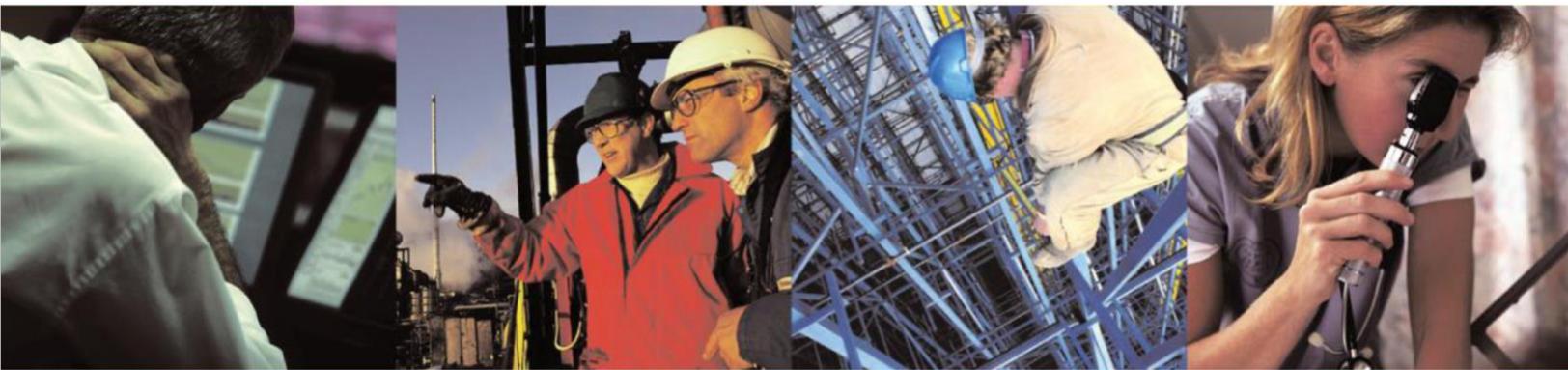


February 10, 2023

# Addressing Knowledge Gaps about Skills of Persons with Disabilities: A Literature Review and Key Informant Interviews

## Final Report



# Addressing Knowledge Gaps about Skills of Persons with Disabilities: A Literature Review and Key Informant Interviews

## Final Report

February 10, 2023

<b>Principal Investigator:</b>	Dr. Emile Tompa Health and Labour Economics
<b>Co-Investigator:</b>	Sabrina Imam Research Associate
<b>Co-Investigator:</b>	Joann Varickanickal Research Associate
<b>Co-Investigator:</b>	Dr. Amir Mofidi Post-doctoral Fellow
<b>Co-Investigator:</b>	Dr. Rebecca Gewurtz Social Policy Research
<b>Co-Investigator:</b>	Emma Irvin Systematic Review Methods
<b>Research Associate:</b>	Basil Southey PhD. Student

Project Undertaken for the Skills for Success program,  
Employment and Social Development Canada (ESDC)

Canada



Centre de  
recherche sur les politiques en  
matière d'invalidité professionnelle



Centre for  
Research on  
Work Disability Policy

## Executive Summary

There is currently little to no information on the foundational and transferable skill levels of persons with disabilities (PWDs). Building on existing research contained in demographic profiles developed by the Skills for Success program, we undertake a literature review and key informant interview to identify and fill knowledge gaps, as well as help inform the development of recommendations for how remaining gaps could be filled (e.g., with a targeted survey conducted by a polling firm). We provide insights on important sensitivities for developing questionnaires for PWDs and make suggestions on how the given research analytical pieces in the literature review can be prioritized in order of magnitude (how large the gaps are) to inform the Skills for Success program policy and program development. All types of disabilities are addressed, however, we give particular focus to persons who identify as having a learning disability or mental health condition. We also consider issues of intersectionality (e.g., LGBTQ+ and gender identity, racialized status, immigrant status, indigeneity) as multiple facets of identity can bear on social location, social barriers, and opportunities to participate in work and other social roles.

## Research Questions

Four research questions underlie this study and serve as the basis for the literature review and key informant interviews. The four questions are:

1. What do we know about the foundational and transferable skill levels and employment outcomes for PWDs, including women and men within this group? What are the knowledge gaps in skill levels and employment outcomes for PWDs, and how could these be addressed?
2. What are the main barriers faced by PWDs to increasing their skill levels and further integrating into the labour market? Do women with disabilities face additional barriers? If so, what are they?
3. What are some proven or promising practices or avenues to address these barriers and/or increase skill levels for PWDs?
4. How has the COVID-19 pandemic affected the skill development and labour market barriers of PWDs? What are some of the long-term implications of the pandemic on the future of PWDs and their skill development and labour market barriers?

Key informant interviews are included here because they provide greater insight than literature reviews on current issues such as the impact of COVID-19 on skills development and labour-

market barriers.

### Some High-Level Statistics from the Canadian Survey on Disability

Findings from the Canadian Survey on Disability (Statistics Canada 2017) reveal the following distribution across types of disabilities:

- Disabilities related to pain (15%), flexibility (10%), mobility (10%), and mental health (7%) were the most common among Canadians aged 15 years and over.
- This was followed by seeing (5%), hearing (5%), dexterity (5%), learning (4%), and memory (4%).
- Developmental disabilities were the least prevalent type representing approximately 1% of those aged 15 years and over.
- Women had a higher prevalence of most disability types, with the exception of hearing, learning, and developmental disabilities.

It should be noted that these categories of disability are not an exhaustive nor comprehensive listing of every disability type.

Following are some additional key insights on mental health and psychological disabilities, learning disability, and neurodiversity drawn from a literature review.

- Mental health disabilities and psychological impairment-related disability had strong correlations to unemployment, but there is little research on their specific skill levels. (Kelly 2021).
- Persons with learning disabilities often struggle with social and communication skills regardless of whether their disability directly impairs their ability to communicate. This can be attributed to increased social anxiety and other psychological co-morbidity related to stigmatization or past experiences with social exclusion (Diaz-Garolera 2019).
- Accardi (2013) identified key barriers to accessing employment for adults with neurodiversity, and that these barriers are largely related to social skills confidence:
  - i. Anxiety from preparing for interviews;
  - ii. Sensory challenges (e.g., overstimulation, distraction);

- iii. A lack of challenging or rewarding work activity;
- iv. Manager and employer misconceptions of Autism Spectrum Disorder (ASD);
- v. Workplace training programs that do not support the individual's needs and
- vi. Difficulty with self-advocacy.

### Barriers to Increasing Skills and Integration into the Labour Market

Several barriers were identified that prevented PWDs from increasing their skill levels and integrating further into the labour market. Variability of success was based on type of disability. For example, those with intellectual disabilities are much less likely to become managers, senior officials, or members of a professional association than other disability types (Kelly 2021). The level of employment and job satisfaction vary greatly based on the type of disability reported.

Another key issue is disclosure considerations. Choosing when and how to disclose a disability to an employer or educator is a major consideration for PWDs. The decision is deeply personal and influenced by factors such as disability type, availability of support, or ability to self-advocate (Lindsay 2018). Jans (2012) conducted focus groups on this issue and found that participants made decisions about disclosure based on perceptions of “disability-friendliness” in the workplace. People with hidden disabilities often chose not to disclose their disability, particularly if that disability was related to mental illness, due to the risk of discrimination in the interview process (Jans 2012).

Job mismatch and underemployment also arose as key issues. PWDs who have attained employment still experience poverty at a much higher rate than non-disabled persons who are employed. This supports other findings of underemployment, underpayment, and job-mismatch (Graham 2013; Kelly 2021; Tompa 2020).

### Impacts from the COVID-19 Pandemic

The COVID-19 Pandemic has had both negative and positive impacts on employment outcomes for PWDs. On the negative side, employment inequality rose due to high risk of COVID infection

and long-term health impacts on PWDs. Businesses were more focused on surviving the pandemic than supporting workers with disabilities. Given that workers with disabilities disproportionately work in front line jobs if employed, many lost their employment during lockdown. During the lockdown period with work-from-home requirements, social isolation was difficult, particularly for persons from neurodivergent populations and others who are already more susceptible to the negative effects of isolation than the general population. As workplaces demanded employees return to work, many PWDs were forced to decide between personal safety and employment, due to their higher risk for infection and long-term health impacts. In general, the pandemic has been a major setback on advances made in the employment of PWDs. COVID-19 has also given rise to a new cohort of PWDs with Long-COVID symptoms.

On the positive side, the increased acceptance of work-from-home as a viable phenomenon for many organizations has created new employment opportunities for persons with mobility and transportations challenges, as well as persons who find it challenging to work outside of the home for other reasons. Support provision can also be more discreet when working from home, which can minimize the focus on a person's disability amongst candidate employers, colleagues, and supervisors.

### Promising Programs, Practices, and Services

Several promising programs, practices, and services were identified through the literature review and key informant interviews. The structuring of inclusive Vocational Education and Training (VET) (e.g., German Federal Institute for VET model) is a promising practice that views inequality and heterogeneity as a benefit and as a basis for further development. It includes development of inclusive educational structures, company-based organization forms, training concepts, and learning arrangement (Bylinski 2015).

O'Toole (2015) conducted a review of approaches focused on one-to-one supports in which the following practices were proposed:

1. Increasing the training and number of advisers who work with PWD in employment services;
2. Provide individualized training programs that are directly relevant and emphasize on-the-job training;
3. Increase the use of peer support and on-the-job mentoring by and for PWDs and
4. Develop structured approaches to placement that provide PWDs with multiple options for employment opportunity.

Several evaluations of existing programs for skill training for PWDs highlighted learning milestones. Clark (2018) developed and evaluated the UPGRADE program for teaching soft skills to students with disabilities. The program emphasized the use of self-monitoring, individual goal setting, and self-graphing in combination with practical job training and relevant scenarios. The Program for the Education and Enrichment of Relational Skills (PEERS) was used in conjunction with the Circles Curriculum for teaching relationship boundaries by Rose (2021) to train college students with intellectual and developmental disability. PEERS includes four components 1) homework review, 2) didactic lessons and role-play, 3) behavioural rehearsal, and 4) homework assignments for the following week's session. Results indicate a significant increase in social skill knowledge with trends toward significant increases in quality of friendship and improvement in conversational skills (Rose 2021).

The evaluations of existing PWDs programs for skill training also focused on technology and networking. Panerai (2018) explored the use of virtual reality to develop functional living skills in individuals with intellectual disability remotely and found statistically significant results. The Employee Assistance and Resource Network on Disability Inclusion (EARN) released a toolkit for the establishment and maintenance of Employee Resource Groups (ERGs) to ensure PWDs have a structured support network.

Workers with ASD tend to benefit from specific practices that enable workplace success. A particularly successful program is the Dandelion Program (DXC Technology 2021), which

began in Australia but has spread rapidly and influencing Autism at Work programs globally. The program aims to create a hiring, training, and worker retention program for neurodiverse employees (e.g., ASD, ADHD, dyslexia) to develop IT, life, and executive skills. Scott (2015) explored key factors for successful employment from the viewpoint of adults with autism. Findings highlight the value of clear communications between employees and employers to ensure an understanding of needs on both sides, and the value of using ASD-specific workplace tools to assist in facilitating the necessary communication between these two groups. Appendix G provides some additional tips on approaches for supervising neurodiverse individuals.

Key informant interviews were a particularly enlightening source for promising programs, practices and services. A lengthy list was gleaned from these interviews and can be found in a table titled **Programs, Services, and Other Resources Gleaned from Interviews**. Following is a summary of recommendations provided by informants.

- i. **Mainstream training opportunities**—Society needs to adopt a social model of disability rather than rely on the outdated medical model. Barriers are created because PWDs are viewed as different from others. But in fact, they are as diverse as all people. Streaming PWDs into different curriculums in secondary school is the starting point for marginalizing such persons. Rather, PWDs need to be integrated into the mainstream to avoid being pigeonholed into programs with low expectations.
- ii. **Contextualize foundational and transferable skills training**—Several different sets of skills may help PWDs secure employment, which can be clustered into three main categories: 1) soft skills, 2) accessibility skills (e.g., ability to navigate environments and use system technology), and 3) technical skills (i.e., specific skills required for a particular job). However, a singular focus on advancing skill sets of PWDs may not be helpful, as they do not necessarily lack skills. Rather, mainstream training programs and employers seeking talent need to be better equipped to accommodate diversity.
- iii. **Accommodate different learning styles**—Programs and employers need to accommodate different learning styles in training programs and opportunities, such as learning visually or

auditorily. Neurodiversity and diversity in general should be valued; programs and employers should take a strengths-based viewpoint.

- iv. **Promote barrier-free hiring approaches**—Multiple barriers are created by conventional hiring practices. One such barrier is online platforms for resume submission. These platforms can be challenging to navigate, particularly for persons with weak computer skills. Oddly, strong computer skills are often not part of the job requirements. Additionally, the screening software used to screen out candidates can be biased against PWDs, e.g., screening out candidate who have gaps in their employment record. A focus on resumes and interviews to assess a person’s strengths and capabilities created barriers, particularly for neurodivergent populations. Interviews highlight a person’s social skills. A better way to observe a person’s skills and abilities is to allow them to demonstrate them through a task-based assessment process. An approach being promoted in some sectors is on-the-job testing for 2-3 weeks, which provides an opportunity to observe both technical and soft skills capabilities. In general, internships are seen as a better way to identify and recruit talent, while at the same time providing candidates with training opportunities.
- v. **Promote on-the-job training opportunities**—Classroom skills training for employment purposes should be minimized, particularly if it is segregated from conventional secondary and post-secondary training programs. Experiential learning on-the-job should be emphasized— It is a better way to uncover an individual’s skills and help persons grow and develop. On-the-job training can facilitate skills discovery and provide contextualized training opportunities, but these training opportunities need to be in the competitive labour market.
- vi. **Consider the whole person and their needs**—Programs and employers should take a “whole person approach to training,” where consideration is given to the needs of a person across all aspects of their lives. An employment opportunity cannot work for a person unless all their life needs are addressed. A range of wrap-around supports available through community services can be engaged for this purpose. The whole-person approach also takes into consideration the skill needs for a lifetime of employment, rather than just the needs at a point in time in a specific job.

- vii. **Provide training for supervisors, managers and co-workers**—Training for managers and co-workers is important to promote culture change. It can be as simple as an afternoon session where people are taught about autism, neurodiversity, what to expect from persons on the spectrum, and just provide an opportunity for people to ask questions and get comfortable with the idea of diversity. More broadly, management training on disability inclusion should be mainstreamed in post-secondary management training programs.
- viii. **Support careers, mentorship, and advancement**—Many training programs fail to look to the future. Instead, they only address the immediate needs of the employer. Employment support services should focus on helping persons find careers, not just jobs. Job seekers may require career exploration opportunities. A support circle is a means to addressing multiple aspects of a worker’s needs in a particular employment situation. A support circle is a team of people who support the individual, including mentors, co-workers, and supervisors. In general, PWDs need mentorship opportunities, just like able-bodied persons, to support their career advancement.

**Contents**

Executive Summary ..... 3

    Research Questions..... 3

    Some High-Level Statistics from the Canadian Survey on Disability..... 4

    Barriers to Increasing Skills and Integration into the Labour Market..... 5

    Impacts from the COVID-19 Pandemic ..... 5

    Promising Programs, Practices, and Services..... 6

Introduction ..... 16

    Key Research Questions ..... 17

    Definitions ..... 17

    Prevalence of Different Types of Disabilities in Canada ..... 20

Module 1: Literature Review and Environmental Scan ..... 22

    Review Methodology ..... 22

        Search Strategy..... 23

        Article Selection..... 23

        Data Extraction and Analysis ..... 24

    Findings from the Rapid Review..... 24

        Categories of Skills Surveys ..... 38

Module 2: Key Informant Interviews ..... 46

    Key-Informant Interview Methodology ..... 46

    Interviewee Selection Process ..... 46

    Inclusion and Exclusion Criteria ..... 47

    Overview of the Key Informant Interviews..... 47

    Summary of the Key Informant Interviews..... 48

Individual-, organizational-, and system-level considerations.....	49
Mainstreaming Training Opportunities .....	50
Foundational and Transferable Skills that Help Secure Employment .....	51
Value and Accommodate Different Learnings Styles .....	51
Barrier-Free Hiring Strategies.....	52
On-the-Job Training .....	53
Development of Soft Skills.....	54
Training for Persons with Neurodiversity.....	55
Training for Supervisors, Managers, and Co-Workers .....	55
Support, Mentorship, and Advancement .....	55
Impacts of intersectional identities.....	56
Impact of the COVID-19 Pandemic .....	57
Desirable Characteristics of a Training Program.....	59
Summary of Key Informant Interviews .....	60
References .....	67
Appendix A: Search Terms Used for PsycINFO .....	76
Appendix B: Title and Abstract, Article Inclusion & Data Extraction Guide .....	77
Appendix C: Articles Identified in the Review.....	79
Appendix D: Key Informant Interview Questionnaire .....	86
Appendix E: List of Skills Training Programs for Key Informant Outreach .....	90
Appendix F: Interview Summaries .....	92
Interview #1.....	92
Respondent Profile .....	92
Key Insights .....	92

Programs, Services and Other Resources .....	92
Some Noteworthy Organizations.....	92
Interview #2.....	93
Respondent Profile .....	93
Key Insights .....	93
Other Insights.....	93
Programs, Services and Other Resources .....	94
Interview #3.....	94
Respondent Profile .....	94
Key Insights .....	94
Other Insights.....	95
Desirable Features of a Training Program.....	95
Interview #4.....	95
Respondent Profile .....	95
Key Insights .....	95
Programs, Services and Other Resources .....	97
Interview #5.....	97
Respondent Profile .....	97
Key insights .....	97
Programs, Services and Other Resources .....	98
Some Noteworthy Organizations.....	99
Interview 6.....	99
Respondent Profile .....	99
Key Insights .....	99

Other Insights.....	99
Programs, Services and Other Resources .....	100
Interview 7.....	100
Respondent Profile .....	100
Key Insights .....	100
Other Insights.....	101
Programs, Services and Other Resources .....	102
Interview 8.....	102
Respondent Profile .....	102
Key Insights .....	102
Other Insights.....	102
Programs, Services and Other Resources .....	103
Interview #9.....	103
Respondent Profile .....	103
Key Insights .....	103
Other Insights.....	104
Programs, Services and Other Resources .....	104
Interview #10.....	104
Respondent Profile .....	104
Key Insights .....	105
Other Insights.....	105
Programs, Services and Other Resources .....	106
Some Noteworthy Organizations.....	106
Interview #11.....	106

Respondent Profile .....	106
Key Insights .....	106
Other Insights.....	107
Programs, Services and Other Resources .....	108
Interview #12.....	108
Respondent Profile .....	108
Key Insights .....	108
Other Insights.....	109
Programs, Services and Other Resources .....	109
Some Noteworthy Organizations.....	109
Interview 13.....	110
Respondent Profile .....	110
Key Insights .....	110
Other Insights.....	111
Programs, Services and Other Resources .....	111
Appendix G: Approaches for Supervising Neurodiverse Individuals .....	112

## Introduction

There is currently little to no information on the foundational and transferable skill levels of persons with disabilities (PWDs). The Program for the International Assessment of Adult Competencies (PIAAC) by the Organization for Economic Co-operation and Development (OECD) – the main source for statistically reliable data on population skill levels – does not include questions on disability status of respondents to help identify individuals in this group. As a bit of background, there are three adult literacy surveys at the international level, the Adult Literacy and Lifeskills Survey (ALL),<sup>1</sup> the International Adult Literacy Survey (IALS), and the OECD’s Programme for the International Assessment of Adult Competencies (PIAAC) noted above. In general, there is no data available on the skills levels of PWDs as measured by PIAAC (Level-1 upward to Level-5) in Canada or in any country, therefore, determining what research exists that is relevant and could help our understanding of the foundational and transferable skills of PWDs is critically important for policy and program development.

Building on existing research contained in demographic profiles developed by the Skills for Success program, we undertake a literature review and key informant interview to identify and fill knowledge gaps, as well as help inform the development of recommendations for how remaining gaps could be filled (e.g., with a targeted survey conducted by a polling firm). We provide insights on important sensitivities for developing questionnaires for PWDs and make suggestions on how the given research analytical pieces in the literature review can be prioritized in order of magnitude (how large the gaps are) to inform the Skills for Success program policy and program development. We give particular focus to persons who identify as having a learning or mental health condition, though we do address all types of disabilities. We also consider issues of intersectionality (e.g., LGBTQ+ and gender identity, racialized status, immigrant status, indigeneity), as multiple facets of identity can bear on social location, social barriers, and opportunities to participate in work and other social roles.

---

<sup>1</sup> The International Adult Literacy and Skills Survey (IALSS) is the Canadian component of the ALL.

As noted, core activities of the project are a literature review and key informant interviews (e.g., of the latter included employers/employer associations, trainers, researchers, and disability community leaders working in training and skills development for PWDs). Activities also include secondary data review to identify promising data sources that inform key research questions, and to develop profile tables for descriptive purposes.

### Key Research Questions

1. What do we know about the foundational and transferable skill levels and employment outcomes for PWDs, including women and men within this group? What are the knowledge gaps and how could these be addressed?
2. What are the main barriers faced by PWDs to increasing their skill levels and further integrating into the labour market? Do women with disabilities face additional barriers? If so, what are they?
3. What are some proven or promising practices or avenues to address these barriers and/or increase skill levels for PWDs?
4. How has the COVID-19 pandemic affected the skill development and labour market barriers of PWDs? What are some of the long-term implications of the pandemic on the future of PWDs and their skill development and labour market barriers?

Key informant interviews provide greater insights than literature reviews on current issues such as the impact of COVID-19 on skills development and labour-market barriers, hence the reason for including this source for knowledge gathering.

### Definitions

#### **Disability**

Disability is a complex phenomenon, reflecting an interaction between features of a person's body and mind and features of the society in which they live. A disability can occur at any time in a person's life; some persons are born with a disability, while others develop a disability later in life. It can be permanent, temporary, or episodic. Disability can steadily worsen, remain the

same, or improve. It can be very mild to very severe. It can be the cause, as well as the result, of disease, illness, injury, or substance abuse. Because of its complexity, there is no single, harmonized “operational” definition of disability across federal programs (Human Resources and Skills Development Canada, 2013).

Reflecting this complexity are the different approaches to understanding the experience of disability. According to the traditional, bio-medical approach, disability is viewed as a medical or health problem that prevents or reduces a person's ability to participate fully in society. In contrast, the social approach frames disability as a natural part of society, where attitudes, stigma and prejudices present barriers to PWDs, and prevent or hinder their participation in mainstream society (Human Resources and Skills Development Canada, 2013).

The most widely accepted definition of disability is provided by the World Health Organization: Disabilities is an umbrella term, covering impairments, activity limitations, and participation restrictions. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations (Human Resources and Skills Development Canada, 2013).

### **Barrier**

Barrier means anything, including physical, architectural, technological, or attitudinal that is based on information or communications, or anything that is the result of a policy or a practice that hinders the full and equal participation in society of persons with an impairment, including a physical, mental, intellectual, cognitive, learning, communication, or sensory impairment or a functional limitation (Minister of Justice, 2019).

**Foundational Skills**

Foundational skills consist of literacy and numeracy skills that are needed regardless of employment aspirations. Foundational skills are essential for further learning, productive employment, and civic engagement (UNICEF, 2019).

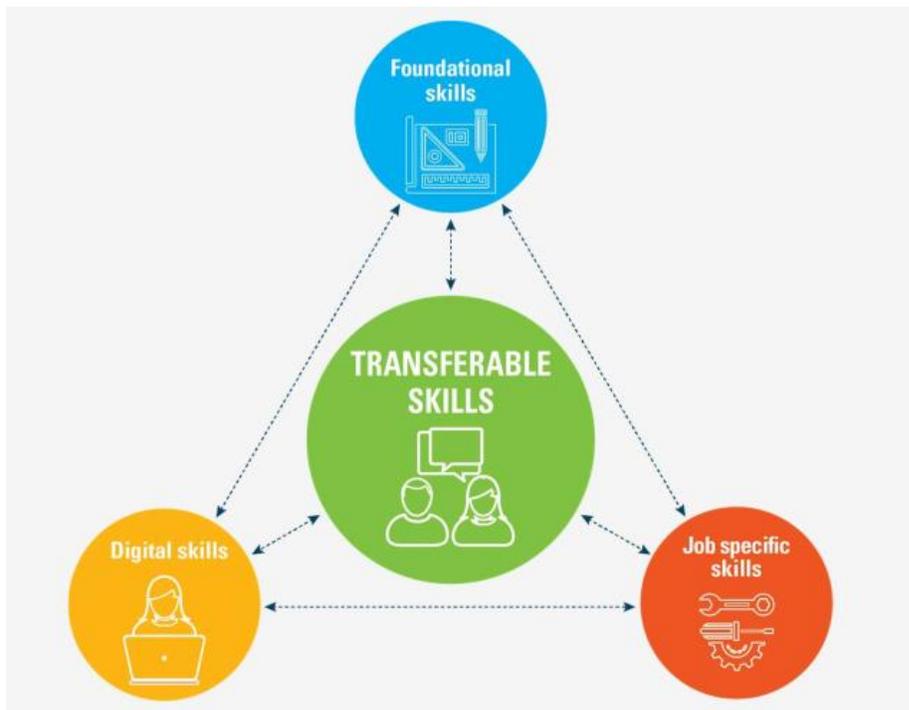
**Transferable Skills**

Transferable skills are skills such as creativity, communication, and problem solving, that are needed by all. Such skills enable young persons to engage in life-long learning and to adapt to rapid changes in the economy and society, thereby improving their chances of finding and retaining work (UNICEF, 2019).

**Skills for Success**

Employment and Social Development Canada's Skills for Success program has identified nine key foundational and transferable skills that are needed to participate and thrive in learning, work, and life. These skills include Adaptability, Collaboration, Communication, Creativity & Innovation, Digital, Numeracy, Problem Solving, Reading, and Writing (Office for Skills and Success 2021).

Figure 1: Transitions from School to Work (UNICEF 2019)



### Prevalence of Different Types of Disabilities in Canada

As indicated in Table 1, disabilities related to pain, flexibility, mobility, and mental health are the most common in Canada. Disabilities related to pain (15%), flexibility (10%), mobility (10%), and mental health (7%) are the most common among Canadians aged 15 years and over. This is followed by seeing (5%), hearing (5%), dexterity (5%), learning (4%), and memory (4%).

Developmental disabilities are the least prevalent type, representing approximately 1% of those aged 15 years and over. Women had a higher prevalence of most disability types, with the exception of hearing, learning, and developmental disabilities (Statistics Canada 2017).

Categorization of disability is difficult, as it relies heavily on a medical model of disability and can be strongly influenced by regional differences in reporting. However, for the purposes of this study, we have attempted to synthesize the categorizations prevalent among the literature we reviewed. The categories of disability in this report are not an exhaustive nor comprehensive listing of every disability type. Categories such as learning disability and intellectual disability are especially challenging to delineate, as definitions related to these types of disabilities have changed rapidly in recent years.

Table 1. Canadian Population Aged 15 and Over with a Disability (Statistics Canada 2017)

Disability type	Both		Women		Men	
	number	percent	number	percent	number	percent
Total population - aged 15 years and over	28,008,860	100.0	14,345,330	100.0	13,663,530	100.0
Pain-related*	4,062,000	14.5	2,374,230	16.6	1,687,770	12.4
Flexibility*	2,795,110	10.0	1,568,970	10.9	1,226,140	9.0
Mobility*	2,676,370	9.6	1,601,010	11.2	1,075,350	7.9
Mental health-related*	2,027,370	7.2	1,272,490	8.9	754,880	5.5
Seeing*	1,519,840	5.4	903,040	6.3	616,800	4.5
Hearing*	1,334,520	4.8	619,360	4.3	715,160	5.2
Dexterity*	1,275,610	4.6	784,120	5.5	491,490	3.6
Learning	1,105,680	3.9	560,970	3.9	544,700	4.0
Memory*	1,050,840	3.8	575,760	4.0	475,080	3.5
Developmental*	315,470	1.1	123,310	0.9	192,160	1.4
Unknown	155,810	0.6	75,150	0.5	80,660	0.6

\* Significantly different between women and men at  $p < .05$

Note: The sum of the values for each category may differ from the total due to rounding.

## Module 1: Literature Review and Environmental Scan

The review and scan focus on research questions 1-3— knowledge about the foundational and transferable skill levels and employment outcomes of PWDs; main barriers faced by PWDs to increasing their skill levels and further integrating into the labour market; and proven or promising practices or avenues to address these barriers and/or increase skill levels.

Consideration is also given to research question 4—impact of the COVID-19 pandemic on the skill development and labour market barriers of PWDs. This latter question is addressed more fully through our key informant interviews, as much of the developments and insights on the impact of the COVID-19 pandemic has not yet been published in traditional journal and internet publication venues. We note that our interactions with disability community organizations through activities related to the Disability and Work in Canada (DWC) initiative have included panel sessions on the topic at the DWC 2020 and 2021 conferences, which can be found at the following links: <https://www.crwdp.ca/en/annual-conference-2020-disability-and-work-canada> and <https://www.crwdp.ca/en/annual-conference-2021-disability-and-work-canada> .

### Review Methodology

We utilized a rapid review methodology. The main idea of rapid reviews is the assessment of what is known about a policy or practice issue using an expedited process. This method has been proposed by the UK Department for International Development as a means of providing an “assessment of what is already known about a policy or practice issue, by using systematic review methods to search and critically appraise existing research” (2015). In this method the completeness of the search is partially determined by time constraints. It may only have limited formal quality assessment (Grant 2009).

Rapid reviews streamline traditional systematic review methods to achieve a synthesis of evidence within a short timeframe (Garritty 2021; Randle 2019). Streamlining is achieved, while still enabling the key evidence to be synthesised in a rapid manner by introducing restrictions at the literature searching and data extraction stages of the process. Such strategies may include limitations on 1) the date and language of publication, 2) the number of electronic

databases searched, and 3) the searches undertaken of unpublished literature. Importantly, evidence comparing rapid reviews and full systematic reviews has found that the overall conclusions do not vary significantly (Cameron 2008). As such, rapid reviews aim to provide a succinct, usable, and highly targeted integration of key research findings within a short timeframe, rather than an exhaustive description of all data available (Ganann 2010).

### Search Strategy

The first part of the search involved a scan undertaken of grey and academic literature identified via internet search engines, specifically Google and Google Scholar. The second part involved a search of various peer-reviewed psychology, business, and multidisciplinary academic databases (e.g., PsycInfo, Scopus, ABI/INFORM Complete). The search was created in consultation with an information specialist. A set of 'gold standard' articles were used to assist in developing the search strategy. Key terms for searches include combinations of the following words: disability, skills, skill mismatch, over skilling, skill gap, challenges and opportunity, learning or mental health condition, developmental disability, worker, labourer, employee/er, employment, job, and occupation. We searched literature published between 2020-2021, with review of reference lists of included studies to capture key studies from earlier time periods. A copy of the PsycINFO search strategy can be found in Appendix A. The search was run in the three specialized databases. Reference lists of the included articles/reports were scanned to retrieve any omitted research with relevance to the research questions.

### Article Selection

The retrieved references were screened using a standardized title and abstract form. A pilot exercise was conducted using the same sample abstracts for the screening team to calibrate and test the inclusion/exclusion form. Initially, two reviewers screened a sample of abstracts, and resolved any conflicts. The remaining abstracts were reviewed by a single reviewer. For full-text screening, a standardized full-text form was developed and piloted. One reviewer screened all included full-text articles. See Appendix B for details.

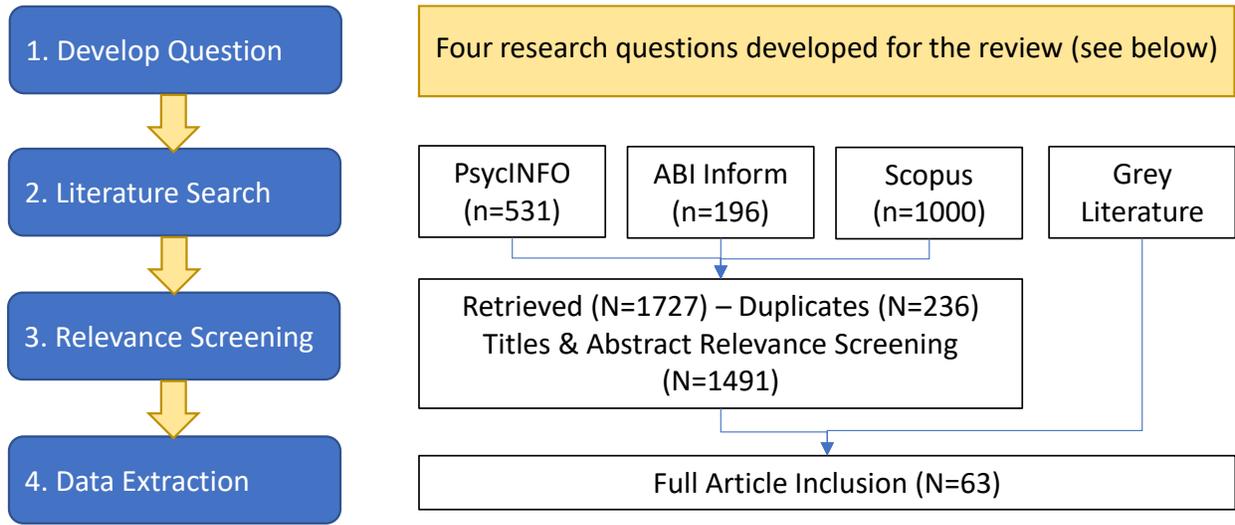
### Data Extraction and Analysis

A single reviewer extracted data using a piloted form and a second reviewer checked for correctness and completeness of the extracted data. Data was extracted on the following: citation, abstract, country/region, peer-reviewed, study type, type of disability, study objectives, alignment with project research questions, programs to explore, potential key informants, and indicators.

### Findings from the Rapid Review

The following tables provide an overview of the peer-reviewed journal article and grey literature search, including: databases searched, titles and abstracts identified, reviewed, and included, full-text articles reviewed and included, and a summary of the evidence synthesis from the included studies.

Figure 2. Flow Chart of Search



Research Questions

1. What do we know about the foundational and transferable skill levels and employment outcomes for PWDs, including women and men within this group? What are the knowledge gaps and how could these be addressed?
  2. What are the main barriers faced by PWDs to increasing their skill levels and further integrating into the labour market? Do women with disabilities face additional barriers? If so, what are they?
  3. What are some proven or promising practices or avenues to address these barriers and/or increase skill levels for PWDs?
- How has the COVID-19 pandemic affected the skill development and labour market barriers of PWDs? What are some of the long-term implications of the pandemic on the future of PWDs and their skill development and labour market barriers?

Table 2. Overview of Findings from the Review

Peer Reviewed	54	Research Question Alignment	Sources
Un-peer reviewed	9	Q1	34
		Q2	21
Study Type	Sources	Q3	38
Evaluative Study of P	21	Q4	1
Descriptive Study	20		
Best Practices	10		
Literature Review/Sy	8	Country/Region	Sources
Measurement Protoc	3	Canada	18
		USA	18
Disability Type	Sources	Australia	11
Not Specified	25	UK	5
ASD	15	Ireland	3
Intellectual	10	Hong Kong	1
Mobility	6	Italy	1
Mental Health	6	Malaysia	1
Learning	4	Netherlands	1
Sensory	4	South Africa	1
Cognitive	1	Sweden	1
Developmental	1	Spain	1

Our review identified 63 articles related to the foundational and transferable skill levels for the employment of PWDs. While all types of disability were included in our search, our findings primarily uncovered studies and reports related to mental health, learning disabilities, intellectual disability, and neurodiversity/autism spectrum disorder (ASD). Overall, it appears that soft skills training was emphasized more for those with invisible disabilities such as ASD, Mental Health, or Intellectual Disabilities (Accardi 2013; Fernández 2021; Ju 2011). What follows is a summary of available research organized by research question. See Appendix C for additional details.

**Question #1 What do we know about the foundational and transferable skill levels and employment outcomes for PWDs, including women and men within this group? What are the knowledge gaps and how could these be addressed?**

Skill levels and difficulties vary greatly based on the type of disability.

1. Sensory disabilities
  - a. Sensory disabilities such as blindness or hearing impairment experienced higher employment rates when compared to disability types such as intellectual disabilities or difficulty with basic physical activities (Kelly 2021).
  - b. Independent living skills were identified as a skill gap among deaf and hard of hearing persons in Ireland. These difficulties crossed three domains: daily living skills, self-determination and interpersonal skills, and employment skills, and were identified by many of the participants as obstacles for success (Donnellan 2021). Support staff tended to emphasize independent living skills (e.g., homecare, cooking, cleaning, etc.) over employment skills due to a perception that deaf and hard of hearing persons would always qualify for income support.
2. Mental health disabilities and psychological impairment related disabilities had strong correlations to unemployment but there is little research on their specific skill levels (Kelly 2021).
3. Intellectual disabilities (ID)
  - a. A study of employability skills among individuals with intellectual disability in Spain identified a correlation between employability skills and quality of life (Fernández 2021). They noted that younger PWDs tended to have higher levels of skills. Furthermore, those with more severe ID tended to have decreased learning and communicative skills. This research suggests further individualization of program supports to accommodate spectrums of intellectual disability and to support older adults with disabilities.
4. Learning disabilities
  - a. Persons with learning disabilities often struggle with social and communication skills regardless of whether their disability directly impacts those areas. This can be

attributed to increased social anxiety and other psychological co-morbidity related to the stigmatization or past exclusion of these individuals (Diaz-Garolera 2019).

#### 5. Autism Spectrum Disorder (ASD)

- a. Challenges included task-related difficulties, individual factors, social difficulties, and distractibility, not managing work-related stress, and being perceived to be too frank (Hedley 2018).
- b. Accardi (2013) Identified key barriers to accessing employment for adults with ASD. These barriers relate largely to social skills confidence and communication.
  - i. Anxiety from preparing for interviews.
  - ii. Sensory challenges (overstimulation or distraction).
  - iii. A lack of challenging/rewarding work activity.
  - iv. Manager and employer misconceptions of ASD.
  - v. Workplace training programs that do not support the individual's needs.
  - vi. Difficulty with self-advocacy.

### **Question #2 What are the main barriers faced by PWDs to increasing their skill levels and further integrating into the labour market? Do women with disabilities face additional barriers? If so, what are they?**

1. Lack of available skills training and training staff confidence
  - a. A South African study identified a lack of continuing skills training programs for PWDs. While the existing programs were demonstrated to be highly effective, participants identified a feeling of 'hitting a ceiling' in terms of available skills training (Soeker 2018). Similarly, PWDs felt that their career advancement was stagnated in part by their lack of professional development opportunities.
  - b. Alexander (2017) identified an underutilization of existing skills training techniques in the workplace for workers with intellectual disabilities. Participants were enthusiastic about learning new skills for success but indicated that a lack of knowledge and confidence from training staff limited their advancement.

- c. Further study and content analysis of Certificates of Disability Studies and other such credentials aimed at working with PWDs is required to assess the value of such certificates as evidence of disability confidence (Alexander 2017).
2. Variability based on type of disability
  - a. Level of employment and job satisfaction vary greatly based on the type of disability reported. Those with intellectual disabilities are much less likely to become managers, senior officials, or members of a professional association than other disability types. Blindness and deafness were associated with a higher level of employment and increased seniority of position (Kelly 2021).
3. Disclosure considerations
  - a. Choosing when and how to disclose a disability to an employer or educator is a major consideration for PWDs. The decision is deeply personal and influenced by factors such as disability type, availability of support, or ability to self-advocate (Lindsay 2018).
  - b. Jans (2012) conducted focus groups of PWDs to discuss the timing and method of disclosure. Participants largely encouraged disclosure and discussion of disability with employers when possible. However, people’s opinions about disclosure were strongly influenced by the nature of their disabilities, including visibility, stigma associated with the disability, and number of disabilities. They also made decisions about disclosure based on the type of organization and their perceptions about the “disability-friendliness” of the workplace.
  - c. Persons with hidden disabilities often choose not to disclose their disability, particularly if that disability is related to mental illness or ASD due to the risk of discrimination in the interview process (Jans 2012).
4. Job mismatch and underemployment
  - a. PWDs who have attained employment still experience poverty at a much higher rate than non-disabled persons who are employed. This supports other findings of

underemployment, underpayment, and job-mismatch (Graham 2013; Kelly 2021; Tompa 2020).

5. Employer perceptions of the cost of including PWDs

- a. The perceived financial cost of hiring PWDs among managers and employers is a major barrier to the participation of PWDs (Scott 2017). While the actual economic benefits of hiring PWDs have been shown to outweigh the costs, the perception of cost may deter employers from hiring them. This may also impact the delivery of training modules when decision makers avoid tailoring programs explicitly for those with disability to reduce costs.
- b. Furthermore, Chan (2010) notes that hiring managers tended to be unenthusiastic about hiring PWDs as they perceived them as less productive.

6. Demographic Impact on Experience

- a. Kelly (2021) noted a higher rate of unemployment among disabled men than among disabled women in Ireland.
- b. Accommodations such as customized job design, clear communication of performance evaluation, buddy/mentor systems, and being given instructions in writing were all considered more helpful to the women who were surveyed than the men (Krzeminska 2020).
- c. Tran (2021) identified age as a significant variable for planning disability employment services and employability increases. For example, increasing education levels had a positive impact for younger PWDs on employability. However, for older PWDs, increasing their education level lowered their chances of becoming re-employed.

**Question #3 What are some proven or promising practices or avenues to address these barriers and/or increase skill levels for PWDs?**

1. Guidelines and best practices for skill training delivery

- a. Soeker (2018) makes several recommendations for the delivery of skills training to PWDs. Programs should be ongoing and provide support after the individual has

- commenced their employment. Training programs should emphasize skill training that is directly applicable to career development to ensure participants feel they are being provided with relevant skills. Additionally, including a certificate or micro-credential in the training process would help provide workers with a tangible proof of their ability.
- b. Tran (2021) created a model for disability employment services to individually tailor their services to an individual's current and recommended skill levels. This individualized approach can help DES providers efficiently assign resources. Recommended levels can be used to design upskilling programs tailored to individual job seekers for desired employability increase.
  - c. Armstrong (2015) conducted synthesized training practices from six Canadian businesses known for recruiting and training PWDs. The following key insights emerged from the investigation:
    - i. Training provided to people with disabilities differs little from that offered to others. The approaches, areas covered, and resources used are very often the same.
    - ii. When accommodations are necessary, they are minimal in their extent. Slight accommodations, rather than a complete redesign of training, will usually suffice.
    - iii. Organizations typically make use of a variety of resources to train and develop employees with disabilities. Both internal and external resources, and often a mix of the two, are used to fulfill different aspects of employee training and development.
    - iv. Accommodations yield best results when they are made on an individual employee basis. Allowing for personal adjustments to training is crucial to success.
  - d. O'Toole (2015) conducted a review of approaches to skills training for PWDs. They produced a broad range of suggestions for investment in and delivery of skills training programs for young PWDs. Their key suggestions include:

- i. Increasing the training and number of advisers who work with PWDs in employment services
  - ii. Individualized training programs that are directly relevant and emphasize on-the-job training
  - iii. The increased use of peer support and on-the-job mentoring by and for PWDs
  - iv. Structured approaches to placement that provide PWDs with multiple options for opportunity
- e. PWDs have a high chance of being over-skilled, underpaid, or mismatched for their current positions. As such, programs that emphasize job fit and job satisfaction for placements are essential (Jones 2011; 2014).
- f. Workers with ASD tend to benefit from specific enablers for workplace success
  - i. Organisation support, advice from co-workers, supportive leadership, allowance of environmental modifications and presence of a consultant were identified as enablers that most contributed to workplace success for Autistic workers (Hedley 2018).
  - ii. Helpful recruitment practices as perceived by autistic workers and described by Krzeminska (2020) include: 1) an individual interview (e.g., panel of people and just you - and maybe a support person), 2) a task instead of a formal interview (e.g., code a program, make/design something), 3) communication that the job they applied for was designed for autistic employees.
  - iii. The Dandelion Program (DXC Technology 2021) began in Australia but has spread rapidly, influencing Autism at Work programs globally. The program aims to create a hiring, training, and worker retention program for autistic employees to develop IT, life, and executive skills through on-the-job training and ongoing support.
  - iv. Scott (2015) interviewed employed adults with ASD and employers to identify factors for successful employment. Factors for successful employment include comprehensive job expectations, knowledge of the

productivity requirements, and support in the workplace to assist in creating an inclusive and modified environment.

## 2. Mental health practices

- a. The Mental Health Commission of Canada has encouraged the implementation of *the National Standard of Canada for Psychological Health and Safety in the Workplace* which outlines best practices for improving mental health outcomes in the workplace. Their key recommendations revolve around 1) enacting workplace education programs, 2) providing early intervention via Employee & Family Assistance Programs, 3) enhancing knowledge of mental health 4) building employee resilience 5) supporting stay-at-work programs that provide ongoing support, and 6) training managers on mental health.
- b. Studies of foundational and transferable skill development for incarcerated persons with intellectual disability identified six key components to a successful skills training program: 1) person-centered and relational, 2) flexible and adaptable 3) collaborative and multidisciplinary, 4) strengths-based and holistic, 5) culturally appropriate, and 6) focuses on context-based skill building (Rowe 2020).
- c. Customizing existing employment programs to better suit the ASD population and educating frontline employment support workers on the needs of the ASD population is essential to program delivery (Accardi 2013).
- d. Liu (2013) evaluated the success of a Hong Kong skills training program for persons with ASD and results indicated that a structured workplace training programme aimed at improving social, communication and emotional behaviours can be helpful for persons with autism. The successful workplace training programme included practices in work context and group educational sessions.
- e. The training and development of social and conversational skills has mostly been aimed at individuals with Intellectual Disabilities or ASD. Within that subset, Behavioural Skills Therapy (BST) and Covert Audio Coaching (CAC) were identified as successful tools for increasing co-worker relationship building and self-initiated conversations (Chezan 2020).

### 3. Evaluation of existing programs for skill training

- a. Clark (2018) developed and evaluated the UPGRADE program for teaching soft skills to students with disabilities. The program emphasized the use of self-monitoring, individual goal setting, and self-graphing in combination with practical job training and relevant scenarios. Results indicated all students improved in both a self-selected soft skill area and their overall performance, and they generalized their skills to a second in-school job site. To assess student acquisition of soft skills, a Job Performance Rubric (JPR) was created based on a survey of employers' perceptions of needed soft skills and how they were defined. The JPR included the following soft skills: a) attitude and cooperation, b) reliability, c) productivity and on-task behavior, d) quality of work, and e) teamwork and cooperation.
- b. Lindsay (2012) identified a lack of accessible co-op placements for PWDs in post-secondary education. As practical employment placements become an increasingly vital aspect of skills training, co-op placements have a strong relation to employment outcomes. Apprenticeship and co-op programs should be tailored to fit the needs of PWDs.
- c. Oursler (2019) reviews the use of Direct Skills Training (DST) for improving interview skills among PWDs. Developed by Boston University, DST "systematically incorporates basic educational and cognitive techniques so that providers can outline the knowledge needed to learn any relevant skill, develop a structured lesson plan to teach each component behavior, and involve the person and individuals in the relevant environment in practice and generalization efforts" (Farkas 2010). Oursler (2019) tested a DST approach to improving interview and job-acquisition skills across a wide range of disabilities including mental health, substance abuse, and cognitive and sensory disability. Effectiveness was evaluated based on the employment outcomes and self-assessment of participants. The results revealed a high degree of successful skill transfer and participant satisfaction across all participants.

- d. The Program for the Education and Enrichment of Relational Skills (PEERS) was used in conjunction with the Circles Curriculum for teaching relationship boundaries by Rose (2021) to train college students with intellectual and developmental disability. PEERS includes four distinct components: 1) homework review, 2) didactic lessons, and roleplay, 3) behavioural rehearsal, and 4) homework assignments for the following week's session. The Circles curriculum (Walker-Hirsch 1991) served as a supplemental resource to provide concrete instruction to categorize and define levels of intimacy. Dependent measures used to test the hypotheses included: a) Friendship Qualities Scale (FQS), b) Test of Adolescent Social Skills Knowledge (TASSK), and c) Conversational Skills Rating Scale (CSRS). Results indicated a significant increase in social skill knowledge with trends toward significant increases in quality of friendship and improvement in conversational skills (Rose 2021).
- e. Panerai (2018) explored the use of virtual reality (VR) to develop functional living skills in individuals with intellectual disability remotely. A statistically significant result was attained demonstrating the effectiveness of VR as a life skills training technique. Participants found the highly technological system to be simple, useful, and fun.
- f. CommunityWorks Canada is a federally funded 12-week (30-hour) program designed to teach communication, social, and job skill training for young adults (aged 15-21) with ASD. The program cohorts typically consist of 6 participants with ASD and an additional 6 peer mentors. The cohorts operate with community partners and employers to provide vocational training that is practical and directly relevant. Typical vocational tasks include activities such as sorting clothing in a retail setting or food preparation in a non-profit. Evaluation through post program qualitative interviews and survey data collected from a range of program stakeholders (participants, parents, peer mentors, and community partners/employers) revealed a high degree of success improving work readiness but limited success in the training of social skills (Nicholas 2019).

#### 4. Enablers of workplace success

- a.** Accommodations that are useful for PWDs are often beneficial to non-disabled workers. Several studies and reports recommended making accommodations available to all employees regardless of disability status/disclosure (Schur 2014). This is especially true for the types of accommodations typically offered to those with intellectual disabilities or autism spectrum disorder (e.g., quiet workplaces, headphones, modified schedules, etc.)
- b.** Iyer (2015) identified several key components for the retention of PWDs in the workplace: 1) personalized orientation/on-boarding, 2) career development and on-the-job training, 3) mentoring programs, and 4) establishing employee resource groups.
- c.** The Employer Assistance and Resource Network on Disability Inclusion (EARN) released a toolkit for the establishment and maintenance of Employee Resource Groups (ERGs) to ensure PWDs have a voice in the workplace and a structured support network (EARN 2011).
- d.** Post-traumatic stress disorder (PTSD) has been identified as a large component of mental health related disabilities in the workplace (Public Services Health and Safety Association 2016). Best practices have been broken down into 3 categories.
  - i.** Prevention: The prevention focus area outlines the basic elements of occupational health and safety management such as understanding legal responsibilities, recognizing, assessing, and controlling the hazard, developing policies and procedures, outlining roles and responsibilities and incident reporting procedures in an organization.
  - ii.** Intervention: Actions that can be taken to improve a situation. This includes ensuring that workers know how to report psychological injuries when they occur and are supported in doing so.
  - iii.** Recovery & Return to Work: Ensure that managers understand how to accommodate a worker who is suffering from PTSD and that there are clearly

established roles and responsibilities for supporting workers through this process.

## 5. Entrepreneurship for PWDs

Several studies have identified self-employment and entrepreneurship as promising avenues for persons with all types of disabilities. PWDs are almost twice as likely to be self-employed than non-disabled persons of similar demographics (Ashley 2021). Individuals who require highly flexible work schedules and customized working environments often find the greatest degree of freedom when self-employed or working from home. Accardi (2013) recognized that adults with ASD are often especially well-suited to self-employment and suggests an increase in entrepreneurial grants and programming specific to adults with ASD. PWDs face unique barriers to pursuing self-employment as many disability benefits programs disincentivize entrepreneurship through restrictions on employment and a fear of losing benefit coverage.

### **Question #4 How has the COVID-19 pandemic affected the skill development and labour market barriers of PWDs? What are some of the long-term implications of the pandemic on the future of PWDs and their skill development and labour market barriers?**

While the direct impact of COVID-19 on skill development and employment outcomes of PWDs will likely take some time to measure and peer review, there are several areas of concern that have been expressed by PWDs and researchers alike. We expect the bulk of our answers to question #4 will come from our key informant interviews.

- Increased employment inequality due to high risk of COVID-19 infection and long-term health impacts. As workplaces demand employees return to work, many PWDs may be forced to decide between personal safety and employment as they are at a higher risk for infection and long-term health impacts.
- Expected increase of PWDs due to long COVID symptoms.
- Potential for increased acceptance of work from home modifications.

## Categories of Skills Surveys

Our review of domestic and international data sources has revealed approximately 12 targeted surveys that assess the skill levels and employment outcomes of PWDs. These surveys can be divided into two categories based on who they were administered to, employees or management/employers. Both kinds of surveys provide valuable data on the skill levels and employability of PWDs. A third category of survey is parent-administered. These assessments were typically filled out by the parent or guardian of someone with an intellectual disability or ASD. However, the autism community and several autistic-led organizations have spoken out against the use of guardian-administered assessments, in favour of autistic-centred research informed by lived experience. The table below identifies 11 employer or employee administered surveys that are potentially valuable for the creation of future skills surveys for Canadian PWDs.

### **Employer Skills Surveys**

Employer Skills Surveys tend to assess three areas of concern: skill demand, skill supply, and skill mismatch. Skill demand surveys identify what skills are in demand in the workplace and what the generic skill needs are for persons employed in the workforce. Skill supply surveys provide valuable information on employer recruitment programs, how employers are investing in training, and identifying barriers to investing in employee training. Finally, skill mismatch surveys identify difficulty in recruiting qualified individuals or the extent to which employers consider their workforce competent. These surveys also identify the factors that lead to skill shortages and how the impact of shortages is addressed by employers (Hogarth 2016).

### **Employee/Public Administered Skills Surveys**

While employer skills surveys are essential for identifying the programs and investments in training PWDs, surveys administered to employees or PWDs seeking employment reveal the impact of such investments. These surveys are typically far-reaching surveys of the general population's skill levels that include a disability screening question such as the 2011 UK Skills for Life Survey. We have also included several skills surveys that did not include a disability

screening question but could be adapted for such purposes such as the Adult Literacy & Life Skills Surveys. Finally, there were several surveys targeted specifically at the skill levels of PWDs. These surveys identify the barriers that PWDs face attempting to access skills training and employment and how employer perceptions of skill requirement impact the workforce.

Table 3. Identified Data Sources and International Surveys Related to Skills

Survey/Data Source/ Report	Year	Country	Department	Disability <sup>[1]</sup>	Skill types <sup>[2]</sup>	Measurement tools <sup>[3]</sup>	Levels <sup>[4]</sup>	Number of Questions	Population <sup>[5]</sup>
Skills for life survey: National profile of adult literacy, numeracy and ICT skills <sup>2</sup>	2011	UK	Department for Business, Innovation & Skills	Yes	Background questionnaire	Developed by authors	NA		Public
					Literacy	Developed by authors	5	25	Public
					Numeracy	Developed by authors	5	19	Public
					ICT	Developed by authors	5	15	Public
Adult Literacy and Life skills Survey (ALL) <sup>3</sup>	2006	Australia	Australian Bureau of Statistics (ABS)	No	Background questionnaire	An international comparative study designed to provide participating countries	TBD	TBD	Public
					Prose literacy				
					Document literacy				
					Numeracy				
					Problem solving				
Health literacy proficiency									
Programme for the International Assessment of	2012	Australia	Australian Bureau of Statistics (ABS)	No	Literacy	International Assessment of Adult Competencies (PIAAC)	5	TBD	Public
					Numeracy		5		
					Problem solving in technology-rich environments (PSTRE)		3		

<sup>2</sup> <https://www.gov.uk/government/publications/2011-skills-for-life-survey>

<sup>3</sup> <https://nces.ed.gov/surveys/all/>

Survey/Data Source/ Report	Year	Country	Department	Disability <sup>[1]</sup>	Skill types <sup>[2]</sup>	Measurement tools <sup>[3]</sup>	Levels <sup>[4]</sup>	Number of Questions	Population <sup>[5]</sup>
Adult Competencies <sup>4</sup>									
Identification of skills gaps among PWDs and their employment prospects <sup>5</sup>	2021	Ireland	Economic and Social Research Institute (ESRI)	Yes	Literacy	International Assessment of Adult Competencies (PIAAC) <sup>6</sup>	Score	TBD	Public
					Numeracy		Score		
Assessment for foundation learning: the importance of purposeful assessment in adult literacy, numeracy and language courses <sup>7</sup>	2006	New Zealand	Ministry of Education (MOE)	Yes	Literacy	Developed by authors	TBD	TBD	Students
					Numeracy				
					Language skill (ESOL)				
Employers Skills Survey (SESS) <sup>8</sup>	2010	Scotland	Scottish Government	No	Customer handling skills	Developed by authors	percent	TBD	Employers

<sup>4</sup> <https://www.abs.gov.au/methodologies/programme-international-assessment-adult-competencies-australia-methodology/2011-2012#appendix-scores-and-skill-levels>

<sup>5</sup> <https://www.esri.ie/publications/identification-of-skills-gaps-among-persons-with-disabilities-and-their-employment>

<sup>6</sup> PIAAC was developed based on the knowledge and experience gained from two previous international adult assessments: the International Adult Literacy Survey (IALS), conducted between 1994 and 1998, and the Adult Literacy and Lifeskills Survey (ALL), conducted in 2003. PIAAC enhances and expands on these previous assessments' frameworks and improves upon their design and methodologies. <https://nces.ed.gov/surveys/piaac/about.asp>

<sup>7</sup> <https://www.voced.edu.au/content/ngv%3A4360>

<sup>8</sup> <https://dera.ioe.ac.uk/2639/>

Survey/Data Source/ Report	Year	Country	Department	Disability <sup>[1]</sup>	Skill types <sup>[2]</sup>	Measurement tools <sup>[3]</sup>	Levels <sup>[4]</sup>	Number of Questions	Population <sup>[5]</sup>
					Planning and organising				
					Oral communication skills				
					Other technical and practical skills				
					Problem solving skills				
					Team working skills				
					Written communication skills				
					Strategic management skills				
					Literacy skills				
					Using numbers				
					Advanced IT or software skills				
					Basic computer literacy / using IT				
The Adult Literacy and Life Skills Survey (ALL) <sup>9</sup>	2003, 2006, 2008	Canada	Statistic Canada	No	Literacy				
					Document literacy				
					Numeracy				
					Problem solving				
	2018	EU		TBD	<b>Fundamental</b>				

<sup>9</sup> <https://www150.statcan.gc.ca/n1/en/catalogue/89M0016X>

Survey/Data Source/ Report	Year	Country	Department	Disability <sup>[1]</sup>	Skill types <sup>[2]</sup>	Measurement tools <sup>[3]</sup>	Levels <sup>[4]</sup>	Number of Questions	Population <sup>[5]</sup>
European Skills and Jobs (ESJ) <sup>10</sup>			CEDEFOP's (An Agency of the European Union)		Basic literacy Advanced literacy Basic numeracy Advanced numeracy Basic ICT Moderate ICT Advanced ICT Foreign language skills				
					<b>Transversal</b> Communication skills Teamwork skills Customer handling skills Problem solving skills Learning skills Planning and organisation skills				
					<b>Technical</b>				
European Working	2005 2010 2015	EU	Eurofound						

<sup>10</sup> <https://www.cedefop.europa.eu/en/publications/3075#group-downloads>

Survey/Data Source/ Report	Year	Country	Department	Disability <sup>[1]</sup>	Skill types <sup>[2]</sup>	Measurement tools <sup>[3]</sup>	Levels <sup>[4]</sup>	Number of Questions	Population <sup>[5]</sup>
Conditions Surveys (EWCS) <sup>11</sup>	2021								
Employability Skills Scale	2020	Spain							
The Revised Irrabeena Core Skills Assessment (RICSA)	2007	Australia	Yes						

Note:

[1] If survey identified disability status of participants or compared person with and without disabilities

[2] Skill types that were covered in the survey, i.e.: Literacy, Numeracy, and ICT, Problem solving, etc.

[3] Name of the measurement tool and its designers

[4] Number of levels that have been considered for estimation of the skill. E.g.: three, five, etc.

[5] Target population of survey

[6] Results regarding the skilled person with and without disabilities

---

<sup>11</sup> <https://www.eurofound.europa.eu/surveys/european-working-conditions-surveys-ewcs>

**Table. Identified skill assessment frameworks**

Survey/Data Source/ Report	Year	Country	Department	Disability <sup>[1]</sup>	Skill types <sup>[2]</sup>	Measurement tools <sup>[3]</sup>	Levels <sup>[4]</sup>	Number of Questions	Population <sup>[5]</sup>
International Student Assessment (PISA) <sup>12</sup>	2018	OECD			Mathematics Science knowledge skills to meet real-life challenges				Student
Australian Core Skills Framework (ACSF) <sup>13*</sup> <i>(This is framework, not a survey)</i>	2012	Australia	Commonwealth of Australia	NA	<b>Core Skills</b>	Developed by department of Industry, Innovation, Science, Research and Tertiary Education		TBD	Public
					learning		5		
					reading		5		
					writing		5		
					oral communication		5		
					numeracy		5		
					<b>Performance</b>		5		
<b>Communication</b>	3								

Note:

- [1] If survey identified disability status of participants or compared person with and without disabilities
- [2] Skill types that were covered in the survey, i.e.: Literacy, Numeracy, and ICT, Problem solving, etc.
- [3] Name of the measurement tool and its designers
- [4] Number of levels that have been considered for estimation of the skill. E.g.: three, five, etc.
- [5] Target population of survey
- [6] Results regarding the skilled person with and without disabilities

<sup>12</sup> <https://www.oecd.org/pisa/>

<sup>13</sup> <https://www.dese.gov.au/skills-information-training-providers/australian-core-skills-framework#:~:text=The%20Australian%20Core%20Skills%20Framework,writing%2C%20oral%20communication%20and%20numeracy.>

## Module 2: Key Informant Interviews

The Key Informant interviews focus on research questions 2-4—main barriers faced by PWDs to increasing their skill levels and further integrating into the labour market, proven or promising practices or avenues to address these barriers and/or increase skill levels, and impact of the COVID-19 pandemic on skills development and labour market barriers for PWDs. Our interview candidates will include both Canadian and international experts in the disability community, public policy arena, industry, labour, and academia. We will draw on our connections through the DWC initiative, the Centre for Research on Work Disability Policy (CRWDP), and our recent efforts in developing a social innovation laboratory called Inclusive Design for Employment Access (IDEA).

### Key-Informant Interview Methodology

Our key informant interview process followed a semi-structured snowballing approach. Semi-structured interviews are ideal for this sort of data collection as they can accommodate a wide variety of perspectives and the interview guide can remain flexible. Optional prompting questions were included in the interview guide and were used where appropriate. Interview design and question choices reflect the semi-structured interview principles expressed in guides for expert interviews (Hay 2021; Marshall 2015; Seidman 2019). Details of the interview question can be found in Appendix D.

### Interviewee Selection Process

For this project, interview respondents were selected using three discrete methods. First, the Principal Investigator identified individuals from his professional network whom he knew to be key stakeholders in the Canadian and international work disability policy system. These individuals were contacted to obtain the names of potential interviewees. In some cases, the individuals contacted became interview respondents, and in other cases they referred other individuals.

Second, names of potential interviewees were drawn from reports, briefings, and reviews that we identified during the literature review phase of the project. A preliminary list of skills training programs was developed for this purpose and can be found in Appendix E. Contact information was drawn from the articles and reports or internet searches to obtain e-mail addresses of candidate key informants.

Third, once a preliminary list of interviewees was developed and interviewing had begun, each interview respondent was asked about other individuals whom they would recommend we contact about this project. In this way, a snowball approach was used so that key informants themselves became a recruitment tool for other key informants.

### Inclusion and Exclusion Criteria

Inclusion and exclusion criteria for key informants:

- Include members of the disability community with knowledge and experience of skill development programs
- Include policymakers and program providers engaged in improving employment outcomes for PWDs
- Include researchers engaged in ongoing solutions-based research for improving skill development service provision for PWDs
- Include program and service providers that work with diverse PWDs, and specifically persons with ASD, learning and developmental disabilities and mental health conditions
- Exclude program and services providers that work exclusively with persons with physical disabilities<sup>14</sup>

### Overview of the Key Informant Interviews

Over the period of March 2022 to June 2022, we conducted in-depth, semi-structured interviews with knowledge leaders on the topic of foundational and transferable skills training

---

14 Based on the scope of research provided by ESDC.

for PWDs. Interviews were held virtually via Zoom and lasted between 45 to 60 minutes. The interviews focused on foundational and transferable skill sets found within the communities of PWDs; gaps in skills; existing skills training programs, services and other resources; gaps in skills training opportunities; and promising practices for skills training. Details of the questionnaire can be found in the Appendix D. Interviews helped us to identify successful initiatives, current barriers to success, and the way forward for practice and research.

Thirteen key informant interviews were completed. Key informants were from Canada, USA, and Australia. See Table 4 for details. They included representatives from governments, community organizations, academic institutions, service providers, and other stakeholders. Key insights and other information provided by key informants were summarized by informant and are available in the Appendix F. These summaries, along with reviews of detailed interview notes and the actual recordings were reviewed and synthesized.

*Table 4. Summary of key informant interviews (n = 13)*

<b>Category</b>	<b>Number</b>
Interviews completed	13
Country	8 Canada, 4 United States, 1 Australia
Occupation	6 Directors, 2 Vice-Presidents, 1 Managers, 2 Owner/Co-Founder, 2 Professors
Organization	4 Academia, 5 Community Groups, 2 Canadian Government, 1 Business, 1 Social Enterprise
Sex/Gender	7 females, 6 males

**Summary of the Key Informant Interviews**

Several themes emerged from the key informant interviews. It was noted that knowledge gaps do exist when addressing foundational and transferable skills that help PWDs secure employment. Several training initiatives/programs and components of skills training programs for persons with disability that effectively advance their skills for employment or help them find skill-matched employment opportunities were identified at the individual, institutional,

community, and other levels. Key informants noted individual, organizational/firm, and system level barriers and challenges to the success of skills training delivery. Respondent also provided invaluable insights into promising/best practices for the provision of employment skills acquisition opportunities. It was noted that gender, race, and other intersectional characteristics of identity and social location created additional barriers to success for diverse PWDs such as women, racialized persons, Indigenous persons, 2SLGBTQIA+ persons, amongst others. Several key informants discussed how skills training programs for neurodiverse populations such as those on the autism spectrum required a unique focus on soft skills for the workplace. There was considerable feedback on the impacts of the COVID-19 Pandemic on skills development and employment opportunities for PWDs. Finally, several key informants identified a wish list of items that would be ideal to be included in skills training delivery programs.

### Individual-, organizational-, and system-level considerations

As noted, key informants highlighted a variety of individual, organizational, and system level barriers that prevent PWDs from finding jobs and advancing in their careers. Individual level barriers include things such as access to transportation, childcare, and housing. Key informants noted that employers sometimes work with external providers to deliver supports to PWDs to help them with life needs. But often, employers are unaware of support services needs and what is available to them. Organizational-level barriers include inaccessible recruitment processes, lack of supervisory skills in supporting workers with disabilities, and pigeonholing PWDs into entry-level jobs. In the area of recruitment, online platforms were noted as an issue, as was the standard assessment techniques centered on interviews rather than direct assessment of skill sets. To promote organizational culture change in the area of diversity, training for supervisors and coworkers was noted as a way to help workplace parties overcome their biases and become more comfortable with diversity. Systems level barriers include streaming of PWDs in secondary educational systems into curriculum with low expectations and no opportunities for acquiring job skills. Post-secondary training programs for PWDs are also segregated rather than mainstreamed. These programs often lack opportunities for on-the-job

training through internships in the competitive labour market, and some are simple respite care in the form of sheltered workshops. Many programs fail to look to the future. Instead, they only address the immediate needs of employers and do not consider how to prepare the individuals with skills they can use and further develop over their careers. One participant noted, *“They are training first, when what needs to be examined are what are the actual skills required, and how do you prepare a person to be able to pivot from one position to another, to gain the skills they need to have a lifetime of employment, as opposed to fulfilling this particular gap that an employer may have right now. They are essentially creating disposable workers.”* This is another reason why PWDs often get pigeonholed into entry level jobs.

In what follows, we cluster insights from key informants on the provision of skills training for PWDs into several themes. We focus on promising/best practices noted by informants. There was much common ground on prescriptions provided.

### Mainstreaming Training Opportunities

Several key informants indicated that it is incumbent on society to adopt a social model of disability rather than rely on the outdated medical model. Barriers are created because PWDs are viewed as different from others. But in fact, they are as diverse as all people, and training opportunities for them should be part of the mainstream. Barriers to training opportunities exist in the educational system at all levels due to a pervasive view that PWDs are unable to work. This view begins in secondary schools and continues into post-secondary educations. It comes from multiple people within the community surrounding the individual, including educators and family members. As a result, PWDs are often not encouraged, or given an opportunity to take on part-time jobs, summer jobs or internships in high school and post studies. Yet there is strong evidence that suggests that a youth or young adult who has had work experience during their studies is substantially more likely to find a job and be more successful in the labour-market after completing their studies. One of the issues noted by informants is the streaming of PWDs into a different curriculum in secondary school. This was

seen as the starting point for marginalizing such persons. Rather, PWDs need to be integrated into the mainstream to avoid them being pigeonholed into programs with low expectations.

### Foundational and Transferable Skills that Help Secure Employment

Participants highlighted several different sets of skills that may help PWDs secure employment. One participant clustered required skill sets into three main categories: 1) soft skills, 2) accessibility skills (e.g., ability to navigate environments and use system technology), and 3) technical skills (specific skills required for a particular job). However, many participants also noted that it is not helpful to solely focus efforts on advancing skills sets of PWDs, as they do not necessarily lack skills. It was noted that their abilities are on a bell curve like any other populations within the labour market. A frequent comment made by respondents is that PWDs are diverse, as is the general population, and the focus on their skills gaps and skills training opportunities created exclusively for them may be misguided. PWDs have many different talents, skills, and interests. What was repeatedly noted is that there are barriers to employment opportunities for even the most talented and skilled persons. Further, even for those employed, it is often in entry-level jobs with little to no opportunities for advancement. Respondents noted that there is a need to look at the individual and explore what job may be a good match for them based on existing skills and interests, rather than focusing on skilling up the individual without a specific job opportunity in mind. Every person has existing skills that can be supported and further honed, but these skills are not always emphasized in skills training programs.

### Value and Accommodate Different Learnings Styles

Key informants noted the need to accommodate different learning styles in educational programs, such as learning visually or auditorily. Valuing neurodiversity and diversity in general was emphasized. Much of the discussion around different learning styles touched on neurodiversity and the need to address differences in the delivery of curriculum. Individuals on the spectrum such as persons with ADHD (Attention Deficit/Hyperactivity Disorder), dyslexia, and autism should not be viewed as having a deficit. Rather, programs and employers should

take a strengths-based viewpoint. A lot of cognitive strengths come with these neurodivergences (e.g., dyslexic individuals may have weaknesses such as difficulty reading), however, they can be amazing problem solvers and can organize complex visual information. Some persons from the neurodivergent population prefer repetitive tasks, for example being a driver. One key informant noted that *“Their cognitive gifts made them so effective at their jobs”*. They noted that such persons know their struggles, but those struggles can be a gift if they are aligned with the tasks in a particular field.

### Barrier-Free Hiring Strategies

Key informants noted multiple barriers created by conventional hiring practices. One such barrier comes from online platforms for resume submission. Many of these platforms are challenging to navigate, particularly for persons with weak computer skills. Ironically, in many instances computer skills are not an important part of the job requirements. Additionally, the screening software used to screen out candidates is often biased against PWDs, due to gaps in employment record and other screening criteria used to reduce the number of candidates considered for an interview.

Several key informants noted the standard hiring methods that required resumes and interviews as part of the hiring process for assessing a person’s strengths and capabilities created barriers, particularly for neurodivergent populations. Interviews are not a very effective way to assess job capabilities. Rather, they simply allow the employer to see how good a candidate is at speaking. As one respondent noted, a candidate could be a good talker but an awful programmer. A better way to observe a person’s skills and abilities is to have them demonstrate through a task-based assessment process. This approach has been used quite successfully in the tech industry and is even being mainstreamed for recruitment of all individuals in some organizations.

One approach noted by a key informant is to use a virtual technical assessment solution as an alternative to assessment through a resume and interview. The person is placed into a

virtual world where they can demonstrate their capabilities (e.g., technical skills, social interaction skills, communication skills, managing stress, prioritizing, and understanding the requirements of a job). It replicates environments with augmented technical components to highlight and measure capabilities and skills in various areas (e.g., verbal skills, sales skills). The program tracks a candidate's responses and can be used to identify transferable skills (e.g., a person may be seen to have potential for sales due to observed interactions/communications in a virtual environment).

Several key informants suggested that the interview process be replaced with an on-the-job testing opportunity, particularly for neurodivergent populations. They suggested conducting on-the-job testing for 2–3-weeks, which would provide an opportunity to observe both technical and soft skills capabilities. In general, internships were seen as a better way to identify and recruit talent, while at the same time providing candidates with training opportunities. One informant emphasized the value of a team based (portfolio) approach to internships where several persons take up internships at an organization concurrently. This approach spreads support costs across several candidates in cases where coaching or other supports are needed at the front end of a training opportunity. With the portfolio approach, an organization is more likely to find one or two ideal candidates that fit with the organization's needs. It was noted that the portfolio approach is being used by some tech companies with neurodiverse populations.

### On-the-Job Training

An emphasis of on-the-job training emerged across numerous key informant interviews. Many informants were quite critical of classroom training settings that mimicked real work context in a stripped-down manner. Classroom skills training for employment purposes should be minimized, particularly if it is segregated from conventional secondary and post-secondary training programs. Experiential learning on-the-job should be emphasized. It is a better way to uncover an individual's skills and help persons to grow and develop. One informant noted the value of bringing industry representatives into the classroom setting in secondary and post-

secondary schools. In general, emphasis should be given to blending the educational setting and industry experiences, in order to better prepare youth and young adults for the job market. On-the-job training can facilitate skills discovery and provide contextualized training opportunities, but these training opportunities need to be in the competitive labour market. There was a strong sentiment amongst key informants that sheltered workshops in their various forms need to be dismantled. It was noted that some PWDs stay in sheltered workshops under the guise of “training programs” for much of their lives. One informant noted that these programs often serve as respite care for family members, but if that is their role, it should be appropriately identified as such.

### Development of Soft Skills

Several key informants noted that in addition to the necessary foundational skills such as numeracy, reading comprehension, document use, problem solving, and literacy (i.e., the traditional hard skills), that there needs to be support for the development of soft skills. These include skills such as commuting to and from work, budgeting, self-care, socializing, understanding unspoken rules around communication norms, appropriate workplace etiquette, self-advocacy, and other life skills. Some key informants describe the need for a “whole person approach to training”, where one takes into consideration the needs of a person across all aspects of their lives rather than focusing just on job skills. An employment opportunity cannot work for a person unless all their life needs are addressed. This notion of the whole-person approach came up often in discussions of neurodiversity and employment in the high-tech sector. Many employers in this sector who have sought to tap into the talent of persons with autism have realized the need to support them beyond the job contexts. A range of wrap-around supports available through community services can be engaged for this purpose (we note a number of these services in the section titled “Links to Programs, Services and other Resources”). The whole-person approach also takes into consideration the skill needs for a lifetime of employment, rather than just the needs for a job at a specific point in time.

### Training for Persons with Neurodiversity

Providing clear, detailed instructions was noted by several informants in the context of training for persons with neurodiversity. They commented that persons with autism need very detailed step-by-step, explicit instructions, particularly in the context of soft skills training (e.g., soft skills associated with human interactions such as behavioural and communications norms in a workplace with colleagues, supervisors, and senior management). Soft skills need to be explicitly taught, sometimes quite literally, on issues such as not communicating in a blunt manner. One respondent noted, *“some kind soul needs to pull them aside to and tell them that someone might be offended by what they said and to soften how they say something.”*

### Training for Supervisors, Managers, and Co-Workers

Some key informants emphasized the importance of training for managers and co-workers, and one informant suggested mainstreaming management training on disability inclusion in post-secondary management training programs. They noted that it should be a standard part of management training and skill requirements to be able to understand neurodiversity and other conditions and be able to support PWDs. Most respondents felt that supervisor and co-worker training are critical. Often it is an afternoon session where people are taught about autism, neurodiversity, what to expect from persons on the spectrum, and just provide an opportunity for people to ask questions and get comfortable with the idea of diversity. Another informant also stated that organizations need to provide training for supervisors on how to be supportive of persons with mental health conditions, learning disabilities, and neurodiversity. It was emphasized that the returns on such investments can be substantial: *“when supervisors and the department is trained, the experience is phenomenal...it is not as big an undertaking as some might think.”*

### Support, Mentorship, and Advancement

Mentorship of PWDs to support career advancement was noted as an area that needed substantial development. Many programs fail to look to the future. Instead, they only address the immediate needs of the employer and do not consider how to prepare PWDs with skills

they can develop, hone, and use for the rest of their career. PWDs are often pigeonholed into entry-level positions and are rarely given opportunities for advancement. As one participant stated, *“How do we shift out of celebrating someone in the same position at McDonald’s for 25 years?...To shifting the narrative from just employment to career development and growth across the lifespan” (Interview 7)*. Another informant noted the need to shift the dialogue from employment to career development and growth across the lifespan.

It was noted that the object of employment support services should be to support PWDs to find careers, not just jobs. Some supported employment service providers use a toolkit that provides an opportunity to explore different kinds of occupations to help persons explore career options. Career pathways may not necessarily be linear but should always have progression.

One informant noted the value of support circles as a means for addressing multiple aspects of a worker’s needs in a particular employment situation. A support circle is a team of people who support the individual, including mentors, co-workers, and supervisors. Sometimes the support team will get training so that they are better equipped to provide support. This informant emphasized the need to consider the ecosystem of a person, and emphasizing careers, not just jobs.

### Impacts of intersectional identities

Respondents discussed the impacts of gender, race, and other intersectional identities on skill training and employment for PWDs. It was noted that discussions about diversity, equity, and inclusion (DEI) often do not include disability. Consideration of intersectional characteristics is important, as it provides an understanding of the diversity of the group and creates sensitivity to issues that make some individuals more vulnerable. When multiple factors contribute to the marginalization of an individual, it further reduces the available opportunities for employment.

Respondents emphasized the influence of race and culture. Black, Indigenous, and People of Colour (BIPOC) communities do not see themselves represented amongst those who provide services, which can be alienating for them. Cultural differences contribute to barriers to success of skills training programs. For example, in a virtual learning strategy model for apprenticeships that one respondent spoke about, it was noted that Indigenous persons were the least likely to complete the program. Another respondent noted the importance of service providers taking an intersectional approach: *“If service providers are helping others to develop their skills, if we’re not aware of those cultural lenses that might be at play, we can be working up against barriers that we don’t even know exist.”* Online tools, visuals, questions, and content for skills training need to be culturally sensitive for PWDs to make connections with the content.

In terms of neurodivergence and intersectionality, it was noted that autism does not know race, gender, or social class, however different cultures and genders have greater probabilities for diagnoses (e.g., a white male has a greater probability of being accurately diagnosed with autism). For females, it is harder to get a diagnosis as they express autism differently. There are also much lower rates of diagnosis for persons of colour and other minority groups. In some cultures, being different is seen as undesirable, so a child who is neurodiverse may be cut off from opportunities to participate in the community, as well as opportunities to access needed support services.

### Impact of the COVID-19 Pandemic

Key informants acknowledged that there were challenges for skills development and employment of PWDs that arose during the COVID-19 Pandemic, but that there were also some new opportunities. They emphasized the importance of not generalizing about the positive or negative impacts. Many impacts experienced by persons depended on the sector in which they worked. A positive impact is the realization by employers that workers can be productive when working from home, and that flexible work arrangements are a great way to accommodate some needs. It was noted that the longer these flexible work arrangements are in place, the

higher the chances that these arrangements will be embraced in the long term. With many having returned to working in-person, there is an opportunity to have conversations about how best to support new work arrangements. The following is a more detailed list of challenges and opportunities precipitated by the COVID-19 Pandemic.

#### Challenges:

- Disparities were increased during the Pandemic, and many PWDs were further marginalized.
- Businesses were focused on staying afloat, and not focused on supporting employees with disabilities.
- Some companies slowed down their hiring of PWDs, so gains in employment rates realized in the period before the Pandemic were set back.
- There was a decrease in opportunities for PWDs to seek, obtain, and train for jobs.
- Many PWDs were working in jobs that were on the frontline and did not have the opportunity to work or train remotely.
- Some PWDs were hesitant to work due to concerns that catching the virus could give rise to more serious health risks if they had comorbidities.
- Some types of support were unavailable for a while (e.g., for those who needed hands-on coaching).
- Many non-profits that provide in-person support did not survive the Pandemic.
- It was harder to conduct skills development initiatives over virtual platforms, particularly in formats with role play.
- Mental health was impacted, particularly for the neurodivergent population, as they already suffer from social isolation and loneliness due to their disability.
- Students with disabilities missed out on group and in-person classes.

#### Opportunities:

- For some, working from home was beneficial.
- Companies were pushed to develop innovative hiring processes.
- Virtual interviews allowed PWDs to participate in conversations about their skills without necessarily disclosing their disability (e.g., a guide dog or wheelchair is not always visible on camera).
- Some persons were relieved that they did not need to be “on” all the time, as was often the case when working in-person.
- There was an opportunity to translate skills training programs into a virtual format, allowing for broader access.

## Desirable Characteristics of a Training Program

Many key informants highlighted what they thought was important to consider in training programs, as well as the broader policy and practice arena in relation to skills training.

Importantly, the need for culture change permeated most discussions with informants. It was emphasized that everyone in society should be taught to think differently about diversity.

Repeatedly, we heard comments such as:

- Diversity should be celebrated
- All individuals belong
- PWDs are as diverse as persons without disabilities
- Focus on abilities not deficits
- There is much talent to be tapped into amongst PWDs
- More effort needs to be given to accommodate the full range of abilities
- Training should be mainstreamed
- Success happens with exposure, education, and experience—experiential learning on-the-job trumps classroom learning
- Exposure to work experience needs to start in secondary education and part of mainstream/core curriculum
- All training should be forward-looking with a focus on careers not jobs
- Manager and supervisory skill requirement should include skills to promote disability confidence if there is to be sustainable growth in DEI

Specifically, with regards to skills training and education, participants highlighted the benefits of having students consider their personal learning and life goals and to realize the strengths they have from “being different”. Several key informants identified a wish list of items that are ideal to include in skills training programs:

- Provide freedom to program developers to try new things and develop evidence-based practices
- Provide financial support to workers
- Build training around individual interests to ensure the person is motivated
- Customize training for the person with a focus on areas needing improvement
- Programs should be flexible and allow for individual learning styles and experiences
- Flexibility is also needed in delivery of training (e.g., length, time of day, self-direct, focused skills modules)
- Customize supports for a person’s specific needs (ask the person what they need)
- Consider the whole person and life needs, not just training and workplace accommodation (i.e., take an ecosystem approach)

- Focus on a place and train model, where a person learns on job instead of learning in sterile classroom environments
- Ensure on-the-job training includes support from managers, supervisors, and co-workers
- Provide training for workplace stakeholders to build familiarity with diversity
- Encourage workplace parties to be open to doing things differently (see recommendations for supervising neurodiverse individuals)

### Summary of Key Informant Interviews

Key informant interviews helped contextualize the complexity of the policy arena of essential and transferable skills training for PWDs. Their insights inform how best to create opportunities for skills acquisition that promotes optimal employment opportunities and career advancement. Following is a summary of insights from the interviews.

- ix. **Mainstream training opportunities**—Society needs to adopt a social model of disability rather than rely on the outdated medical model. Barriers are created because PWDs are viewed as different from others. But in fact, they are as diverse as all people. Streaming PWDs into different curriculums in secondary school is the starting point for marginalizing such persons. Rather, PWDs need to be integrated into the mainstream to avoid pigeonholing them into programs with low expectations.
- x. **Contextualize foundational and transferable skills training**—Several different sets of skills may help PWDs secure employment, which can be clustered into three main categories: 1) soft skills, 2) accessibility skills (e.g., ability to navigate environments and use system technology), and 3) technical skills (e.g., specific skills required for a particular job). However, a singular focus on advancing skill sets of PWDs may not be helpful, as they do not necessarily lack skills. Rather, mainstream training programs and employers seeking talent need to be better equipped to accommodate diversity.
- xi. **Accommodate different learning styles**—Programs and employers need to accommodate different learning styles in training programs and opportunities, such as learning visually or auditorily. Neurodiversity and diversity in general should be valued; programs and employers should take a strengths-based viewpoint.
- xii. **Promote barrier-free hiring approaches**—Multiple barriers are created by conventional hiring practices. One such barrier is online platforms for resume submission. These

platforms can be challenging to navigate, particularly for persons with weak computer skills. Oddly, strong computer skills are often not a requirement of the job. Additionally, the screening software used to screen out candidates can be biased against PWDs, e.g., screening out candidate who have gaps in their employment record. A focus on resumes and interviews to assess a person's strengths and capabilities creates barriers, particularly for neurodivergent populations. In addition, interviews focus on a person's social skills. A better way to observe a person's skills and abilities is to have them demonstrate them through a task-based assessment process. An approach being promoted in some sectors is on-the-job testing for 2-3 weeks, which provides an opportunity to observe both technical and soft skills capabilities. In general, internships are seen as a better way to identify and recruit talent, while at the same time providing candidates with training opportunities.

- xiii. **Promote on-the-job training opportunities**—Classroom skills training for employment purposes should be minimized, particularly if it is segregated from conventional secondary and post-secondary training programs. Experiential learning on-the-job should be emphasized. It is a better way to uncover an individual's skills and help a person to grow and develop. On-the-job training can facilitate skills discovery and provide contextualized training opportunities, but these training opportunities need to be in the competitive labour market.
- xiv. **Consider the whole person and their needs**—Programs and employers should take a “whole person approach to training,” where consideration is given to the needs of a person across all aspects of their lives. An employment opportunity cannot work for a person unless all their life needs are addressed. A range of wrap-around supports available through community services can be engaged for this purpose. The whole-person approach also takes into consideration the skill needs for a lifetime of employment, rather than just the needs at a point in time in a specific job.
- xv. **Provide training for supervisors, managers, and co-workers**—Training for managers and co-workers is important to promote culture change. It can be as simple as an afternoon session where people are taught about autism, neurodiversity, what to expect from persons on the spectrum, and to provide an opportunity for people to ask questions and get

comfortable with the idea of diversity. More broadly, management training on disability inclusion should be mainstreamed in post-secondary management training programs.

- xvi. **Support careers, mentorship, and advancement**—Many training programs fail to look to the future. Instead, they only address the immediate needs of the employer. Employment support services should focus on helping persons find careers, not just jobs. Job seekers may require career exploration opportunities. A support circle is a means to addressing multiple aspects of a worker’s needs in a particular employment situation. A support circle is a team of people who support the individual, including mentors, co-workers, and supervisors. In general, PWDs need mentorship opportunities in the same way as able-bodied persons to support their career advancement.

Table 5. Programs, Services and Other Resources Gleaned from Interviews

1. Paul Menton Centre for Students with Disabilities at Carleton University <https://carleton.ca/pmc/>
2. OCAD University Inclusive Design Research Centre <https://legacy.idrc.ocadu.ca/index.php/resources/idrc-online/49-articles-and-papers/100-web-browsing-through-adaptive-technology-a-consumer-information-resource-april-1996>
3. Global Alliance on Accessible Technologies and Environments (GAATES) <http://gaates.org/>
4. The Global Initiative for Inclusive ICT <https://g3ict.org/>
5. Virtual Learning Strategist Model <https://saskpolytech.ca/news/posts/2021/sask-polytech-delivers-virtual-learning-strategist-program-across-canada-for-apprentices-with-disabilities.aspx>
6. Canadian Council of Directors of Apprenticeship CCDA <https://www.ellischart.ca/eng/about/ccd.1.shtml>
7. German model of apprenticeship <https://www.macleans.ca/work/how-the-german-style-of-apprenticeships-could-be-a-model-for-canada/> <https://www.expatrio.com/studying-germany/german-education-system/german-dual-apprenticeship-system>
8. Carleton University READ program—This program helps students and organizations identifying specific elements that are barriers to success. <https://carleton.ca/read/>
9. Wilfrid Laurier University—They have developed a policy that ensures a focus on helping students with disabilities develop their skills. <https://www.wlu.ca/about/discover-laurier/accessibility/index.html>
10. York University—They have an internal mentoring program and accessible services for students. <https://careers.yorku.ca/students-and-new-grads/services-events/taste>
11. Disability Foundation—This foundation, based in British Columbia, has developed a comprehensive program for students (Connectra) that helps them identifying their skills and learning opportunities. <https://disabilityfoundation.org/about-us/> <https://connectra.org/>
12. City of Kingston has an economic recovery group that has focused on the disenfranchised, and those who are barriered, including a focus on employment of PWDs. Recently pulled together a report on their two years of work. <https://www.cityofkingston.ca/city-hall/projects-construction/kingston-economic-recovery-team>
13. Prospect Now (Alberta program) that helps Albertans overcome barriers to employment. Services range from everything from information and resources to skill upgrading, placement and post-employment support. <https://www.prospectnow.ca/>
14. YMCA Peace River, quarterly survey (Working Well) with a focus on mental health in the workplace. Findings on impacts of COVID are interesting. <https://www.ymcaworkwell.com/insights-to-impact-2021>
15. ILO recently released a report on AI and the future of work for PWDs. [https://www.ilo.org/global/topics/future-of-work/publications/research-papers/WCMS\\_647306/lang--en/index.htm](https://www.ilo.org/global/topics/future-of-work/publications/research-papers/WCMS_647306/lang--en/index.htm)
16. Life Sherpa app (developed by Washington DC based group) <https://lifesherpapp.com/>
17. Uptimize platform—web platform with training regime for persons with Autism based in Australia <https://uptimize.com/neurodiversity-to-neuroinclusion/>

18. Mental Health Toolkit (Untapped Group) <https://www.neurodiversityhub.org/mentalhealth>
19. Neurodiversity Hub—community of practice <https://www.neurodiversityhub.org/>
20. Genius Armory—cyber security training program for persons with neurodiversity <https://geniusarmoury.com/>
21. Neurodivergent Rebels—self-help group of persons with neurodiversity <https://neurodivergentrebel.com/>
22. Dandelion Program by DXC Technology (Australia)—program that is based on the ecosystem approach—team of people, consultant, tools [www.dandelionprogram.com](http://www.dandelionprogram.com)
23. Employer Connect by Integrated Advisors (based in New York)—service provider for internships for persons with neurodiversity <https://www.integrateadvisors.org/>
24. Stanford Neurodiversity Project - <https://med.stanford.edu/neurodiversity.html>
25. Frist Centre—<https://www.vanderbilt.edu/autismandinnovation/>
26. Untapped Group—suite of ecosystem services with links to other platforms <https://www.untapped-group.com/>
27. Autistica (UK)— <https://www.autistica.org.uk/>
28. Autism Co-operative Research Centre (Australia) (that we are affiliates of) and their “myWAY Employability” initiative: <https://www.mywayemployability.com.au>
29. Technology North (in Alberta) <https://www.technologynorth.net/>
30. ODD (Optimizing Diversity with Disability) <https://idrc.ocadu.ca/odd/>
31. World Association for Supported Employment <https://www.wase.ca/>
32. Mentorability program <https://supportedemployment.ca/mentorability/>
33. Digital literacy program <https://supportedemployment.ca/digital-literacy-training/>
34. Some supported employment service providers have a toolkit for different kinds of occupations that help with candidates explore different careers. BC company has a library of virtual reality experiences tied to certain careers. (Edgefactor <https://www.edgefactor.com/V5/pages/Welcome.aspx>)
35. Online resource library on work and disability <https://supportedemployment.ca/resource-hub/>
36. CNIB Come to Work program (networking program) <https://cnib.ca/en/programs-and-services/work/im-looking-work-come-work?region=on>
37. TAPE Measure (Tool to Assess Preparedness for Employment)—validated psychometric instrument to assess job readiness <https://pubmed.ncbi.nlm.nih.gov/21673428/>
38. COPM (Canadian Occupational Performance Measure) <https://www.thecopm.ca/> (often administered before and after a training program)
39. Expanded Core Curriculum (ECC) <https://www.tsbvi.edu/programs/ecc> teach skill sets that are typically not taught but are implicit, so make them explicit in the curriculum
40. Vision Australia Pre-Employment Program <https://www.visionaustralia.org/news/2019-08-23/new-program-support-young-people-find-employment>
41. The Frist Centre for Autism and Innovation Workplace Resource: Guide to finding talent, and integrating neurodivergent populations in the workplace, and creating meaningful employment opportunities for people with autism, called [Autism at Work Playbook](https://www.vanderbilt.edu/autismandinnovation/autism-at-work-playbook/) <https://www.vanderbilt.edu/autismandinnovation/autism-at-work-playbook/>

<https://disabilityin.org/wp-content/uploads/2019/07/Autism At Work Playbook Final 02112019.pdf>

42. Summer Camp with Specialisterne—3-to-4-week camp designed for autistic teens where they get to experience what a work week is like. They work at different tasks such as engineer tasks, building robotics, solving problems of various sorts, and simple programming. They also learn soft skills such as working at teams, scrum model of conflict resolution, professional etiquette, etc. The program provides an opportunity for participants to learn soft skills and try a variety of jobs to help them identify what they are interested in and good at. <https://www.specialisterneni.com/specialisterne-ni-stemlabs-summer-scheme/>
43. Frist Centre for Autism and Innovation <https://www.vanderbilt.edu/autismandinnovation/partners/>
44. Specialisterne Work Readiness and Preparation (WRaP) curriculum <https://www.us.specialisterne.com/students/>
45. Specialisterne <https://specialisterne.com/>
46. Provail <https://provail.org/>
47. Autism and Work Roundtable <https://disabilityin.org/what-we-do/committees/neurodiversity-at-work-roundtable/>
48. 2017 Harvard Business Review article called “Neurodiversity as a competitive advantage” <https://hbr.org/2017/05/neurodiversity-as-a-competitive-advantage>
49. Association of People Supporting Employment First (APSE) <https://apse.org/>
50. Office of Disability Employment Policy <https://www.dol.gov/agencies/odep/program-areas/mental-health/youth>
51. Centre for Advancing Policy on Employment for Youth (CAPE Youth) <https://capeyouth.org/>
52. Broad Futures Program <https://broadfutures.org/>
53. An array of assessments is available including Myers-Briggs, <https://www.myersbriggs.org/>, Career Cruising <https://public.careercruising.com/en/>, Birkman <https://birkman.com/>, and Onet (US Department of Labor) <https://www.onetonline.org/>
54. Broad Futures (based in Washington D.C.)—Neurodiverse internship program, and training on becoming work ready <https://broadfutures.org/>
55. Neurodiversity Pathways (Based on the U.S. westcoast) <https://ndpathways.org/>
56. Integrate—train employers and also help students find employers who have neurodiverse friendly work environments
57. Neurodiversity Hub <https://www.neurodiversityhub.org/>
58. Landmark College website: <https://www.landmark.edu/research-training/blog/what-is-neurodiversity>
59. Landmark College Employment Readiness Experience—program that offers professional skills building course in conjunction with a workplace experience [https://catalog.landmark.edu/preview\\_course\\_nopop.php?catoid=15&coid=15893](https://catalog.landmark.edu/preview_course_nopop.php?catoid=15&coid=15893)
60. Landmark College PEERS—course on social pragmatics <https://www.landmark.edu/student-life/social-pragmatic-support-services>
61. Landmark College Career Connections website <https://www.landmark.edu/academics/career-connections>

62. NACE website. <https://www.naceweb.org/diversity-equity-and-inclusion/individuals-with-disabilities/>
63. Disability: IN—Resources that empower businesses to achieve *disability* inclusion and equality <https://disabilityin.org/>
64. Approaches for Supervising Neurodiverse Individuals—see Appendix G
65. Dandelion Program in North America based at Cornell University—This three-phased program develops technical, life, and executive functioning skills within participating individuals. <https://ecommons.cornell.edu/handle/1813/72826>
66. Source America— Connects government and corporate customers to a national network of nearly 700 nonprofit agencies that hire a talented segment of the workforce – people with disabilities. <https://www.sourceamerica.org/>

## References

- Accardi C, Duhaime S. 2013. Diversity in Ontario's Youth and Adults with Autism Spectrum Disorders: Finding and Keeping Employment. Autism Ontario.  
[https://www.autismontario.com/sites/default/files/2020-04/Finding%20and%20Keeping%20Employment\\_0.pdf](https://www.autismontario.com/sites/default/files/2020-04/Finding%20and%20Keeping%20Employment_0.pdf)
- Alexander J, Ford J, Raghavendra P, Clark J. 2017. Nature and Extent of On-the-Job Training for Employees with an Intellectual Disability: A Pilot Study. *Research and Practice in Intellectual and Developmental Disabilities*, 5:2, 138-148.  
<https://doi.org/10.1080/23297018.2017.1359661>
- Annabi H, Crooks EW, Barnett N, Guadagno J, Mahoney JR, Michelle J, Pacilio A, Shukla H, Velasco J. 2021. *Autism @ Work Playbook: Finding talent and creating meaningful employment opportunities for people with autism*. ACCESS-IT. 64 pp.
- Armstrong, T. 2015. *Training and Development of Persons with Disabilities: Six Cases from the Canadian Private Sector*. Conference Board of Canada. 32 pp.
- Ashley D, Graf NM. 2021. Vocational Rehabilitation Counselors' Self-Employment Perceptions and Related Client Characteristics. *Journal of Applied Rehabilitation Counseling*, 52(3): 194–212.
- Boles M, Ganz J, Hagan-Burke S, Hong ER, Neely LC, Davis JL, Zhang D. 2019. Effective Interventions in Teaching Employment Skills to Individuals with Developmental Disabilities: A Single-Case Meta-analysis. *Review Journal of Autism and Developmental Disorders*, 6(2): 200–215. Rapid evidence assessments.
- Brisbois R. 2014. *Business Benefits of Accessible Workplaces*. Conference Board of Canada.  
<https://accessibilitycanada.ca/wp-content/uploads/2018/10/Benefits-of-Acc.-Workplaces-CBC.pdf>
- Bylinski U. 2015. *Routes to inclusive vocational education and training*. The Federal Institute for Vocational Education and Training. <https://www.bibb.de/en/26574.php>
- Cameron A, Watt A, Sturm L, Lathlean T, Babidge W, Blamey S, Maddern G. 2008. Rapid reviews versus full systematic reviews: an inventory of current methods and practice in health technology assessment. *International Journal of Technology Assessment in Health Care*, 24(02): 133–139.
- Canadian Human Rights Commission. 2020. *COVID-19 and Mental Health in the Workplace: A Human Rights Guide for Employees and Employers*. 13 pp.

- Chan F, Strauser D, Gervey R, Lee EJ. 2010. Introduction to Demand-Side Factors Related to Employment of People with Disabilities. *Journal of Occupational Rehabilitation*, 20(4): 407–411.
- Chan F, Strauser D, Maher P, Lee EJ, Jones R, Johnson ET. 2010. Demand-side factors related to employment of people with disabilities: a survey of employers in the Midwest region of the United States. *Journal of Occupational Rehabilitation*, 20(4): 412–419.
- Chezan LC, Drasgow E, Grybos EM. 2020. Conversation Skills and Self-Initiated Interactions in Young Adults with Autism and Intellectual Disability. *Research in Autism Spectrum Disorders*. <https://doi.org/10.1016/j.rasd.2020.101554>
- Clark KA, Konrad M, Test DW. 2018. UPGRADE Your Performance: Improving Soft Skills of Students with Disabilities. *Journal of vocational rehabilitation*, 49(3), 351–365. <https://content.iospress.com/articles/journal-of-vocational-rehabilitation/jvr180979>
- Conference Board of Canada. 2015. *Employers Toolkit: Making Ontario Workplaces Accessible to People with Disabilities*, 2nd Edition. 196 pp.
- Conference Board of Canada. 2015. *Training and Developing Persons with Disabilities- Case Studies.pdf*. (n.d.).
- Conference Board of Canada. 2018. *The Business Case to Build Physically Accessible Environments.pdf*.
- Conference Board of Canada. 2021. *Making Your Business Accessible.pdf*.
- COVID-19 and Mental Health in the Workplace: A Human Rights Guide for Employees and Employers. 2020. Government of Canada.
- Cox A, Simmons H, Painter G, Philipson P, Hill R, Chester V. 2014. Real Work Opportunities: Establishing an Accessible Vocational Rehabilitation Programme within a Forensic Intellectual Disability Service. *Journal of Intellectual Disabilities and Offending Behaviour*; Bingley, 5(4), 160–166. <https://www.semanticscholar.org/paper/Real-Work-Opportunities%3A-establishing-an-accessible-Cox-Simmons/69b2e516c2f3b3ee9cd6f2b0856c48670715166c>
- Diaz-Garolera G, Pallisera M, Fullana J. 2019. Developing Social Skills to Empower Friendships: Design and Assessment of a Social Skills Training Programme, *International Journal of Inclusive Education*, DOI: 10.1080/13603116.2019.1625564. <https://www.tandfonline.com/doi/abs/10.1080/13603116.2019.1625564?journalCode=tied20>

- Disability Rights UK. 2014. Skills for Employment for Disabled People: A Reflective Report. <https://www.disabilityrightsuk.org/sites/default/files/word/Skillsforemploymentfordisabledpeople.doc>
- Donnellan L, Mathews ES. 2021. Service Providers' Perspectives on Life Skills and Deaf and Hard of Hearing Students with and without Additional Disabilities: Transitioning to Independent Living. *European Journal of Special Needs Education*, 36(4), 547–561. <https://www.tandfonline.com/doi/abs/10.1080/08856257.2020.1776982>
- DXC Technology. 2021. The Dandelion Program: Overview. <https://dxc.com/content/dam/dxc/projects/dxc-com/au/About%20Us/social-impact-practice/dandelion-program/pdfs/dxc-au-dandelion-program-overview.pdf>
- EARN (Employer Assistance and Resource Network on Disability Inclusion). 2011. A Toolkit for Establishing and Maintaining Successful Employee Resource Groups. [https://askearn.org/wp-content/uploads/2019/09/EARN\\_ERG\\_Toolkit.pdf](https://askearn.org/wp-content/uploads/2019/09/EARN_ERG_Toolkit.pdf)
- Evans, S. 2007. Disability, Skills and Work: Raising our ambitions. Social Market Foundation.
- Farkas M, Anthony WA. 2010. Psychiatric rehabilitation interventions: A review. *International Review of Psychiatry*. 22(2): 114–129. <https://doi.org/10.3109/09540261003730372>
- Federal Disability Reference Guide. 2013. Date modified: 2013-08-05. <https://www.canada.ca/en/employment-social-development/programs/disability/arc/reference-guide.html#h2.10-h3.1>
- Fernández GH, Molla CL, Garcia MJ. 2021. Employability skills and quality of life among employees with mild and moderate intellectual disability who attend occupation centres in Catalonia (Spain). *Siglo Cero Revista Española sobre Discapacidad Intelectual*. 52(1): 45-57. <https://doi.org/10.14201/scero20215214557>
- Fielden SL, Moore ME, Bend GL (Eds). 2020. *The Palgrave Handbook of Disability at Work*. Palgrave Macmillan.
- First Responders First. 2016. PTSD Employer's Resource Guide. 37 pp. [https://www.firstrespondersfirst.ca/wp-content/uploads/2016/04/PTSD\\_EmployerGuide.pdf](https://www.firstrespondersfirst.ca/wp-content/uploads/2016/04/PTSD_EmployerGuide.pdf)
- Flower RL, Hedley D, Spoor JR, Dissanayake C. 2019. An alternative pathway to employment for autistic job-seekers: a case study of a training and assessment program targeted to autistic job candidates. *Journal of Vocational Education & Training*. 71(3): 407-428.
- Fraser RT, Johnson K, Hebert J, Ajzen I, Copeland J, Brown P, Chan F. 2010. Understanding employers' hiring intentions in relation to qualified workers with disabilities: preliminary findings. *Journal of Occupational Rehabilitation*, 20(4): 420–426.

- Ganann R, Ciliska D, Thomas H. 2010. Expediting systematic reviews: Methods and implications of rapid reviews. *Implementation Science*, 5(1): 1-10.
- Garritty C, Gartlehner G, Nussbaumer-Streit B, King VJ, Hamel C, Kamel C, Affengruber L, Stevens A. 2021. Cochrane Rapid Reviews Methods Group offers evidence-informed guidance to conduct rapid reviews. *Journal of Clinical Epidemiology*. (130): 13-22.
- Gibbard R, Desormeaux M, Persaud P, Wright R. 2018. The Business Case to Build Physically Accessible Environments. Conference Board of Canada. 64 pp.
- Gould-Werth A, Morrison K, Ben-Shalom Y. 2018. Employers' Perspectives on Accommodating and Retaining Employees with Newly Acquired Disabilities: An Exploratory Study. *Journal of Occupational Rehabilitation*. 28(4): 611–633.
- Graham JR, Graham SM. 2013. Literature Review Exploring Job Mismatch and Income. Human Resources and Skills Development Canada (HRSDC). 23 pp.  
<https://deep.idrc.ocadu.ca/literature-review-exploring-job-mismatch-and-income/>
- Grant MJ, Booth A. 2009. A typology of reviews: an analysis of 14 review types and associated methodologies. *Health Information & Libraries Journal*. 26(2): 91-108.
- Hay I. 2021. *Qualitative Research Methods in Human Geography*. 5th edition. Oxford University Press.
- Hedley D, Cai R, Uljarevic M, Wilmot M, Spoor JR, Richdale A, Dissanayake C. 2018. Transition to work: Perspectives from the autism spectrum. *Autism*. 22(5): 528–541.
- Hemmingsson H, Borell L. 2000. Accommodation needs and student-environment fit in upper secondary schools for students with severe physical disabilities. *Canadian Journal of Occupational Therapy*. 67(3): 162-172.
- Hogarth T. 2016. Designing an Employer Skills Survey: Notes on How to Develop a Survey to Meet a Range of Policy Issues Relating to the Demand for, and the Supply of, Skills. IDB.  
<https://publications.iadb.org/en/designing-employer-skills-survey-notes-how-develop-survey-meet-range-policy-issues-relating-demand>
- Human Resources and Skills Development Canada. 2013. Federal Disability Reference Guide.  
[https://www.canada.ca/content/dam/esdc-edsc/migration/documents/eng/disability/arc/reference\\_guide.pdf](https://www.canada.ca/content/dam/esdc-edsc/migration/documents/eng/disability/arc/reference_guide.pdf)
- Ilyer A, Masling S. 2015. Recruiting, Hiring, Retaining, and Promoting People with Disabilities. Equal Employment Opportunity Commission.  
[https://www.eeoc.gov/sites/default/files/migrated\\_files/eeoc/interagency/employing\\_people\\_with\\_disabilities\\_toolkit\\_february\\_3\\_2015\\_v4-2.pdf](https://www.eeoc.gov/sites/default/files/migrated_files/eeoc/interagency/employing_people_with_disabilities_toolkit_february_3_2015_v4-2.pdf)

- Jjans LH, Kaye HS, Jones EC. 2012 Getting hired: successfully employed people with disabilities offer advice on disclosure, interviewing, and job search. *Journal of Occupational Rehabilitation*. 22(2): 155-165.
- Jones MK, Mavromaras KG, Sloane PJ, Wei Z. 2011. Disability and job mismatches in the Australian labour market. IZA Discussion Papers No. 6152, Institute for the Study of Labor. <https://nbn-resolving.de/urn:nbn:de:101:1-2012010913722> Link: <https://ftp.iza.org/dp6152.pdf>
- Jones MK, Mavromaras KG, Sloane PJ, Wei Z. 2014. Disability, job mismatch, earnings and job satisfaction in Australia. *Cambridge Journal of Economics*. 38(5): 1221-1246.
- Jones MK, Sloane PJ. 2010. Disability and skill mismatch. *Economic Record*. (86): 101-114.
- Ju S, Zhang D, Pacha J. 2011. Employability Skills Valued by Employers as Important for Entry-Level Employees with and Without Disabilities. *Career Development and Transitions for Exceptional Individuals*, 35(1): 29-38. <https://journals.sagepub.com/doi/10.1177/0885728811419167>
- Kelly E, Maître B. 2021. Identification of skills gaps among persons with disabilities and their employment prospects. ESRI. <https://doi.org/10.26504/sustat107>
- Khalil H, Peters M, Godfrey CM, McInerney P, Soares CB, Parker D. 2016. An Evidence-Based Approach to Scoping Reviews. *Worldviews on Evidence-Based Nursing / Sigma Theta Tau International, Honor Society of Nursing*. 13(2): 118–123.
- Kruse D, Schur L, Rogers S, Ameri M. 2018. Why do workers with disabilities earn less? Occupational job requirements and disability discrimination. *British Journal of Industrial Relations*. 56(4): 798-834.
- Krzeminska A, Härtel CEJ, Carrero J, Samayoa Herrera X. 2020. Autism @ Work: New insights on effective autism employment practices from a world-first global study. Final Report. Brisbane. Autism CRC. [https://www.autismcrc.com.au/sites/default/files/reports/3-054RI\\_New-insights-on-effective-employment-practices\\_Final-Report\\_2021.pdf](https://www.autismcrc.com.au/sites/default/files/reports/3-054RI_New-insights-on-effective-employment-practices_Final-Report_2021.pdf)
- Kvale S. 1996. *InterViews: An Introduction to Qualitative Research Interviewing*. Sage, 326 pp.
- Lindsay S, Adams T, McDougall C, Sanford R. 2012. Skill development in an employment-training program for adolescents with disabilities. *Disability and Rehabilitation*. 34(3): 228-237.
- Lindsay S, Cagliostro E, Carafa G. 2018. A Systematic Review of Barriers and Facilitators of Disability Disclosure and Accommodations for Youth in Post-Secondary Education. *International Journal of Disability, Development and Education*. 65(5): 526–556.

- Liu KPY, Wong D, Chung ACY, Kwok N, Lam MKY, Yuen CMC, Arblaster K, Kwan ACS. 2013. Effectiveness of a Workplace Training Programme in Improving Social, Communication and Emotional Skills for Adults with Autism and Intellectual Disability in Hong Kong – A Pilot Study. *Occupational Therapy International*, 20(4): 198-204. DOI:10.1002/oti.1356. <https://onlinelibrary.wiley.com/doi/10.1002/oti.1356>
- Lorenz T, Frischling C, Cuadros R, Heinitz K. 2016. Autism and Overcoming Job Barriers: Comparing Job-Related Barriers and Possible Solutions in and outside of Autism-Specific Employment. *PloS One*, 11(1), e0147040. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4713226/>
- Marshall C, Rossman GB. 2015. *Designing Qualitative Research*. Sage, 352 pp.
- Martin V, Lanovaz MJ. 2021. Program Evaluation of a Community Organization Offering Supported Employment Services for Adults with Autism. *Research in Autism Spectrum Disorders*, 82, 101741. <https://psyarxiv.com/6qc9e/>
- Mental Health Commission of Canada. 2017. *Case Study Research Project Findings: The National Standard of Canada for Psychological Health and Safety in the Workplace*. 54 pp.
- Milasinovic V, Buchanan A. 2013. Reliability of an assessment used in formal accommodation services: implications for adults with an intellectual disability. *Journal of Intellectual & Developmental Disability*, 38(4), 301–309. <https://pubmed.ncbi.nlm.nih.gov/24279782/>
- Minister of Justice. 2019. *Accessible Canada Act*. <https://laws-lois.justice.gc.ca/PDF/A-0.6.pdf>
- Nicholas DB, Mitchell W, Zulla R, Solomatin E, Qi S. 2019. A Review of CommunityWorks Canada®: Toward Employability Among High School-Age Youth with Autism Spectrum Disorder. *Global Pediatric Health*, 6, 2333794X19885542. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6826927/>
- Nieuwenhuijsen K, Verbeek JHAM, de Boer AGEM, Blonk RWB, van Dijk FJH. 2005. Validation of performance indicators for rehabilitation of workers with mental health problems. *Medical Care*, 43(10): 1034–1042.
- O’Handley RD, Ford WB, Radley KC, Helbig KA, Wimberly JK. 2016. Social Skills Training for Adolescents with Intellectual Disabilities: A School-Based Evaluation. *Behavior Modification*, 40(4), 541–567. <https://journals.sagepub.com/doi/abs/10.1177/0145445516629938>
- O’Toole G. 2015. *Closing the Disability Skills Gap: What Works to Enhance Skills for Future Work*. Disability Rights UK. 3 pp.

- Office of Skills for Success. 2021. Skill component and proficiency levels.  
<https://www.canada.ca/en/services/jobs/training/initiatives/skills-success/learning-steps.html>
- ODEP (2012). Office of Disability Employment Policy. (2012). Skills to Pay Bills: Mastering Soft Skills for Workplace Success.  
<https://www.dol.gov/sites/dolgov/files/odep/topics/youth/softskills/softskills.pdf>
- Ontario Ministry of Labour. 2015. Summit on Work-Related Traumatic Mental Stress. 19 pp.
- Oursler J, Lu W, Herrick S, Harris K. 2019. Using Direct Skills Teaching to Improve Job Skills for Persons with Disabilities. *Journal of Employment Counseling*, 56(2), 69–84.  
<https://onlinelibrary.wiley.com/doi/full/10.1002/joec.12113>
- Padkapayeva K, Posen A, Yazdani A, Buetting A, Mahood Q, Tompa E. 2017. Workplace accommodations for persons with physical disabilities: evidence synthesis of the peer-reviewed literature. *Disability and Rehabilitation*. 39(21): 2134–2147.
- Panerai S, Catania V, Rundo F, Ferri R. 2018. Remote Home-Based Virtual Training of Functional Living Skills for Adolescents and Young Adults with Intellectual Disability: Feasibility and Preliminary Results. *Frontiers in Psychology*, 9, 1730.  
<https://pubmed.ncbi.nlm.nih.gov/30283382/>
- Public Services Health and Safety Association. 2016. PTSD Employer’s Resource Guide.  
[https://www.firstrespondersfirst.ca/wp-content/uploads/2016/04/PTSD\\_EmployerGuide.pdf](https://www.firstrespondersfirst.ca/wp-content/uploads/2016/04/PTSD_EmployerGuide.pdf)
- Randle M, Reis S. 2019. Changing community attitudes toward greater inclusion of people with disabilities. A Rapid Literature Review.  
[https://www.facs.nsw.gov.au/\\_data/assets/file/0008/372608/Rapid-Review-V3-interactive.pdf](https://www.facs.nsw.gov.au/_data/assets/file/0008/372608/Rapid-Review-V3-interactive.pdf)
- Rios-Avila F, Saavedra-Caballero F. It pays to study for the right job: Exploring the causes and consequences of education-occupation job mismatch. *Levy Economics Institute, Working Papers Series*. 2019 Feb 5(922).
- Rose AJ, Kelley KR, Raxter A. 2021. Effects of PEERS® Social Skills Training on Young Adults with Intellectual and Developmental Disabilities During College. *Behavior Modification*, 45(2), 297–323. <https://pubmed.ncbi.nlm.nih.gov/33423534/>
- Rowe S, Dowse L, Newton D, McGillivray J, Baldry E. 2020. Addressing education, training, and employment supports for prisoners with cognitive disability: Insights from an Australian programme. *Journal of Policy and Practice in Intellectual Disabilities*. 17(1): 43–50.

- Ryan G, Brady S, Holloway J, Lydon H. 2019. Increasing appropriate conversation skills using a behavioral skills training package for adults with intellectual disability and autism spectrum disorder. *Journal of Intellectual Disabilities*: 23(4), 567–580.  
<https://pubmed.ncbi.nlm.nih.gov/29291670/>
- Schur L, Nishii L, Adya M, Kruse D, Bruyère SM, Blanck P. 2014. Accommodating employees with and without disabilities. *Human Resource Management*. 53(4): 593–621.
- Scott M, Falkmer M, Girdler S, Falkmer T. 2015. Viewpoints on Factors for Successful Employment for Adults with Autism Spectrum Disorder. *PLoS One* 10(11), e0139281.  
<https://doi.org/10.1371/journal.pone.0143674> e0139281.
- Scott M, Jacob A, Hendrie D, Parsons R, Girdler S, Falkmer T, Falkmer M. 2017. Employers' Perception of the Costs and the Benefits of Hiring Individuals with Autism Spectrum Disorder in Open Employment in Australia. *PLoS One*; San Francisco, 12(5), e0177607.  
<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0177607>
- Seidman I. 2019. *Interviewing as Qualitative Research: A Guide for Researchers in Education and the Social Sciences*. Teachers College Press.
- Smith JA, Flowers P, Larkin M. 2009. *Interpretative phenomenological analysis: Theory, method and research*. Sage.
- Soeker MS, De Jongh JC, Diedericks A, Matthys K, Swart N, van der Pol P. 2018. The Experiences and Perceptions of Persons with Disabilities Regarding Work Skills Development in Sheltered and Protective Workshops. *Work*, 59: 303-314.  
<https://pubmed.ncbi.nlm.nih.gov/29355125/>
- Statistics Canada. 2017. Canadian Survey on Disability (CSD): A demographic, employment and income profile of Canadians with disabilities aged 15 years and over.  
<https://www150.statcan.gc.ca/n1/pub/89-654-x/89-654-x2018002-eng.htm>
- Stumbo NJ, Hedrick BN, Weisman C, Martin JK. 2010. An Exploration into the Barriers and Facilitators. *Journal of Science Education for Students with Disabilities*, 14(1).
- Tennison O. 2018. Enabling organizations to better support autistic employees: Assessment Tools & Strategies. *Autism in Malaysia Symposium*, Kuala Lumpur.  
<https://core.ac.uk/download/pdf/219377035.pdf>
- Tompa E, Buettgen A. 2016. Evidence Review of Health and Health-Related Measures for Essential Skills Training Interventions. Final Report. Public Health Agency of Canada. 29 pp.
- Tompa E, Samosh D, Boucher N. 2020. Skills Gaps, Underemployment and Equity of Labour Market Opportunities for Persons with Disabilities in Canada. Future Skills Centre. 36 pp.

Tran HX, Le TD, Li J, Liu L, Liu J, Zhao Y, Waters T. 2021. Recommending the Most Effective Intervention to Improve Employment for Job Seekers with Disability. Proceedings of the 27th ACM SIGKDD Conference on Knowledge Discovery & Data Mining 2021 Aug 14 (pp. 3616-3626).

UK Department for International Development. 2015. Collection- Rapid evidence assessments. <https://www.gov.uk/government/collections/rapid-evidence-assessments>

UNICEF. 2019. Global framework on transferable skills. <https://www.unicef.org/media/64751/file/Global-framework-on-transferable-skills-2019.pdf>

Walker-Hirsch L, Champagne MP. 1991. The Circles Concept: Social Competence in Special Education. Educational Leadership, 49(1): 65-67.

Wright R. 2001. Tapping the Talents of People with Disabilities. Conference Board of Canada. 60 pp.

Wright R. 2014. A Business Perspective on Hiring and Integrating People with Disabilities. Conference Board of Canada. 23 pp.

## Appendix A: Search Terms Used for PsycINFO

### Search Strategy:

- 1 Disabilities/
- 2 Developmental Disabilities/
- 3 Mental Disorders/
- 4 *disabilit\*.ti,ab.*
- 5 *("mental health" adj2 condition\*).ti,ab.*
- 6 *(mental adj2 (illness\* or disorder\*)).ti,ab.*
- 7 *or/1-6*
- 8 *skill#.ti,ab.*
- 9 *(skill\* adj2 gap\*).ti,ab.*
- 10 *"over skilling".ti,ab.*
- 11 *overskilling.ti,ab.*
- 12 *challenge\*.ti,ab.*
- 13 *opportunit\*.ti,ab.*
- 14 *or/8-13*
- 15 *7 and 14*
- 16 *limit 15 to yr=2015-2020*
- 17 *16*
- 18 *limit 17 to (peer reviewed journal and English language)*

### Addition of a work term:

- 19 *(worker? or labo?rer?).ti,ab.*
- 20 *employee?.ti,ab.*
- 21 *employer?.ti,ab.*
- 22 *Employment Status/*
- 23 *employment.ti,ab.*
- 24 *job?.ti,ab.*
- 25 *occupation\*.ti,ab.*
- 26 *workplace\*.ti,ab.*
- 27 *19 or 20 or 21 or 22 or 23 or 24 or 25 or 26*
- 28 *15 and 27*
- 29 *limit 28 to yr=2015-2020*
- 30 *29*
- 31 *limit 30 to (peer reviewed journal and English language)*

## Appendix B: Title and Abstract, Article Inclusion & Data Extraction Guide

### Title and Abstract Inclusion/Exclusion Questions

1. Is the study about PWDs? Yes or Uncertain include/No exclude
2. Is the study one of the following:
  - a. An opinion or thought pieces without substantive descriptive or analytic insights?
  - b. A newsletter or broad information piece?
  - c. Two pages or less?
  - d. Is the study in a language other than English?
  - e. Is the study published in 2000 or laterYes to any of a, b, c, d, or e then exclude/No or Uncertain to all of a, b, c, d, and e then include
3. Does the study subject matter fit into one of the following areas:
  - a. Description of foundational and transferable skill levels of PWDs in relation to employment opportunities and outcomes.
  - b. Description of barriers faced by PWDs to increasing their foundational and transferable skill levels in relation to their integration into the labour market.
  - c. Description or evaluation of programs and practices to increase the foundational and transferable skill levels for PWDs to improve their employment opportunities and outcomes.
  - d. Impact of the COVID-19 pandemic on the foundational and transferable skill level development of PWDs in relation to labour market opportunities and outcome.
  - e. Development and testing of protocols for measuring foundational and transferable skill levels of PWDs in relation to their integration into the labour market.Yes or Uncertain to any of a, b, c, d, or e then include/No to all of a, b, c, d, or e then exclude

### Full Article Inclusion/Exclusion Questions

Same as above, but exclude uncertain

### Study Core Research Questions

1. What do we know about the foundational and transferable skill levels and employment outcomes for PWDs, including women and men within this group? What are the knowledge gaps and how could these be addressed?
2. What are the main barriers faced by PWDs to increasing their skill levels and further integrating into the labour market? Do women with disabilities face additional barriers? If so, what are they?
3. What are some proven or promising practices or avenues to address these barriers and/or increase skill levels for PWDs?
4. How has the COVID-19 pandemic affected the skill development and labour market barriers of PWDs? What are some of the long-term implications of the pandemic on the future of PWDs and their skill development and labour market barriers?

## **Key Definitions for Consideration in Abstract & Article Inclusion/Exclusion Decisions**

**Disability:** Includes physical, mental, cognitive and sensory conditions; impairments; chronic/episodic health conditions; self-reported disability

**Foundational Skills Related to Employment:** Literacy and numeracy skills that are needed regardless of employment aspirations and are essential for further learning and productive employment.

**Transferable Skills Related to Employment:** Skills such as creativity, communication, and problem solving, that enable people to engage in life-long learning and to adapt to rapid changes in the economy and society, thereby improving their chances of finding and retaining employment.

**Barriers:** Physical, architectural, technological or attitudinal phenomena that prevent or hinder PWDs from acquiring or advancing foundational and transferable skill levels to improve their employment opportunities.

**Skills for Success:** Employment and Social Development Canada's Skills for Success program has identified nine key foundational and transferable skills that are needed to participate and thrive in learning, work, and life. These skills include:

1. Adaptability
2. Collaboration
3. Communication
4. Creativity
5. Innovation
6. Digital
7. Numeracy
8. Problem Solving
9. Reading

## Appendix C: Articles Identified in the Review

	Authors/Year	Country (Region)	Peer-Reviewed?	Study Type	Type of Disability	Project Research Questions Alignment (Q1, Q2, Q3, Q4)
1	Accardi (2013)	Canada	Yes	Descriptive Study	Autism Spectrum Disorder (ASD)	Q1
2	Alexander (2017)	Australia	Yes	Evaluative Study of Program/Intervention	Intellectual	Q1, Q2
3	Annabi (2021)	USA	No	Best Practices	Autism Spectrum Disorder (ASD)	Q3
4	Armstrong (2015)	Canada	Yes	Evaluative Study of Program/Intervention	Not Specified	Q3
5	Boles (2019)	USA	Yes	Literature Review/Synthesis	Developmental	Q3
6	Brisbois 2014	Canada	Yes	Descriptive Study	Not Specified	Q2, Q3
7	Canadian Human Rights Commission (2021)	Canada	Yes	Best Practices	Mental Health	Q3, Q4
8	Chan (2010)	USA	Yes	Descriptive Study	Sensory & Mobility	Q1, Q2
9	Chezan (2020)	USA	Yes	Evaluative Study of Program/Intervention	Autism Spectrum Disorder (ASD)	Q1, Q2, Q3
10	Clark (2018)	USA	Yes	Evaluative Study of Program/Intervention	Sensory, Learning, Intellectual	Q3
11	Conference Board of Canada (2015)	Canada	No	Best Practices	Not Specified	Q3
12	Cox (2014)	UK	Yes	Evaluative Study of Program/Intervention	Intellectual	Q3
13	Diaz-Garolera (2019)		No	Evaluative Study of Program/Intervention	Learning	Q3
14	Donnellan (2020)	Ireland	Yes	Descriptive Study	Sensory	Q1
15	DXC (2021)	Australia	No	Best Practices	ASD, ADHD, Learning	Q3
16	Evans (2007)	UK	Yes	Literature Review/Synthesis	Not Specified	Q1
17	Fernández (2020)	Catalonia	Yes	Evaluative Study of Program/Intervention	Intellectual	Q1, Q2
18	First Responders First (2016)	Canada	No	Best Practices	Mental Health	Q1, Q3
19	Fraser (2009)	USA	Yes	Descriptive Study	Not Specified	Q1, Q2
20	Gibbard (2018)	Canada	Yes	Descriptive Study	Not Specified	Q3
21	Gould-Werth (2018)	USA	Yes	Descriptive Study	Not Specified	Q2
22	Graham (2013)	Canada	Yes	Literature Review/Synthesis	Not Specified	Q1, Q2
23	Hedley (2018)	Australia	Yes	Descriptive Study	Autism Spectrum Disorder (ASD)	Q1, Q3
24	Hemmingson (2000)	Sweden	Yes	Descriptive Study	Mobility	Q1
25	Iyer (2015)	USA	Yes	Best Practices	Not Specified	Q3
26	Jans (2012)	USA	Yes	Best Practices	Not Specified	Q3
27	Jones (2010)	UK	Yes	Descriptive Study	Not Specified	Q1
28	Jones (2011)	Australia	Yes	Descriptive Study	Not Specified	Q1
29	Ju (2011)	USA	Yes	Descriptive Study	Not Specified	Q1, Q2
30	Kelly (2021)	Ireland	Yes	Descriptive Study	Not Specified	Q1, Q2
31	Kruse (2018)	USA	Yes	Descriptive Study	Not Specified	Q2
32	Krzeminska (2020)	Australia	Yes	Best Practices	Autism Spectrum Disorder (ASD)	Q1, Q2, Q3

	Authors/Year	Country (Region)	Peer-Reviewed?	Study Type	Type of Disability	Project Research Questions Alignment (Q1, Q2, Q3, Q4)
33	Lindsay (2012)	Canada	Yes	Evaluative Study of Program/Intervention	Mobility	Q1, Q3
34	Lindsay (2018)	Canada	Yes	Literature Review/Synthesis	Not Specified	Q2
35	Liu (2013)	Hong Kong	Yes	Evaluative Study of Program/Intervention	ASD, Intellectual	Q1, Q2, Q3
36	Lorenz (2016)	USA	Yes	Evaluative Study of Program/Intervention	Autism Spectrum Disorder (ASD)	Q1, Q3
37	Martin (2021)	Canada – Quebec	Yes	Evaluative Study of Program/Intervention	Autism Spectrum Disorder (ASD)	Q1, Q3
38	Mental Health Commission of Canada (2017)	Canada	Yes	Literature Review/Synthesis	Mental Health	Q1, Q3
39	Milasinovic (2013)	Australia	Yes	Measurement Protocol - Development or Evaluation	Intellectual	Measurement Protocol
40	Nicholas (2019)	Canada	Yes	Evaluative Study of Program/Intervention	Autism Spectrum Disorder (ASD)	Q3
41	Nieuwenhuijsen (2005)	Netherlands	Yes	Measurement Protocol - Development or Evaluation	Mental Health	Q1, Q2
42	O’Handley (2016)	USA	Yes	Evaluative Study of Program/Intervention	Intellectual	Q3
43	O’Toole (2014)	UK	Yes	Literature Review/Synthesis	Not Specified	Q3
44	O’Toole (2015)	UK	No	Literature Review/Synthesis	Not Specified	Q1
45	ODEP (2012)	USA	No	Best Practices	Not Specified	Q3
46	Ontario Ministry of Labour (2015)	Canada	No	Literature Review/Synthesis	Mental Health	Q1, Q2, Q3
47	Oursler (2019)	USA	Yes	Evaluative Study of Program/Intervention	Mental Health, Learning, Mobility, Intellectual	Q1, Q3
48	Panerai (2018)	Italy	Yes	Evaluative Study of Program/Intervention	Intellectual	Q3
49	Rose (2021)	USA	Yes	Evaluative Study of Program/Intervention	Intellectual	Q3
50	Rowe (2020)	Australia	Yes	Evaluative Study of Program/Intervention	Cognitive	Q1, Q3
51	Ryan (2019)	Ireland	Yes	Evaluative Study of Program/Intervention	Autism Spectrum Disorder (ASD)	Q3
52	Schur (2014)	USA	Yes	Evaluative Study of Program/Intervention	Sensory, Intellectual, Mobility	Q3, Q1
53	Scott (2015)	Australia	Yes	Descriptive Study	Autism Spectrum Disorder (ASD)	Q3
54	Scott (2017)	Australia	Yes	Descriptive Study	Autism Spectrum Disorder (ASD)	Q1, Q2
55	Scott (2017)	Australia	Yes	Descriptive Study	Autism Spectrum Disorder (ASD)	Q1, Q2
56	Soeker (2018)	South Africa	Yes	Descriptive Study	Not Specified	Q1, Q2, Q3
57	Stumbo (2010)	USA	Yes	Evaluative Study of Program/Intervention	Mobility	Q1, Q2
58	Tennison (2018)	Malaysia	No	Measurement Protocol - Development or Evaluation	Autism Spectrum Disorder (ASD)	Q3
59	Tompa (2016)	Canada	Yes	Literature Review/Synthesis	Not Specified	Q1
60	Tompa 2020	Canada	Yes	Descriptive Study	Not Specified	Q1
61	Tran (2021)	Australia	Yes	Evaluative Study of Program/Intervention	Not Specified	Q2, Q3
62	Wright (2001)	Canada	No	Best Practices	Not Specified	Q3
63	Wright (2014)	Canada	Yes	Descriptive Study	Not Specified	Q1

## Full Citations for Articles Identified in the Review

1. Accardi C, Duhaime S. 2013. Diversity in Ontario's Youth and Adults with Autism Spectrum Disorders: Finding and Keeping Employment. Autism Ontario. 4 pp.
2. Alexander J, Ford J, Raghavendra P, Clark J. 2017. Nature and Extent of On-the-Job Training for Employees with an Intellectual Disability: A Pilot Study. *Research and Practice in Intellectual and Developmental Disabilities*, 5:2, 138-148.
3. Annabi H, Crooks EW, Barnett N, Guadagno J, Mahoney JR, Michelle J, Pacilio A, Shukla H, Velasco J. 2021. *Autism @ Work Playbook: Finding Talent and Creating Meaningful Employment Opportunities for People with Autism*. ACCESS-IT. 64 pp.
4. Armstrong, T. 2015. Training and Development of Persons with Disabilities: Six Cases from the Canadian Private Sector. Conference Board of Canada. 32 pp.
5. Boles M, Ganz J, Hagan-Burke S, Hong ER, Neely LC, Davis JL, Zhang D. 2019. Effective Interventions in Teaching Employment Skills to Individuals with Developmental Disabilities: A Single-Case Meta-analysis. *Review Journal of Autism and Developmental Disorders*, 6(2): 200–215. Rapid evidence assessments.
6. Brisbois, R. 2014. Business Benefits of Accessible Workplaces. Conference Board of Canada. 25 pp.
7. Canadian Human Rights Commission. 2020. COVID-19 and Mental Health in the Workplace: A Human Rights Guide for Employees and Employers. 13 pp.
8. Chan F, Strauser D, Maher P, Lee EJ, Jones R, Johnson ET. 2010. Demand-Side Factors Related to Employment of People with Disabilities: A Survey of Employers in the Midwest Region of the United States. *Journal of Occupational Rehabilitation*, 20(4): 412–419.
9. Chezian LC, Drasgow E, Grybos EM. 2020. Conversation Skills and Self-Initiated Interactions in Young Adults with Autism and Intellectual Disability. *Research in Autism Spectrum Disorders*.
10. Clark KA, Konrad M, Test DW. 2018. UPGRADE Your Performance: Improving Soft Skills of Students with Disabilities. *Journal of vocational rehabilitation*, 49(3), 351–365.
11. Conference Board of Canada. 2015. *Employers Toolkit: Making Ontario Workplaces Accessible to People with Disabilities*, 2nd Edition. 196 pp.
12. Cox A, Simmons H, Painter G, Philipson P, Hill R, Chester V. 2014. Real Work Opportunities: Establishing an Accessible Vocational Rehabilitation Programme within a Forensic Intellectual Disability Service. *Journal of Intellectual Disabilities and Offending Behaviour; Bingley*, 5(4), 160–166.
13. Diaz-Garolera G, Palliser M, Fullana J. 2019. Developing Social Skills to Empower Friendships: Design and Assessment of a Social Skills Training Programme, *International Journal of Inclusive Education*, DOI: 10.1080/13603116.2019.1625564.

14. Donnellan L, Mathews ES. 2021. Service Providers' Perspectives on Life Skills and Deaf and Hard of Hearing Students with and without Additional Disabilities: Transitioning to Independent Living. *European Journal of Special Needs Education*, 36(4), 547–561.
15. DXC Technology. 2021. The Dandelion Program: Overview.
16. Evans, S. 2007. *Disability, Skills and Work: Raising our ambitions*. Social Market Foundation.
17. Fernández G, Molla CL, Garcia MJ. 2020. Employability Skills and Quality of Life Among Employees with Mild and Moderate Intellectual Disability Who Attend Occupation Centres in Catalonia (Spain)
18. First Responders First. 2016. PTSD Employer's Resource Guide. 37 pp.
19. Fraser RT, Johnson K, Hebert J, Ajzen I, Copeland J, Brown P, Chang F. 2010. Understanding Employers' Hiring Intentions in Relation to Qualified Workers with Disabilities: Preliminary Findings. *Journal of Occupational Rehabilitation*, 20: 420-426.
20. Gibbard R, Desormeaux M, Persaud P, Wright R. 2018. The Business Case to Build Physically Accessible Environments. Conference Board of Canada. 64 pp.
21. Fraser RT, Johnson K, Hebert J, Ajzen I, Copeland J, Brown P, Chan F. 2010. Understanding Employers' Hiring Intentions in Relation to Qualified Workers with Disabilities: Preliminary Findings. *Journal of Occupational Rehabilitation*, 20(4): 420–426.
22. Graham JR. 2013. Literature Review Exploring Job Mismatch and Income, and Labour Market Outcomes for People with Disabilities. Human Resources and Skills Development Canada (HRSDC). 23 pp.
23. Hedley D, Cai R, Uljarevic M, Wilmot M, Spoor JR, Richdale A, Dissanayake C. 2018. Transition to Work: Perspectives from the Autism Spectrum. *Autism*. 22(5): 528–541.
24. Hemmingsson H, Borell L. 2000. Accommodation Needs and Student-Environment Fit in Upper Secondary Schools for Students with Severe Physical Disabilities. *Canadian Journal of Occupational Therapy*. 67(3): 162-172.
25. Iyer A, Masling. 2015. *Recruiting, Hiring, Retaining, and Promoting People with Disabilities: A Resource Guide for Employers*. Equal Employment Opportunity Commission.
26. Jans LH, Kaye HS, Jones EC. 2012 Getting Hired: Successfully Employed People with Disabilities Offer Advice on Disclosure, Interviewing, and Job Search. *Journal of Occupational Rehabilitation*. 22(2): 155-165.
27. Jones MK, Sloane PJ. 2010. Disability and Skill Mismatch. *Economic Record*. (86): 101-114.
28. Jones MK, Mavromaras KG, Sloane PJ, Wei Z. 2011. Disability and Job Mismatches in the Australian Labour Market. IZA Discussion Papers No. 6152, Institute for the Study of Labor.
29. Ju S, Zhang D, Pacha J. 2011. Employability Skills Valued by Employers as Important for Entry-Level Employees with and Without Disabilities. *Career Development and Transitions for Exceptional Individuals*, 35(1): 29-38.

30. Kelly E, Maître B. 2021. Identification of Skills Gaps Among Persons with Disabilities and Their Employment Prospects. ESRI. <https://doi.org/10.26504/sustat107>
31. Kruse D, Schur L, Rogers S, Ameri M. 2018. Why Do Workers with Disabilities Earn Less? Occupational Job Requirements and Disability Discrimination. *British Journal of Industrial Relations*. 56(4): 798-834.
32. Krzeminska A, Härtel CEJ, Carrero J, Samayoa Herrera X. 2020. Autism @ Work: New insights on effective autism employment practices from a world-first global study. Final Report. Brisbane. Autism CRC. Work: New insights on effective autism employment practices from a world-first global study. Final Report. Brisbane. Autism CRC.
33. Lindsay S, Adams T, McDougall C, Sanford R. 2012. Skill Development in an Employment-Training Program for Adolescents with Disabilities. *Disability and Rehabilitation*. 34(3): 228-237.
34. Lindsay S, Cagliostro E, Carafa G. 2018. A Systematic Review of Barriers and Facilitators of Disability Disclosure and Accommodations for Youth in Post-Secondary Education. *International Journal of Disability, Development and Education*. (65(5): 526–556.
35. Liu KPY, Wong D, Chung ACY, Kwok N, Lam MKY, Yuen CMC, Arblaster K, Kwan ACS. 2013. Effectiveness of a Workplace Training Programme in Improving Social, Communication and Emotional Skills for Adults with Autism and Intellectual Disability in Hong Kong – A Pilot Study. *Occupational Therapy International*, 20(4): 198-204. DOI:10.1002/oti.1356.
36. Lorenz T, Frischling C, Cuadros R, Heinitz K. 2016. Autism and Overcoming Job Barriers: Comparing Job-Related Barriers and Possible Solutions in and outside of Autism-Specific Employment. *PloS One*, 11(1), e0147040.
37. Martin V, Lanovaz MJ. 2021. Program Evaluation of a Community Organization Offering Supported Employment Services for Adults with Autism. *Research in Autism Spectrum Disorders*, 82, 101741.
38. Mental Health Commission of Canada. 2017. Case Study Research Project Findings: The National Standard of Canada for Psychological Health and Safety in the Workplace. 54 pp.
39. Milasinovic V, Buchanan A. 2013. Reliability of an assessment used in formal accommodation services: implications for adults with an intellectual disability. *Journal of Intellectual & Developmental Disability*, 38(4), 301–309.
40. Nicholas DB, Mitchell W, Zulla R, Solomatin E, Qi S. 2019. A Review of CommunityWorks Canada®: Toward Employability Among High School-Age Youth with Autism Spectrum Disorder. *Global Pediatric Health*, 6, 2333794X19885542.
41. Nieuwenhuijsen K, Verbeek JHAM, de Boer AGEM, Blonk RWB, van Dijk FJH. 2005. Validation of Performance Indicators for Rehabilitation of Workers with Mental Health Problems. *Medical Care*, 43(10): 1034–1042.

42. O'Handley RD, Ford WB, Radley KC, Helbig KA, Wimberly JK. 2016. Social Skills Training for Adolescents with Intellectual Disabilities: A School-Based Evaluation. *Behavior Modification*, 40(4), 541–567.
43. O'Toole G. 2014. Review of Different Approaches to Work Skills Development for Disabled Young People (14–25) and Disabled Working Adults in the UK and Internationally. Institute for Policy Studies in Education (IPSE). 39 pp.
44. O'Toole. 2015. Closing the Disability Skills Gap: What Works to Enhance Skills for Future Work. Disability Rights UK. 3 pp.
45. ODEP (2012). Office of Disability Employment Policy. (2012). Skills to Pay Bills: Mastering Soft Skills for Workplace Success.
46. Ontario Ministry of Labour. 2015. Summit on Work-Related Traumatic Mental Stress. 19 pp.
47. Oursler J, Lu W, Herrick S, Harris K. 2019. Using Direct Skills Teaching to Improve Job Skills for Persons with Disabilities. *Journal of Employment Counseling*, 56(2), 69–84.
48. Panerai S, Catania V, Rundo F, Ferri R. 2018. Remote Home-Based Virtual Training of Functional Living Skills for Adolescents and Young Adults with Intellectual Disability: Feasibility and Preliminary Results. *Frontiers in Psychology*, 9, 1730.
49. Rose AJ, Kelley KR, Raxter A. 2021. Effects of PEERS® Social Skills Training on Young Adults with Intellectual and Developmental Disabilities During College. *Behavior Modification*, 45(2), 297–323.
50. Rowe S, Dowse L, Newton D, McGillivray J, Baldry E. 2020. Addressing Education, Training, and Employment Supports for Prisoners with Cognitive Disability: Insights from an Australian Programme. *Journal of Policy and Practice in Intellectual Disabilities*. 17(1): 43–50.
51. Ryan G, Brady S, Holloway J, Lydon H. 2019. Increasing appropriate conversation skills using a behavioral skills training package for adults with intellectual disability and autism spectrum disorder. *Journal of Intellectual Disabilities*: 23(4), 567–580.
52. Schur L, Nishii L, Adya M, Kruse D, Bruyère SM, Blanck P. 2014. Accommodating Employees with and Without Disabilities. *Human Resource Management*. 53(4): 593–621.
53. Scott M, Falkmer M, Girdler S, Falkmer T. 2015. Viewpoints on Factors for Successful Employment for Adults with Autism Spectrum Disorder. *PLoS One* 10(11), e0139281.
54. Scott M, Falkmer M, Girdler S, Falkmer T. 2015. Viewpoints on Factors for Successful Employment for Adults with Autism Spectrum Disorder. *PLoS One* 10(11), e0139281. <https://doi.org/10.1371/journal.pone.0143674> e0139281.
55. Scott M, Jacob A, Hendrie D, Parsons R, Girdler S, Falkmer T, Falkmer M. 2017. Employers' Perception of the Costs and the Benefits of Hiring Individuals with Autism Spectrum Disorder in Open Employment in Australia. *PLoS One*; San Francisco, 12(5), e0177607.

56. Soeker MS, De Jongh JC, Diedericks A, Matthys K, Swart N, van der Pol P. 2018. The Experiences and Perceptions of Persons with Disabilities Regarding Work Skills Development in Sheltered and Protective Workshops. *Work*, 59: 303-314.
57. Stumbo NJ, Hedrick BN, Weisman C, Martin JK. 2010. An Exploration into the Barriers and Facilitators. *Journal of Science Education for Students with Disabilities*, 14(1).
58. Tennison O. 2018. Enabling organizations to better support autistic employees: Assessment Tools & Strategies. *Autism in Malaysia Symposium*, Kuala Lumpur.
59. Tompa E, Buettgen A. 2016. Evidence Review of Health and Health-Related Measures for Essential Skills Training Interventions. Final Report. Public Health Agency of Canada. 29 pp.
60. Tompa E, Samosh D, Boucher N. 2020. Skills Gaps, Underemployment and Equity of Labour Market Opportunities for Persons with Disabilities in Canada. *Future Skills Centre*. 36 pp.
61. Tran HX, Le TD, Li J, Liu L, Liu J, Zhao Y, Waters T. 2021. Recommending the Most Effective Intervention to Improve Employment for Job Seekers with Disability. *Proceedings of the 27th ACM SIGKDD Conference on Knowledge Discovery & Data Mining 2021 Aug 14* (pp. 3616-3626).
62. Wright R. 2001. Tapping the Talents of People with Disabilities. *Conference Board of Canada*. 60 pp.
63. Wright R. 2014. A Business Perspective on Hiring and Integrating People with Disabilities. *Conference Board of Canada*. 23 pp.

## Appendix D: Key Informant Interview Questionnaire

### **Addressing Knowledge Gaps about Skills of Persons with Disabilities: A Literature Review and Key Informant Interviews**

This study, contracted by Employment & Social Development Canada (ESDC), is designed to identify the foundational and transferable skill sets found within the disability community and identify ways to improve skills training opportunities for PWDs (PWDs). These interviews will help us identify successful initiatives, current barriers to success, and further research that is required.

There is currently little to no information on the foundational and transferable skill levels of PWDs. Building on existing research, we are undertaking a literature review and key informant interviews to identify and fill knowledge gaps, make recommendations for how remaining gaps can be filled (e.g., with the possibility of a targeted survey to be conducted by a polling firm).

We are interested in hearing from key informants about the following research questions:

1. What is known about the foundational and transferable skill levels and employment outcomes for PWDs, including women and men within this group? What are the knowledge gaps about current skill levels?
2. What are the main barriers faced by PWDs to increasing their skill levels and further integrate into the labour market? Do women with disabilities face additional barriers? If so, what are they?
3. What are some proven or promising practices or avenues to address these barriers and/or increase skill levels for PWDs?
4. How has the COVID-19 pandemic affected the skill development and labour market barriers of PWDs? What are some of the long-term implications of the pandemic on the future of PWDs and their skill development and labour market barriers?

#### **Some Key Definitions**

**Disability:** Disability means any impairment, including a physical, mental, intellectual, cognitive, learning, communication or sensory impairment—or a functional limitation—whether permanent, temporary or episodic in nature, or evident or not, that, in interaction with a barrier, hinders a person’s full and equal participation in society. However, the scope of this study is focused on those who identify as having a learning disability or mental health condition.

**Barrier:** Barrier means anything—including physical, architectural, technological or attitudinal that is based on information or communications or that is the result of a policy or a practice—that hinders the full and equal participation in society of persons with an impairment, including a physical, mental, intellectual, cognitive, learning, communication, or sensory impairment or a functional limitation.

**Foundational Skills:** Foundational skills consist of literacy and numeracy – skills that are needed regardless of employment aspirations. Foundational skills are essential for further learning, productive employment, and civic engagement.

**Transferable Skills:** Such as creativity, communication, and problem solving that are needed by all. Such skills enable young persons to engage in life-long learning and to adapt to rapid changes in the economy and society, thereby improving their chances of finding and retaining work

**Skills for Success:** These are specific foundational & transferable skills for success identified by the ESDC’s Skills for Success program (SSP). They include Adaptability, Collaboration, Communication, Creativity & Innovation, Digital, Numeracy, Problem Solving, Reading, and Writing. Full descriptions and definitions of each skill can be found on the OSS website at: <https://www.canada.ca/en/services/jobs/training/initiatives/skills-success/understanding-individuals.html#h2.2>

## **Informed Consent**

We will send you an informed consent form to read and sign before the interview. Your participation in this interview is voluntarily. Please also note that you can choose not to answer a question and can also choose to withdraw from the interview at any time. The interview will be semi-structured in format and about 30 to 60 minutes in length.

Please note that your name will be kept confidential. The interview recording and transcript will be kept on a secure server and will only be available to me and research team members undertaking analysis of the data collected for the environmental scan. No identifiers of the participants and their organizations will be made public at any time or shared with people beyond the research team tasked with data collection and analysis.

## **Interview Questions**

### **Question #1**

Please tell me about the work that you do/have done supporting PWDs to find employment?

Probing Questions

- What programs have you been involved with?
- What populations or groups of people have you focused on in your work?
- What employment sectors of the labour market have you focused on in your work?
- What kinds of disabilities have the people you worked with had?

### **Question #2**

What are some examples of foundational and transferable skills that help PWDs secure employment?

Probing Questions

- What types of skills do the people you/your organization serve(s) have to secure employment?
- What are the gaps between the needs of employers, sectors or labour markets you are working in and the skill sets of people you/your organization serve(s)?
- What data sources are you aware of to help identify current skills and skills gaps for the populations you/your organization serves?

**Question #3**

Can you identify specific training initiatives/programs for persons with disability that effectively advance their skills for employment or help them find skill-matched employment?

Probing Questions

- Can you describe the programs/initiatives?
- Are there particular success stories among the initiatives/programs that you are aware of?
- What organizations or disability support programs were involved?
- Do you know of any other initiatives that have successfully implemented skills training for PWDs?
- What are/were the outcomes of interest for these initiatives/programs?

**Question #4**

Thinking about a time when skills training delivery failed, what would you say were the largest barriers to success? Probe for individual, organizational/firm and system level barriers and challenges

**Question #5**

How have gender, race, or other intersectional identities impacted skill training and employment for PWDs I your work?

Probing Questions

- How do these barriers affect diverse people with disabilities such as women, racialized people, Indigenous peoples, 2SLGBTQI people, etc.? How do these barriers affect people with different types of disabilities?
- How can we improve skills training from a mental health, learning disability and neurodiversity perspective?
- Do you have a wish list of what would be good to see in training programs?
- What would be good to include in terms of social and emotional skills training?

**Question #6**

How has the COVID-19 Pandemic affected skills development and employment opportunities for PWDs? What are the new opportunities, challenges and barriers for skills development and employment for people with disabilities? How long do you anticipate this affect to last?

Probing Questions

- Have people with mental illness or learning disabilities been impacted uniquely by the Pandemic? How do different categories of disability impact these challenges and barriers?

**Question #7**

Do you know where I can find reports or other written materials about the foundational and transferable skills of persons you/your organization serve(s)?

Probing Questions

- Do you know of any other relevant reports, websites, initiatives/programs that might help us with our study?

**Question #8**

Can you recommend anyone else I might speak to about the foundational and transferable skill levels and employment outcomes for PWDs?

**Question #9**

Do you have anything else to add that you think is important for us to hear, based on your experience in this area?

(The interviewer will then ask the participant if they have any final questions about the project)

## Appendix E: List of Skills Training Programs for Key Informant Outreach

Program/Initiative Name	Country	Description
University of Illinois Beckwith Program	USA	In addition to immediate residential support services, Beckwith supported residents' benefit from a Transitional Disability Management Program (TDMP) that helps prepare them for the greatest possible independence upon graduation from the University of Illinois and learn the skills necessary to be more independent and responsible.
Train to Gain Program	UK	Train to Gain is a UK government-funded initiative for employees to get new skills that will help them succeed at work. Training can include literacy and numeracy skills, vocational qualifications up to level 3 (equivalent to two good A-levels) as well as leadership and management training
Pathways to Work	UK	Pathways to Work, offering a tailored condition management programme matched by a responsibility to attend a series of work-focused interviews (WFIs), was piloted for new claimants of IB.
ODSP Employment Support Program	Canada	The ODSP Employment Supports Program assists PWDs to locate and retain employment. The actual services available throughout ODSP Employment Supports are delivered by various community organizations located throughout the City of Toronto.
DXC Dandelion Program	Australia	The DXC Dandelion Program, part of DXC Technology's <a href="#">Social Impact Practice</a> , provides an environment that supports and celebrates the talents and skills of neurodiverse persons — such as those with Autism, ADHD or Dyslexia — and helps them build valuable skills to pursue a career in information technology.
Program for the Education and Enrichment of Relational Skills (PEERS)	USA	The Program for the Education and Enrichment of Relational Skills (PEERS) is world-renowned for providing evidence-based social skills treatment to preschoolers, adolescents, and young adults with autism spectrum disorder (ASD), attention deficit/hyperactivity disorder (ADHD), anxiety, depression, and other socio-emotional problems.

		First developed at UCLA by PEERS Clinic director, Dr. Elizabeth Laugeson, the program has expanded to locations across the United States, has been translated into over a dozen languages, and is used in over 80 countries across the globe.
UPGRADE Your Performance	USA	A multicomponent intervention developed based on research focused on teaching soft skills, as well as evidence-based instructional practices for teaching employment skills to individuals with disabilities. Includes a job performance rubric (JPR) used to measure students' soft skills in the areas of attitude and cooperation, reliability, productivity and on-task, quality of work, and teamwork and communication (Clark 2018)
CommunityWorks Canada	Canada	A peer supported pre-employment program for teens and young adults with Autism Spectrum Disorder (ASD) ages 15-21. The program provides participants with the opportunity to develop and practice basic job skills, improve social and communications skills, acquire community volunteer experience and cultivate potential areas of interest for future employment.
Friendship & Social Skills Programme (FSSP)	Spain	To help young persons with LD gain knowledge about the meaning of friendship, and to analyse and reflect on their own ways of dealing with friendships (Diaz-Garolera 2019).
UCLA Skills Training Program – Workplace Fundamentals	USA	Teaches broad social skills in employment settings in nine areas: (a) knowing how work changes your life, (b) learning about your workplace, (c) identifying your stressors, (d) learning to solve problems, (e) managing your symptoms and medications on-the-job, (f) managing your health and avoiding substance abuse, (g) improving your job performance, (h) socializing with coworkers, and (i) finding support and proper motivation. Each skill area includes an introduction, videotaped demonstration, role play, generation and evaluation of solutions to resource management problems, generation and evaluation of solutions, in vivo assignments, and

		homework assignments (Wallace & Tauber, 2004)
--	--	---

## Appendix F: Interview Summaries

### Interview #1

#### Respondent Profile

This key informant owned a company that offered seminars, workshops, and consulting on accessible web design for decades, after working in the federal government. In the federal government position, he provided training on assistive technology systems for employees with disabilities that needed job accommodations. He worked in an adaptive technology centre, the first of its kind in the federal government at the time, helping employees with sensory impairments, sensory disabilities, blindness, those who were hearing impaired and deaf and people with mobility impairments. His own company focused on accessible website design and web accessibility standards. His clients included blind persons who used screen readers, persons with mobility impairments, and persons who were deaf and needed software such as teletypewriter.

#### Key Insights

1. Training/technical supports for PWDs should be customized, as there are no cookie cutter solutions.
2. Appreciate, and take into account, that people have different learning styles. Some people are better at learning than others. Training needs to be amenable to different learning styles to be effective.
3. Good management support is a key factor for success. Departments with supportive management have good retention and workers in them do not need training as often, unless there is a technology change. Having management that is committed to providing full accommodations from the beginning is a key factor for positive outcomes.
4. There will always be on-going technology changes that present challenges. Change is a constant.

#### Programs, Services and Other Resources

67. Paul Menton Centre for Students with Disabilities at Carleton University  
<https://carleton.ca/pmc/>
68. OCAD University Inclusive Design Research Centre  
<https://legacy.idrc.ocadu.ca/index.php/resources/idrc-online/49-articles-and-papers/100-web-browsing-through-adaptive-technology-a-consumer-information-resource-april-1996>
69. Global Alliance on Accessible Technologies and Environments (GAATES) <http://gaates.org/>
70. The Global Initiative for Inclusive ICT <https://g3ict.org/>

#### Some Noteworthy Organizations

IBM technology (known for accessibility)

## Interview #2

### Respondent Profile

This key informant works with a provincial apprenticeship training program that has been translated into a virtual platform. It is being used by apprenticeship authorities in the province and is beginning to be rolled out across Canada. The program focuses on populations with learning disabilities or mental health conditions who struggle with theoretical learning in apprenticeship programs. It is a comprehensive model with complete wrap-around services, including customized learning services.

### Key Insights

1. Essential skills service does not meet the needs of all learners, particularly persons with learning disabilities. Need to consider the whole person.
2. Kinesthetic learning is very important for persons with learning disabilities in the apprenticeship world.
3. There is the need to appreciate that different people have different learning styles, such as learning visually or auditorily. Different learning styles do not reflect capability.
4. One-on-one customized training is important. What a person needs to learn for a particular occupation, e.g., a trade, cannot be changed, however one can work with a trainee to find the best way for them to learn the required skill set.
5. Online tools, visuals, questions, and content for skills training need to be culturally sensitive for PWDs to connect with the content and understand how to modify their skills to the situation.
6. Top essential skills in top 10 trades in Canada (which encompass about 80% of apprentices across Canada) are i) numeracy, ii) reading comprehension, iii) document use, and iv) problem solving.
7. Psychologist's toolbox focused on trades helps better contextualize psychoeducational assessments for the trades.
8. More effective to take a proactive approach where there is an essential skills assessment at the beginning of the program rather than after a person has failed.

### Other Insights

1. K-12 systems often stream PWDs into apprenticeship programs because they are not seen as meeting the traditional academic university model. This is a fault with the system in Canada.
2. University model should learn from the apprenticeship model, which is quite excellent—it is a national model where curriculum is standardized across the country for all red-seal trades.
3. Red Seal trades curriculum is pre-set, so focus of training is on how one learns not what they learn, i.e., adapting to person's learning style.
4. Cultural differences contribute to barriers to success of skills training programs. For example, in the apprentice program in which this key informant worked, it was noted that the highest incompleteness rate was amongst persons from Indigenous populations.
5. The COVID-19 Pandemic provided the impetus to take skills training program from in-person format to a virtual format, making it accessible and available to more people.
6. Quebec has a different apprenticeship model than the rest of Canada—they begin training for the trades in high school.

## Programs, Services and Other Resources

1. Virtual Learning Strategist Model <https://saskpolytech.ca/news/posts/2021/sask-polytech-delivers-virtual-learning-strategist-program-across-canada-for-apprentices-with-disabilities.aspx>
2. Canadian Council of Directors of Apprenticeship CCDA <https://www.ellischart.ca/eng/about/ccd.1.shtml>
3. German model of apprenticeship <https://www.macleans.ca/work/how-the-german-style-of-apprenticeships-could-be-a-model-for-canada/> <https://www.expatrio.com/studying-germany/german-education-system/german-dual-apprenticeship-system>

## Interview #3

### Respondent Profile

This key informant is in a leadership position with a Canadian disability employment organization. The organization focuses on helping match organizations and their employment opportunities with job candidates that have the requisite skills. They help with the matching, onboarding and sustainability support such as coaching. Their focus is on skilling up employers to be disability confident. The interviewee has overseen the program for several years.

### Key Insights

1. Need for more inclusive and accessible post-secondary education—having separate program for PWDs is indicative of failure of the regular educational system
2. Importance of early work experience—in high school, in post-secondary education, through part-time work, internships, summer work
3. Supportive environments for youth and young adults—parents, teachers, and others often believe that youth and young adults with disabilities are unable to work—should be preparing them for work in secondary schools
4. Early exposure to employers—have employers connected to education system—issue sometimes is the mix of ministerial responsibilities is separate (i.e., labour/employment and education)
5. Training on the job—pre-vocational training often does not end up in employment as the programs are not connected to real opportunities or employers—often cycling through training programs that go nowhere
6. Doing away with segregation—shelter workshops, social enterprises and other forms of segregate activities under the guise of “training programs” that are ghettos for subsidized labour or respite care for guardians
7. Developing demand-side capacity—employers need skilling up
8. Training on the job—best place to get training is on the job, not in the classroom
9. Challenges of transportation—particularly for persons with intellectual disabilities, learning to navigate public transit—in some cases issue is absence of public transit (e.g., rural areas)
10. Soft skills are critical—most persons with intellectual disabilities lose their job, not because they do not have the skills to do it, but social part of work is an issue—scheduling, social interactions with co-workers and supervisor, persons with neurodiversity communicate differently

## 11. Job coach plays a critical role for some populations

### Other Insights

1. Basic literacy (ability to read signs), understand safety, ability to get back and forth to work, ability to socialize, workplace manners
2. People learn a lot of social skill in their first jobs in high school, so if PWDs do not have these early experiences they are behind from the beginning—people also learn what they don't like in the various crappy jobs they have in their youth and young adulthood
3. Contextualized training—training for certain populations (BIPOC) needs to consider geographies, cultural norms, identities (intersectionality issues)
4. The COVID-19 Pandemic reduced opportunities at least temporarily during epidemic. Post-epidemic, employers were reticent to hire PWDs because they needed to ramp up quickly and had little time for training. But COVID did open up opportunities with remote work.
5. Virtual work has helped advance supported employment—coach and supportive resources not as visible when working from home—less of a sense of being different from co-workers

### Desirable Features of a Training Program

1. Inclusive education in post-secondary school rather than separate programs for PWDs (dismantle sheltered workshops)
2. Training programs need to be finite and tied to real job opportunities—can't go on forever, or cycle through multiple programs
3. Partnerships with employers—employers need to be involved in training programs and ready to pick up workers once they complete the program—possibly have employers deliver the training
4. Opening of opportunities in the trades—so far have been unsuccessful with penetrating trades—perceptions in industry that PWDs (intellectual, neurodiverse), are not suited for such work

## Interview #4

### Respondent Profile

This key informant works for the private Canadian company that developed a barrier-free hiring strategy for PWDs. The organization is tech-centric; however, it expanded its scope outside of the tech industry and now focuses on all sectors. It specialises in virtualization, e.g., remote desktop solutions. The organization provides premium solutions for clients, e.g., facilitating a remote first model so that PWDs can connect remotely. Clients are very diverse, ranging from biotech to retail, profit to non-profit, and local to regional and national. They work with persons with diverse disabilities and match mentors with them.

### Key Insights

1. Resumes and interviews are barriers to accessing to employment and assessing people's strengths and capabilities. Resumes do not always tell you what a person can do.
2. A virtual technical assessment can serve as an alternative to a resume or interview as a means of assessing a candidate's strengths. A person with a disability can be placed into virtual

- world, where they can show what they can do, e.g., technical skills, social interaction skills, communication skills, managing stress, prioritizing, and understanding requirements of jobs.
3. One needs to work with persons to identify their skills and allow them to discover their skills, as they might not present or identify those skills on their own.
  4. Skills are not always best acquired in a classroom setting.
  5. The way one recognizes skills needs to change. Some persons may have proxy skills such as innovation, problem solving or being eloquent.
  6. Key categories of barriers are transportation, physical environment, and attitudes.
  7. Employers need to be educated on how to become disability confident. They need to encourage workers to talk about skill needs, education needs, and other issues. Employers should empower their workers to have conversations, to be comfortable asking questions. They should create forums for safe conversations where answers are provided, workers are supported, and actions taken for the collective good.
  8. Automated Talent Search (ATS) software, often used by organizations, has biases built in it. It often screens out talented candidates, including PWDs, e.g., by sorting out based on specific terminology and time gaps in a resume. Time gaps may be due to health issues or caregiving responsibilities.
  9. Employment service agencies do not specialise in skills for success or skills augmentation, but rather individual supports, e.g., resume writing, job development, career guidance, matching workers with employment opportunities, coaching. They are not experts in skills development.
  10. The educational environment needs to change. Educational systems often provide standardized training that can conflict with the individualisation of a person. The onus should not be on the student to change. Learning facilities need to provide accommodations and accessible environments.
  11. The post-secondary learning environment is often self-guided, so students need to be their own advocate, but it can be difficult to self-advocate when a person is not well or has no community or family supports.
  12. There needs to be a continuum from high school to post-secondary studies and then to world of work. The transition from post-secondary studies to the world of work has the biggest gaps due a to misunderstanding accommodations in the workplace will be the same as in school.
  13. Experiential learning should be given the highest priority. In school and on-the-job learning should focus on experiential learning whenever possible, as such learning opportunities can uncover many skills and help individuals grow and develop.
  14. Better understand the barriers of the process. When employers say cannot find the talent, they should look to understand why. Talent is out there, but employers just need to change the process. It does not need to be complicated or expensive. Just being willing to do one or two small things differently in the recruitment process can make the difference.
  15. Employers need to build the confidence to do things differently. They may need help to build up this confidence. Sometimes peer to peer support can help, so that they can better appreciate what is possible.

### **Other Insights**

1. There is great value in embracing intersectionality, as diversity breeds creativity and opportunity. Understanding comes from exposure, education, and experience. PWDs are not solely identified by their disability, they have multi-layered identities as do all persons.

2. COVID-19 has created a fear that progress made in the employment of PWDs over the last 20 years has been lost. There certainly was a negative impact for PWDs, particularly in certain sectors that were hardest hit by developments. But overall, there are more opportunities now than before COVID-19, as there is a labour shortage. However, there are still system and skill development barriers for PWDs that prevents them from getting jobs.

### Programs, Services and Other Resources

1. Carleton University READ program—This program helps students and organizations identifying specific elements that are barriers to success. <https://carleton.ca/read/>
2. Wilfrid Laurier University—They have developed a policy that ensures a focus on helping students with disabilities develop their skills. <https://www.wlu.ca/about/discover-laurier/accessibility/index.html>
3. York University—They have an internal mentoring program and accessible services for students. <https://careers.yorku.ca/students-and-new-grads/services-events/taste>
4. Disability Foundation—This foundation, based in British Columbia, has developed a comprehensive program for students (Connectra) that helps them identifying their skills and learning opportunities. <https://disabilityfoundation.org/about-us/> <https://connectra.org/>
5. City of Kingston has an economic recovery group that has focused on the disenfranchised, and those who are barriered, including a focus on employment of PWDs. Recently pulled together a report on their two years of work. <https://www.cityofkingston.ca/city-hall/projects-construction/kingston-economic-recovery-team>
6. Prospect Now (Alberta program) that helps Albertans overcome barriers to employment. Services range from everything from information and resources to skill upgrading, placement and post-employment support. <https://www.prospectnow.ca/>
7. YMCA Peace River, quarterly survey (Working Well) with a focus on mental health in the workplace. Findings on impacts of COVID are interesting. <https://www.ymcaworkwell.com/insights-to-impact-2021>
8. ILO recently released a report on AI and the future of work for PWDs. [https://www.ilo.org/global/topics/future-of-work/publications/research-papers/WCMS\\_647306/lang--en/index.htm](https://www.ilo.org/global/topics/future-of-work/publications/research-papers/WCMS_647306/lang--en/index.htm)

### Interview #5

#### Respondent Profile

This key informant is from an International NGO that provides a suite of services for persons with Neurodiversity. Services include all facets of a person's life, not just employment. They work with many other organizations around the world operating in this space, including service providers, employers, and universities. They both develop and deliver programs and services, including one available through other organizations. The interviewee has worked overseeing the organization for several years.

#### Key insights

1. Ecosystem approach—consider the person in context across all facets of their life

2. Sustainable employment—consider person, employer, co-workers—need for learning across all actors—also need for consideration of ecosystem of person and consideration of career, not just a job.
3. Criticality of soft skills (life skills)—executive functioning, understanding social norms in work setting, self-advocacy, emotional intelligence, independent living, cooking and nutrition, relationships--help with life skills that are important and complementary to hard skills needed for employment.
4. Team based (portfolio) approach to internships—have several persons with neurodiversity in internships at an organization along with Autism Spectrum Consultant—spread cost across several candidates and more likely to find one or two ideal candidates that fit with organization’s needs.
5. Full support services for employer (demand side)—full support team with expertise and proven track record to save employer time and resources.
6. Creating pipeline of talent (supply side)—working with youth and young adults to provide pathways to skills development through education and early work experience.
7. Community of practice—organizations and individuals that have a common interest and provide peer-to-peer support—employers, universities, service providers.
8. Importance of early work experience.
9. Customized approach—each person and organization is different, so no need to have standard prerequisite of soft or hard skills training.
10. Longer-term internships—take some time to prove the value employing person with neurodiversity (e.g., 6-10 months).
11. Use of networks to share knowledge and build capacity locally, nationally, and internationally—Summits, Workshops, Conferences.

#### Programs, Services and Other Resources

1. Life Sherpa app (developed by Washington DC based group) <https://lifesherpapp.com/>
2. Uptimize platform—web platform with training regime for persons with Autism based in Australia <https://uptimize.com/neurodiversity-to-neuroinclusion/>
3. Mental Health Toolkit (Untapped Group) <https://www.neurodiversityhub.org/mentalhealth>
4. Neurodiversity Hub—community of practice <https://www.neurodiversityhub.org/>
5. Genius Armory—cyber security training program for persons with neurodiversity <https://geniusarmoury.com/>
6. Neurodivergent Rebels—self-help group of persons with neurodiversity <https://neurodivergentrebel.com/>
7. Dandelion Program by DXC (Australia)—program that is based on the ecosystem approach—team of people, consultant, tools [www.dandelionprogram.com](http://www.dandelionprogram.com)
8. Employer Connect by Integrated Advisors (based in New York)—service provider for internships for persons with neurodiversity <https://www.integrateadvisors.org/>
9. Stanford Neurodiversity Project - <https://med.stanford.edu/neurodiversity.html>
10. Frist Centre—<https://www.vanderbilt.edu/autismandinnovation/>
11. Untapped Group—suite of ecosystem services with links to other platforms <https://www.untapped-group.com/>
12. Autistica (UK)— <https://www.autistica.org.uk/>
13. Autism Co-operative Research Centre (Australia) (that we are affiliates of) and their “myWAY Employability” initiative: <https://www.mywayemployability.com.au>

14. Technology North (in Alberta) <https://www.technologynorth.net/>

#### Some Noteworthy Organizations

SFE, IBM, ANZ, NAV, DHP, Sunpork (in Australia) <https://www.nab.com.au/business/small-business/moments/grow/international/sunpork> , Ultranaughts (in New York) <https://ultranaughts.co/company/>

### Interview 6

#### Respondent Profile

This key informant works in education and research. Their area of expertise is in the area of technology and universal design. They have undertaken projects at the local, national and international level in a diverse range of sectors. Their work has focused on disability and accessibility issues, in particular, in relation to new technologies. Much of their work is on access to labour-market opportunities for PWDs.

#### Key Insights

1. The focus on skills for success for PWDs suggests that there are consistent and unique skills gaps for PWDs but skills amongst PWDs are as diverse as with able bodied persons.
2. Issue may be as much about barriers and attitudes of employers, rather than skills gaps.
3. Education, training, and employment are not designed with PWDs in mind.
4. Many barriers to participation for PWDs in architecture schools and industry are often related to attitude.
5. Skills training programs need to be forward looking, scanning the horizon to better understand how the environment is changing.
6. Training programs for person with disabilities should be connected to the mainstream educational system rather than on a separate track, otherwise it suggests there is a problem with the system and reinforces the marginalization of opportunities for PWDs.
7. We need to think about individuals as lifelong learners who, even as the world changes, they can continue to work, rather than focusing on filling the short-term needs of employers.
8. Focus on a person's learning goals and their desired accomplishments, then and help fashion opportunities to develop the skills in the areas of their interests that will help them grow and access meaningful employment.
9. Disability is simply difference sufficiently different from the normal range that it creates barriers to access—problem is often with the system and the creation of barriers that do not allow for difference—we should see difference as a strength rather than a weakness that should be celebrated.
10. Narrative of labour shortages and untapped talent pool of PWDs should not be the dominant narrative because it suggests a last resort.

#### Other Insights

1. Need to understand the value of imperfect, impermanence, and incompleteness in design.
2. Challenge of getting beyond the why to discuss the how—essentially, many people are challenged to understand the importance of inclusive design—accessibility is often only considered at the tail end of project because of regulatory requirements.

3. Need to deconstruct the notion of disability and rethink how we address people's needs—disability is part of every other marginalized group, at the outer edges.
4. Waste of resources how we treat students in post-secondary educations—short sighted activities and exercises that do not have long-term value.
5. COVID-19 Pandemics has heightened disparities—belief that working from home opportunities has opened up many employment opportunities, but these opportunities are limited for PWDs—cannot make generalities because not all PWDs have the same needs.
6. To do things differently and sustainably, need to change culture—what is the role of human work in society.
7. Skills for success should focus on workers and their lives—change framing so that it is promoting disability as a group with a common need—the only commonality is that they are marginalized.
8. There is a problem with the way we collect data, and then it is used to make generalizations that are not accurate—often focus is on averages rather than distributions/ranges—suggest starting with those that are most marginalized.
9. Monocultures are bad for organizations and society.
10. MIT and Stanford could look at data exploration algorithms to increase diversity—using decision systems for recruitment and hiring to avoid culture fit and instead culture add that increases diversity and creativity

#### Programs, Services and Other Resources

1. ODD (Optimizing Diversity with Disability) <https://idrc.ocadu.ca/odd/>

#### Interview 7

##### Respondent Profile

This key informant works in an organization that serves professionals in the supported employment space. Their members provide supported employment services for PWDs. Members include services across all disabilities and all sectors, though many serve persons with developmental and intellectual disabilities.

##### Key Insights

1. It is important to look at the role of culture when exploring this topic, as it may influence the experience of PWDs and service providers.
2. Support capacity building for service providers so they can support those looking for employment.
3. Need to shift dialogue from employment to career development and growth across the lifespan.
4. Some service providers have targeted programs for skills development based on their clientele and needs in their community.
5. Digital literacy training for some populations can't assume any digital literacy, e.g., not knowing how to use a computer and get on the internet, so they need to be given in person.
6. Different people communicate in different ways, so need to support different ways of communicating with different clientele.

7. An essential skill is being familiar with the unspoken rules and norms in work environments-- often imbedded in work readiness programs, teaching workplace social norm, etiquette, culture.
8. Work readiness programs can become a trap—sends a message that a person is not ready to work until they have specific skills, but these can become lifelong programs, e.g., sheltered workshops.
9. Place and train models work better—get a job and learn in the context of a workplace.
10. Literacy, numeracy, digital literacy are foundational skills that are often trained before training through place and train program, but once on the job such training can continue.
11. Skills gaps vary from person to person, so looking at trends in a certain population can be misleading. High level trends still look at specific people's circumstances to shed light on why there are gaps, e.g., it may be due to poverty and so do not have the resources to access the technology.
12. Experiencing different jobs through internships and undertaking some form of career exploration might best precede focusing on the skill needed for a specific career.
13. Training programs need to be flexible in format, timing and delivery modes. They also need to be short if they are in a classroom setting (e.g., training for six weeks before being placed is a big investment of time). In contrast, place and train internships need to be reasonable length to acquire skills (e.g., three-week internship may not be sufficient). Generic training may not be easily transferable.

#### Other Insights

1. Employment rates of PWDs seem to have plateaued, likely due to systemic issues.
2. To understand gaps and trends, for high-level data, people go to Statistics Canada. Some people working in the field gather their understanding through their work with different populations. People may not be relying on formal research as one would like it to be. Also, when understanding trends, one needs to be sure not to assume causality when one sees correlations.
3. Supported employment organizations often have high caseloads, so do not have the capacity to collect rigorous data. Most of their knowledge is field knowledge gathered from working with stakeholders.
4. Gender and cultural sensitivities are important considerations in work environments. Persons with disability are disproportionately victims of abuse.
5. Disability is often not included in the conversation of diversity, equity and inclusion. Often workplaces are not sure where to start with disability, whereas other DEI characteristics are more familiar (gender, racialized minority status, etc.).
6. Employers are often hesitant to share what they are doing and what they are not doing, so it is hard to get a good sense of their issues and challenges. Employers often have misunderstandings about the nature of disability and how to address accommodating PWDs.
7. COVID-19 Pandemic exposed how many PWDs worked in front line positions and were first to be laid off, and when hired back there were health sensitivities. On the plus side, employers realized that remote work is possible in many cases.
8. COVID-19 also made many realize that everyone can experience mental health issues. Also, we all need accommodation (e.g., childcare, family needs).

## Programs, Services and Other Resources

1. National Institute on Disability, Independent Living, and Rehabilitation Research-NIDILRR (United States): <https://acl.gov/about-acl/about-national-institute-disability-independent-living-and-rehabilitation-research>
2. The Canadian Association for Supported Employment: <https://supportedemployment.ca/>
3. Supported Employment Resource Hub: <https://supportedemployment.ca/resource-hub/>World Association for Supported Employment <https://www.wase.ca/>
4. Mentorability program <https://supportedemployment.ca/mentorability/>
5. Digital literacy program <https://supportedemployment.ca/digital-literacy-training/>
6. Some supported employment service providers have a toolkit for different kinds of occupations that help with candidates explore different careers. BC company has a library of virtual reality experiences tied to certain careers. (Edgefactor <https://www.edgefactor.com/V5/pages/Welcome.aspx>)
7. Online resource library on work and disability <https://supportedemployment.ca/resource-hub/>

## Interview 8

### Respondent Profile

This key informant works for a not-for-profit community organization in the area of employment and education. Their work has included exploring the quality of lived experience in the context of either looking for work, having a job or no longer being in the labour market.

### Key Insights

1. More qualitative research (small number of participants) and less quantitative research is needed to better understand the work disability policy arena.
2. When conducting work for pan-disability populations, there needs to be focus on specific disabilities to capture specific challenges.
3. For skills needs there are three sets of skills to be considered—technical skills, soft skills, and accessibility skill sets.
4. One gap in programming is how best to self-advocate and discuss skills, abilities and needs.
5. It is important to understand the role of culture in terms of how they create expectations of people that BIPOC PWDs may not easily conform to, and how they are marginalized as a result.
6. Skills training programs may have cultural biases—issue is sometimes disability identity often seen as overriding other aspects of social location, but then programs may not work for some persons.

### Other Insights

1. Data sources include Statistics Canada data sources and community organizations' data collected in house for their own purposes.
2. Pan-disability surveys can gloss over some of the specific issues that are important for certain sub-populations.
3. COVID-19 Pandemic—teaching virtual is different than teaching in person—some things work better in one format or the other.
4. Pandemic expanded use of virtual platforms and made training more accessible.

5. Pandemic changed the nature of skills needs, e.g., need for teaching how to do things virtually such as interviewing and virtual social interactions, as well as skills for returning to in-person work.

#### Programs, Services and Other Resources

1. CNIB Come to Work program (networking program) <https://cnib.ca/en/programs-and-services/work/im-looking-work-come-work?region=on>
2. TAPE Measure (Tool to Assess Preparedness for Employment)—validated psychometric instrument to assess job readiness <https://pubmed.ncbi.nlm.nih.gov/21673428/>
3. COPM (Canadian Occupational Performance Measure) <https://www.thecopm.ca/> (often administered before and after a training program)
4. Expanded Core Curriculum (ECC) <https://www.tsbvi.edu/programs/ecc> teach skill sets that are typically not taught but are implicit, so make them explicit in the curriculum
5. Vision Australia Pre-Employment Program <https://www.visionaustralia.org/news/2019-08-23/new-program-support-young-people-find-employment>

#### Interview #9

#### Respondent Profile

This key informant works at a centre that focuses on neurodivergent populations at a university in the U.S. The centre helps workplaces finding talent and persons with autism find meaningful employment. They also conduct research and seek to understand and promote neurodiverse talent.

#### Key Insights

1. People have different learning styles. Some people are visual learners, others need to hear something explained in words, and yet others need to read it on a page.
2. Persons with neurodiversity can have a lot of cognitive strengths, e.g., dyslexic individuals may be amazing problem solvers and can organize complex visual information, even though they may have weaknesses such as difficulty spelling and reading. Some persons from the neurodivergent population prefer repetitive tasks, e.g., being a driver, where they can focus on following a route repeatedly and consistently.
3. Employers need to be open to including people from neurodivergent populations in their teams. Having team members who think outside-the-box can stimulate creativity and problem solving. In general, diversity can bring different lenses to the table which, in turn, can promote novel solutions.
4. Supervisors and managers need to be educated about neurodiversity. Once supervisors understand autistic employees, they can better support them and tap into their talent.
5. Persons with autism need very detailed step-by-step, explicit instructions, particularly when it comes to learning soft skills. Web-based app tools with visual data can help autistic adults to communicate.
6. Persons with neurodiversity often do not do well in interviews, so task-based testing can be a more effective way to have them show their skills and expertise.

7. Employers should adopt and use the principles of universal design to create training modules. This will help ensure modules are accessible to workers with diverse learning styles.
8. Diversity is an advantage for any organization, as it stimulates creativity. There is need for education across the board to help raise awareness of the value of diversity.

### Other Insights

1. Traditional interview format of assessing a job candidate's abilities does not work for autistic individuals and may not be a good way to assess abilities for anyone. It just gives the interviewer a sense of who is good at talking and presenting themselves. The recommendation is to use a task-based skills assessment approach.
2. Employers need to consider and address environmental stressors when engaging persons from neurodiverse populations.
3. The COVID-19 Pandemic made many organizations realize the possibilities of employees working virtually. Now there are more opportunities to work virtually and be successful and thrive in such flexible work arrangements. Some workers are very effective working virtually and for some it is the only way they can work. The downside is that autistic persons, like all people, need social interaction, so working from home can result in isolation and loneliness.

### Programs, Services and Other Resources

1. The Frist Centre for Autism and Innovation Workplace Resource: Guide to finding talent, and integrating neurodivergent populations in the workplace, and creating meaningful employment opportunities for people with autism, called Autism at Work Playbook <https://www.vanderbilt.edu/autismandinnovation/autism-at-work-playbook/> [https://disabilityin.org/wp-content/uploads/2019/07/Autism\\_At\\_Work\\_Playbook\\_Final\\_02112019.pdf](https://disabilityin.org/wp-content/uploads/2019/07/Autism_At_Work_Playbook_Final_02112019.pdf)
2. Summer Camp with Specialisterne—3-to-4-week camp designed for autistic teens where they get to experience what a work week is like. They work at different tasks such as engineer tasks, building robotics, solving problems of various sorts, and simple programming. They also learn soft skills such as working at teams, scrum model of conflict resolution, professional etiquette, etc. The program provides an opportunity for participants to learn soft skills and try a variety of jobs to help them identify what they are interested in and good at. <https://www.specialisterne.com/specialisterne-ni-stemlabs-summer-scheme/>
3. Frist Centre for Autism and Innovation <https://www.vanderbilt.edu/autismandinnovation/partners/>
4. Specialisterne Work Readiness and Preparation (WRaP) curriculum <https://www.us.specialisterne.com/students/>

### Interview #10

#### Respondent Profile

This key informant is an academic undertaking applied research on business operations perspective. Their research program has focused on neurodiversity and employment in industry, particularly in the technology sector. They develop case studies that are used in the curriculum in management training courses.

## Key Insights

1. Mainstreaming management training on disability inclusion—Mainstream what we teach managers to make it normal to understand neurodiversity and other conditions
2. Fix the system not the person—Person should not have to acquire skills for employer to see their talents, employer should change their hiring and management practices--It is in their interest to do so.
3. Change hiring practices—Assess skills of people by having them show an organization what they can do rather than just describe what they can do. More recently, internships have become a way to provide opportunities for try outs.
4. Importance of support circles—Team of people who support the individual, including mentors, co-workers, and supervisors. Sometimes the support team will get training so that they are better equipped to provide support.
5. Importance of experiential (on-the-job) learning.
6. There are many spillover effects—Organizations often create some sort of disability employment program, originally running it in parallel with standard recruitment program, but objective is ultimately to use program to improve standard practices such then the program is no longer necessary. Spillover effects results in improvements in--hiring practice, supervisory practices, career practices across the board. Debias standard practices using principles of universal design.
7. Supervisor and co-worker training are critical—Successful program features, training for supervisors and co-workers. Often it is an afternoon session where people are taught what is autism, what is neurodiversity, what to expect, and just provide an opportunity to ask questions and get comfortable.
8. Best practice is to evaluation all workers' performance on the same criteria (the bar is the bar)—Performance management of neurodiverse persons should be the same as other employees, on actual technical duties, though they may additional things they work on, like soft skills.
9. Don't assume, ask—Learn not to assume anything as a way of ensuring intersectional considerations are taken into account.
10. It takes a different supervisory approach—Think of employees as individuals rather than getting employee to fit into a job role.

## Other Insights

1. Torkel Sona (Specialisterne) developed methods for assessing talent without heavy reliance on interviews. Built these excises using Lego-mind storms, projects that he had his neurodivergent candidates do together. Companies looking to hire them observed candidates in action. Almost all multinationals now who have started a program based on Torkel Sona's methods. Spillover, companies seeing the wisdom of methods based less on interviews and more on tryouts. Expanding to other areas not just neurodiversity.
2. Some companies farm out life support services to external and contractual agency to provide support for life skills need outside of work, such as budgeting. One example of a company that provides support services is Provail.
3. One point of weakness is that multinational companies have a lot of ability to transfer what works from one geography to another, but NGOs who provide supports do not have the same capabilities. Support often local for disabilities, because training and funding is local.

4. Another limitation is tapping into pipeline of talent. No easy way to find people who are autistic or neurodivergent. The way some groups have done it is to have a web-based platform. For example, DXE in Australia started a video gaming camps to identify talent and attract people.
5. Company in Boston, Ultranaughts, developed system checking in on workers, always worked remotely even before the pandemic. Company in Calgary, called Technology North, developed software, sometimes quite simple stuff, first thing in the morning, how are you feeling today? Smiley or flat frowny space, choose emoji. Asks these questions throughout today, if get 3 frowny faces, intervene.
6. Key factors that need to be in place-- Alternative talent assessment process; Neurodivergent friendly onboarding process; Support circles; Sufficient training for worker, but also supervisor and co-workers; Process for choosing good supervisors for these programs.

#### Programs, Services and Other Resources

1. Specialisterne <https://specialisterne.com/>
2. Provail <https://provail.org/>
3. Autism and Work Roundtable <https://disabilityin.org/what-we-do/committees/neurodiversity-at-work-roundtable/>
4. Technology North (in Alberta) <https://www.technologynorth.net/>
5. 2017 Harvard Business Review article called “Neurodiversity as a competitive advantage” <https://hbr.org/2017/05/neurodiversity-as-a-competitive-advantage>

#### Some Noteworthy Organizations

SAP (German software company), Microsoft, Hewlett Packard, EY (Earnest and Young), Ultranaughts (in New York) <https://ultranaughts.co/company/>

#### Interview #11

##### Respondent Profile

This key informant was a train-the-trainer provider working with a U.S. NGO. The person worked at the systems level with a membership association called APSE (Association of People Supporting Employment First). They developed and implemented training initiatives for employment support professionals (job coaches and job developers) who work with employers and job seekers with disabilities. They also worked with youth 14-24 transitioning out of high school into post-secondary activities.

##### Key Insights

1. Transition supports in secondary education—these are important for supporting transitions, particularly for at risk youth
2. Skills development in transition programs—importance of providing skills training within youth transition programs (e.g., understand banking, how to access money, how to budget, consumer economics, importance of hygiene), which may not be necessary for success in a job, but important if taking a whole person approach
3. Professionalization of employment support professionals—no clear avenue by which job coaches and job developers acquire their skills, they often do not have post-secondary

credentials, so providing training to helping them bring coherence to their professional skills is important

4. Whole person approach—like the ecosystem approach, where one considers the person in context across all facets of their life
5. Value of inclusion-- Belief that every individual has capacity to work, and the responsibility of employment support specialists is to get to know those individuals, and learn what those capacities are, and help them find a meaningful job with career potential
6. Dual capacity role of employment support professionals-- need to understand what employer looking for, what clients are good capable of and want to do, and match those with each other in mutually beneficial way
7. Careers not jobs—Object of employment support services should be to support individuals with disabilities to find careers not just jobs, career pathways, careers may not necessarily be linear but always have progression
8. Focus on skills not job tasks-- Skills training often rudimentary, focusing on tasks in a specific job, e.g., janitorial skills, cycling through a store to empty garbage, janitorial tasks in hospital, internal messenger carrying charts in hospital setting, but what is needed is life skills such as how to manage own attention so that one can stay focused on a task and monitor own breaks to be able to return to the task
9. Team approach—PWDs who are successful often have a team around them, a support network that often includes a determined parent, a skilled job coach etc.
10. Three-part approach to skills development-- Prepare persons for what will be taught, teach it, then review it. Repeated interactions in three different environments—in the classroom, in the job setting, in other settings allows for generalization, allows for a skill set to be applied in any setting. Helpful approach for anybody with cognitive or generalization challenges.
11. Developing demand-side capacity—employers need skilling up

### Other Insights

1. Intersectionality an important issue with marginalized populations, as they are often marginalized for multiple complex reasons with disability common factor, e.g., generational poverty, marginalized because of incarceration, other involvement with juvenile justice systems, in general, complex reasons of marginalization
2. Cities and municipalities typically separated at risk youth from youth with disabilities, so professionals trained to help one group or another, therefore need to provide services in a more coordinated way
3. Not confident that focus on diversity equity and inclusion amongst employers is all-inclusive towards PWDs, nor inclusive of that kind of “how do we become an accessible and inclusive community.” It is often focused on separating people by identity. Disability still viewed as a lack, a deficit. DEI is about cultural setting, whereas PWDs sometimes need other things changes, e.g., workstation, technology.
4. For individuals with disabilities who had lost jobs early 2020, fewer than 65% have gone back to paid employment settings as of this spring 2022. Unemployment because of COVID has knocked out a lot of progress made, taking us back to early in the 2000s in terms of employment of PWDs.
5. Not confident that many of the jobs held by PWDs are adaptable to work from home environment.

## Programs, Services and Other Resources

1. Association of People Supporting Employment First (APSE) <https://apse.org/>
2. Office of Disability Employment Policy <https://www.dol.gov/agencies/odep/program-areas/mental-health/youth>
3. Centre for Advancing Policy on Employment for Youth (CAPE Youth) <https://capeyouth.org/>
4. Broad Futures Program <https://broadfutures.org/>

## Interview #12

### Respondent Profile

This key informant works at a U.S. college that is exclusively for students who learn differently. The college supports students with accessing employment opportunities and develops partnerships with organizations that are seeking to hire individual with learning differences. The college has relationships with organizations in technical fields, and particularly STEM fields (science, technology, engineering, mathematics), as well as government, hospitality, finance, social services, marketing and communications.

### Key Insights

1. Teaching skills relevant for success in traditional recruitment process is important, particularly since interviews are a common way to access employment. These skills include networking, communications, and related professional skills. Needless to say, an interview is not a good way to identify a candidate's strengths and capability for a job, so hopefully the mainstay role of interviews will change.
2. Having the ability to work independently and to navigate the job application process is critical. The job application process can be layered, and often good candidates are systematically eliminated because they find the process overwhelming.
3. Self-advocacy is an important skill to learn, especially for persons on the spectrum. Having the ability to ask for help rather than struggle on one's own, is not always instinctive.
4. Emphasizing importance of professional workplace skills (e.g., professional communications, meetings etiquette, ability to navigate challenging circumstances, advocating for oneself, manage stress) is needed for success in finding and maintaining employment. Students need these foundational (soft) skills to survive, however savvy they may be with technology and however much book knowledge they may have.
5. It is important to integrate career-readiness courses into the general curriculum at a college.
6. Some students may need more stepping-stones/scaffolding and intentional progression before being ready for a longer-term work opportunity.
7. Some students need more steppingstones, scaffolding, intentional progression to ease them into longer-term employment.
8. Organizations need to provide training for supervisors on how to be supportive of persons with mental health conditions, learning disabilities and neurodiversity. The returns on such investments are substantial. When the supervisor, department and company are trained, the potential is phenomenal. It is not as big an undertaking as some might think. It just requires being willing and open.

## Other Insights

1. Students with neurodiversity can have strong data analytics and data entry skills, computer science and computer programming skills. Some are strong writers, communicators, problem-solvers, and critical, global thinkers. Yet others are artistic, creative and have strong humanities skills. Many are focused, accurate, and detail oriented.
2. Some organizations can have biases or inaccurate assumptions about ethnicities, gender and sexual orientation, but many companies do have a diversity, equity and inclusion plan in place. However, neurodiversity and disability more broadly, need to be folded in.
3. The COVID-19 Pandemic resulted in limited ability to have in-person educational experiences, so the mental health conditions have been on the rise (e.g., anxiety, depression, feelings isolation). The silver lining is that educators and employers have overcome barriers about the virtual arrangements. There was a need to be flexible, and many have realized that they can be productive in a virtual environment.

## Programs, Services and Other Resources

1. An array of assessments is available including Myers-Briggs, <https://www.myersbriggs.org/>, Career Cruising <https://public.careercruising.com/en/>, Birkman <https://birkman.com/>, and Onet (US Department of Labor) <https://www.onetonline.org/>
2. Broad Futures (based in Washington D.C.)—Neurodiverse internship program, and training on becoming work ready <https://broadfutures.org/>
3. Neurodiversity Pathways (Based on the U.S. westcoast) <https://ndpathways.org/>
4. Integrate—train employers and help students find employers who have neurodiverse friendly work environments
5. Neurodiversity Hub <https://www.neurodiversityhub.org/>
6. Landmark College website. <https://www.landmark.edu/research-training/blog/what-is-neurodiversity>
7. Landmark College Employment Readiness Experience—program that offers professional skills building course in conjunction with a workplace experience [https://catalog.landmark.edu/preview\\_course\\_nopop.php?catoid=15&coid=15893](https://catalog.landmark.edu/preview_course_nopop.php?catoid=15&coid=15893)
8. Landmark College PEERS—course on social pragmatics <https://www.landmark.edu/student-life/social-pragmatic-support-services>
9. Landmark College Career Connections website <https://www.landmark.edu/academics/career-connections>
10. NACE website. <https://www.naceweb.org/diversity-equity-and-inclusion/individuals-with-disabilities/>
11. Disability: IN—Resources that empower businesses to achieve *disability* inclusion and equality <https://disabilityin.org/>
12. Approaches for Supervising Neurodiverse Individuals—see Appendix

## Some Noteworthy Organizations

JP Morgan Chase, Ernst Young (EY), Hasbro

## Interview 13

### Respondent Profile

This key informant is an academic who undertakes applied policy research. They have done a variety of work in the work disability policy arena, including training for disability employment service providers. They have experience supporting a variety of sectors. They have assisted employers with removing barriers that may have previously kept people out of their workplace. Barriers can occur at various points of the employment journey, such as during recruitment, onboarding, mentorship and career development. Their work has not focused on a specific population of PWDs, however, in the last few years, they have worked with employers who are specifically interested in the neurodiverse population. They have had to refine some of their work to improve their understanding of that specific population.

### Key Insights

1. Many jobs are not advertised online, but PWDs may not be able to navigate the recruitment platforms. Portals may not be disability friendly both technically and how they communicate positions. If employers actively communicate their desire to recruit PWDs and other marginalized groups, they are more likely to be able to tap into diverse groups.
2. We would be remiss in saying there are particular skills needed by persons with disabilities. There is a bell curve with all populations. What is different for PWDs is that they do not receive equitable opportunities for skilling-up because of existing biases. It is not because they are uniquely equipped or not equipped. PWDs have lots of different skills and interests. One needs to consider the individual's interests to ensure a good match, rather than placing them into stereotyped jobs. For that reason, it is important to not focus on just a few standard skillsets for entry-level, lower skill level jobs.
3. There is a mismatch between training opportunities, where the jobs are in different sectors, and people opportunity to get equitable access to training. There is also discrimination. It is perceptions and preparation rather than differences in innate skills for certain types of jobs.
4. In general, it is helpful if people get good preparation from appropriate skills training programs. Ideally a person would get a degree or a credential in whatever area they want to pursue. They should have equitable access to every kind of training available. But it is important for the employer to support them in the interview, onboarding, and job maintenance parts of their employment journey. Employers need to be educated on how to do that well.
5. When employers have internships for PWDs, they are six times more likely to hire a person with a disability. The number one workforce development initiative is to support internships. Helps with individuals to get job experience and employer to see their potential.
6. Internships can vary in length for one-two weeks just to get acculturated to work environment, to semester or even a year. It will depend on industry and situation.
7. Preparation of the worker and workplace are important, but it is also important to think about supports around the attachment. Sometimes it is as simple as support with transportation, childcare, housing, finances, time management. Community service providers are sometimes called on to support the worker.
8. Rather than thinking singularly about skills training, it might be better to focus on how to get people the right jobs that are a good match for them and giving them the supports they need to succeed.

9. It would be best to focus on helping PWDs be skilled up to be competitive in the general labour market rather than what kinds of skills to get them into specific sectors and jobs. One should not presume only certain types of jobs would be appropriate for them.

### Other Insights

1. Data sources—macro level look at census data to see who is in what kinds of jobs. It does not say what skill sets they have. May find that PWDs are more likely to be in certain type of jobs and occupations. Less likely to be in higher-skilled professional services jobs and more likely to be in lower-end manual jobs.
2. At the individual level—there are all kinds of psychometric tests to assess skill levels, skills and ability tests, and a battery of tests for people with different types of disabilities.
3. When there are additive, multiple marginalized identities there are extra barriers. It can have an impact not just on economic factors, but also on mental health. We see that with the COVID-19 Pandemic, where person with multiple marginalized identities is more likely to experience mental health issues.
4. COVID-19 Pandemic has had different impacts on different sectors, even though everyone was affected. Some positions were furloughed, while others continued. Some when remote, some essential services continued in person. Companies slowed down their hiring, and particularly affirmative hiring. Some move to virtual platforms for recruitment and employment. There was much innovation in some contexts. Virtual platforms can also help with reducing emphasis on differences. For people who needed hands on coaching, they struggled to get these supports. A lot of not-for-profit agencies that provided these types of services were lost. Need to take note of what we have learned through COVID that works better and capitalizes on it going forward. Workplaces are more malleable than they ever have been, so there is great opportunity.

### Programs, Services and Other Resources

1. National Institute on Disability, Independent Living, and Rehabilitation Research-NIDILRR (United States): <https://acl.gov/about-acl/about-national-institute-disability-independent-living-and-rehabilitation-research>
2. Dandelion Program in North America based at Cornell University—This three-phased program develops technical, life, and executive functioning skills within participating individuals. <https://ecommons.cornell.edu/handle/1813/72826>
3. Source America— Connects government and corporate customers to a national network of nearly 700 nonprofit agencies that hire a talented segment of the workforce – people with disabilities. <https://www.sourceamerica.org/>

## Appendix G: Approaches for Supervising Neurodiverse Individuals

Neurodiverse employees can be an asset and bring great talent to the workplace. They may require workplaces to adjust or fine tune their management practices to support the neurodiverse individual and create a strong working relationship. Suggestions and important considerations for working with neurodiverse individuals are:

### 1. Be clear about the expectations of the job

- Review a job description - make a task list, define expectations (goals)
- Explain office etiquette and the “unwritten rules” of the workplace. Do not assume that they already know or will learn these through observation. Correct inappropriate behavior by giving positive feedback before a critique and give clear suggestions for improvement.
- Be clear about the timeframe in which you expect a task to be completed and the outcome you desire (e.g., what it should look like, format, scope, etc.). Provide opportunities for check-ins and specific people for frequent feedback and mentoring.

### 2. Give SMART instructions - specific, measurable, attainable, relevant, timely.

- Provide specific instructions on how to carry out each task, from beginning to completion. Do not assume the employee will infer your expectations from informal instructions. For example, rather than saying, “please make some copies to replenish our supply,” say “Please make 10 copies of each handout and place them on the shelves next to my office.”
- Provide written instructions whenever possible or ensure the employee takes detailed notes and checks for understanding. Rather than asking, “Do you understand? Any questions?” you may want to say “How are you going to approach this task? What will you do first? Second?”
- Provide a weekly schedule of tasks and expectations (goals) and review these bi-weekly.

### 3. Provide detailed feedback with focus on goals and behaviors

- Provide feedback often and correct problems as they are happening. Do this in a verbal, private, and timely manner. Feedback should be straightforward, constructive, and consistent. Begin with positive feedback before suggestions and corrections. If a task was completed incorrectly, do not assume that it was intentional, as the error likely resulted from a misunderstanding. Be direct, yet kind. Explain clearly yet tactfully why it was wrong. Be sure the employee understands the error. *Explain what should be done instead (how to correct the error).* Consistently provide positive feedback when deserved!
- Set and celebrate goals. Help the employee set short- and long-term goals pertaining to their work with you. Make sure these are SMART with frequent check-ins and follow up. If needed, provide recognition as goals are completed.

#### **4. Discuss accommodations**

- Be considerate of feelings when checking in and giving feedback.
- From the start, discuss with the employee what accommodations they may require in order to complete their work. Check frequently to ascertain if other accommodations are needed.
- Reasonable accommodations should allow employees to complete essential job functions but should not cause the employer undue hardship. Creative solutions are usually available in most situations.
- Examples of accommodations can include things like text readers, providing written directions, or noise canceling headphones.