

Reversing Un(der)employment with Skills Development in the WE Accelerate Program

Introduction

Youth unemployment, skill mismatches and skill gaps remain major challenges for students, postsecondary institutions, employers and policymakers. In 2021, one in eight Canadians between the ages of 15 and 24 were unemployed. In Ontario, the youth unemployment rate was even higher at 14.6% (Statistics Canada, 2022). One related consequence of youth unemployment and skills mismatch is a phenomenon known as underemployment. Underemployment is a situation where individuals work in a job that is below their skills or academic qualifications, resulting in relatively lower earnings (Jones, 1971).

Participation in skill development programs and high-quality work-integrated learning (WIL)¹ opportunities can help reduce the likelihood of un(der)employment (Jackson & Collings, 2018; Jackson & Rowe, 2023; Peters et al., 2014; Wilton, 2012; Wyonch, 2020). WIL provides invaluable work readiness experiences for students, leading to higher employment rates, greater fit between education and work and higher earnings (Jackson & Collings, 2018; Jackson & Rowe, 2023; Wilton, 2012). WIL job searches are competitive, however, and employers often prioritize experienced WIL students over first-time students (Cukier et al., 2018). First-timers have relatively lower employment rates and higher underemployment rates, creating a “WIL experience paradox” (Prier et al., 2022). For WIL to effectively serve its purpose, first-time WIL students should not be restricted from participating due to lack of experience.

The Waterloo Experience (WE) Accelerate program, a collaboration between the University of Waterloo and industry partners, was created to address the problem of the “WIL experience paradox.” WE Accelerate was an innovative work-term option specifically for undergraduate co-op students who were entering their first work term but had not yet found co-op employment. It aimed to “accelerate” students from unemployment to meaningful employment in future work terms by helping them develop in-demand, transferable skills through content provided by industry collaborators and team-based project experiences. Each industry collaborator-designed stream included skill development work, project work and career curriculum training components that together added up to the 280 hours required for a flexible work-term credit, which can help them stay on track to complete their co-op degree. The expectation was that the employer-designed nature of the training would be engaging for students, leading to the development of targeted, transferable, in-demand skills that prepare students for future employment.

This study investigated the impact of the WE Accelerate program on the skill development and (under)employment outcomes of first work-term co-op students in a subsequent work term. The project sought to answer the following questions:

1. How is participation in WE Accelerate associated with students’ skill development?
2. How is participation in WE Accelerate associated with unemployment in a subsequent co-op work term?
3. How is participation in WE Accelerate associated with underemployment in a subsequent co-op work term?

¹ In this report, the term WIL includes co-op employment.

- How do students' demographic backgrounds relate to the dynamics between WE Accelerate and un(der)employment in a subsequent co-op work term?

Methodology

Researchers used a quasi-experimental design to evaluate the WE Accelerate programs' impact on skill development and employment outcomes, comparing students who were either unemployed, unemployed participants in the WE Accelerate program, or employed during their first work term (either the fall 2021 or winter 2022 semester). Students' skill development and second work-term outcomes were measured in the following ways:

- Students completed University of Waterloo Co-operative and Experiential Education Student Reflection Exercises before and after completing WE Accelerate, which provided information on their transferable skills and their confidence using them.
- Students completed Skills Surveys at the start and the end of their first work term to investigate changes in transferable skills (mainly critical thinking and teamwork). Students rated their skills on a six-point scale for critical thinking and a seven-point scale for teamwork. Higher ratings indicate greater skill development (see Appendix A).
- University of Waterloo Student Employment Data provided information about students' demographic characteristics and co-op employment status, speed, remuneration, wages and reference wages² during students' first and second work term.
- Co-op performance evaluation reports supplied data on students' ratings of their learning, impacts, networking and satisfaction.

Findings

Students who were either employed or who participated in WE Accelerate were more confident in their critical thinking and teamwork skills after their first term. Fifty percent of employed students recorded increased confidence. Table 1 shows changes in confidence for WE Accelerate participants specifically. Students reported increased confidence in their teamwork (13%) and critical thinking (12%) skills after participating in the program.

Table 1

Students' Confidence in Their Teamwork and Critical Thinking Skills Before and After Participating in the WE Accelerate Program

Skills	Before the program (%)	After the program (%)	N
Teamwork	67	73	43
Critical Thinking	59	62	34

Note. This table shows the proportion of WE Accelerate Program participants with high confidence in their teamwork and critical thinking skills development before and after the WE Accelerate Program

Participants in WE Accelerate were employed at a higher rate (in the fall 2022 cohort only) and earlier (in the spring 2021 cohort only) in their second work term (in Winter 2022) than non-

² The average wage of students given their academic level, faculty and previous co-ops.

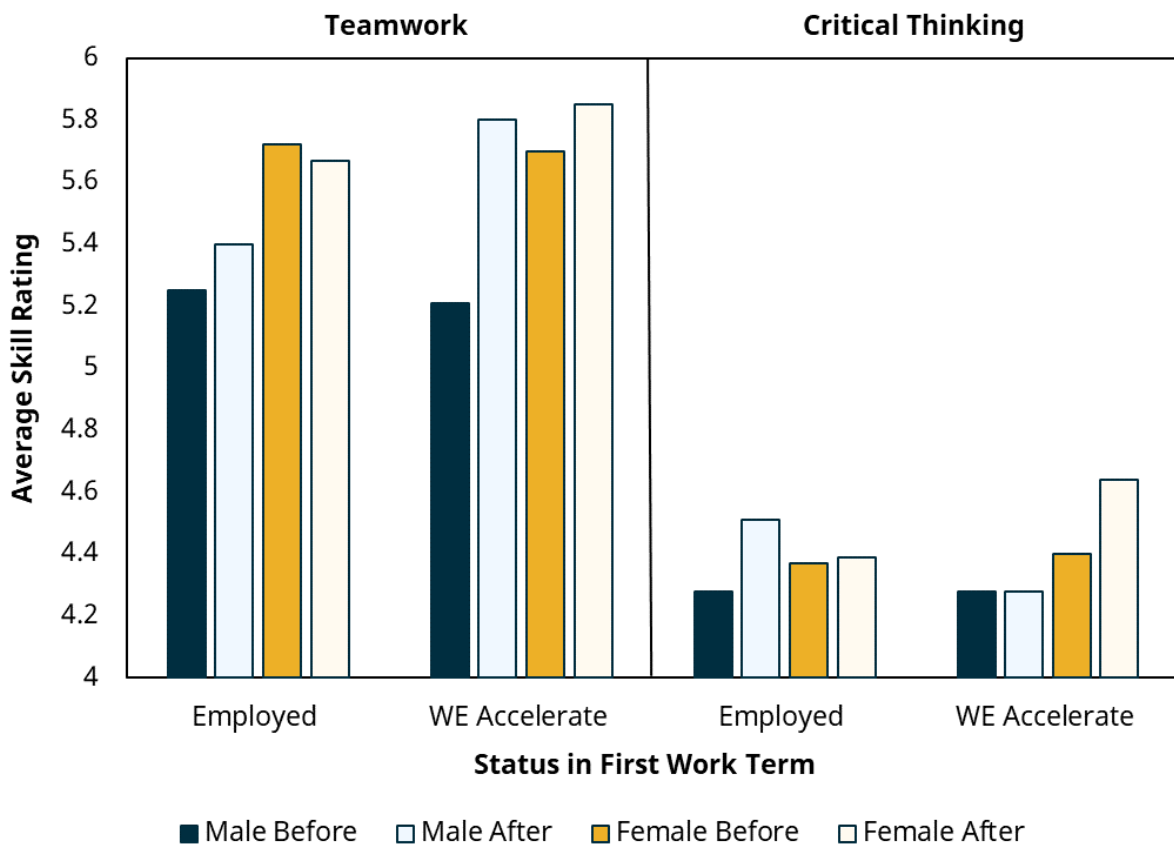
participants without previous work experience. Sixty-eight percent of program participants got matched to their preferred job by the third match cycle, compared to only 56.5% of non-participants without previous work experience.

Sixty-three percent of participants in WE Accelerate found jobs that employers described as senior-level positions or equivalent, compared to 45% of unemployed students. Fifty-three percent of WE Accelerate participants earned above the reference wage compared to 40% of the unemployed group. These results indicate that WE Accelerate program participants experienced less underemployment. On average, compared to non-participants, more WE Accelerate participants reported high pay satisfaction and that their jobs fit their skills and academic training.

Figure 1 presents male and female students' average self-rating of critical thinking (left) and teamwork (right) skills before and after being employed or participating in the WE Accelerate program during their first work term.

Figure 1

Gender and Skill Development Scores Across Student Groups



Note. Figure 1 presents male and female students' average self-rating of Critical Thinking (left) and Teamwork (right) skills before and after being employed or participating in the WE Accelerate program during their first work term.

Employed male students reported statistically significantly lower teamwork skills scores than employed female students both before and after their first work term. Male WE Accelerate

participants also reported lower teamwork skills scores than female participants before the program, but their teamwork skills scores reported similar teamwork skills were not significantly different than the females' scores after program participation. These results suggest that WE Accelerate program participation provided a better opportunity for improving male students' teamwork skills than employment alone.

Female participants in the WE Accelerate program reported statistically significantly higher critical thinking skills after the program, whereas males did not. No significant differences across students' ages, international statuses and racial identities were found in both teamwork and critical thinking skills scores.

Discussion and Conclusion

While participating in WIL programs may not translate directly into full-time employment (Jackson & Rowe, 2023; Kinash et al., 2016), there is a growing consensus that the strongest labour market benefit of WIL is its ability to significantly improve the fit between jobs, skills and credentials for students, resulting in more relevant and quality employment (Jackson & Collings, 2018; Peters et al., 2014). One reason for this is WIL's documented positive impact on career self-management and professional identity development (see Coll et al., 2009; Jackson, 2018; Manning & Parrott, 2018; McIlveen et al., 2011; Peters et al., 2014; Pretti et al., 2020).

WE Accelerate participation was associated with skill development and with students finding a position earlier and at a higher rate in a subsequent work term. Participants reported increased critical thinking and teamwork scores after their first work term. This result is important given the substantial literature on employer prioritization of teamwork and critical thinking skills (see Jackson, 2013; Khampirat et al., 2019; Moalosi et al., 2021; Wilton, 2012). Combined with the fact that WE Accelerate students found employment earlier in subsequent work terms, this suggests participation in WE Accelerate provided positive signals to employers about participants' skills and productivity.

Participation was also associated with finding senior-level co-op positions, higher pay satisfaction and earning above the average wage for students' level of education and previous work experience in subsequent co-op employment opportunities. These results suggest that the WE Accelerate program helped address underemployment by reducing overqualification and skills mismatches, and that WIL-based interventions can attempt to address the "WIL experience paradox" and reverse the slippery slope of unemployment and underemployment for students embarking on careers.

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Appendix A: Skills Survey Consent & Demographics

Title of the study: Reversing Un(der)employment with a Novel Work-Integrated Learning Skills Development Intervention

Principal Investigators:

Judene Pretti, Director, CEE Business Services, University of Waterloo, tjpretti@uwaterloo.ca

Dave Drewery, Associate Director, Work-Learn Institute, University of Waterloo, dwdrewery@uwaterloo.ca

To help you make an informed decision regarding your participation, this letter will explain what the study is about, the possible risks and benefits, and your rights as a research participant. If you do not understand something in the letter, please ask one of the investigators prior to consenting to the study.

What is the study about?

Students who are following different paths for their first work terms are invited to participate in this research study aimed to highlight how work-integrated learning (WIL) programs can aid in successful skills development for students. We are interested in examining how their different experiences affect career and skill development. Insights from this study will aid our understanding of the needs of first work-term students, and how to improve their preparation for future work terms.

What does participation involve?

Participation in the study will consist of participating in an online survey at two time points (approximately three months apart at the beginning and end of the term), and each will take approximately 20 minutes of your time. The surveys will ask about your transferable skills development, specifically focusing on teamwork and problem-solving abilities. Please note that anonymous quotations from your open-ended survey responses may be used in papers and publications resulting from this study.

Is participation in the study voluntary?

Your participation in this study is voluntary. You may decline to answer any question(s) you prefer not to answer by skipping to the next question. Further, you may decide to end your participation in the survey at any time by not submitting your responses. You can withdraw from the study by contacting the principal investigators listed above.

Will I receive anything for participating in the study?

To thank you for your time, you will receive a Starbucks gift card for each of the two surveys you complete. You will receive \$5 for participating in each survey. The amount received is taxable. It is your responsibility to report this amount for income tax purposes.

What are the possible benefits of the study?

Participation in this study will not provide any personal benefit to you. The research team hopes that the information you provide will help institutions understand what type of curriculum and programs to offer to students (specifically in the realm of WIL) to ensure they are better

prepared for their career paths. This research can help explain the importance of providing flexible options for skills development in an institution's WIL programs, to ensure no student is missing out on a chance to improve their transferable skills, aiding in their employability.

What are the risks associated with the study?

The potential risks associated with the study are emotional in nature, which may include feelings of discouragement or low self-esteem. These feelings, if experienced, are anticipated to be short-term and low severity. If a question, or the discussion, makes you uncomfortable, you can choose not to answer. See above for more details on voluntary participation.

Privacy, Data Retention and Storage

Your identity will be confidential as the survey will not ask identifying information to conduct the analyses of your data. However, you will be asked to provide your student ID number which we will link to your WaterlooWorks profile and employment data to obtain demographic information. Linking student IDs from the survey to WaterlooWorks profile and employment data will allow us to connect employment results to the participants' survey information; data analyses will only be using assigned case-IDs and will not involve the participants' student IDs or any other personal information. Linking your survey responses to your WaterlooWorks profile and employment data will only be done with your consent. Once the data is collected and linked (if applicable), student ID be removed, and a participant ID will be assigned in its place. Collected data will be securely stored on password-protected computers for a minimum of 10 years, at which time it will be deleted. Only the research team will have access to the study data. Collected data will also be submitted to the funding source (HEQCO) open-data repository after the Waterloo researchers determine that no information being shared will enable the identification of any participant.

You will be participating in the survey via an online survey operated by Qualtrics. Qualtrics has implemented technical, administrative, and physical safeguards to protect the information provided via the Services from loss, misuse, and unauthorized access, disclosure, alteration, or destruction. However, no internet transmission is ever fully secure or error-free. Qualtrics temporarily collects your computer IP address to avoid duplicate responses in the dataset but will not collect information that could identify you personally.

Who is sponsoring/funding this study?

This study is funded by the Higher Education Quality Council of Ontario (HEQCO).

Has the study received ethics clearance?

This study has been reviewed and received ethics clearance through a University of Waterloo Research Ethics Board (REB 43553). If you have questions for the Board, contact the Office of Research Ethics, at 1-519-888-4567 ext. 36005 orreb@uwaterloo.ca.

Who should I contact if I have questions regarding my participation in the study?

If you have any questions regarding this study, would like additional information to assist you in reaching a decision about participation, or would like to receive a copy of the results, please contact the Principal Investigators using the contact information listed below.

Judene Pretti, Director
CEE Business Services, University of Waterloo

tjpretti@uwaterloo.ca

Dave Drewery, Associate Director
Work-Learn Institute, University of Waterloo
dwdrewery@uwaterloo.ca

Consent to Participate

By providing your consent, you are not waiving your legal rights or releasing the investigator(s) or involved institution(s) from their legal and professional responsibilities.

- I agree to participate in this study.
- I do not agree to take part in this study.

Consent for Data Linkage

By providing your consent, you are not waiving your legal rights or releasing the investigator(s) or involved institution(s) from their legal and professional responsibilities.

- I consent to my student ID being linked to WaterlooWorks data.
- I do not consent to my student ID being linked to WaterlooWorks data.

Please provide your student ID number (*used to link to WaterlooWorks employment data, and will be replaced with a code*):

What is your current age (*in years*)?

Please select the gender identity option(s) you identify with (*select all that apply*).

- Woman (Includes cisgender women, trans women, and anyone else who identifies as a woman)
- Man (Includes cisgender men, trans men, and anyone else who identifies as a man)
- Gender non-conforming
- Non-binary
- Agender
- Questioning
- Trans
- Two-Spirit
- Other (please specify)
- I prefer not to answer

Please select the following racial category or categories with which you primarily identify (*select all that apply*).

- Black (e.g., African, Caribbean, Black Canadian, Afro-Latine, African American or other African descent)
- East Asian (e.g., Chinese, Korean, Japanese, Taiwanese or other East Asian descent)
- Indigenous (First Nations status or non-status, Métis, or Inuit)
- Latine (e.g., Latin American, Afro-Latine, or Latine descent)
- Middle Eastern (e.g., Afghan, Egyptian, Iranian, Lebanese, Turkish, Kurdish, or other Arab or Persian descent)

- South Asian (e.g., East Indian, Pakistani, Bangladeshi, Sri Lankan, Indo-Caribbean, or other South Asian descent)
- Southeast Asian (e.g., Filipino, Vietnamese, Cambodian, Thai, Indonesian, or other Southeast Asian descent)
- White (e.g., British, German, Ukrainian, or other European descent)
- Another race category
- I prefer not to answer

What is the highest educational attainment of either parent/guardian?

- High school diploma or equivalency certificate
- Trades or vocational certificate or diploma
- College or other non-university certificate or diploma
- University certificate or diploma below a bachelor's degree
- Bachelor's degree
- University certificate or diploma above a bachelor's degree
- Master's degree
- Earned doctorate
- Unknown

	Not at all knowledgeable						Extremely knowledgeable
	0	1	2	3	4	5	6
Consider opposing views when controversial issues are examined	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Analyze a problem using multiple sources of information to draw conclusions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tell if the information supporting the arguments is reliable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Explain how personal preference/bias may affect the analysis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Develop logical conclusions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Arrive at conclusions that are supported with strong evidence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Clearly explain my reasons for accepting or rejecting a claim	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Have your skills, as described above, improved over the semester as a result of taking part in your co-op work term?

- No change
- Somewhat improved
- Substantially improved
- Don't know

Teamwork

Please rate your ability for each of the following. Select one competency level along each of the behaviours listed below, using intermediate levels when your competency falls in between the described levels.

	1	2	3	4	5	6	7
Build the trust of team members	Does not attempt to build trust with team members		Expects to be trusted by others without demonstrating trust in others		Works in a manner in which trust is implied, but is not consciously developed or discussed		Engages in non-work related activities to consciously build trust between team members
Motivate others to do their best	Does not demonstrate interest in the motivation of anyone on the team, including self		Does not demonstrate interest in the motivation of others on the team		Attempts to motivate others when it's beneficial to self, or is not too time consuming		Motivates others on the team to do their best at all times during the project
Raise contentious issues in a constructive way	Raises contentious issues in a destructive manner		Avoids contentious issues		Raises contentious issues constructively in a manner that clearly focuses on the benefit to self only		Raises contentious issues in a manner that focuses on team improvement and no person in particular
Solicit input before proceeding	Proceeds without asking for others'		Solicits input before proceeding on areas that were contentious		Solicit others for input before proceeding on all tasks		Solicit others for input before proceeding in all tasks, encourages all

	opinions		only				team members to provide input
Adopt suggestions from other team members	Does not adopt others' suggestions about work/work habits		Adopts suggestions when felt appropriate or only in areas that are easy		Adopts suggestions from others without soliciting input on how they were adopted		Adopts suggestions from others and solicits input from the team on how they were adopted
Accept feedback about strengths and weaknesses	Disregard all feedback as incorrect or irrelevant		Accept feedback about some strengths and weaknesses, but only those agreed with		Accept feedback about some strengths and weaknesses, but only those agreed with		Accepts feedback about strengths and weaknesses and attempts to improve through soliciting additional feedback on attempted improvements
Show respect for other team members	Does not show respect for other team members		Shows respect for team members only when in agreement or working well together		Shows respect for all other team members		Shows respect for all team members and encourages others to respect them through their actions on the team
Demonstrate accountability	Does not admit when wrong or		Admits when wrong if there is little		Admits when wrong or if something is		Admits when wrong or if something is

	when work is incomplete		repercussion to the admission		not done regardless of repercussions		not done, and presents an alternate plan for success; encourages others to demonstrate accountability
Collaborate effectively	Does not attempt to engage with the team on any aspect of the work		Collaborates with others when it is beneficial to the work assigned only		Collaborates with others in a way that promotes openness and understanding among team members		Collaborates with, and supports when needed, other team members in any manner that is beneficial to team objectives or dynamics

To what extent have your skills improved over the semester as a result of taking part in your co-op work term?

- No change
- Somewhat improved
- Substantially improved
- Don't know