



Skills that Matter

Building a City that Adapts

December 2020

calgary economic
development
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BUSINESS COUNCIL
OF ALBERTA

CityXLab
From Place to Experience



The Paradox of Calgary

An unstable global energy market, combined with the structural impact of the pandemic, are contributing to seismic economic and social change in Calgary. ¹ Today, the primary sector of industries and utilities contribute about \$36 billion (28.4 per cent) of Calgary's GDP and Calgary's oil and gas reliance (OGR) index stands at 34.9. ² The historical demand of the energy sector for skilled labour generated the highest concentration of high-tech workers in Canada ³ and the second highest number per capita of small businesses and self-employed individuals in the country. ⁴

To meet this demand for talent, Calgary's population increased by 220,000 in the past decade and Calgary is now the third most ethnically diverse city in the country. ⁵ Moreover, the city has seen a significant increase in both bachelor's and master's degrees, ranking second in Canada as a proportion of population. Currently, there are over 91,000 postsecondary students enrolled in programs. ⁶ At 27 per cent, Calgary possesses the highest proportion of STEM graduates among major Canadian cities, with a high concentration in geo-sciences and related areas. ⁷

Yet, with the expansion of fields such as artificial intelligence and data science, total employment in key digital roles is forecasted to surpass 77,000 in Alberta by 2023, doubling the employment growth rate of all other sectors. ⁸ However, Calgary's proportion of technical expertise in the specific areas of software and data science is less than half of other major Canadian cities. ⁹ Not surprisingly, PwC reports 68 per cent of the oil and gas leaders globally are concerned about talent availability to

execute digital transformation strategies. ¹⁰ Moreover, Calgary Economic Development warns that half of the jobs performed by Calgarians today could be at risk of automation over the next 20 years. ¹¹ The Business Council of Alberta, in their report, *Skilled by Design: A Blueprint for Alberta's Future Workforce* raises similar concerns. The result is Calgary paradoxically is facing both a talent surplus and talent deficit. ¹²

"Our goal is to create the best, most skilled, technologically sophisticated, progressive and adaptable workforce in the country."

***Skilled by Design: A Blueprint for Alberta's Future Workforce
Business Council of Alberta***

This mismatch of competencies is not unique to Calgary. The World Economic Forum forecasts that by 2022, 75 million jobs will be displaced across the leading 20 economies, while 133 million new jobs will be created in nascent sectors. It has been estimated that 50 per cent of employees globally will need to be reskilled or upskilled between 2018 and 2022. ¹³ Not surprisingly, 91 per cent of human resource decision-makers view an employee's ability to adapt as a critical competency. ¹⁴ The result is employers are demanding people who possess the capacity to live with uncertainty, adapt to new roles, and learn new skills quickly. ¹⁵ These skills transcend industries and professions. If there were such a thing as a defining competency in the next decade, it would be adaptability.

Learning as a Climbing Wall

A city's ability to attract, develop, and retain talent (the people who will live and work there) is the greatest predictor of social and economic prosperity.¹⁶ This means how cities grow and develop their talent pool is crucial. Adaptable people can adjust to the dynamic context of the world today. Adaptability can be reactive, like learning to live in a new reality during the COVID-19 pandemic. However, adaptability can also be proactive and intentional, characterized by anticipating change and planning a response in advance.

In Spring 2020, numerous LearningCITY community partners released two reports exploring the future of learning in Calgary. This research recommended Calgary, as a city, fundamentally rethink how it learns. This starts by recognizing that traditional learning systems, though essential, are only a small component of the city's rich, but fragmented, learning system.

One of the reports' central themes was the critical importance of recognizing that learning today is inverted. Learning is no longer a top down institutional model rooted in the industrial revolution. Rather, learning follows the innovation processes adopted by companies like Google and Apple, and is iterative, open, and prioritizes empowerment and autonomy of the individual.

This means that learning today looks more like a climbing wall than a ladder. The industrial revolution learning model is anchored in mass production, commoditization, and efficiency. In other words, its goal is to produce as many educated people as efficiently as possible.

"Employers are demanding people who possess the capacity to live with uncertainty, adapt to new roles and learn new skills quickly."

In contrast, the climbing wall model prioritizes personal exploration, experimentation, enabling competencies, and adaptivity. It includes diverse educational pathways, including all forms of learning (formal and informal) and experiences



(professional, volunteer, and contextual). So, the future of a resilient and adaptive Calgary is about how Calgarians learn to step off the ladder and choose to design and navigate their own climbing wall.

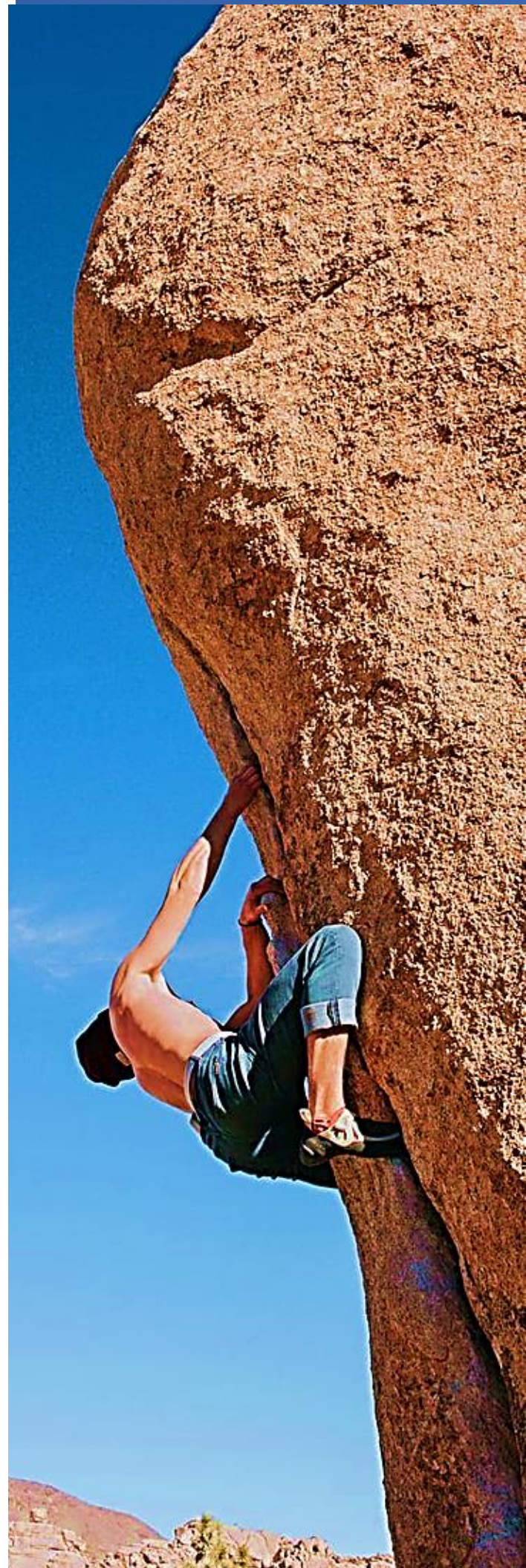
What Really Matters?

The barrier to accelerating the adaptive capacity of Calgarians remains rooted in the legacy learning system. This is because traditionally, both the learning system and employers put priority on what are called **domain-specific competencies (DSCs)**. DSCs are the skills you need to complete a specific job, whether it be welding, policy analysis or engineering. DSCs may incorporate role specific competencies, for example, the competencies required to be an accountant. They may also include industry specific competencies, for example, the competencies required to be an accountant in the oil & gas sector. Historically, DSCs were highly valued by society as they were essential to generating short-term economic value. The challenge is DSCs are highly contextual and possess a shorter lifespan than enabling competencies (ECs), also known as soft, essential, or transferable skills.¹⁷ Today, the World Economic Forum reports professional skills have a half life of under six years.¹⁸ Just think, in the past a trade learned as a teenager could be developed and refined through a lifetime of experience. Today, DSCs often become dated and demand continual training to maintain relevance. The primacy of DSCs is visible in every postsecondary institution which has entire schools, departments, diplomas, and degrees dedicated to developing specific

"Enabling competencies are foundational and enable an individual to succeed across a diverse range of personal and professional contexts."

domain-specific disciplines.

In contrast to DSCs, ECs are foundational and enable an individual to succeed across a diverse range of personal and professional contexts. These include competencies such as analytical thinking, problem-solving, communications and organizational skills.¹⁹ ECs provide the capacity for





an individual to navigate and explore the climbing wall.

However, today's DSC-centric learning model puts limited emphasis and no accountability on developing ECs. Whereas there are dedicated faculty accountable for developing DSCs related to accounting, nursing, and computer science, there are no faculty dedicated to ensuring development of ECs. Rather, every educator is accountable for developing ECs. However, as the old adage goes, *when everyone is accountable, no one is accountable*. This lack of accountability demands a reinvention of learning.

Learning to Climb

It is important to recognize that the climbing wall model of learning does not devalue the role of DSCs. It recognizes that DSCs, ranging from software coding to nursing and welding, are essential for generating value. However, it also recognizes that the dominant coding languages, medical and welding technologies of today are dynamic and ever-changing. Therefore, it is possessing the optimal level of both ECs and DSCs that seamlessly work together, which provides an individual the capacity to adapt, as the world around them adapts.

To deliver this adaptive capacity, the city's learning system must be designed to recognize and credential the diversity of pathways on the climbing wall including all forms of education (formal and informal) and experience (professional, volunteer, and contextual) resources. This must include an effective

scaffolding of these credentials, acting as building blocks, rather than isolated events. This change creates short-term targeted learning goals for individuals to map to.

Acknowledging learning today as a climbing wall requires a new set of tools for learners to explore and navigate their own pathway. If today's ladder reflects a static map to a predefined destination, learners on the climbing wall must have a compass to provide them direction while allowing them to explore their own path.

This compass is a unified **Calgary competency model** (CCM). A competency model describes the competencies, and levels of competence, required to complete a specific task and the criteria to observe and measure proficiency in these competencies.

"Competency-based micro-credentialing programs offer a solution to these challenges. These programs effectively break down continuous learning into courses spanning a few weeks or months..."

Skilled by Design: A Blueprint for Alberta's Future Workforce Business Council of Alberta

The idea of a competency model is not new. They have existed in forms for decades. Competency models have proven to be effective for aligning

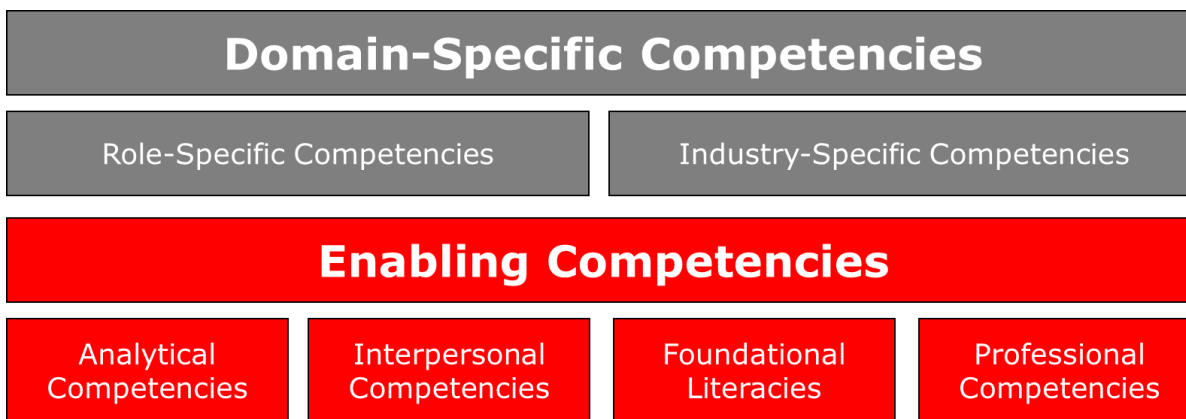


Figure-1: The Two-Level CCM

and prioritizing the required competencies across individuals, employers, and educators. For example, competency models were introduced at different levels including organizations (e.g., UNESCO), roles (e.g., accounting) or regions (e.g., European Union; Singapore). Today, 140 countries have adopted competency models to provide a framework to prioritize learning.²⁰

"Competency models have proven to be effective for aligning and prioritizing the required competencies across individuals, employers, and educators."

These models provide guidance for the classification of competencies and associated levels in specific roles.²¹ Models support the creation of a common vocabulary.²² In addition, they often include consistent classifications and measures to enable policymakers, employers, and individuals to assess the current state of human capital and guide the allocation of scarce development resources (e.g., education and training).²³

In general, competency models include five components:²⁴

Task: the demand to complete a discrete activity in a role (e.g., managing staff).

Competency: the skills and knowledge and attributes required to complete this task.

Levels: The ability to evaluate the level of proficiency of a competency to complete the task (e.g., basic vs. advanced).

Assessment: The process to evaluate proficiency.

Governance: The competency model must be part of a broader recognized workforce development framework that prioritizes and legitimizes competencies.

The Calgary Competency Model

Similar to traditional learning systems, competency models are domain specific. For example, there are competency models for accountants, social workers, system engineers, human resource managers and salespeople (refer to Appendix-1 for a sample list of 15 diverse competency models).

However, though social workers and system engineers appear to have little in common on the surface, the reality is quite different. While it is true the DSCs of these roles are vastly different, their underlying ECs are not. In fact the analysis reported in *Calgary on the Precipice*, found two-thirds of ECs were common across all 15 competency frameworks, including 76 per cent of interpersonal competencies; 67 per cent of analytical competencies; 63 per cent of foundational literacies; and 52 per cent of professional competencies.²⁵

This result identifies the opportunity for developing a two-level CCM that transcends all commercial, social, and public sectors (Figure-1). The first level is composed of four clusters of ECs,



Figure-2: Four Cluster EC Model

including *analytical* competencies, *interpersonal* competencies, *foundational* literacies, and *professional* competencies (Figure-2 and Appendix-2). The second level is composed of DSCs that will be specific to a role or organization.

This CCM becomes the compass for not only individuals navigating the learning climbing wall, but also for employers and educators. Moreover,

this model will frame the priority learning outcomes for the learning system. The benefit of a CCM with common ECs is shared language and criteria across all sectors and organizations in the city. From an employer's perspective, a CCM provides them the ability to clearly communicate the competency required in a specific role. This in turn, provides existing or future employees the ability to focus on developing these competencies.



Lastly, it provides the ability for both formal and informal educators to clearly articulate the competencies their programs or initiatives will develop.

Table-1: Benefits of the CCM

Employer	Individual	Educator
Aligning the supply and demand of priority competencies. Accelerating the acquisition and retention of talent. Accelerating retraining and upskilling.	Accelerating employment transitions. Providing guidance to focus both formal and informal learning. Providing guidance on experiential learning.	Aligning learning opportunities and outcomes to community priorities. Providing a framework to link informal learning to community.

The Path Forward

The goal of this discussion paper is to continue the debate introduced in *Calgary on the Precipice*. The future of Calgary is defined not by geography, government, or any single organization. Rather, the future of Calgary is defined by the capacity of Calgarians to adapt to meet current and future headwinds. The future of Calgary is defined by how Calgarian’s learn.

This discussion paper proposes the development of a unified CCM to accelerate the transformation of the learning system from a static ladder, to one that resembles a climbing wall and incorporates all

forms of learning from formal to informal to experiential.

For a CCM to be valuable, it must meet four criteria.

1. It must guide the development goals of Calgarians, enabling more efficient labour transition.
2. It must be complementary to existing role or sector level DSCs competency models to maximize adoption.
3. It must be adaptable to enable it to be adopted across the diverse commercial, social, and public sectors.
4. It must be simple, to enable adoption by small and medium enterprises that make up over 90 per cent of the Calgary market.
5. It must provide support for diversity of learning pathways, including all forms of education (formal and informal) and experience (professional, volunteer, and contextual) to guide effective scaffolding of competencies.

“By embracing diversity, innovation and new ideas, Alberta will become the place where the brightest minds come together and solve the world’s biggest challenges.”

***Skilled by Design: A Blueprint for Alberta’s Future Workforce
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CCM Working Group

To advance this discussion, this paper proposes the establishment of a collaborative LearningCITY working group incorporating Calgary Economic Development (CED), the Calgary Chamber of Commerce (CCC), the Calgary Chamber of Voluntary Organizations (CCVO) and representatives from across the formal and informal learning system. The mandate of this working group will include:

1. A comprehensive audit of role and industry level competency frameworks.
2. Refinement of the proposed ECs embedded in the CCM.
3. Alignment of the level dimensions of the proposed CCM.
4. Alignment on the assessment dimension of the proposed CCM.
5. Development of a pilot deployment plan.

CCM Pilot

Based on the refinement of the CCM, the CCM should be piloted in a business revitalization zone (BRZ). The core questions propose to test in the pilot are:

1. Do the ECs embedded in the CCM transfer across industry sectors?
2. Do the ECs embedded in the CCM transfer across organization size?
3. Do individuals understand the role of a CCM in guiding their professional development?
4. Do formal and informal educators understand how to link their learning outcomes to a CCM?

This limited BRZ pilot would enable the working group to test the validity of the CCM across diverse contexts from industry sector to organization size. For this reason, the choice of the pilot BRZ must be representative of the diversity of the city.

During this pilot, the focus will be on engaging a representative sample of employers and educators to test the value of the CCM.



The Last Word

Collaboration can be difficult, especially across such diverse partners as policymakers, educators, and employers. Therefore, the greatest challenge for most of us is not external, but the embedded rules, routines, practices, and cultures that influence individual mindsets, behaviours, and organizations. Yet the collaboration, compromise, and consensus required to implement a unified CCM is an essential step forward to creating an agile and adaptive labour force.



PROJECT CONTRIBUTORS

LearningCITY is a research program of the CityXLab hosted by the *Institute for Community Prosperity at Mount Royal University*. LearningCITY is a collaboration of researchers, educators and other community leaders committed to innovating learning in Calgary through sharing and evidence. The goal is to accelerate innovation through collaborative research and sharing across Calgary's vast open learning system.

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Dr. Sharon McIntyre	Innovation and Technology	Mount Royal University
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Dr. Chad Saunders	Entrepreneurship support policy	University of Calgary
Dr. Faith-Michael Uzoka	Computer Information Systems	Mount Royal University



APPENDIX-1: COMPETENCY MODEL INVENTORY

Domain	Publisher	Year	Scope
1. Accounting	Chartered Global Management Accounting	2019	Global
2. Accounting Education, Training, and Certification	World Bank	2018	Global
3. Sales	Canadian Professional Sales Association	2017	Canada
4. Human Resources	Society and Human Resource Professionals	2012	Global
5. Human Resources	Human Resource Professional Association	2014	Canada
6. Policing	College of Policing	2016	United Kingdom
7. Engineering	Association of Professional Engineers & Geologists of Saskatchewan	2018	Saskatchewan, Canada
8. Social Work	Steering Committee for the National Social Work Competency Framework	2015	Singapore
9. Civil Service	Civil Service Human Resources	2017	United Kingdom
10. United Nations Education, Science Organization (UNESCO) Management	UNESCO	2015	UNESCO
11. Organisation for Economic Co-operation and Development (OECD)	OECD	2014	OECD
12. Systems Engineering	ICOSE UK	2015	United Kingdom
13. International Atomic Energy Agency (IAEA) Staffing	IAEA	N.D.	IAEA
14. Prescribing Professionals	Royal Pharmaceutical Society	2016	United Kingdom
15. United Nations International Children's Emergency Fund (UNICEF) Staffing	UNICEF	N.D.	UNICEF

APPENDIX-2: ENABLING COMPETENCY DEFINITIONS

Analytical Competencies

Analytical Thinking: The ability to deconstruct issues into smaller, more manageable pieces, use evidence and reasoning to identify unique relationships between concepts and weigh the costs and benefits of the alternative actions available. Includes:

- Analyzing evidence and assumptions.
- Applying reason and appropriate criteria to make a judgement.
- Apply knowledge from across fields to discover new or expand one's understanding.
- Ability to be objective and open-minded.

Contextual Agility: The ability to work well no matter the context. The contextual setting can include the culture, socio-economic conditions, organization size, industry type, culture, and team composition.

Creativity: Use of imagination or original ideas to create something new and appropriate for the problem at hand.

Curiosity: The ability to be curious and explore a deeper meaning than what is being overtly expressed. It can lead to the expansion of social networks and learning opportunities.

Perseverance: Perseverance in the face of professional challenges is essential to adaptive capacity. This includes improvements in an individual's control of

their emotional reactions to an intellectual challenge, learning from failure, understanding the importance of practice for competency development, how to manage obstacles in career advancement, and personal hardiness when faced with adversity. One caveat is that perseverance must be maintained within the context of excellent metacognitive abilities that are necessary to determine the point at which perseverance in a career becomes detrimental to being adaptable to uncertainty.

Problem Solving: Problem solving often leverages analytical thinking. Effective problem solving is made up of four interrelated skills:

- The ability to identify vital questions and problems and communicate them clearly.
- The ability to gather and evaluate relevant information.
- The ability to think open-mindedly, recognizing and assessing assumptions, implications, and practical consequences.
- The ability to come to well-reasoned conclusions and solutions, testing them against relevant criteria and standards.

Reflection: Contemplation about one's character, actions, and motives. Provides an understanding of self, values, and how they impact thinking and actions. This competency is under the umbrella of meta-cognitive thinking.

System Thinking: The ability to evaluate the interdependence of discrete components of a whole, as well how these components affect the whole and vice-versa. This includes an individual's ability to understand complex systems, enabling the ability to anticipate potential outcomes and develop approaches to influencing these outcomes.

Takes Initiative: The discipline and ambition to start a task, regardless of difficulty, with limited guidance from others and be self-reliant under pressure.

Time Management: Efficiently and effectively managing one's own time, the time of others, and deliverables for projects. Time management also includes the ability to manage and filter vast levels of information to make timely decisions.

Interpersonal Competencies

Influence: The ability to sway the attitudes or behaviour of others through evidence, logic, and emotion.

Integrity: Display consistent principles that conform with socially acceptable standards within the context of a place of employment. Includes encouraging others to be honest and trustworthy.

Relationship Curation: The ability to develop and maintain relationships with individuals who may share common interests or future goals. This includes the ability to cooperate with others to work towards a common goal.

Collaboration: Work together to a common purpose to achieve mutually beneficial value.

Conflict Resolution: The ability to resolve conflict or create common ground and reach a consensus when different options for forward movement in an organization are considered. The development of this competency encourages people with diverse perspectives to work together to evaluate options and resolve a shared problem.

Emotional Intelligence: The ability to identify, assess and modulate one's own feelings and to understand the feelings of others. Emotional intelligence requires a mix of self-awareness and empathy towards others. Dimensions of emotional intelligence include emotional management, self-awareness, optimism, motivation, empathy, and social skills.

Foundational Literacies

Civic Literacy: Both the knowledge of and the ability to effectively engage in and influence change in social systems, including political, economic, and cultural.

Effective Listening: The ability to commit full attention to what other people are saying, taking the time to understand points being made and ask questions when appropriate, without interrupting at improper times. (Listening to listen versus listening to answer.)

Financial Literacy: Both the knowledge of and the ability to make informed decisions on the allocation of financial resources. Includes areas such as personal financial management, budgeting, and investing.

Numeracy Both the knowledge of and the ability to work with and use numbers. Has the confidence and awareness to know when and how to apply quantitative and spatial understandings at home, at school, at work or in the community.

Verbal Communication: The ability to share information and explanations with a target audience by speaking in a persuasive and influential way. This includes vocabulary, tone, pace, volume, and articulation, with or without, technological support.

Written Communication: The ability to share information and explanations with a target audience in writing in a persuasive, engaging, and influential way. This includes grammar, tone, vocabulary, and style.

Technology Literacy: Both the knowledge of, and the ability to effectively use technology to access, manage, integrate, evaluate, create, and communicate information in a digital environment. This includes an ability to effectively adapt to new digital devices and interfaces. General technical literacy is different from domain-specific technology competency.

Professional Competencies

Define Workplace Goals: Capacity to define future goals, objectives, and outcomes at an individual and organizational level and to use these goals to serve as motivators for the present action.

Manage Organizational Resources: Ability to define a plan to achieve organization goals. This may include:

- Evaluation of current financial and human resources available to execute the defined plan.
- Identifying current and future macro and micro level risks to achieving plan.
- Identify and prioritize existing resource gaps and secure incremental resources or alternatives.
- Ability to develop and manage rigorous budgets.
- Ability to influence others to achieve goals, including the ability to delegate tasks.
- Ability to monitor progress towards achieving organizational and/or individual performance indicators.

Inspire and Lead Others: The ability to guide others to complete a task through charisma, rank, intellect, will or experience. A leader's influence may be formal (e.g., supervisor) or informal (e.g., social influence). This includes the ability to establish a clear goal, the ability to communicate this goal to others, and the ability to balance the interests of others to engage them to deliver on this goal.

Professional Identity: One's self-concept based on attributes, beliefs, values, motives, and experiences. Research suggests that the formation of an individual's professional identity plays a critical role in the transition between postsecondary and future job environments. The age of an individual and how open they are to future change can influence their career adaptability.

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