demonstrate to be effective in a job, role, function, task or duty.

Human resource planning (HRP): the ongoing process of systematic planning to achieve optimum use of an organization's human assets (employees). Human resources planning is applied to avoid manpower shortages or surpluses, by ensuring the best fit between employees and jobs are maximized.

Appendix B - Trends Observed

Here are some of the trends that were strongly noted across the various literature reviewed, and highly related to workforce disruptions.

The Future of Skills or Industry 4.0 Skills

With the Fourth Industrial Revolution underway (4IR, or Industry 4.0)² brings about rapid change in technology, industries, and societal patterns and processes that will be seen in the 21st century, mainly due to increasing interconnectivity and smart automation. Future skills are the skills being studied and identified to remain competitive in a job market, take advantage of new opportunities. Employment and Social Development Canada government [website](#), define Future Skills as a set of skills that encourage collaboration, innovation and transformation.

The Digital Divide

The gap between people who have access to affordable, reliable internet service, along with the skills and tool (hardware) necessary to take advantage of it, and those who do not. This also impacts and affects the ability (and skills development) to utilize digital technology in a creative way for learning, working, collaboration.

The Great Resignation

Since 2020, higher than usual number of employees have been voluntarily leaving their jobs across multiple sectors. While most people attribute this economic trend as one of the impacts of COVID-19, some data show indicates that there has been a steady uptrend since 2009. Discussions around the reasons behind this ongoing phenomenon vary, ranging from concerns around low pay, lack of opportunities for advancement, feeling disrespected and undervalued at work and toxic work cultures.

Micro Credentials

The rising popularity and offering of micro-certifications that are short, competency-based courses that confirm the recipient has completed one or more courses that are focused on specific skill(s) or competency(ies). This was driven by a) the widening gaps between the type of education offered in traditional higher education institutions and the skills urgently needed to work in today's digital world, b) lack of equal access to education and the need for credentials that provide the skills that lead to landing a job, and c) people who have completed some higher education credits but have not completed a formal degree. Literature evidence confirms that micro credentials have been well received and accepted by employers.

Emotional Quotient (EQ) over the Intelligence Quotient (IQ)

While the in-demand skills are still increasingly technical in nature, employers are identifying a corresponding need for the uniquely human ability to work through and with others to accomplish goals. The ability human ability to perceive, use, understand, manage, and handle emotions, especially in a time where everything is fast paced, proving most valuable. Employers are placing more and more emphasis now on emotional intelligence and soft skills as they are more difficult to training than technical skills that can be taught or acquired on the job.

² Bai, C., Dallasega, P., Orzes, G., & Sarkis, J. (2020). Industry 4.0 technologies assessment: A sustainability perspective. *International journal of production economics*, 229, 107776.

Intercultural Intelligence (ICI)

Intercultural Intelligence is the ability to understand their own individual cultural worldview and how it impacts their behaviors, expectations and relationships with others. It helps people assess and understand cultural drivers of other people and enables them to adapt their behavior and communication to bring about more effective and successful interactions.

To increase intercultural intelligence is to successfully build and acquire a winning attitude (heartset), mindset and skillset to increase and make use of your understanding of cultural differences and how to bridge them constructively.

Social-emotional learning (SEL)

The increased need to apply methods that foster social and emotional skills within the school curricula. It is the process through which children and young adults build and apply knowledge, skills, and attitudes to develop healthy and well-rounded identities, manage their emotions, achieve personal and collective goals, show empathy towards others, create and maintain relationships, and make responsible decisions.

The Rise of the Social Enterprise

A Social Enterprise is a company or a business that put great emphasis and value in empowering the individuals, meeting their unique needs, and calls for the inclusion of those typically excluded to participate in financial, social, and economic systems. It offers a new way of “businesses” and shifts goals from focusing purely on performance, to business positively impacts society³. The term has been widely picked up by the stream of Diversity, Equity and Inclusion (DEI).

Sustainable Work

Effort to extend the working life by achieving living and working conditions that support people in engaging and remaining in work. This will require transformation efforts to eliminate barriers and factors that discourage or hinder individuals from staying in or entering the workforce. The main challenge is to match the needs and abilities of individuals with the quality of jobs available or being offered.

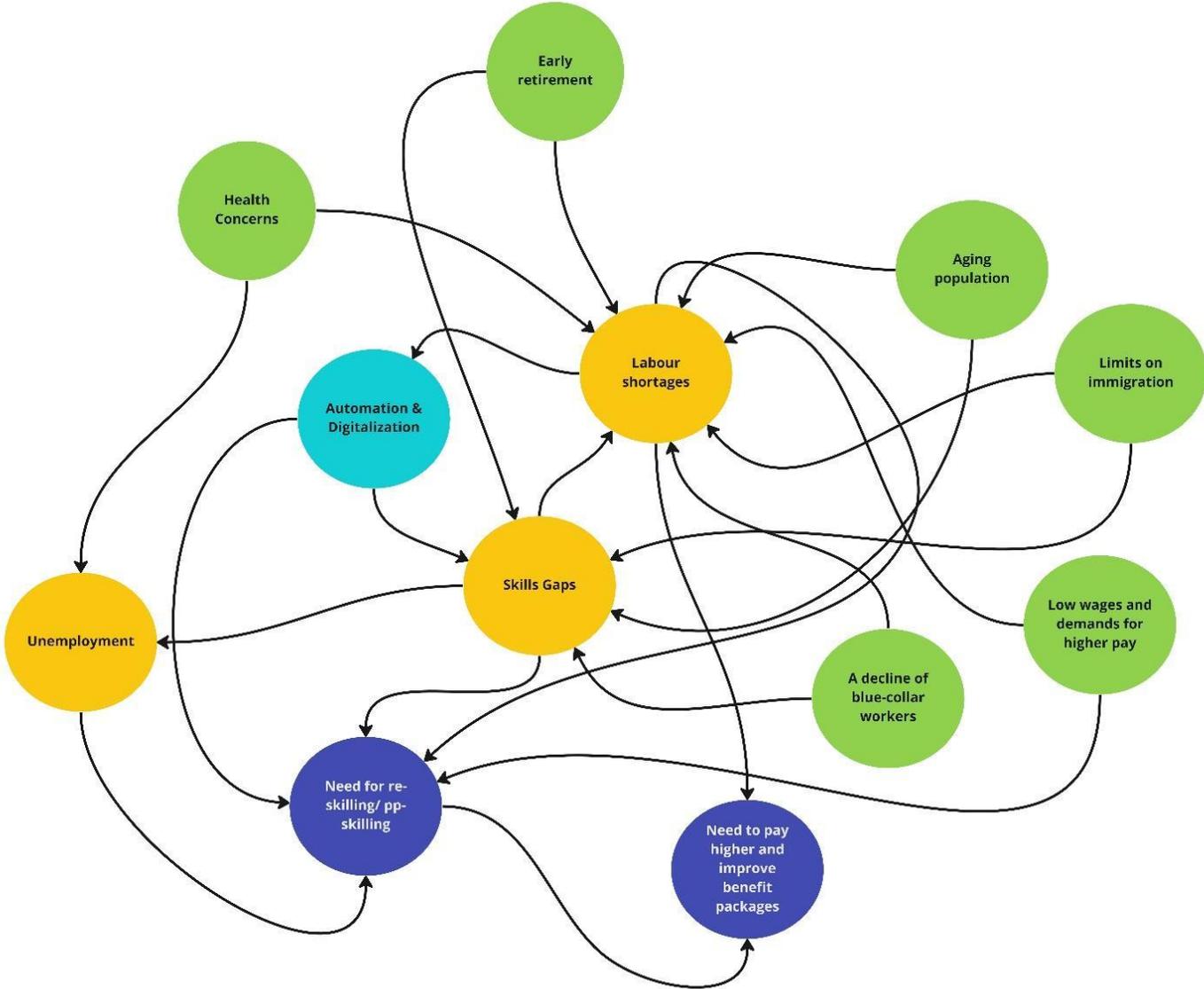
Coaching and Transformational Learning

Recognized as a learning activity that helps the participate and take ownership in unlocking their potential to maximize performance, advance opportunities and enhance their quality of life. It generally aligned with the theory of transformative learning as it calls for an active paradigm shift and/or shift in behavior that affects the behavior and future experiences of the learner.

³ [2018 Global Human Capital Trends](#) report published by Deloitte surveyed 11,000 business and HR leaders. The report indicated enormous changes in the workforce, the workplace, and the technologies used in the world of work, and finding that businesses are no longer assessed only on traditional financial performance metrics or quality of their products or services. Relationships with employees, customers, and local/ global communities, are being judged and evaluated by the public.

Appendix C – Labour Shortages Context Mapping (a)

Figure 11
Context mapping of labour shortages in Canada



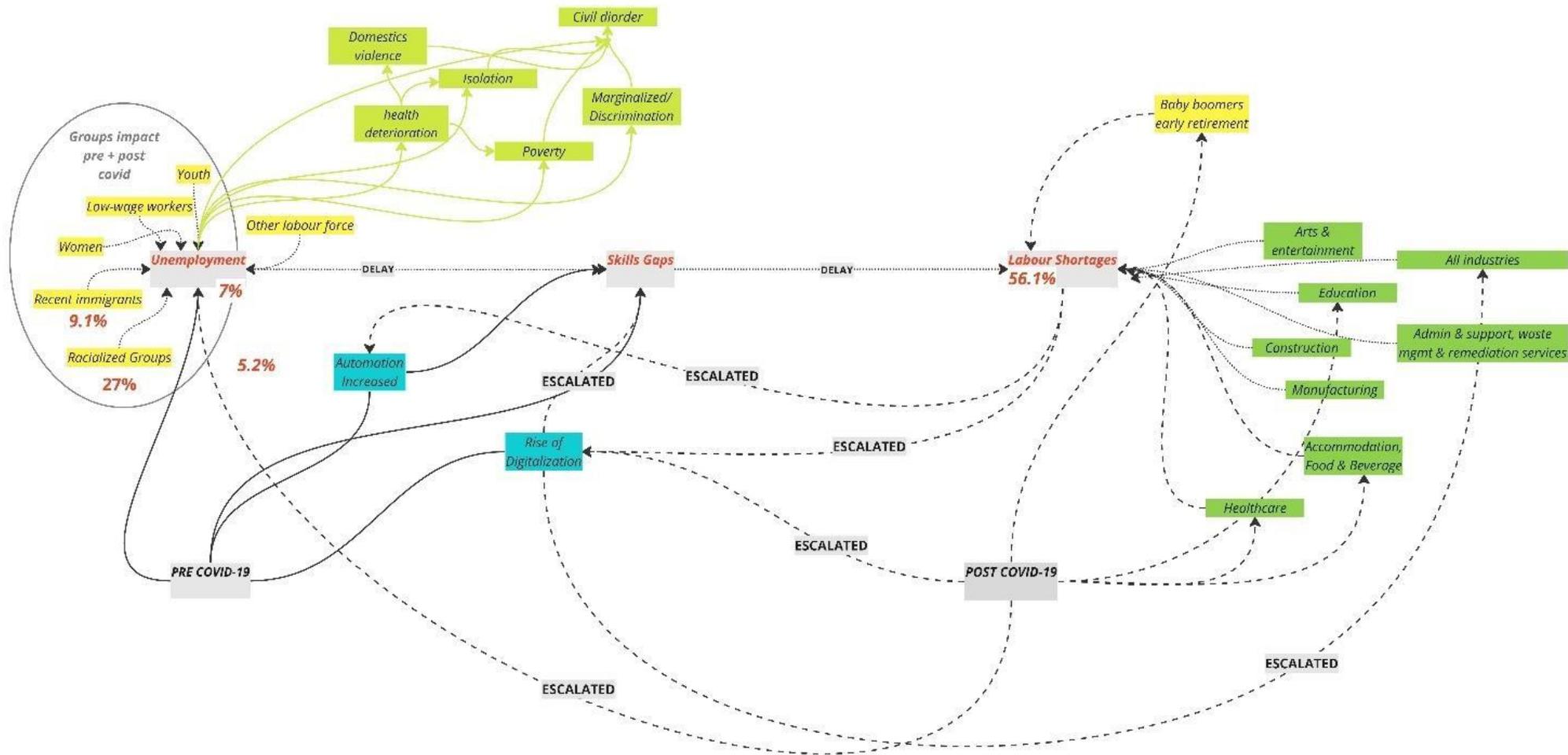
Note: Visual synthesis of the Canadian labour shortages context as presented in literature reviewed.

Tip for the reader - follow the relational arrows to understand the causes and connections between the investigated context issues and themes.

Appendix D – Labour Shortages Context Mapping (b)

Figure 12

Context mapping of labour shortages and impact of skills gaps in Canada



Note: Visual synthesis of Canadian labour market shortages and economic and social impacts observed as presented in literature reviewed findings (Chapter Two).

Tip for the reader - follow the relational arrows to understand the causes and connections between the investigated context issues and themes.

Appendix E –Montessori Method for Orienting and Motivating Adults (MOMA) guide to areas and competencies acquired through Montessori principled initiatives

Table 5

Montessori Method for Orienting and Motivating Adults (MOMA) Identified impact areas and competencies - Relational Competencies

RELATIONAL COMPETENCES

PERSONAL ASPECTS

Self-control: Managing disruptive emotions and impulses.

Adults with this competence:

- Manage their impulsive feelings and distressing emotions well
- Stay composed, positive, and unflappable even in trying moments
- Think clearly and stay focused under pressure

Trustworthiness: Maintaining standards of honesty and integrity.

Adults with this competence:

- Act ethically and are above reproach
- Build trust through their reliability and authenticity
- Admit their own mistakes and confront unethical actions in others
- Take tough, principled stands even if they are unpopular

Conscientiousness: Taking responsibility for personal performance.

Adults with this competence:

- Meet commitments and keep promises
- Hold themselves accountable for meeting their objectives
- Are organized and careful in their work

Adaptability: Flexibility in handling change.

Adults with this competence:

- Smoothly handle multiple demands, shifting priorities, and rapid change
- Adapt their responses and tactics to fit fluid circumstances
- Are flexible in how they see events

Innovativeness: Being comfortable with and open to novel ideas and new information.

Adults with this competence:

- Seek out fresh ideas from a wide variety of sources
- Entertain original solutions to problems
- Generate new ideas
- Take fresh perspectives and risks in their thinking

SOCIAL ASPECTS

Influence: Wielding effective tactics for persuasion.

Adults with this competence:

- Are skilled at persuasion
- Fine-tune presentations to appeal to the listener
- Use complex strategies like indirect influence to build consensus and support
- Orchestrate dramatic events to effectively make a point

Communication: Sending clear and convincing messages.

Adults with this competence:

- Are effective in give-and-take, registering emotional cues in attuning their message
- Deal with difficult issues straightforwardly
- Listen well, seek mutual understanding, and welcome sharing of information fully
- Foster open communication and stay receptive to bad news as well as good

Change catalyst: Initiating or managing change.

Adults with this competence:

- Recognize the need for change and remove barriers
- Challenge the status quo to acknowledge the need for change
- Champion the change and enlist others in its pursuit
- Model the change expected of others

Conflict management: Negotiating and resolving disagreements.

Adults with this competence:

- Handle difficult people and tense situations with diplomacy and tact
- Spot potential conflict, bring disagreements into the open, and help deescalate
- Encourage debate and open discussion
- Orchestrate win-win solutions

Political awareness: Reading a group's emotional currents and power relationships.

adults with this competence:

- Accurately read key power relationships
- Detect crucial social networks
- Accurately read situations and organizational and external realities

Source: The [Montessori Method for Orienting and Motivating Adults \(MOMA\) Project Committee Report](#), by Boldrini & Bracchini, 2015, p. 92.

Table 6

Montessori Method for Orienting and Motivating Adults (MOMA) Identified impact areas and competencies – Emotional Competencies

EMOTIONAL COMPETENCES

PERSONAL ASPECTS

Emotional awareness: Recognizing one's emotions and their effects.

Adults with this competence:

- Know which emotions they are feeling and why
- Realize the links between their feelings and what they think, do, and say
- Recognize how their feelings affect their performance
- Have a guiding awareness of their values and goals

Accurate self-assessment: Knowing one's strengths and limits.

Adults with this competence are:

- Aware of their strengths and weaknesses
- Reflective, learning from experience
- Open to candid feedback, new perspectives, continuous learning, and self-development
- Able to show a sense of humor and perspective about themselves

Self-confidence: Sureness about one's self-worth and capabilities.

Adults with this competence:

- Present themselves with self-assurance; have "presence"
- Can voice views that are unpopular and go out on a limb for what is right
- Are decisive, able to make sound decisions despite uncertainties and pressures
- Take fresh perspectives and risks in their thinking

SOCIAL ASPECTS

Empathy: Sensing others' feelings and perspective, and taking an active interest in their concerns. Adults with this competence:

- Are attentive to emotional cues and listen well
- Show sensitivity and understand others' perspectives
- Help out based on understanding other people's needs and feelings

Orientation to the others: Anticipating, recognizing, and meeting the others' needs. Adults with this competence:

- Understand the others' needs
- Seek ways to help the other trying to increase their wellbeing
- Gladly offer appropriate support

Developing others: Sensing what others need in order to develop, and bolstering their abilities. Adults with this competence:

- Acknowledge and reward people's strengths, accomplishments, and development
- Offer useful feedback and identify people's needs for development
- Offer support in order to sustain the other person's skills.

Leveraging diversity: Cultivating opportunities through diverse people.

Adults with this competence:

- Respect and relate well to people from varied backgrounds
- Understand diverse worldviews and are sensitive to group differences
- See diversity as opportunity, creating an environment where diverse people can thrive
- Challenge bias and intolerance

Political awareness: Reading a group's emotional currents and power relationships.

Adults with this competence:

- Accurately read key power relationships
- Detect crucial social networks
- Accurately read situations and external realities

Source: *The [Montessori Method for Orienting and Motivating Adults \(MOMA\) Project Committee Report](#), by Boldrini & Bracchini, 2015, p. 93.*

Table 7

Montessori Method for Orienting and Motivating Adults (MOMA) Identified impact areas and competencies - Motivation and Self-Esteem

MOTIVATION AND SELF ESTEEM

PERSONAL ASPECTS

Achievement drive: Striving to improve or meet a standard of excellence.

Adults with this competence:

- Are results-oriented, with a high drive to meet their objectives and standards
- Set challenging goals and take calculated risks
- Pursue information to reduce uncertainty and find ways to do better
- Learn how to improve their performance

Commitment: Aligning with the goals of the group or organization.

Adults with this competence:

- Readily make personal or group sacrifices to meet a larger organizational goal
- Find a sense of purpose in the larger mission
- Use the group's core values in making decisions and clarifying choices
- Actively seek out opportunities to fulfil the group's mission

Initiative: Readiness to act on opportunities.

Adults with this competence:

- Are ready to seize opportunities
- Pursue goals beyond what's required or expected of them
- Are able to mobilize the others

SOCIAL ASPECTS

Leadership: Inspiring and guiding groups and people.

Adults with this competence:

- Articulate and arouse enthusiasm for a shared vision and mission
- Step forward to lead as needed, regardless of position
- Guide the performance of others
- Lead by example

Building bonds: Nurturing instrumental relationships.

Adults with this competence:

- Cultivate and maintain extensive informal networks
- Seek out relationships that are mutually beneficial
- Build rapport and keep others in the loop

Collaboration and cooperation: Working with others toward shared goals.

Adults with this competence:

- Balance a focus on task with attention to relationships
- Collaborate and sharing information and resources
- Promote a friendly, cooperative climate
- Spot and nurture opportunities for collaboration

Team capabilities: Creating group synergy in pursuing collective goals.

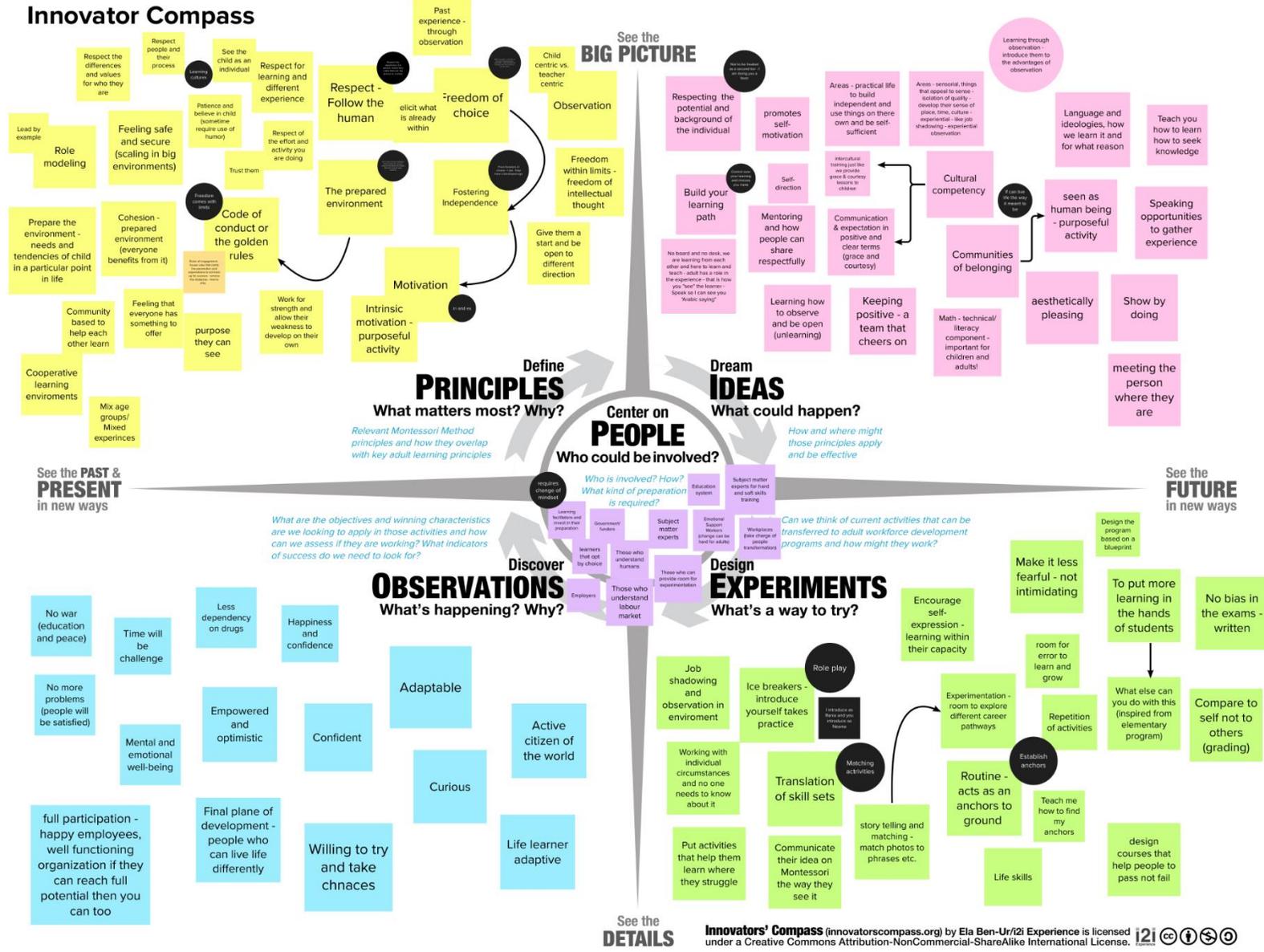
Adults with this competence:

- Have and promote qualities like respect, helpfulness, and cooperation
- Draw the members of the team into active and enthusiastic participation
- Build team identity, creating a real community of learners
- Challenge bias and intolerance

Source: The [Montessori Method for Orienting and Motivating Adults \(MOMA\) Project Committee Report](#), by Boldrini & Bracchini, 2015, p. 94.

Appendix F – Interactive Workshop MURALS with Montessori Practitioners

Figure 13
Interactive Workshop MURALS with the Montessori Practitioners



Note: Innovator Compass tool used with Montessori Practicing community to define principles, think of ideas and concepts for experimentation, imagine outcomes and who needs to be involved to make it happen. Summary of findings is included in Table 4 p. 62

Appendix G – Quotes by Skilled Immigrant

Quotes describing their journeys to labour market integration and experiences with employment programs.

Extracted from published research by Lau, K. 2010 and El Tal, J. & Asalya, S. 2022. The purpose of compiling these quotes is to share and amplify common experiences I have consistently encountered in my work with newcomer immigrants in the Canadian labour market.

So basically they think “Oh you’re new here, you don’t have any Canadian knowledge or Canadian experience.” As integrated as it (Canada) is, I pretty much know what’s going on after I’d gone to the interviews every time. They judge you right away. (Lau, 2010, p. 79)

It’s a nice country, but there is a lack of job opportunities. If you don’t have Canadian experience, you cannot get a job. So it’s very stressful for immigrants because how can you get Canadian experience if you cannot get a job anywhere? (Lau, 2010, p. 15)

All they were asking for was Canadian experience, which I didn’t have. On my resume, I stated clearly that I worked in London, UK, but they kept asking me if it was Ontario and I said no. It was pretty hard at the beginning because I worked in the second financial place in the world, and they were not very interested in my previous experience. (Lau, 2010, p. 15)

I wanted to stay in the same profession because I didn’t want to start something else or go through taking other courses. But most of the places that I went to said, “Oh, you don’t have any Canadian education.” So that’s why I had to go to George Brown College to upgrade my CV.... I dealt with a portfolio myself at Bloomberg. That didn’t seem to matter... I was thinking that Bloomberg would hold some regard in people’s minds. I thought maybe they would think, “Oh, she’s worked there, with traders and taught them financial market stuff, and she’s learned yield curves and commodities” ... I’m not admin, where they put things in the database. I had a real job! (Lau, 2010, p. 81)

I visited some employment centers. I just went there to use the computer to prepare my resumes. After I got my resume done, I tried to show the workers over there how my resume

looked... but the problem is that, when I submitted the resume to the employers, I never got a response. So sometimes I think that this help is not really helpful. I didn't really get useful help from employment centres. I still really felt like I was by myself. (Lau, 2010, p. 82)

I think the problem is that so many people come here and there are so few spots... I wish there was a way that it could be something that all the companies know about and they would participate in the program by giving internships to that program every year... But the way that the system is for immigrants to join the workforce is appalling. (Lau, 2010, p. 82)

I expected to get a job in my field, more or less at the same level, maybe one step back, but not 1000 steps back. I've never had to work in a call center in my life. It's even worse than I ever imagined. You just kind of compromise everything in getting the job, because you know it's not a matter of finding things. You have to have some income and then you can look for something else... so you are just looking for income, you are not looking for a career at that time. (Lau, 2010, p. 82)

That would be when I would tell the employer that even if you start me off as a part-time (worker), I will take it just so I can get this Canadian experience you're talking about. So I didn't demand the employer. I tried to beg them to hire me. (Lau, 2010, p. 82)

I think I've become realistic. I feel a little bit disappointed but I still try to be positive, because I never applied for welfare. I don't want to live on welfare. I still have pride. I still want to work with my hands and not just complain about the difficulties to the government and ask them for support. (Lau, 2010, p. 101)

I was really down because I felt that there's no way I went to university for this position... The first job I held here didn't require for me to get a postgraduate or go to university. I was really down at the beginning. (Lau, 2010, p. 103)

I think this work is causing some confusion in my life. I try to struggle but it caused a lot of confusion. I don't know what I should do. Especially since I'm 39 years old and I don't know what I should do to make my life better, to have a better job. (Lau, 2010, p. 107)

I have never felt so discriminated against in my life when than when accessing these employment agencies. (El Tal & Asalya, 2022, p. 42)

"The first three years, I felt I didn't have anything to do here in this country. I can't work in a job I like because it's a foreign degree. Back home, I was a teaching assistant, and I have my master's degree." (El Tal & Asalya, 2022, p. 42)

"I felt that when you do an interview with a person whose first language is English, they start talking to you as if you're less - that you have less skills or less smart because of your accent. Or you are less qualified for jobs that are maybe easy." (El Tal & Asalya, 2022, p. 38)

"conflicted between trying to stay here and get more Canadian experience and have a higher chance to get into graduate school here or just go back home somewhere in the Middle East and get a job there, where it will likely be easier to get accepted and fit into a workplace - to be myself." (El Tal & Asalya, 2022, p. 53)

Appendix H – Fun Fact: Famous Montessori Alumni (Robin, 2020)

Listed Alphabetically

- * Alexander Graham Bell, inventor (and his wife Mabel founded the Montessori Education Association in 1913. They also provided financial support directly to Dr. Maria Montessori and helped establish the first Montessori class in Canada and one of the first in the United States).
- * Ann Sullivan, Helen's Keller's teacher, used Montessori ideas to teach her famous student
- * Anne Frank, Diarist
- * Anthony Doer, Author
- * Bill Gates, founder of Microsoft
- * Berry Brazelton, noted pediatrician and author
- * Beyonce Knowles, Singer
- * David Blaine, magician, Illusionist, endurance artist
- * Erik Erikson, psychologist and psychoanalyst
- * Friedensreich Hundertwasser, Viennese artist & architect
- * Gabriel García Marquez, author, Nobel Prize in Literature recipient
- * George Clooney, actor
- * Helen Hunt, Emmy Award winning actress
- * Jean Piaget, psychologist (was once the President of the Swiss Montessori Society)
- * Jeff Bezos, Founder of Amazon
- * Jacqueline Kennedy Onassis, former First Lady
- * Joan Cusack, Academy award-nominated actress
- * John Cusack, actor and screenwriter
- * Joshua Bell, violinist
- * Julia Child, chef, author, and TV personality
- * Kami Cotler, actress (youngest child on long-running series The Waltons)
- * Katharine Graham, Pulitzer prize-winning author and former owner & editor of the Washington Post
- * Peter Drucker, the inventor of modern management
- * Puff Daddy, singer and musician
- * Larry Page and Sergei Brin, founders of Google
- * Melissa and Sarah Gilbert, actresses
- * Morgan Saylor, actress
- * Stephen Curry, NBA player
- * Taylor Swift, singer, and songwriter
- * Will Wright, original designer of The Sims (computer game designer)