A Comprehensive Review and Development of Measurement Options for Essential Skills Initiatives

Identifying tipping point milestones

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1.0 INTRODUCTION

1.1 OVERALL PROJECT OBJECTIVES

The Office of Literacy and Essential Skills (OLES) currently supports a wide range of Literacy and Essential Skills (LES) projects that include pilots of various training delivery models in both workplace settings and for jobseekers, through the Adult Learning, Literacy, and Essential Skills Program (ALLESP). This program aims to develop, test and evaluate innovative training models that support Canadians in improving their LES, with the aim to help them obtain and keep a job, as well as to adapt and succeed at work. Performance measurement is critical to the achievement of these broader objectives of ALLESP and to the success of the projects it supports.

One of the many challenges is that the measurement options for evaluating success of LES initiatives are vast and complex in nature. The preferred measurement instruments will vary by, among other factors, program objectives, scope of the models, delivery context, and the target population. Measurement options are also quite dynamic with new indicators and evidence on their validity and reliability emerging on a frequent basis not to mention evolution in the delivery models that require new approaches to measurement. The wider LES community would benefit greatly from i) a consolidation of current knowledge on existing measurement options for LES initiatives, as well as ii) the development of a framework for the application of measurement options in different program contexts, with different targeted populations.

SRDC was contracted by OLES to conduct a comprehensive review of measurement options for assessing outcomes of LES initiatives and to develop a framework to support a broader performance measurement strategy. The project was conducted in four phases, each with specific objectives:

Phase 1 – Literature review and environmental scan

Through a comprehensive literature review and environmental scan, SRDC documented currently available instruments and measures relevant to all nine Essential Skills, including the core literacy and numeracy skills (Reading, Writing, Document Use, and Numeracy), digital literacy, and the four 'soft' skills that are receiving increasing attention in recent research: Oral Communication, Thinking, Working with Others, and Continuous Learning. As part of this review, SRDC outlined and assessed existing evidence on the validity and reliability of all measures and their suitability for different contexts and populations. The review also updated and expanded on analysis from publicly-available documents by incorporating information form

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key informant interviews with assessment developers, practitioners, and other key LES stakeholders. The results are available in the project Phase 1 report.

Phase 2 – Framework development

Following the review and scan, SRDC developed a broader framework to support performance measurement applicable to a range of LES initiatives. This included a milestone-pathway based approach that incorporates measures linked to both intermediate performance gains and longer-term and employment outcomes, including key contextual variables that may act to create conditions for success. SRDC developed the framework by building on the Phase 1 review as well as evidence from earlier SRDC projects such as Pay for Success, Foundations, and UPSKILL. The results are available in the project Phase 2 report.

Phase 3 – Further data analysis to identify tipping point milestones

For the current report. SRDC has undertaken additional data analysis of a selected subset of key skills measures and performance indicators from the Phase 2 framework. This analysis helps provide evidence for the suitability of these intermediate measures as precursors (tipping points) to longer-term outcomes such as employment. This effort focuses on extended analyses of existing SRDC data sets (e.g., Foundations and UPSKILL), with the aim of replicating the Pay for Success approach of determining which indicators function best as possible milestones towards longer-term success of LES initiatives.

Phase 4 – Final report and recommendations

Once Phase 3 analysis is complete, SRDC will revise the framework and recommend a series of preferred indicators along with guidelines for their use in evaluating different LES programs in a range of contexts and for various populations. The final report will aim to serve as a practical guide for LES practitioners and policy-makers in selecting suitable indicators for evaluating success of their initiatives. At the same time, it will support OLES in creating alignment and synergies across projects, as part of a broader performance measurement strategy and monitoring of the achievements of ALLESP.

1.2 STRUCTURE OF THIS REPORT

The report is organized as follows. The next section summarizes the key findings and themes that have emerged from the first two phases of our work, which emphasized the importance of drawing from multiple options to organize measurement frameworks into milestone-based

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pathways to employment. The main body of the report (Section 3) reintroduces the concept of tipping point milestones, i.e., intermediate outcomes linked to longer-term employment success, and presents three illustrative examples of analyses SRDC conducted to identify measures that may act as tipping points to success. These kinds of analyses represent an important step in informing evidence-based prioritization of learning outcomes and measures applicable to a range of training/program delivery contexts.

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2.0 BRIEF OVERVIEW OF LITERACY AND ESSENTIAL SKILLS MEASUREMENT FRAMEWORKS

Literacy and Essential Skills (LES) measurement options span a range of objective, competency-based tools (e.g., questions with correct answers) and subjective, self-assessed tools (e.g., questions that rely on learners' self-reports). Within each of these two categories, there are various generic and industry-contextualized measurement options, each of which aligns with different types of learners' objectives and training needs. The generic assessments draw upon materials and skill domains used in a variety of work and non-work settings. They tend to be most appropriate for programs that aim to sharpen transferrable Essential Skills to enhance readiness for a wide range of learning and employment contexts. Industry-contextualized assessments are informed by and embedded within job competency frameworks for specific industries or sectors. These are more suitable for workplace training programs that are more tightly aligned with industry skill needs.

LES measurement tools have an important role to play in a robust evaluation, but it is important to recognize that single LES metrics alone are not sufficient to demonstrate the full value of LES initiatives. Focusing on just LES metrics can underestimate the benefits of LES training programs. Successful employment training initiatives often improve more than just Essential Skills. A range of behavioural competencies and attitudinal factors related to employability can increase after participation in training.

Measurement frameworks should be customized to program context and the target populations – and optimally, organized into milestone-based learning pathways. A milestone-based pathway design uses a series of interconnected indicators of success to guide training and evaluation activities. Milestones are arranged in a logical hierarchy where achievements of earlier, foundational milestones provide the necessary pre-conditions to maximize the chances of achieving subsequent, longer-term milestones. To illustrate the concept, only three milestones are shown in Figure 1, but the same concept of interconnectedness applies to programs with more than three milestones.

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Figure 1   Interconnected relationships among hypothetical performance milestones

Start	Milestone 1	Milestone 2	Milestone 3	Final Goal
All participants start the program	Successfully complete	More likely to complete	More likely to complete	Achieved
	Fail to complete	Less likely to complete	Less likely to complete	Failed
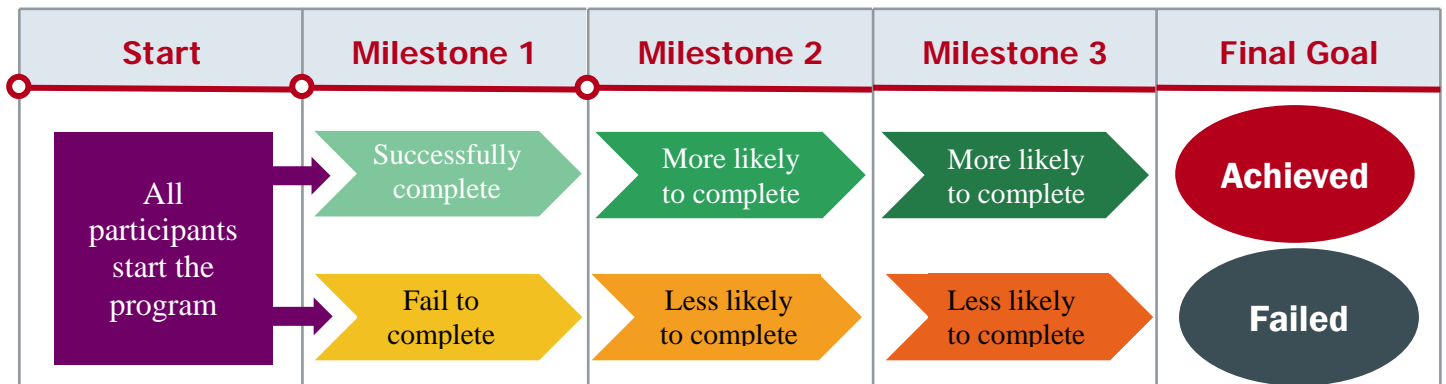
Close collaboration between service providers, trainers, employers, and other stakeholders is needed to select and define performance milestones. This ensures that milestones are grounded in conceptual theory, backed up by empirical evidence, and at the same time remain practical to service providers.

A milestone-based approach can improve not only the strength of an evaluation but also the design and delivery of programs, leading to further innovation and capacity-building for delivery partners. It avoids focus on a single overarching measure of success, and recognizes that multiple small steps are often needed to produce a 'final' outcome. It puts practitioners at the front and centre of milestone design, encouraging practitioner input on defining learning pathways and selecting measures appropriate for their programs. It facilitates timely tracking of learner outcomes, identification of bottlenecks, and needs for service adaptation. Furthermore, it can stimulate innovation in program delivery by establishing links between earlier and later milestones – e.g., designing a skills curriculum customized to specific job performance targets. Finally, it facilitates demonstration of program value, while maintaining accountability to funders and other stakeholders.

In the Phase 2 report, SRDC developed menus of measurement options that integrate:

- Assessments of core and soft Essential Skills

- Other important psychosocial competencies and attributes that are pertinent to work readiness, employability, and learning readiness

- Key short-, medium- and long-term indicators of downstream success (transition, attachment, retention)

- Contextual factors to test whether the training was suitable for different target populations.

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The next section presents the results of further analysis on existing datasets to enhance the evidence base supporting the feasibility and applicability of the milestone-based pathway approach. The analysis also helps identify measures that work well as "tipping point" milestones (i.e., that significantly predict employment success) in a variety of training contexts.

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3.0 FIELD APPLICATIONS OF THE MILESTONE-BASED APPROACH

We present below illustrative examples of training milestones (*tipping points*) linked to longer-term employment outcomes for three recent SRDC-led projects. The projects cover a wide range of training contexts and target populations, with analyses of Essential Skill and other tipping point milestones beginning to inform an evidence-based prioritization of learning outcomes and measures applicable to each context.

The three different programs/training contexts described in more detail below are:

1. Pay for Success, a single employer model featuring intensive employer engagement and sector-based employment training for lower-skilled job seekers.

2. UPSKILL, a workplace and career advancement model offering training for lower-skilled employees with multiple employers in the tourism & hospitality sector.

3. Foundations, a career pathfinding and skill upgrading model for those seeking employment in multiple target sectors and occupations.

As described in the detailed analyses below, tipping point milestones vary by context. We examine a wide range of potential tipping points to employment success, including gains in objectively measured Essential Skills as well as gains in self-reported skills where objective measures were not available. Employment success is also defined in several different ways, depending on the program context and objectives. For job seekers, it may mean successful work placement, employment and retention in the targeted sector, or, for models with multiple target occupations, success in finding high-wage, skills commensurate work. For those already employed, success may mean returning to work post-training with an increased chance of achieving key performance standards and/or certifications. In each case, we investigate potential tipping points by exploiting naturally occurring variability in skill gain outcomes among those who participate in training, and determining whether higher skill gains are linked with greater success in subsequent employment outcomes. Establishing empirical links between intermediate and longer-term outcomes, is a powerful way to validate learning targets and the measures used to track those targets.

In addition to focusing on tipping points to employment success, we also briefly describe how the measurement of *contextual factors* led to important insights on the suitability of each program

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for a broad range of target populations, which in turn led to recommendations for adapting each program to align better with the needs of specific populations.

3.1 PAY FOR SUCCESS

Funded by ESDC in partnership with the provinces of Manitoba and Nova Scotia, the Pay for Success project used an outcome-based rather than activity-based funding model to foster new and innovative approaches to training, with the goal of developing more direct pathways to employment for lower-skilled job seekers (SRDC, 2017). Pay for Success was implemented by three providers with a range of backgrounds and expertise. Each provider implemented a milestone-based pathway to employment program model, customized to the needs of their target populations, and each was eligible for incentive payments upon attainment of milestone outcomes.

The largest provider implemented a sector-focused, model, which made use of intensive employer engagement to inform an occupation-specific Essential Skills training curriculum designed to align with job performance requirements. Participants who graduated from the occupation-specific training were placed in the job site for further technical training and work experience, after which those who succeeded in meeting employer-rated performance standards were offered employment.

In this analysis, we summarize how gains participants made during training acted as tipping points – i.e., how gains made during classroom-based Essential Skills and employability training enabled subsequent performance in the workplace and, ultimately, successful employment outcomes. More specifically, we look at two kinds of gains associated with classroom training:

- Gains in two objectively-assessed Essential Skills (Numeracy and Document Use); and

- Gains in self-reported survey measures, including career adaptability, attitudes towards learning, and understanding and thinking. Some of these measures may be linked with soft skills such as problem solving/thinking, oral communication, and continuous learning, and/or with behavioural competencies such as self-efficacy.

We further summarize how gains in the measures above are linked with:

- Transition from classroom-based training to work placement;

- Performance on an employer-rated occupation-specific Essential Skills (OSES) assessment in the early stages of technical training at the job site; and

- Attainment of the employer-rated productivity standard required for employment.

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Overall, the results (described in detail below) suggest that classroom-based gains in objectively measured as well as self-rated skills were significant predictors of success in the workplace. For example, our multivariate analysis (see Appendix A for more details) shows that **numeracy gains achieved in the classroom acted as tipping points for success on the employer-rated OSES assessment, which in turn increased the likelihood of attaining the employer-rated productivity standard required for employment**. As illustrated in Figure 2, a demographically average participant with a 25-point or higher numeracy gain and higher than median OSES score had an 88% likelihood of being hired – compared to only 60% for an otherwise identical participant with no gain in numeracy and below median OSES score. Once hired, the majority of participants were still employed at the final follow-up point of the study, i.e., 12 months.

Figure 2   Probability of getting hired, at different levels of Numeracy gain and OSES score
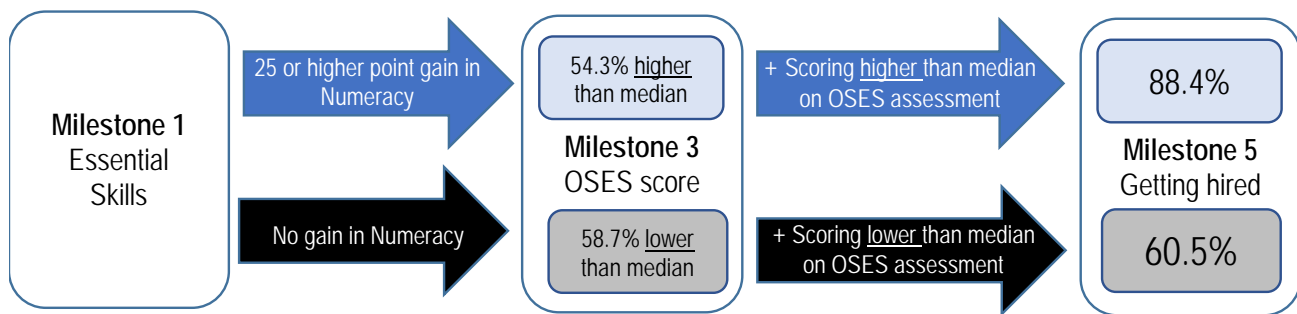
Notes: With everything else held constant, gains in numeracy significantly predict achieving high OSES scores (above median), p<0.1*. Achieving a high OSES score (above median) significantly predicts getting hired at Canada Goose, p<0.01***.
Source: SRDC, 2017.

Evidence of a link between numeracy gains and scores on the OSES assessment suggests that the provider was able to customize its curriculum to prepare participants for the multiple numeracy-based tasks they would be required to perform at the work placement (e.g., recognizing angles, measuring seams, manual monitoring of own work rate). Furthermore, the link between performance on the OSES assessment and later achievement of productivity standards required for employment suggests that the OSES instrument itself was well-aligned with employer business needs, i.e., that it tapped into a wide range of tasks and underlying Essential Skills required for effective job performance.

In addition to objectively assessed numeracy, **participant gains in self-rated understanding and thinking also acted as predictors/tipping points to workplace success**. More specifically, as illustrated in Figure 3, those who reported improvement in a self-rated measure of understanding and thinking (which incorporated ability to concentrate, remember, solve problems, and communicate with others) after the classroom-based training were 13 percentage

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points more likely to be hired after work placement than otherwise similar participants whose understanding and thinking scores decreased.

These results imply that participants who were ready to meet the oral communication and thinking challenges associated with technical training during work placement – which required participants to ask questions and understand feedback from trainers, and to be able to concentrate and focus on solving problems when faced with setbacks – were more likely to reach the productivity level required for employment.

Figure 3   Those who whose self-rated thinking and understanding skills improved after classroom-based training were more likely to be hired after their work placement

Thinking and Understanding

Overall average rate: 74.9%

67.8

80.8

Hiring rate (%)

Score decreased   Score increased
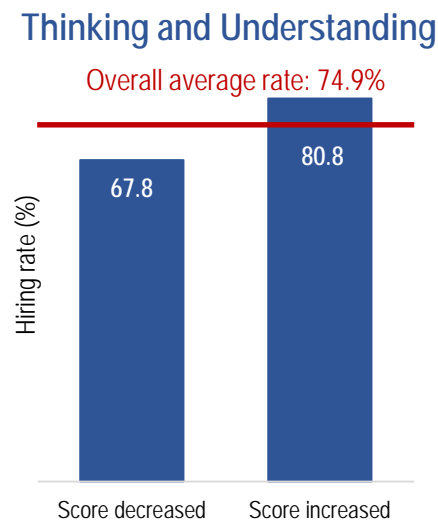
Notes: This figure illustrates differences in hiring rate for two hypothetical participants who have identical average demographic characteristics and average baseline skills, but differ only in their self-reported gains in thinking and understanding. With everything else held constant, gains in thinking and understanding significantly predict being hired after transition, p<0.05**.
Source: SRDC, 2017.

Two additional self-rated measures were also found to be tipping points to workplace-based outcomes. **Gains in job search clarity and attitudes towards learning were both significantly linked with post-training work placement**, and **gains in attitudes towards learning were also linked with success on the employer-rated OSES assessment**. In a sector-focused training model, those who gain job search clarity may become more confident that the targeted occupation is a good fit for their skills and interests, while those who lose clarity may be more likely to seek other kinds of work. Similarly, increasingly positive beliefs in the value of continuous learning may reflect openness to new opportunities, and enable participants to make

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a successful transition from the classroom to what was for most of them an unfamiliar workplace.

Interestingly, there was **no link between gains in objectively assessed document use and subsequent success in the workplace**, which is consistent with the relative lack of document use based tasks in the job performance requirements associated with the target occupation.

In general, the several links we observed between classroom-based skill gains and employment outcomes is encouraging, and suggests that this Essential Skills based training model was well-aligned with job performance requirements.

Contextual factors

The tipping point analysis above showed that participants who made larger gains in specific skill areas – objectively assessed numeracy, and self-rated job search clarity, attitudes towards learning, and understanding/thinking – and those who performed well on the employer-rated OSES assessment were more likely to make effective transitions to the workplace than demographically identical learners with smaller gains and lower OSES scores.

However, learners who realized skill gains in these areas did not benefit equally in terms of subsequent employment outcomes – demographic characteristics made a difference. Figure 4 illustrates the likelihood of getting hired for job seekers with specific baseline characteristics, holding factors linked with training achievement such as skill gains and OSES scores constant.

The results indicate **some groups of job seekers were less likely to be able to leverage their skills gains into employment**. These groups include: lower-skilled job seekers (i.e., those entering the program with lower level 1 baseline numeracy skills), job seekers aged 40 and over, Canadian-born job seekers (Indigenous and non-Indigenous), those more distant from the labour market (i.e., unemployed for more than a year), and male job seekers.

There is no evidence that any of the groups with lower hiring rates were less likely to benefit from training, as skill gains were broadly distributed among all demographic groups. The fact that some groups were less able to leverage their skill gains into employment likely reflects historical cultural norms within this particular sector/workplace, which has tended to hire younger female immigrants.

In some cases, selection/screening of candidates for training likely reflects both provider and client perceptions about low probability of success and/or lack of interest in employment within this sector. For instance, men made up only 12% of the sample, and Canadian-born job seekers only 13% (Figure 4). However, for some groups, level of interest appears to be high – for

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example, older job seekers (aged 40 and above) made up almost half the sample – though their chances of successful employment are lower than those of other groups.

These results suggest that future iterations of the training model need to find ways to adapt to the challenges of obtaining positive employment outcomes for employable and engaged participants whose demographic characteristics deviate from those of existing workers in the sector.

Figure 4   Hiring rates among different participant groups
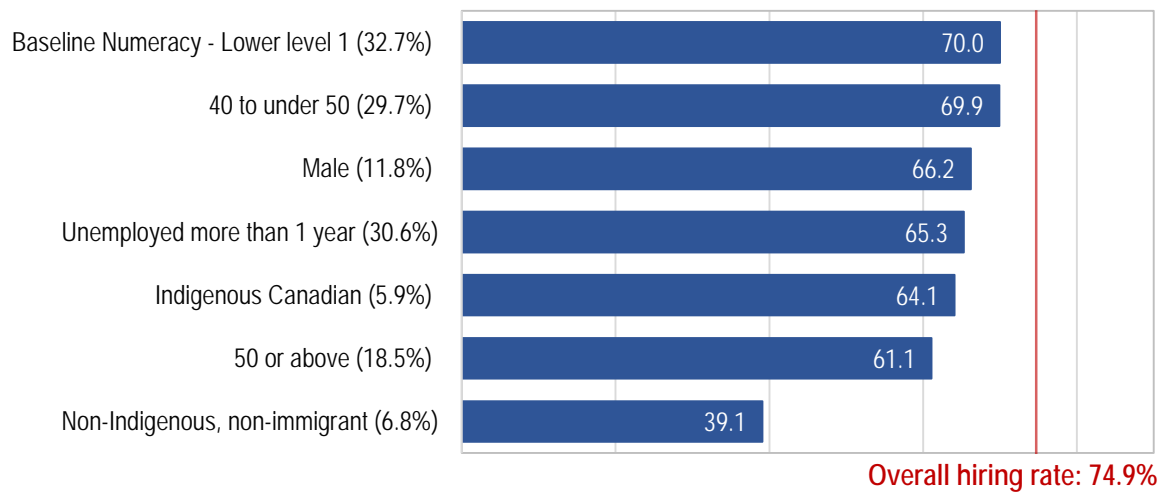
Notes: This figure illustrates differences in hiring rates among participants who differ only in a single demographic characteristic, and are at the sample average in all other respects. The following characteristics are significantly linked with a lower probability of being hired: Baseline Numeracy – Lower Level 1, p<0.05**; 40 to under 50, p<0.01***; Male, p<0.1*; Unemployed for more than 1 year, p<0.1*; Indigenous Canadian, p<0.01***; 50 or above, p<0.01***; Non-Indigenous, non-immigrant, p<0.05**.
Source: SRDC, 2017.

3.2 UPSKILL

UPSKILL was a pan-Canadian study of workplace training in the tourism industry. Study findings showed significant training impacts and returns on investment when the training curriculum was well aligned with tangible business needs as articulated by employers (Gyarmati et al., 2014). The measurement framework of this study allows us to use the existing dataset to conduct a milestone analysis modeled on that of Pay for Success. This analysis provides an example of applying a milestone analysis to workplace training and will contribute to our understanding of which indicators function best as possible milestones for longer-term outcomes of LES initiatives and training.

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The study involved a randomized control trial of 88 firms in the Accommodations and Food Service Sector. This consisted primarily of hotels with employees in a range of occupations, including housekeeping, front desk agents, food and beverage servers, and banquet attendant servers. Employees in the program group were offered a maximum of 40 hours of LES training on-site during working hours, whereas employees in the control group were not offered any training. Program group employees showed significant training impacts, including increased literacy scores, especially document use, psychosocial gains in self-reported attitudinal, behavioural, and social domains, and improved job performance as measured by passing industry certification standards.

In this analysis, we will specifically examine the following gains associated with classroom training as potential milestones:

- Gains in objectively assessed essential skills (numeracy and document use)

- Gains in self-rated psychosocial attributes and skills (attitudinal, behavioural, social).

The analysis will investigate whether the training milestones above were predictive of subsequent workplace outcomes, i.e., whether skill gains acted as tipping points to workplace success. UPSKILL workplace outcomes were assessed using industry certification standards in five job performance domains. Each domain is associated with an overall standard and, with the exception of maintaining service, each domain is also comprised of several individual standards (listed in sub-bullets underneath each standard):

- Enhancing customer relations
  - Effective communication
  - Resolving customer complaints
  - Professionalism

- Maintaining service standards

- Increasing productivity
  - Organization
  - Teamwork

- Improving health and safety
  - Working safely
  - Safety and emergency

- Increasing sales
  - Upselling
  - Product knowledge

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Overall, the results (described in detail below) suggest that **essential skill gains achieved in the classroom acted as tipping points to achieving industry certification standards. A 25-point or higher gain in document use was associated with an increased likelihood of passing industry standards in several performance domains, including domains related to customer relations, health and safety, and increasing sales**. Gains in numeracy were also associated with an increased likelihood of passing industry standards; however, **numeracy predicted fewer workplace outcomes than document use, and less strongly**.

Document use is likely to be more widely applicable than numeracy in the hotel industry, as various document types are used extensively to record and share information. When working with customers and in sales, employees refer to and use company policy documents, calendars, booking logs, receipts, and service price lists. For health and safety policies and practices, employees refer to manuals, report accidents and incidents by filling out forms, and regularly log health and safety checks or related tasks. Numeracy appears important for customer relations, however, where employees might often communicate and resolve issues related to scheduling, prices, charges, or inventory. Numeracy also predicted teamwork, although the nature of this relation is less readily apparent. It might be that the types of tasks performed as a team involve using numbers (e.g., sharing and coordinating dates, times, charges, services across team members). In addition, certain characteristics such as perseverance may underlie both working well with numbers and working well with other people.

While document and numeracy tipping points were generally clustered around certain job domains (i.e., predicted passing multiple standards within a domain), **psychosocial gains predicted specific component standards across a range of domains**. Psychosocial gains were measured with self-report surveys and included attitudinal (e.g., self-efficacy, receptivity to learning), behavioural (e.g., motivation and engagement behaviours at work), and social (e.g., social network, resources) domains. Attitudinal gains were associated with an increased likelihood of passing industry standards in organization (part of productivity) and product knowledge (part of sales). Behavioural gains was associated with an increased likelihood of passing industry standards in professionalism (part of customer relations). Both behavioural and social gains were associated with an increased likelihood of passing industry standards in working safely (part of health and safety). Despite the dispersed pattern, in some cases, these gains acted as strong tipping points. For example, gains in several behavioural indicators were associated with a 39.6 percentage point increase in the likelihood of passing industry standards in working safely, and gains in social network indicators were associated with a 25.9 percentage point increase in the likelihood of passing the same standards. Psychosocial gains also predicted performance on certain industry standards that did not show any association with numeracy or document use (e.g., professionalism, organization). Therefore, they may be useful as milestones that augment or complement essential skill milestones. Furthermore, as described below, our findings regarding psychosocial indicators may underestimate their role as tipping point

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predictors since we were working with a more limited sample and less statistical power to detect effects. A larger sample and greater power might reveal other important milestone associations.

Together, these results show evidence that a milestones approach can be applied to workplace LES initiatives. Controlling for baseline work performance and skills, classroom-related gains can act as tipping points to achieving industry certification standards. Helping participants achieve document use gains as part of a sector-contextualized training model appears to be a particularly important milestone for hotel occupations. However, numeracy and a range of psychosocial gains can be tipping points for more specific types of outcomes that may be nonetheless important and of interest.

Relationship between numeracy, document use, and job performance

We focused our analyses on employees in the program group who received training. Original UPSKILL analyses showed significant training-related impacts on document use and numeracy as well as on job performance outcomes. We looked at numeracy and document use gains separately to determine to determine the extent to which each was predictive of longer-term job performance outcomes.

We used multivariate regression analyses to determine how well gains in numeracy and document use predict job performance, controlling for other variables that likely impact job performance, such as participant characteristics (e.g., age, gender, education, income, immigration status), job characteristics (e.g., tenure, permanency), firm characteristics (e.g., number of employees, number of business needs), and baseline skills and job performance that were measured pre-training (e.g., starting numeracy level, starting job performance). This allowed us to determine whether a participant with a significant gain in numeracy or document use would be more likely to pass industry certification standards compared to another participant who was unable to achieve skills gains but was otherwise identical in baseline skills and demographics.

Gains in numeracy and document use were measured on a scale of 0 to 1 based on how close participants were to a gain of 25 points or higher (equivalent to half an Essential Skill level) – those with gains of 25 points or more were scored 1, and those with smaller gains were scored as a fraction of 25 (e.g., a 20-point gain was scored 0.8).

Job performance was based on passing or not passing industry certification standards across the domains listed in Table 1 below. A summary of the regression analyses results, showing how gains in each of the skill domains predicts subsequent performance in each of the job domains, is presented in Table 1.

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Table 1   Essential skill gains predict job performance: Summary of regression analyses

Job performance outcome	Essential skill gains (regression coefficients)	
	Numeracy	Document use
Customer relations (composite)	.073	.096
Effective Communication	**.094****	**.136****
Resolving Customer Complaints	**.147****	**.125***
Professionalism	.040	0
Maintaining service standards (composite)	-.025	.034
Productivity (composite)	.037	-.047
Organizational	.017	-.026
Teamwork	**.067****	.034
Health and safety (composite)	.083	.108
Work Safely	.031	**.186****
Safety and Emergency	.083	**.201*****
Sales (composite)	.041	**.186*****
Upselling	.071	**.395*****
Product Knowledge	.033	**.104****

Notes: Coefficients in **bold** represent statistically significant links between skill gains and job performance outcomes * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The regression coefficients can be interpreted as the difference in achieving the outcome between a person who had no gain and a demographically identical person with identical baseline skills who had a gain of 25 points or more. For example, 0.094 is equivalent to a 9.4 percentage point difference in passing effective communication standards. If an individual without gains had an 84.6% likelihood of passing, an otherwise identical individual with a 25-point or higher gain would have a 94.0% likelihood of passing.

Gains in document use were a significant milestone predictor in three job performance domains. The largest effect was observed in sales (see Figure 5). With all other demographic and baseline skills held constant at the sample average, achieving a 25-point or higher gain in document use was associated with a 39.5 percentage point increase in the likelihood of passing industry standards in upselling, a 10.4 percentage point increase in the likelihood of passing standards in product knowledge, and a 18.6 percentage point increase in the likelihood of passing standards in the overall sales domain.

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Gains in document use also predicted performance in health and safety and customer relations (see Figure 5). In health and safety, a 25-point or higher gain was associated with a 18.6 percentage point increase in the likelihood of passing standards in working safely, and a 20.1 percentage point increase in the likelihood of passing standards in safety and emergency. In customer relations, a 25-point or higher gain was associated with a 13.6 percentage point increase in the likelihood of passing standards in effective communication, and a 12.5 percentage point increase in the likelihood of passing standards in resolving customer complaints.

Figure 5   Gains in document use predict passing industry standards in three job domains
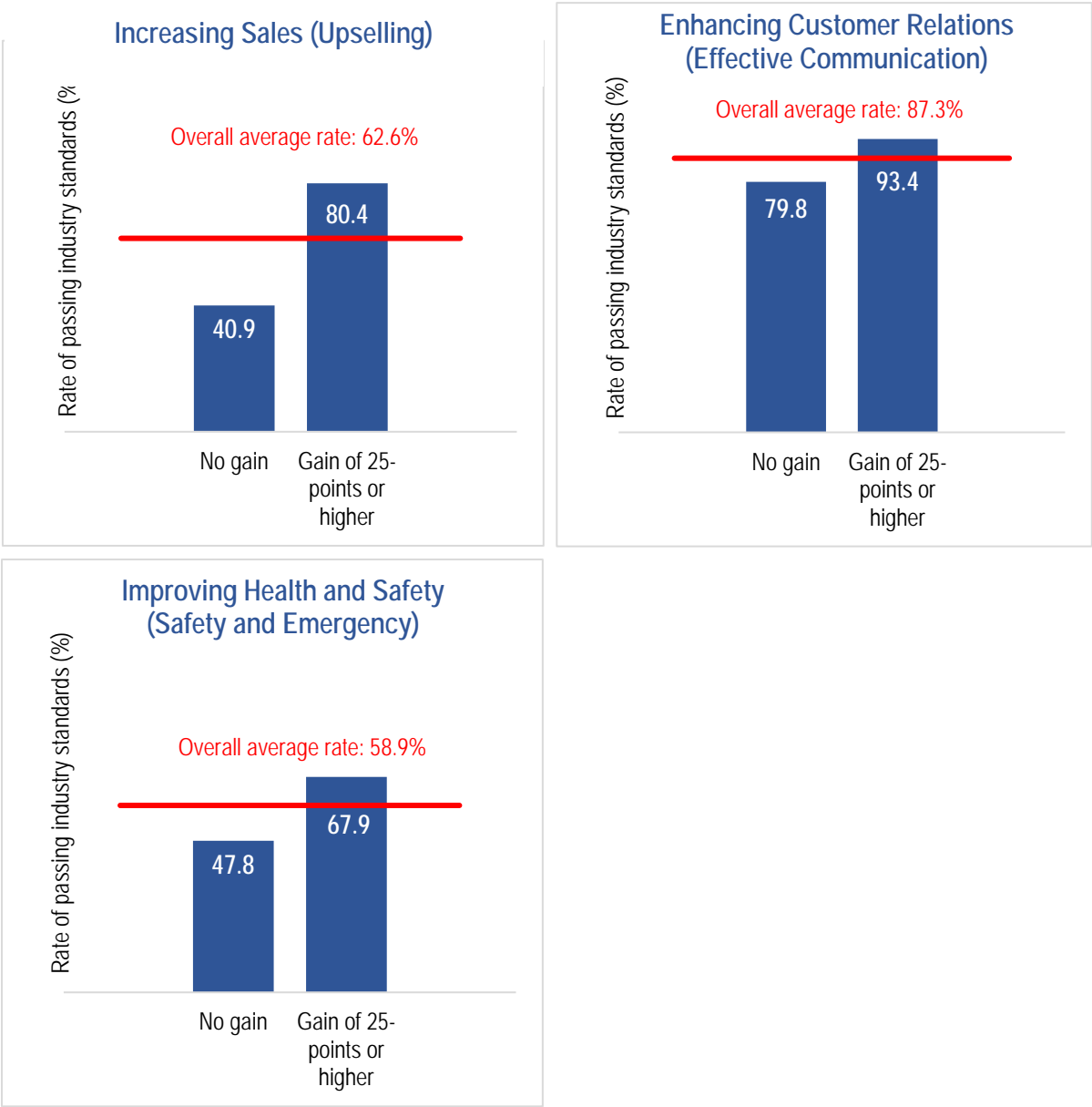
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Notes: This figure illustrates comparisons in job performance for two hypothetical participants who have identical average demographic characteristics and average baseline skills, but differ only in their document use gains. Differences in upselling and safety and emergency are statistically significant at $p < 0.01$***. Differences in effective communication are statistically significant at $p < 0.05$**.

Gains in numeracy use were a significant milestone predictor in two job performance domains. Compared with an otherwise identical participant who achieved no gains, a demographically average participant with a 25-point or higher gain in numeracy had a 9.4 percentage point higher likelihood of passing industry standards in effective communication, and a 14.7 percentage point higher likelihood of passing standards in resolving customer complaints (See Figure 6). Gains in numeracy also predicted performance in productivity, specifically a 25-point or higher gain was associated with a 6.7 percentage point increase in the likelihood of passing standards in teamwork.

Figure 6   Gains in numeracy predict passing industry standards in customer relations
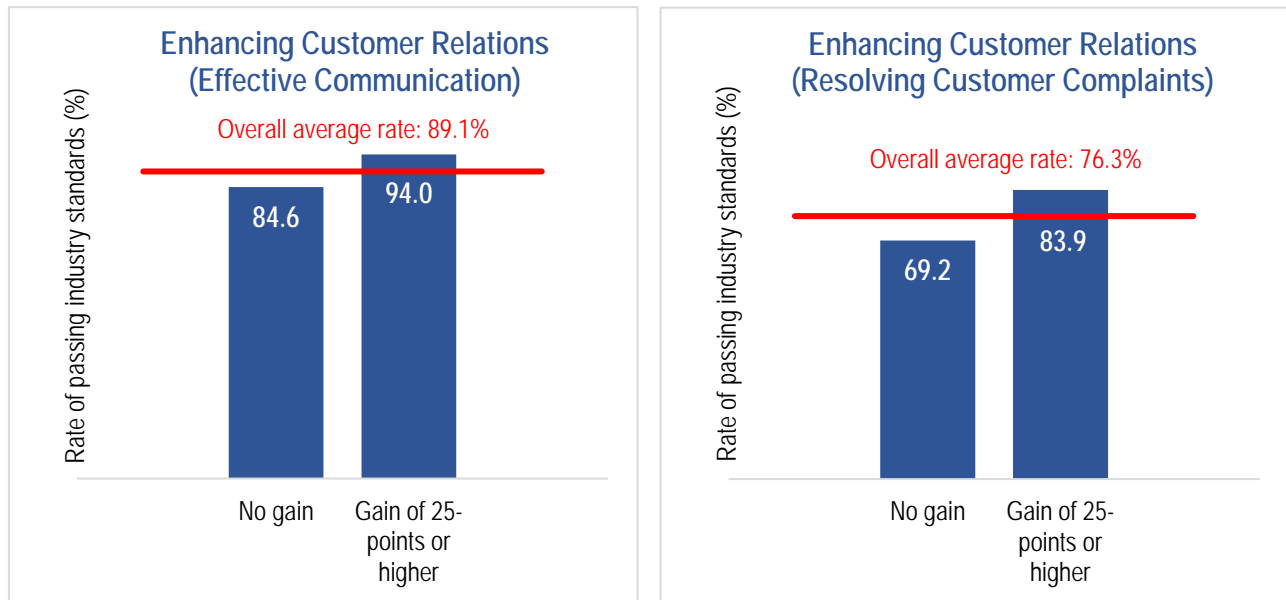
Notes: This figure illustrates comparisons in job performance for two hypothetical participants who have identical average demographic characteristics and average baseline skills, but only differ in their numeracy gains. Differences in effective communication and resolving customer complaints are statistically significant at $p < 0.05$**.

The pattern of results described above suggests that both document use and numeracy gains can be important milestone predictors of job performance outcomes. At least in the context of the hotel occupations examined in UPSKILL, document use has wider applicability as a milestone predictor, especially in performance areas such as health and safety, and sales.

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Relationship between attitudinal, behavioural, and social gains, and job performance

Next we examined gains in psychosocial attributes and skills, specifically gains in attitudinal, behavioural, and social domains. We analyzed gains within each domain separately as potentially independent milestone predictors of job performance. We used the same analytic strategy used for numeracy and document use, conducting multivariate regressions while controlling for participant characteristics, job characteristics, firm characteristics, baseline psychosocial levels and baseline job performance. Each psychosocial domain was measured as a composite of several self-reported scales that participants completed as part of their baseline pre-training and follow-up post-training surveys. For each domain, gains were determined by summing the number of indicators where the participant showed a gain from baseline to follow-up. Participants were considered to have shown a gain in a domain if they had gains in three or more individual indicators within the domain.

A summary of the regression analyses results is presented in Table 2. One limitation with these analyses compared to those conducted for essential skill gains is that the sample sizes are significantly smaller (because of survey non-response). A smaller sample size leads to less statistical power, i.e., a smaller likelihood of detecting significant associations between measures. For example, some of coefficients shown in Table 2, though large in magnitude, are nevertheless not statistically significant. It is possible that a larger sample might reveal that psychosocial gains have greater predictive power than shown here.

Table 2   Psychosocial gains predict job performance: Summary of regression analyses

Job Performance Outcome	Psychosocial gains (regression coefficients)		
	Attitudinal	Behavioural	Social
Customer relations (composite)	-.077	.106	.075
Effective Communication	-.016	.064	.046
Resolving Customer Complaints	-.052	.098	.034
Professionalism	.016	**.123****	.041
Maintaining service standards (composite)	-.058	-.017	.170
Productivity (composite)	-.084	.127	.055
Organizational	**.054***	.049	-.031
Teamwork	.029	.048	-.036

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Job Performance Outcome	Psychosocial gains (regression coefficients)		
	Attitudinal	Behavioural	Social
Health and safety (composite)	.013	-.014	.107
Work Safely	-.032	**.396***	**.259***
Safety and Emergency	-.041	-.027	.056
Sales (composite)	-.024	-.165	.188
Upselling	-.057	**-.246***	.240
Product Knowledge	**.059***	.019	.026

Notes: Coefficients in **bold** represent statistically significant links between skill gains and job performance outcomes * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The regression coefficients can be interpreted as the difference in achieving the outcome between a person who had a gain in 3 or more indicators and a demographically identical person with identical baseline skills who had gains in less than 3 indicators. For example, 0.054 is equivalent to a 5.4 percentage point difference in passing the organizational standard. If an individual with less than 3 gains had a 93.4% likelihood of passing, the individual with 3 or more gains would have a 98.8% likelihood of passing.

The attitudinal composite measure assessed changes in attitudes and beliefs using six self-reported indicators: i) future orientation, ii) receptivity to continuous learning, iii) motivation and engagement at work, iv) self-efficacy, v) trust, and vi) confidence in Essential Skills used in everyday life. Our analyses revealed that attitudinal gains were a significant milestone predictor for two job performance domains: productivity and sales. Compared with an otherwise identical participant, a demographically average participant with gains in 3 or more indicators had a 5.4 percentage point higher likelihood of passing industry standards in organization, and a 5.9 percentage point higher likelihood of passing standards in product knowledge. Attitudinal gains in planning and preparing for the future, being motivated and engaged at work, feeling confident and competent at completing tasks and using skills may lead to more conscientious, organized, and task-oriented behaviour. Additional gains in receptivity to continuous learning may lead to greater product knowledge, and motivation to keep up-to-date with new products and services.

The behavioural composite measure assessed increased learning and literacy practice using four self-reported indicators: i) preparing for the future by learning new things at work or in one's personal life, ii) behaviour related to motivation and engagement at work, iii) use of Essential Skills in everyday life, and iv) volunteering for groups and organizations. Behavioural gains were a significant milestone predictor for three job performance domains: customer relations, health and safety, and sales. In customer relations, a gain in three or more behavioural indicators was associated with a 12.3 percentage point increase in the likelihood of passing

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standards in professionalism. In health and safety, a behavioural gain in three or more indicators was associated with a 39.6 percentage point increase in the likelihood of passing standards in working safely. Although not significant, the coefficients for resolving customer complaints and for the overall customer relations composite show a trend towards higher performance for those with greater behavioural gains (9.8 percentage points and 10.6 percentage points higher, respectively). Surprisingly, in sales, behavioural gains was associated with a 24.6 percentage point *reduction* in the likelihood of passing standards in upselling. It might be that the types of behaviours associated with successful upselling are at odds with the kinds of behaviour we measured. For example, behaviour used in upselling may not be aligned with behaviour associated with engaging in other aspects of the job or with volunteering and helping others outside the work place.

The social composite measure assessed network size and quality (in terms of diversity and support availability) based on six self-reported indicators: i) overall network size, ii) network density, i.e., proportion of contacts who knew each other, iii) proportion of contacts known from work, iv) proportion of contacts with a different occupation, v) proportion of contacts from a different community, and vi) various kinds of supports received from these contacts. Social gains were a significant milestone predictor for only one job performance standard, namely working safely. A gain in three or more indicators was associated with a 25.9 percentage point increase in the likelihood of passing standards in working safely. A larger and more diverse social network may have important implications for working better with others and taking others' safety into consideration when completing tasks.

Interestingly, if we examine the coefficients for social gains, we observe that there are several other sizeable coefficients that are not statistically significant. For example, social gains are associated with a 17.0 percentage point increase in the likelihood of passing maintaining service standards, a 18.8 percentage point increase in the likelihood of passing the overall sales standard, and a 24.9 percentage point increase in the likelihood of passing the upselling standards. Gains in social network, especially diversity in network, likely point to improved social skills and opportunities to practice social and communication skills leading performance in sales and service.

Although individually, each psychosocial domain predicts limited outcomes, together they predict workplace performance across four job performance domains. Unlike numeracy and document gains, which generally predicted outcomes clustered around certain job domains (e.g., customer relations, sales), the pattern of results for psychosocial gains is more dispersed. They appear to be milestones for specific individual standards across different job domains. However, as noted above, these analyses are limited by smaller sample sizes, which lowers our ability to detect significant effects. A different pattern might emerge given a larger sample size.

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Contextual factors

The tipping point analysis above showed that, on average, participants who made larger gains in specific skills or attributes areas – especially objectively assessed document use, but also numeracy and self-rated attitudes, behaviours, and social networks – were more likely to perform effectively when they returned to their jobs than demographically identical learners with smaller gains in these areas.

However, the UPSKILL final report also documents a number of examples where job performance impacts are dependent on participant characteristics or the context in which the training was implemented (Gyarmati et al., 2014). One striking example has to do with firm characteristics – **employees at firms where employers were able to identify and articulate a greater breadth of business needs prior to training were able to achieve greater job performance gains**.

Figure 7 illustrates that program group members working in firms that reported a high degree of need in six or more core business areas experienced large impacts on an aggregate indicator of job performance relative to the control group (18.5 percentage point increase in certification rates from pre- to post-training for the program group vs. close to zero change over the same time period for the control groups). In contrast, while workers in firms with fewer than six core business needs did experience short term skills gains as a result of the training, they weren't able to leverage these gains into higher certification rates. The left panel of Figure 7 shows no significant change in certification rates for either the program group or control group of employees in firms with less than six business needs identified.

These results suggest that provision of sector-specific training is enhanced by the ability of employers to articulate a broad range of business needs, allowing trainers to customize their curricula according to these needs. When employers are less informative, trainers are required to rely more on generic content, with the result that post-training learning transfer to the workplace may be diminished. Future iterations of the UPSKILL training model likely need a longer period of pre-training engagement with employers who are less able to identify and articulate their business needs, to adapt to the challenges of obtaining positive job performance outcomes for employees in these kinds of firms.

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Figure 7   Job performance impacts vary by firm ability to articulate training needs
                prior to implementation
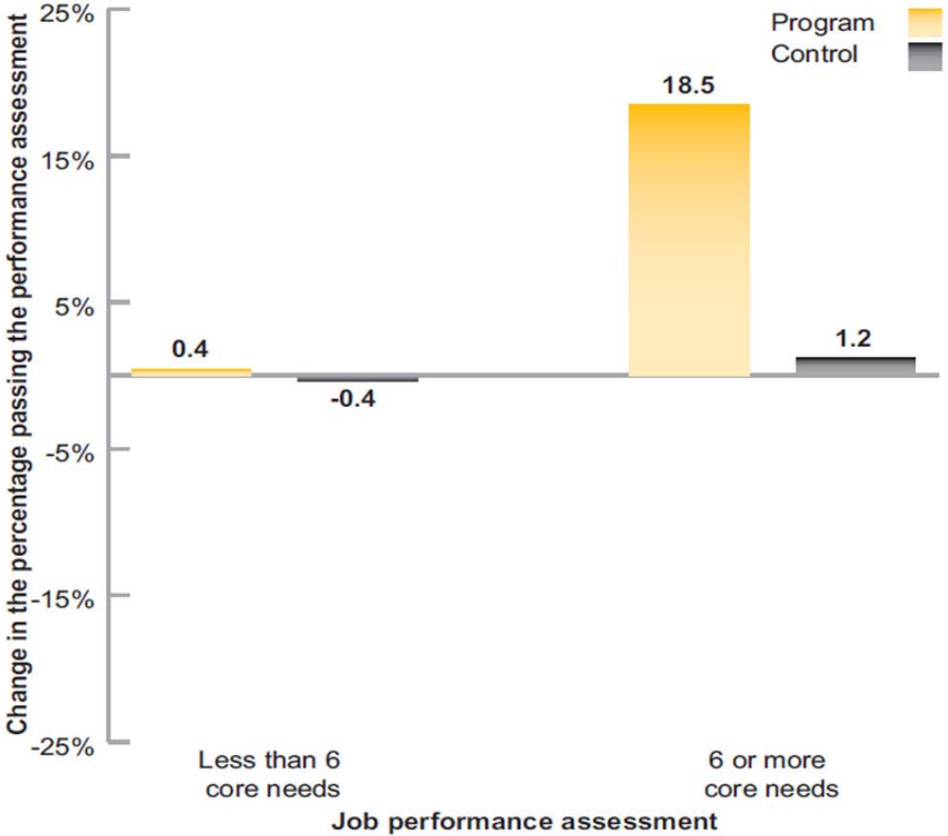
Note: The difference in the impact on employees in firms with fewer than 6 core needs and those in firms with six or more core
needs is statistically significant at $p < 0.01$***.
Source: Gyarmati et al., 2014.

3.3 FOUNDATIONS

The Foundations Workplace Skills Project (FWSP), a three-year initiative led by the Training
Group at Douglas College, British Columbia, used a randomized control trial design to evaluate
the impacts of a Literacy & Essential Skill (LES) based program model targeted specifically to
meet the needs of unemployed job seekers. Foundations was implemented by three adult
education providers across Canada. In contrast to industry-contextualized interventions such as
Pay for Success and UPSKILL which focused on embedding LES training within a specific
vocational context, Foundations was designed to deliver training tailored to a broad range of
participant-targeted occupations.

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Foundations, therefore, did not engage with prospective employers to identify and customize training to a set of sector or occupation-specific business needs. Instead, the training model focused on helping unemployed clients create an inventory of their own skills while also understanding the skill requirements of their targeted occupations, then developing individually-customized learning plans to close the gap between current and required skills. The goal was to equip job seekers with the tools they needed to shape and refine their career paths, skill up if necessary, and find jobs they would not have otherwise been able to get.

The study involved randomly assigning 452 participants into either: i) the program group who were offered two weeks of career pathfinding and skills portfolio development, followed by two to ten weeks of targeted skill enhancement where required; or ii) the control group who were not offered any of the Foundations services but were free to enter other existing programs.

Relative to the control group, the Foundations program produced immediate impacts on career adaptability (indicating an increased belief among participants in their ability to identify a clear, realistic career path and search for jobs in a targeted way) and Essential Skills (closing any skill gaps that may have hampered participants in their pursuit of their targeted occupations) (Palameta, Dowie, Nguyen, & Gyarmati, 2016). In addition, participants were able to leverage their short-term career adaptability and skills gains into longer-term employment outcomes, including higher wage and higher skilled jobs than control group members were able to find (Palameta, Nguyen, Hui, & Gyarmati, 2016).

In this analysis, we summarize how gains participants made during training acted as tipping points – i.e., how gains made during classroom-based portfolio development and Essential Skills training enabled subsequent employment outcomes. More specifically, we look at two kinds of gains associated with classroom training:

▪ Gains in objectively-assessed Essential Skills (Numeracy, Document Use, and Reading); and

▪ Gains in a range of self-reported survey measures, including:

  o Career adaptability measures (including career planning; career decision-making self-efficacy; job search clarity; and job search self-efficacy)

  o Other psychosocial measures (including attitudes towards learning; future orientation; and social networks).

We further summarize how gains in the measures above are linked with a series of employment outcomes, including:

▪ Becoming employed post-training

▪ Getting a high-wage job

▪ Getting a highly skilled job.

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Overall, the results (described in detail below) suggest that classroom-based gains in objectively measured as well as self-rated skills were significant predictors of employment outcomes. For example, our multivariate analysis (see Appendix B for more details) shows that **document use gains were associated with a greater likelihood of finding a high-skilled job**.

As illustrated in Figure 8, a demographically average participant with a 25-point or higher document use gain had an 43% likelihood of finding a job that normally requires a university degree – compared to only 11% for an otherwise identical participant with no gain in document use. Since about half of the Foundations sample was made up of university-educated newcomers, this result means that those who achieved gains in document use were more likely to find skills commensurate jobs.

Figure 8   Gains in document use predict finding a highly skilled job

Gains in Document Use LInked With Job Skill Level

(Vertical axis: Probability of getting a job that requres a univeristy degree; values 0.0%, 20.0%, 40.0%, 60.0%, 80.0%, 100.0%)

No gain: 10.6%
Gains of 25 points or more: 42.8%
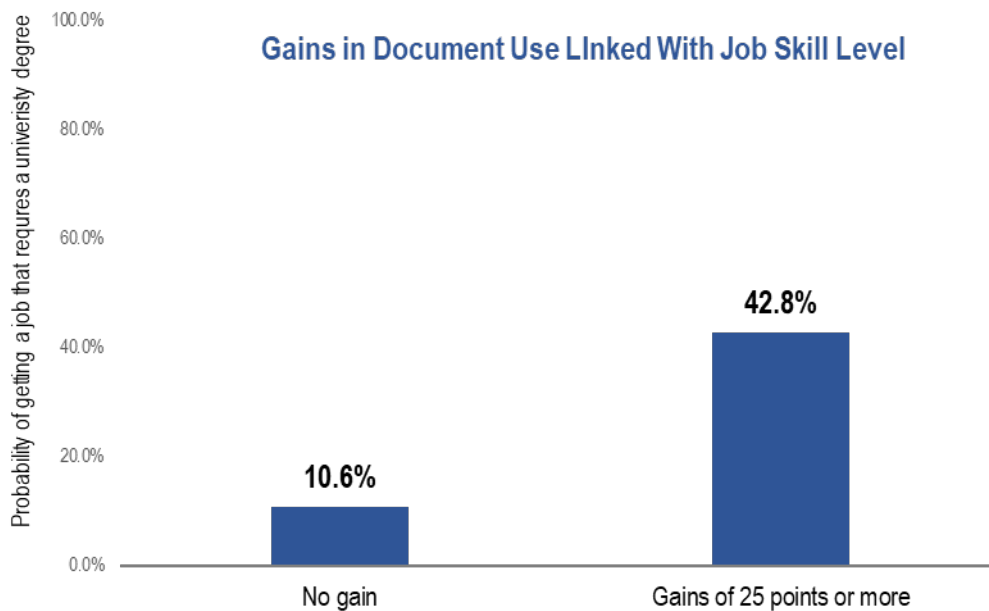
Notes: This figure compares the likelihood of getting a job that normally requires a university degree for two hypothetical participants who have identical average demographic characteristics and average baseline skills, but only differ in their document use gains. The difference is statistically significant at $p < 0.10^*$.

In addition, **numeracy gains were associated with a greater likelihood of being employed 12 months later**. As illustrated in Figure 9, a demographically average job seeker with a 25-point or higher numeracy gain had an 40% likelihood of being employed 12 months later – compared to only 16% for an otherwise identical participant with no gain in numeracy.

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Figure 9   Gains in numeracy predict being employed 12 months later

Gains in Numeracy Linked with Probability of Employment
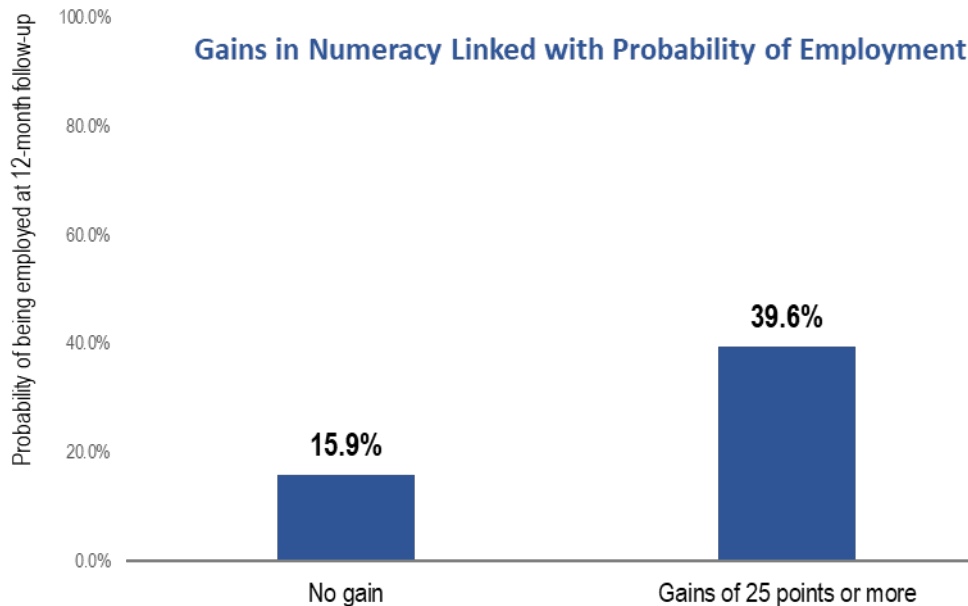
Notes: This figure compares the likelihood of being employed at the 12 month follow-up for two hypothetical participants who have identical average demographic characteristics and average baseline skills, but only differ in their numeracy gains. The difference is statistically significant at $p < 0.05$**.

In addition to gains in objectively measured skills, gains in self-rated career adaptability measures (namely job search self-efficacy and career decision-making self-efficacy) were also linked with positive employment outcomes. Career adaptability – defined as positive, proactive thoughts and behaviours which allow people to change their existing frames of reference and routines for career pathfinding and job search, leading to potential new opportunities – was targeted directly by the Foundations program model, as a stepping stone to higher quality jobs.

Indeed, **those who made substantial gains in job search self-efficacy as a result of classroom training were more likely subsequently find a higher-wage and more highly skilled job**. As illustrated in Figure 10, a demographically average job seeker with a job search self-efficacy gain of 1 point per scale item had an 53% likelihood of subsequently getting a job that paid more than $15 per hour – compared to only 31% for an otherwise identical participant with no gain in job search self-efficacy. Similarly, average job seekers who achieved a gain in job search self-efficacy had a 62% likelihood of subsequently getting a job that required a post-secondary credential – compared to only 41% for an otherwise identical participant with no gain in job search self-efficacy.

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Figure 10   Gains in job search self-efficacy predict getting a higher-wage, and more highly skilled job

Gains in Job Search Self-efficacy Linked with Higher Wages

Gains in Job Search Self-efficacy LInked with More Highly Skilled Jobs
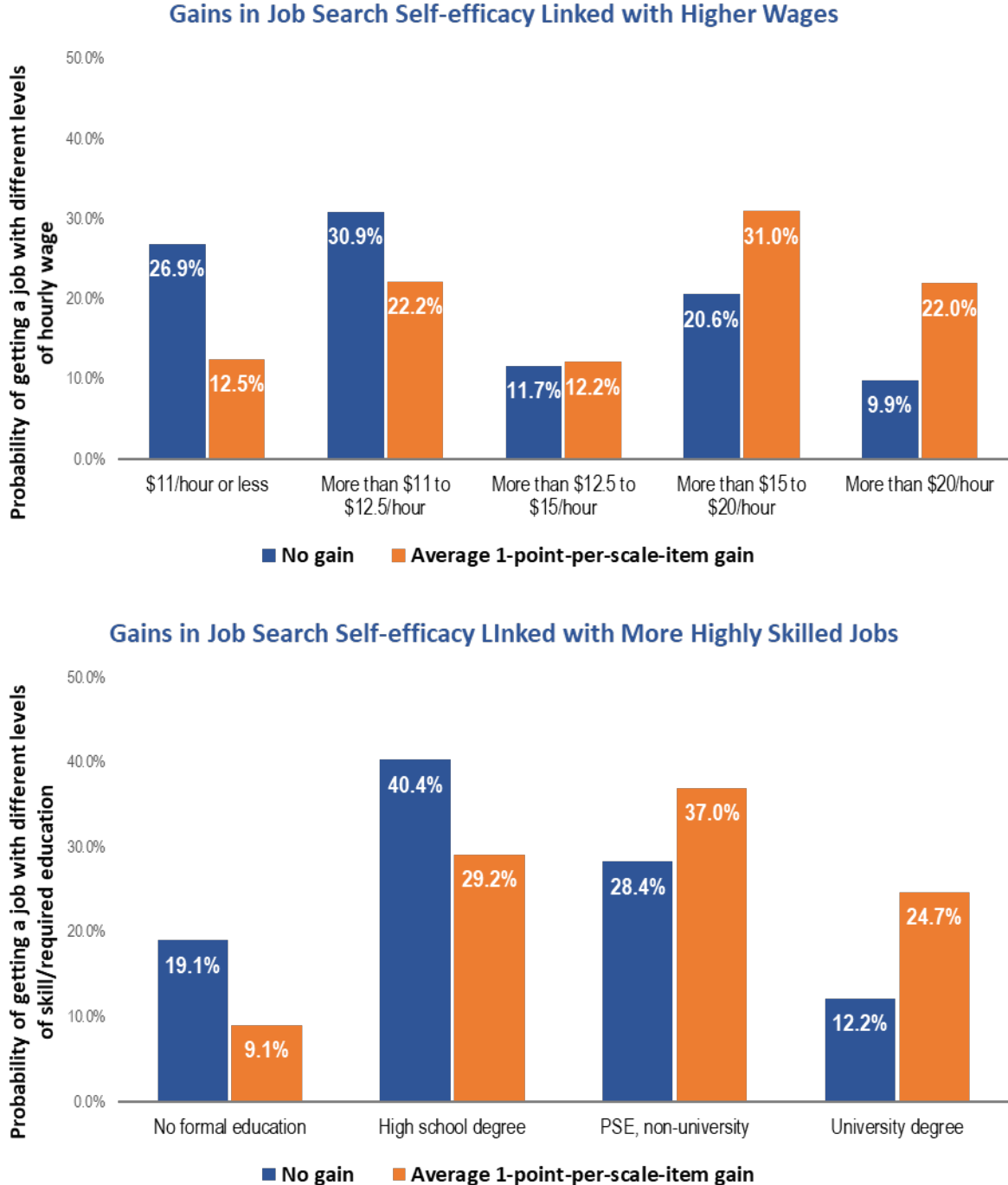
Notes: This figure compares the distributions of hourly wage and job skill level for participants who have identical average demographic characteristics and average baseline skills, but only differ in their self-reported job search self-efficacy gains. The hourly wage distributions are significantly different at $p < 0.05$**, and the job skill level distributions are significantly different at $p < 0.10$*.

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Gains in another self-reported measure of career adaptability – career decision-making self efficacy – are also linked with subsequent employment in more highly paid jobs. Figure 11 shows that demographically average job seekers who achieved a gain in career decision-making self-efficacy had a 55% likelihood of subsequently getting a job that paid more than $15 per hour – compared to only 34% for an otherwise identical participant with no gain in career decision-making self-efficacy.

Figure 11　　Gains in career decision-making self-efficacy predict getting a higher-wage job
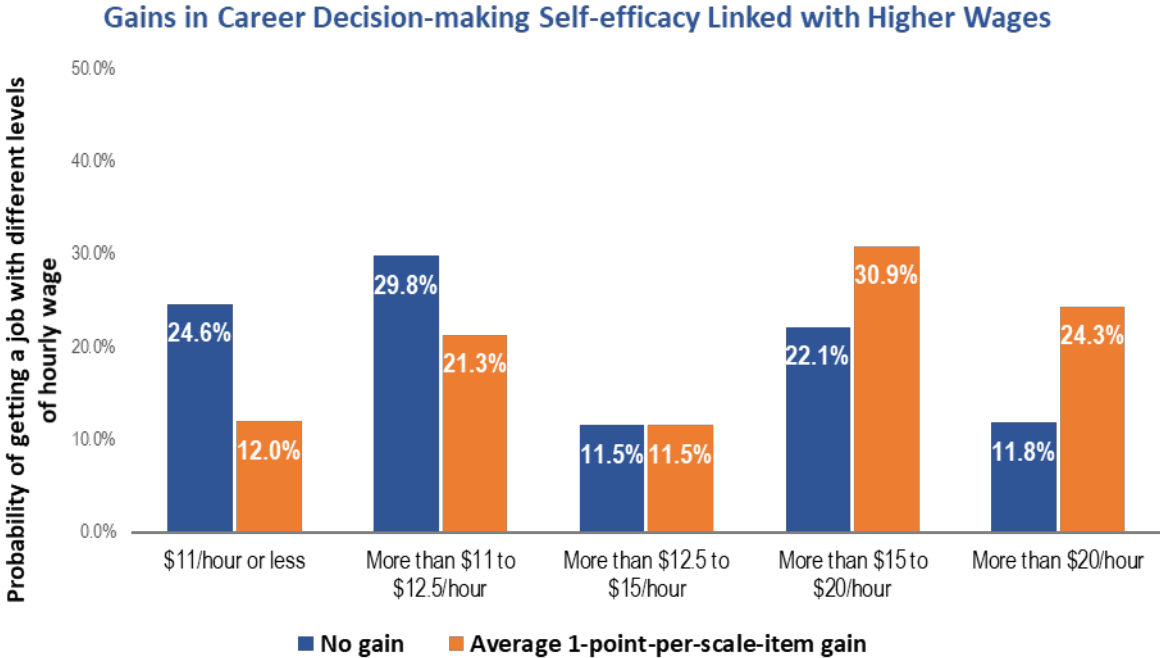
Notes: This figure compares the distributions of hourly wages for participants who have identical average demographic characteristics and average baseline skills, but only differ in their self-reported career decision-making self-efficacy gains. The hourly wage distributions are significantly different at $p < 0.10^*$.

Contextual factors

The tipping point analysis above showed that job seekers who made gains in career adaptability and document use as a result of participating in Foundations were more likely to subsequently find high-wage and high-skilled jobs than demographically identical learners with no gains in these areas.

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However, as documented in the Foundations final report, employment impacts were contingent on participant educational attainment (Palameta, Nguyen, Hui, & Gyarmati, 2016). Notably, though significant average impacts on job skill level and hourly wage were found for the entire sample of job seekers, these average impacts were not equally distributed among the sample – in fact, **the employment impacts of the Foundations program were entirely driven by the subsample of immigrant job seekers with university degrees.**

As shown in Table 3, though the program led to significant impacts for all learners, regardless of educational attainment, on classroom training outcomes such as Essential Skills and career adaptability, only those with university degrees were able to leverage these gains into subsequent employment impacts. The vast majority of university graduates in the sample were internationally trained newcomers, for whom the program may have represented an opportunity to navigate new paths to, or pursue alternative career options in, skills commensurate occupations.

For those with lower levels of educational attainment, the results suggest that more supports are needed. For example, a more demand-led model, focusing on intensive employer engagement and more sector-specific pathways to employment, including facilitated work placements, may lead to better results for this population.

Table 3   Foundations employment impacts vary by level of educational attainment

Impacts on:	University educated	High school or less
Classroom-training outcomes		
Career decision-making self-efficacy; job search self-efficacy	YES	YES
Document use; numeracy; reading	YES	YES
Subsequent employment outcomes		
Rates of high-wage jobs	YES	NO
Rates of skills commensurate employment	YES	NO

Note: Adapted from results reported in Palameta, Nguyen, Hui, & Gyarmati, D.(2016), and Palameta, Dowie, Nguyen, & Gyarmati (2016).

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3.4 SUMMARY AND NEXT STEPS

The analyses conducted for this report summarize evidence from three recent SRDC-led projects on measures of training milestones (tipping points) that are linked to longer-term employment outcomes for a range of different program contexts and target populations. Establishing empirical links between intermediate and longer-term outcomes is a powerful way to validate learning targets and the measures used to track those targets.

The programs examined, and tipping point milestones for each, are summarized below:

1. **Pay for Success**, a sector-based employment training model for lower-skilled job seekers, featuring intensive engagement with a single, large employer in the garment manufacturing industry.

    An organizational needs analysis (ONA) conducted with the employer beforehand showed that job performance expectations and requirements were focused largely on job tasks requiring numeracy, thinking, oral communication skills, and continuous learning skills. The ONA led to the development of an industry-contextualized occupation-specific Essential Skills assessment, to be used by employers to rate learner performance in the workplace. This assessment was also used as a tool/target for employment service providers to customize their classroom-based curriculum to the identified job requirements.

    The analysis revealed that **gains in skills identified as key for job performance – numeracy (objectively-assessed), understanding/thinking/communicating (self-rated), and receptivity to continuous learning (self-rated) – all acted as tipping points to subsequent success in the workplace**.

    In addition, **the occupation-specific Essential Skills assessment employers used to rate trainee performance during work placements also acted as a tipping point milestone to subsequent employment and job retention**.

    Though learners also achieved gains in skills not identified as critical for job performance (e.g., document use), these gains were not linked with subsequent workplace success.

2. **UPSKILL**, a sector-based workplace and career advancement model offering training for lower-skilled employees with multiple employers in the tourism & hospitality sector.

    This model was also based on building a deep understanding of job performance needs, then aligning and customizing the training curriculum to these needs. Trainers were also able to make use of a number of existing sector-specific measures of job performance across a number of domains as targets to inform specific aspects of the curriculum.

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The analysis showed that **gains in objectively-measured document use were tipping points for subsequent certification across a number of domains** that required ongoing consultation of frequently updated workplace documents – e.g., health and safety, sales, and customer relations.

Gains in objectively-assessed numeracy and in a range of self-rated psychosocial measures also acted as tipping points, but for a smaller range of job performance domains.

3. **Foundations**, a career pathfinding and skill upgrading model for those seeking employment in multiple target sectors and occupations.

   This model did not feature engagement with any specific employers. Instead, unemployed clients used a series of tools and resources with instructor assistance to create an inventory of their own skills while also understanding the skill requirements of targeted occupations. The goal was to enable job seekers to shape and refine their career paths, skilling up if necessary to find jobs they are targeting.

   The training model was targeted to achieve gains in career adaptability as a stepping stone to higher quality jobs. Indeed, **observed gains in two types of career adaptability – job search self-efficacy and career decision-making self-efficacy – were both linked with learners' subsequently finding higher–wage jobs.**

   In addition, **gains in objectively-assessed document use and numeracy were also linked with measures of employment success**, namely job skill level, and being employed 12 months after training respectively.

In general, the findings show that for sector-based models, gains in Essential Skills are likely to be tipping points to employment success to the extent that these skills are linked to sector-specific job performance requirements (and that these requirements have been used to inform and customize training). This applies whether the skills are objectively measured such as document use or numeracy, or self-reported such as thinking, communication, or receptivity to continuous learning. Soft skills have been under-investigated, largely because of the relative lack of objective measures of skill gain. Nonetheless, we provide promising evidence that self-reported measures of skill gain can act as reliable predictors of employment success.

For models with no specific target sector, on the other hand, tipping points to employment success tend to be gains in transferable skills – such as career adaptability – that enable job seekers to navigate their ways to a range of possible occupations.

In addition to focusing on tipping points to employment success, we also briefly describe how the measurement of contextual factors may lead to important insights on the suitability of a given program for all those it serves, which in turn can inform recommendations for making

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adaptations to align better with the needs of specific populations for whom outcomes are not as successful.

As programs begin to increasingly define milestone-based pathways and measure outcomes, continued analyses of Essential Skill and other tipping point milestones will help build an important evidence base and inform the prioritization of learning targets and measures suitable for a variety of program objectives, delivery contexts and target populations.

In the next and final report associated with this project, we will offer a state-of-current-knowledge guide to help LES practitioners and policymakers navigate the complex landscape of measurement options and select the most suitable tools for their programs.

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APPENDIX A: PAY FOR SUCCESS – ANALYTICAL APPROACH AND RESULTS

We examined the interconnected relationships among the following milestone outcomes:

- Milestone 1: gains in skills as a direct result of classroom training. These skills include Essential Skills (Numeracy and Document Use) as well as other skills and attitudes related to employability (job search clarity, attitude towards learning, and understanding and thinking);

- Milestone 3: performance on the employer-rated occupation-specific Essential Skills (OSES) assessment in the workplace context; and

- Milestone 5: attainment of the employer-defined productivity standard required for employment.

We used multivariate linear probability models to analyze the predictive validity of indicators captured in earlier milestones with respect to outcomes in later milestones. Particularly:

- We examined how well classroom gains (Milestone 1) work as tipping points in predicting successful labour market attachment (being hired – Milestone 5) (see Table 4, models labelled "Milestone 1 to 5").

- We also examined how well classroom gains (Milestone 1) work as tipping points predicting success at Milestone 3 (transitioning to the work placement and completing the occupation-specific Essential Skills assessment – see models labeled "Milestones 1 to 3" in Table 4 – as well as the performance on that assessment – see models labeled "OSES Scores – Above Median" in Table 4).

- Finally, we looked at how well performance on the OSES assessment worked as a tipping point to predict the likelihood of getting hired (see models labeled "Milestone 3 to 5" in Table 4).

In the multivariate models, we also control for individual characteristics, such as gender, age, education, employment history, immigration status, starting skill level, etc. In doing so, we are effectively asking whether a participant who made a large skill gain (e.g., in numeracy) during the classroom portion of the training would for example go on to score higher on the employer-rated OSES assessment than an otherwise demographically identical participant who made a smaller skill gain.

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Table 4 illustrates skill gain tipping points to workplace success (highlighted in yellow). For example, the panel labeled "Milestones 1 to 3" shows that when demographic and starting skill levels are held constant at the sample average, gains in job search clarity and attitudes towards learning are both significant predictors of transition from classroom to work placement.

In addition, the panel labeled "OSES Scores – Above Median" shows that with everything else held constant, gains in numeracy and attitudes towards learning are both significant classroom-based predictors of performance on the employer-rated OSES assessment. Furthermore, the panel labeled "Milestone 3 to 5" showed that, with everything else held constant, those who scored higher than the sample median on the employer-rated OSES assessment – as well as those who had made gains in self-rated understanding and thinking ability – were significantly more likely to meet employer-defined productivity standards and get hired.

Table 4   Predicting workplace milestone achievements

	Milestone 1 to 5				Milestone 1 to 3				OSES Scores – Above Median				Milestone 3 to 5			
	Numeracy		Document Use		Numeracy		Document Use		Numeracy		Document Use		Numeracy		Document Use	
Gender (Reference: Female)																
Male	-0.232***	(0.083)	-0.237***	(0.079)	-0.167**	(0.077)	-0.176**	(0.078)	-0.127	(0.116)	-0.052	(0.123)	-0.152	(0.105)	-0.185*	(0.103)
Age (Reference: Under 30)																
30 to under 40	-0.060	(0.082)	-0.062	(0.081)	0.005	(0.075)	0.010	(0.075)	0.125	(0.102)	0.108	(0.104)	-0.115	(0.076)	-0.110	(0.074)
40 to under 50	-0.160*	(0.084)	-0.145*	(0.082)	0.019	(0.074)	0.037	(0.074)	0.043	(0.100)	0.033	(0.101)	-0.224***	(0.078)	-0.210***	(0.075)
50 or above	-0.264***	(0.094)	-0.231**	(0.092)	-0.047	(0.081)	-0.028	(0.081)	-0.015	(0.120)	-0.019	(0.122)	-0.288***	(0.093)	-0.268***	(0.092)
Marital status (Reference: Married/Common law)																
Single/Separated/Divorced/Widowed	0.050	(0.073)	0.037	(0.072)	0.037	(0.062)	0.039	(0.062)	0.153*	(0.081)	0.135	(0.085)	0.033	(0.067)	0.004	(0.066)
Presence of young children (Reference: No)																
Yes	0.006	(0.064)	-0.003	(0.065)	0.092*	(0.055)	0.094*	(0.056)	-0.012	(0.072)	-0.017	(0.076)	-0.077	(0.059)	-0.088	(0.058)
Education (Reference: High school or less)																
College	0.182*	(0.093)	0.170*	(0.091)	0.108	(0.087)	0.082	(0.085)	0.040	(0.113)	0.109	(0.114)	0.092	(0.090)	0.074	(0.092)
University	0.000	(0.072)	-0.004	(0.073)	-0.017	(0.065)	-0.028	(0.067)	-0.009	(0.088)	0.060	(0.093)	0.006	(0.071)	-0.017	(0.072)
Other	0.004	(0.080)	-0.008	(0.081)	-0.045	(0.074)	-0.054	(0.073)	-0.003	(0.105)	0.016	(0.108)	0.032	(0.078)	0.006	(0.081)
Employment status (Reference: Unemployed for 1 year or less)																
Unemployed for more than 1 to 3 years	-0.154**	(0.078)	-0.156**	(0.078)	-0.108	(0.073)	-0.105	(0.072)	0.140	(0.100)	0.128	(0.101)	-0.151*	(0.086)	-0.147*	(0.083)
Unemployed for more than 3 years	-0.127	(0.078)	-0.120	(0.077)	-0.119*	(0.070)	-0.129*	(0.067)	-0.020	(0.096)	-0.046	(0.098)	-0.004	(0.081)	0.017	(0.080)
Currently employed	-0.006	(0.070)	-0.013	(0.068)	-0.005	(0.062)	-0.017	(0.062)	0.014	(0.082)	-0.026	(0.081)	0.019	(0.065)	0.013	(0.063)
Language level (Reference: Level 4)																
Level 1	-0.226**	(0.112)	-0.205*	(0.113)	-0.077	(0.107)	-0.036	(0.104)	-0.196	(0.135)	-0.186	(0.137)	-0.148	(0.121)	-0.120	(0.122)
Level 2	-0.066	(0.080)	-0.079	(0.079)	-0.094	(0.073)	-0.101	(0.073)	0.038	(0.091)	-0.003	(0.091)	0.013	(0.069)	0.018	(0.070)
Level 3	-0.098	(0.068)	-0.101	(0.068)	-0.056	(0.060)	-0.056	(0.061)	0.026	(0.080)	0.033	(0.082)	-0.087	(0.066)	-0.080	(0.066)
Aboriginal Canadian	-0.288**	(0.133)	-0.339**	(0.134)	-0.209	(0.127)	-0.214*	(0.123)	-0.155	(0.175)	-0.187	(0.186)	-0.171	(0.159)	-0.208	(0.164)
Non-Aboriginal Canadian	-0.448***	(0.116)	-0.467***	(0.108)	-0.243**	(0.114)	-0.207*	(0.118)	-0.255	(0.185)	-0.171	(0.187)	-0.419***	(0.134)	-0.488***	(0.120)
Job Search Clarity																
Baseline level	0.044	(0.057)	0.028	(0.056)	0.025	(0.051)	0.012	(0.050)	0.009	(0.066)	-0.018	(0.067)	0.045	(0.052)	0.037	(0.052)
Gains	0.070	(0.053)	0.066	(0.052)	0.104**	(0.051)	0.104**	(0.049)	-0.037	(0.064)	-0.056	(0.064)	0.035	(0.055)	0.039	(0.054)
Attitude toward Learning																
Baseline level	-0.016	(0.073)	-0.013	(0.074)	0.042	(0.064)	0.029	(0.066)	0.063	(0.089)	0.110	(0.089)	-0.085	(0.070)	-0.069	(0.071)
Gains	0.106	(0.071)	0.102	(0.071)	0.141**	(0.057)	0.115**	(0.058)	0.144*	(0.081)	0.132	(0.084)	-0.025	(0.071)	-0.016	(0.070)

	Milestone 1 to 5				Milestone 1 to 3				OSES Scores – Above Median				Milestone 3 to 5			
	Numeracy		Document Use		Numeracy		Document Use		Numeracy		Document Use		Numeracy		Document Use	
Thinking and Understanding																
Baseline level	0.029	(0.035)	0.016	(0.034)	0.056*	(0.033)	0.041	(0.031)	-0.037	(0.040)	-0.016	(0.041)	-0.005	(0.033)	-0.003	(0.034)
Gains	0.039	(0.030)	0.035	(0.030)	-0.019	(0.029)	-0.033	(0.028)	0.013	(0.036)	0.024	(0.037)	0.074**	(0.031)	0.083***	(0.031)
Essential skills (Reference: Upper level 1)																
Lower level 1	-0.075	(0.071)	-0.021	(0.082)	-0.084	(0.063)	-0.102	(0.082)	-0.211**	(0.085)	-0.073	(0.108)	-0.027	(0.077)	0.055	(0.097)
Level 2	0.109	(0.073)	0.156**	(0.065)	-0.040	(0.066)	0.088	(0.058)	0.100	(0.085)	0.022	(0.075)	0.164***	(0.061)	0.122**	(0.059)
Level 3 and above	-0.013	(0.092)	0.201*	(0.104)	-0.098	(0.089)	-0.007	(0.094)	0.135	(0.121)	0.011	(0.135)	0.020	(0.087)	0.288***	(0.101)
Essential Skills gains	-0.018	(0.064)	0.001	(0.066)	-0.033	(0.061)	-0.037	(0.063)	0.130*	(0.077)	0.027	(0.080)	0.029	(0.062)	0.045	(0.064)
OSES Scores – Above median													0.249***	(0.059)	0.262***	(0.060)
Missing values	-0.084	(0.082)	-0.066	(0.083)	0.065	(0.070)	0.090	(0.068)	-0.273***	(0.087)	-0.291***	(0.091)	-0.086	(0.087)	-0.080	(0.086)
Cohort 14+ indicator	0.028	(0.058)	0.021	(0.058)	0.160***	(0.051)	0.149***	(0.050)	-0.215***	(0.071)	-0.194***	(0.071)	-0.055	(0.060)	-0.047	(0.059)
Constant	0.804**	(0.362)	0.833**	(0.360)	0.483	(0.298)	0.590**	(0.299)	0.487	(0.428)	0.284	(0.428)	1.166***	(0.354)	1.109***	(0.359)
Observations	327		328		327		328		241		242		241		242	
R-squared	0.192		0.204		0.161		0.169		0.212		0.172		0.313		0.328	

Notes: Statistical significance is denoted as follows: * = 10%, ** = 5%, *** = 1%. Robust standard errors are in parentheses.

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APPENDIX B: FOUNDATIONS – ANALYTICAL APPROACH AND RESULTS

We used multivariate probability models to analyze the predictive validity of the following measures, identifying how well they work as tipping point milestones predicting further success along the employment and learning pathways:

- Each of the four Career Adaptability scales:

    o Career planning

    o Career decision-making self-efficacy

    o Job search clarity

    o Job search self-efficacy

- Each of the following psychosocial scales:

    o Attitude toward learning

    o Future orientation

    o Social networks

- Each of the three Essential Skills:

    o Reading

    o Document Use

    o Numeracy

The types of outcomes indicating further success we examined were:

- Being employed since baseline up to the 12-month follow-up survey

- Being employed at time of the 12-month follow-up survey

- Getting a high-paying job, defined by hourly wage

- Getting a highly skilled job, defined by the second digit of the NOC code of their occupations

The multivariate models also controlled for individual characteristics such as gender, age, education, employment history, immigration status, starting skill level, etc. In doing so, we

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effectively asked whether a participant who made a *large* skill gain during classroom training would be *more* likely to achieve more positive labour market outcomes, e.g., getting a high-paying job 12 months after the program, than an otherwise demographically identical participant who made a *smaller* gain.

For the following dichotomous outcomes, we used linear probability models to predict the likelihood of achieving the desirable outcome:

- Decision to participate in intensive training (yes/no)

- Being employed since baseline up to the 12-month follow-up survey (yes/no)

- Being employed at time of the 12-month follow-up survey (yes/no)

For the following multinomial outcomes, we used ordered logistic regression to predict the distributional probability of being in each category of outcomes:

- Getting a high-paying job, with wages divided into quintiles:

    o $11/hour or less

    o More than $11 to $12.5/hour

    o More than $12.5 to $15/hour

    o More than $15 to $20/hour

    o More than $20/hour

- Getting a highly skilled job, with skill levels divided into four categories

    o Skill level A: University degree

    o Skill level B: Post-secondary degree, non-university

    o Skill level C: High school degree or equivalent

    o Skill level D: No formal education required, on-the-job training only

The tables presented in this Appendix provide the detailed results of the analysis, with significant tipping points to successful employment outcomes highlighted in yellow. For example, Table 7 illustrates that for two demographically identical participants, the one who had a higher gain in numeracy after training would be more likely to be employed at time of follow-up than the one who had a lower gain. Table 8 shows that higher gains in career decision-making self-efficacy

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and job search self-efficacy are both associated with greater likelihood of getting a higher paying job. Similarly, Tables 11 and 13 show that higher gains in job search self-efficacy and document use, respectively, predict greater likelihood of getting a more highly skilled job, even after controlling for key observable individual characteristics such as educational attainment or starting skill scores.

Table 5   Predicting likelihood of having been employed since baseline – Gains in each of the Career Adaptability scales

	Career Planning				Career Decision-making Self-efficacy				Job Search Clarity				Job Search Self-efficacy			
	Ever worked		Currently working		Ever worked		Currently working		Ever worked		Currently working		Ever worked		Currently working	
Gender (Reference: Female)																
Male	0.067	(0.111)	0.246**	(0.096)	0.038	(0.110)	0.199*	(0.103)	0.094	(0.109)	0.232**	(0.103)	0.077	(0.105)	0.231**	(0.098)
Age (Reference: 30 or younger)																
31-40	-0.283*	(0.157)	-0.019	(0.147)	-0.294*	(0.164)	-0.035	(0.159)	-0.317**	(0.150)	-0.043	(0.157)	-0.324**	(0.158)	-0.058	(0.158)
41-50	-0.189	(0.149)	-0.135	(0.148)	-0.212	(0.151)	-0.157	(0.155)	-0.248*	(0.141)	-0.171	(0.156)	-0.242*	(0.145)	-0.176	(0.158)
51 or older	-0.268	(0.188)	-0.236	(0.144)	-0.287	(0.191)	-0.259*	(0.153)	-0.297	(0.179)	-0.262*	(0.153)	-0.326*	(0.181)	-0.289*	(0.154)
Marital status (Reference: Married/Common Law)																
Not married	-0.118	(0.129)	-0.183*	(0.104)	-0.102	(0.135)	-0.174	(0.112)	-0.084	(0.137)	-0.162	(0.115)	-0.100	(0.137)	-0.171	(0.113)
Having children (Reference: No)																
Yes	-0.049	(0.107)	-0.102	(0.106)	-0.029	(0.112)	-0.075	(0.112)	-0.060	(0.103)	-0.092	(0.113)	-0.042	(0.112)	-0.089	(0.112)
Immigration status (Reference: Canadian-born)																
Immigrant	0.051	(0.127)	0.004	(0.117)	0.039	(0.126)	-0.017	(0.118)	0.077	(0.130)	0.001	(0.123)	0.031	(0.129)	-0.029	(0.119)
Educational attainment (Reference: High school or less)																
PSE, non-university	-0.163	(0.147)	0.034	(0.118)	-0.167	(0.146)	0.034	(0.117)	-0.160	(0.147)	0.037	(0.119)	-0.159	(0.146)	0.036	(0.117)
PSE, university degree	0.102	(0.130)	0.228*	(0.126)	0.083	(0.131)	0.205*	(0.119)	0.110	(0.131)	0.221*	(0.121)	0.091	(0.126)	0.208*	(0.116)
Household income (Reference: Under $20,000)																
$20,000 to under $40,000	0.159	(0.129)	0.078	(0.122)	0.164	(0.131)	0.077	(0.122)	0.153	(0.129)	0.075	(0.123)	0.165	(0.129)	0.078	(0.123)
$40,000 or more	-0.106	(0.112)	-0.014	(0.104)	-0.070	(0.112)	0.025	(0.101)	-0.102	(0.108)	0.009	(0.102)	-0.070	(0.112)	0.021	(0.100)
Distance from the labour market (Reference: No work last 3 years)																
Worked for 1.5 years or less	0.400***	(0.119)	0.321***	(0.114)	0.432***	(0.119)	0.345***	(0.120)	0.416***	(0.115)	0.337***	(0.113)	0.431***	(0.116)	0.340***	(0.118)
Worked for more than 1.5 years	0.417***	(0.110)	0.200**	(0.098)	0.429***	(0.115)	0.206**	(0.103)	0.437***	(0.113)	0.214**	(0.102)	0.414***	(0.119)	0.183*	(0.102)
Missing indicator (global)	0.331*	(0.187)	0.092	(0.160)	0.309	(0.186)	0.073	(0.161)	0.297	(0.181)	0.063	(0.157)	0.286	(0.189)	0.065	(0.159)
Career Adaptability indicator																
Baseline	-0.115	(0.075)	-0.121	(0.074)	-0.047	(0.081)	-0.031	(0.076)	-0.062	(0.077)	-0.054	(0.078)	0.026	(0.074)	0.053	(0.069)
Gains	-0.046	(0.059)	-0.041	(0.056)	-0.012	(0.074)	-0.028	(0.081)	0.068	(0.064)	0.012	(0.076)	0.105	(0.076)	0.086	(0.076)
Constant	0.612*	(0.344)	0.468	(0.354)	0.392	(0.350)	0.205	(0.356)	0.389	(0.348)	0.251	(0.352)	0.137	(0.339)	-0.078	(0.318)
Observations	119		119		119		119		119		119		119		119	
R-squared	0.240		0.250		0.225		0.227		0.247		0.234		0.237		0.235	

Notes: Statistical significance is denoted as follows: * = 10%, ** = 5%, *** = 1%. Robust standard errors are in parentheses.

Table 6   Predicting likelihood of having been employed since baseline – Gains in other psychosocial scales

	Attitude toward Learning				Future Orientation				Social Networks			
	Ever worked		Currently working		Ever worked		Currently working		Ever worked		Currently working	
Gender (Reference: Female)												
Male	0.027	(0.104)	0.228**	(0.100)	0.054	(0.103)	0.240**	(0.096)	0.040	(0.105)	0.211**	(0.098)
Age (Reference: 30 or younger)												
31-40	-0.294*	(0.170)	-0.066	(0.166)	-0.327*	(0.170)	-0.060	(0.162)	-0.302*	(0.161)	-0.040	(0.159)
41-50	-0.207	(0.153)	-0.182	(0.161)	-0.228	(0.153)	-0.178	(0.152)	-0.220	(0.146)	-0.164	(0.152)
51 or older	-0.288	(0.192)	-0.292*	(0.165)	-0.340*	(0.195)	-0.329**	(0.159)	-0.303	(0.183)	-0.271*	(0.151)
Marital status (Reference: Married/Common Law)												
Not married	-0.107	(0.133)	-0.189	(0.116)	-0.128	(0.135)	-0.210*	(0.109)	-0.120	(0.133)	-0.181	(0.111)
Having children (Reference: No)												
Yes	-0.030	(0.113)	-0.080	(0.115)	-0.028	(0.115)	-0.079	(0.111)	-0.041	(0.114)	-0.087	(0.116)
Immigration status (Reference: Canadian-born)												
Immigrant	0.027	(0.127)	-0.009	(0.119)	0.035	(0.126)	-0.039	(0.113)	0.031	(0.127)	-0.019	(0.118)
Educational attainment (Reference: High school or less)												
PSE, non-university	-0.167	(0.148)	0.062	(0.118)	-0.148	(0.141)	0.061	(0.114)	-0.160	(0.146)	0.037	(0.118)
PSE, university degree	0.072	(0.136)	0.242**	(0.119)	0.064	(0.127)	0.189*	(0.109)	0.081	(0.128)	0.206*	(0.116)
Household income (Reference: Under $20,000)												
$20,000 to under $40,000	0.164	(0.129)	0.070	(0.124)	0.146	(0.129)	0.067	(0.122)	0.161	(0.131)	0.078	(0.123)
$40,000 or more	-0.071	(0.111)	0.015	(0.100)	-0.090	(0.111)	-0.015	(0.101)	-0.080	(0.114)	0.019	(0.103)
Distance from the labour market (Reference: No work last 3 years)												
Worked for 1.5 years or less	0.414***	(0.118)	0.329***	(0.113)	0.407***	(0.117)	0.344***	(0.113)	0.415***	(0.117)	0.338***	(0.115)
Worked for more than 1.5 years	0.420***	(0.111)	0.178*	(0.098)	0.394***	(0.115)	0.176*	(0.096)	0.415***	(0.113)	0.199**	(0.099)
Missing indicator (global)	0.312*	(0.186)	0.060	(0.154)	0.290	(0.183)	0.054	(0.151)	0.316*	(0.189)	0.074	(0.156)
Psychosocial scales												
Baseline	-0.031	(0.097)	0.107	(0.085)	0.100	(0.074)	0.157**	(0.062)	-0.002	(0.073)	-0.004	(0.065)
Gains	0.008	(0.101)	0.075	(0.101)	0.114	(0.082)	0.098	(0.069)	0.020	(0.065)	0.010	(0.052)
Constant	0.380	(0.448)	-0.318	(0.402)	-0.043	(0.338)	-0.377	(0.333)	0.270	(0.363)	0.117	(0.342)
Observations	119		119		119		119		119		119	
R-squared	0.223		0.237		0.238		0.257		0.223		0.226	

Notes: Statistical significance is denoted as follows: * = 10%, ** = 5%, *** = 1%. Robust standard errors are in parentheses.

Table 7   Predicting likelihood of having been employed since baseline – Gains in each of the three Essential Skills

	Numeracy				Document Use				Reading			
	Ever worked		Currently working		Ever worked		Currently working		Ever worked		Currently working	
Gender (Reference: Female)												
Male	0.138	(0.140)	0.161	(0.126)	0.012	(0.136)	0.052	(0.126)	0.045	(0.126)	0.143	(0.126)
Age (Reference: 30 or younger)												
31-40	-0.113	(0.262)	0.159	(0.219)	-0.284	(0.242)	0.114	(0.203)	-0.252	(0.250)	0.116	(0.235)
41-50	0.080	(0.254)	0.047	(0.213)	-0.142	(0.219)	-0.050	(0.191)	-0.067	(0.214)	-0.011	(0.216)
51 or older	-0.067	(0.308)	-0.108	(0.212)	-0.234	(0.281)	-0.148	(0.195)	-0.187	(0.281)	-0.121	(0.211)
Marital status (Reference: Married/Common Law)												
Not married	-0.085	(0.168)	-0.224*	(0.124)	-0.160	(0.171)	-0.250*	(0.131)	-0.107	(0.157)	-0.231*	(0.117)
Having children (Reference: No)												
Yes	-0.099	(0.165)	-0.162	(0.142)	-0.071	(0.166)	-0.100	(0.135)	-0.076	(0.160)	-0.105	(0.137)
Immigration status (Reference: Canadian-born)												
Immigrant	0.078	(0.170)	0.092	(0.126)	-0.044	(0.175)	-0.005	(0.142)	-0.060	(0.171)	0.054	(0.137)
Educational attainment (Reference: High school or less)												
PSE, non-university	-0.202	(0.199)	-0.190	(0.142)	-0.136	(0.189)	-0.046	(0.138)	-0.150	(0.191)	-0.094	(0.136)
PSE, university degree	0.062	(0.194)	0.020	(0.149)	0.117	(0.194)	0.156	(0.149)	0.158	(0.196)	0.109	(0.157)
Household income (Reference: Under $20,000)												
$20,000 to under $40,000	0.158	(0.148)	0.119	(0.146)	0.091	(0.171)	-0.015	(0.148)	0.127	(0.157)	0.064	(0.143)
$40,000 or more	0.032	(0.122)	0.029	(0.114)	-0.042	(0.133)	-0.070	(0.120)	0.022	(0.128)	0.008	(0.118)
Distance from the labour market (Reference: Did not work past 3 years)												
Worked for 1.5 years or less	0.555***	(0.134)	0.318**	(0.130)	0.513***	(0.137)	0.260**	(0.129)	0.559***	(0.132)	0.290**	(0.130)
Worked for more than 1.5 years	0.539***	(0.127)	0.188	(0.120)	0.560***	(0.129)	0.188	(0.119)	0.551***	(0.125)	0.188*	(0.110)
Essential Skills												
Baseline scores	-0.001	(0.001)	0.001	(0.001)	-0.001	(0.001)	0.001	(0.001)	-0.003**	(0.001)	0.000	(0.001)
Gains	0.131	(0.117)	0.237**	(0.108)	-0.151	(0.132)	-0.162	(0.151)	-0.126	(0.123)	-0.027	(0.117)
Missing indicator (global)	0.257	(0.185)	0.009	(0.191)	0.066	(0.209)	-0.140	(0.193)	0.067	(0.175)	-0.093	(0.156)
Constant	0.216	(0.362)	-0.247	(0.315)	0.603	(0.440)	0.171	(0.474)	1.065**	(0.486)	0.176	(0.490)
Observations	88		88		88		88		89		89	
R-squared	0.308		0.272		0.272		0.285		0.316		0.239	

Notes: Statistical significance is denoted as follows: * = 10%, ** = 5%, *** = 1%. Robust standard errors are in parentheses.

Table 8   Predicting likelihood of having a higher paying job – Gains in each of the Career Adaptability scales (ordered logistic regressions)

	Career Planning		Career Decision-making Self-efficacy		Job Search Clarity		Job Search Self-efficacy	
Gender (Reference: Female)								
Male	1.131	(0.809)	1.169	(0.886)	1.255	(0.922)	0.898	(0.764)
Age (Reference: 30 or younger)								
31-40	0.490	(1.037)	0.036	(1.078)	0.240	(1.186)	0.106	(1.056)
41-50	0.465	(0.984)	-0.007	(0.962)	0.270	(1.047)	0.259	(0.919)
51 or older	0.009	(1.004)	-0.782	(1.097)	-0.063	(1.074)	-0.538	(0.997)
Marital status (Reference: Married/Common Law)								
Not married	-0.754	(1.065)	-1.227	(1.175)	-0.721	(1.163)	-0.843	(1.099)
Having children (Reference: No)								
Yes	-0.772	(0.805)	-1.021	(0.772)	-0.837	(0.836)	-0.876	(0.800)
Immigration status (Reference: Canadian-born)								
Immigrant	0.007	(0.597)	-0.402	(0.713)	0.129	(0.603)	-0.336	(0.660)
Educational attainment (Reference: High school or less)								
PSE, non-university	0.133	(0.714)	0.660	(0.768)	0.196	(0.743)	0.465	(0.734)
PSE, university degree	0.821	(0.801)	1.084	(0.734)	0.911	(0.745)	1.110	(0.830)
Household income (Reference: Under $20,000)								
$20,000 to under $40,000	0.656	(0.841)	0.486	(0.762)	0.685	(0.815)	0.561	(0.788)
$40,000 or more	0.711	(1.051)	0.601	(0.995)	0.676	(1.000)	0.580	(0.944)
Distance from the labour market (Reference: Did not work past 3 years)								
Worked for 1.5 years or less	0.756	(1.000)	0.946	(0.936)	0.931	(1.010)	1.086	(0.969)
Worked for more than 1.5 years	1.069	(1.051)	1.040	(0.971)	1.157	(0.967)	1.046	(0.909)
Missing indicator (global)	1.460	(0.925)	1.676*	(0.907)	1.520*	(0.914)	1.726*	(1.043)
Career Adaptability scales								
Baseline	0.143	(0.458)	1.080*	(0.558)	0.257	(0.570)	1.085**	(0.423)
Gains	0.256	(0.378)	0.875*	(0.472)	0.544	(0.490)	0.945**	(0.431)
Constant cut 1	2.272	(2.358)	4.999*	(2.579)	3.009	(2.806)	5.139**	(2.469)
Constant cut 2	3.492	(2.347)	6.297**	(2.549)	4.255	(2.756)	6.453***	(2.456)
Constant cut 3	3.960*	(2.346)	6.782***	(2.540)	4.736*	(2.755)	6.960***	(2.441)
Constant cut 4	5.278**	(2.386)	8.125***	(2.520)	6.068**	(2.743)	8.346***	(2.452)
Observations	71		71		71		71	

1)   Notes: Statistical significance is denoted as follows: * = 10%, ** = 5%, *** = 1%. Robust standard errors are in parentheses.

Table 9   Predicting likelihood of having a higher paying job – Gains in other psychosocial scales (ordered logistic regressions)

	Attitude towards Learning		Future Orientation		Social Networks	
Gender (Reference: Female)						
Male	1.041	(0.764)	1.362*	(0.761)	0.979	(0.759)
Age (Reference: 30 or younger)						
31-40	0.509	(1.032)	0.055	(1.098)	0.477	(1.003)
41-50	0.469	(0.994)	-0.054	(1.125)	0.341	(0.993)
51 or older	0.128	(1.026)	-0.895	(1.059)	0.110	(0.919)
Marital status (Reference: Married/Common Law)						
Not married	-0.732	(1.088)	-1.209	(1.160)	-0.604	(1.018)
Having children (Reference: No)						
Yes	-0.775	(0.879)	-0.519	(0.916)	-0.697	(0.829)
Immigration status (Reference: Canadian-born)						
Immigrant	-0.026	(0.573)	-0.266	(0.730)	0.025	(0.592)
Educational attainment (Reference: High school or less)						
PSE, non-university	0.107	(0.688)	0.271	(0.813)	0.044	(0.688)
PSE, university degree	0.967	(0.812)	0.742	(0.825)	0.879	(0.777)
Household income (Reference: Under $20,000)						
$20,000 to under $40,000	0.716	(0.841)	0.474	(0.904)	0.581	(0.880)
$40,000 or more	0.709	(0.972)	0.517	(0.998)	0.722	(1.011)
Distance from the labour market (Reference: Did not work past 3 years)						
Worked for 1.5 years or less	0.805	(0.976)	1.061	(1.061)	0.951	(1.036)
Worked for more than 1.5 years	1.117	(0.998)	1.010	(1.182)	1.126	(1.062)
Missing indicator (global)	1.535	(0.945)	1.255	(1.057)	1.565	(0.975)
Psychosocial scales						
Baseline	0.269	(0.465)	1.484**	(0.654)	0.399	(0.396)
Gains	0.365	(0.519)	1.146	(0.773)	0.360	(0.373)
Constant cut 1	2.922	(2.635)	6.129**	(3.105)	3.201	(2.447)
Constant cut 2	4.140	(2.623)	7.447**	(3.154)	4.431*	(2.429)
Constant cut 3	4.608*	(2.644)	7.933**	(3.151)	4.902**	(2.429)
Constant cut 4	5.928**	(2.629)	9.301***	(3.152)	6.227**	(2.436)
Observations	71		71		71	

Notes: Statistical significance is denoted as follows: * = 10%, ** = 5%, *** = 1%. Robust standard errors are in parentheses.

Table 10 Predicting likelihood of having a higher paying job – Gains in each of the three Essential Skills

	Numeracy				Document Use				Reading			
	Higher wages (qualitative)		Above quintile 3 (quantitative)		Higher wages (qualitative)		Above quintile 3 (quantitative)		Higher wages (qualitative)		Above quintile 3 (quantitative)	
Gender (Reference: Female)												
Male	0.675	(0.741)	0.149	(0.215)	0.538	(0.635)	0.133	(0.199)	0.836	(0.560)	0.217	(0.178)
Age (Reference: 30 or younger)												
31-40	0.747	(1.561)	0.016	(0.447)	1.051	(1.145)	0.178	(0.371)	1.177	(1.247)	0.209	(0.405)
41-50	0.923	(1.536)	0.087	(0.455)	1.327	(1.041)	0.280	(0.342)	1.258	(1.230)	0.271	(0.393)
51 or older	0.949	(1.282)	0.181	(0.368)	1.255	(0.833)	0.333	(0.267)	1.172	(1.017)	0.321	(0.320)
Marital status (Reference: Married/Common Law)												
Not married	0.501	(0.964)	-0.001	(0.303)	0.448	(0.945)	0.023	(0.294)	0.233	(0.982)	-0.021	(0.309)
Having children (Reference: No)												
Yes	-0.393	(0.679)	-0.107	(0.207)	-0.355	(0.661)	-0.053	(0.205)	-0.077	(0.784)	0.045	(0.248)
Immigration status (Reference: Canadian-born)												
Immigrant	-0.103	(0.572)	-0.175	(0.211)	-0.069	(0.610)	-0.190	(0.220)	0.181	(0.541)	-0.097	(0.203)
Educational attainment (Reference: High school or less)												
PSE, non-university	-0.238	(0.773)	0.050	(0.294)	0.128	(0.781)	0.190	(0.283)	-0.150	(0.786)	0.099	(0.295)
PSE, university degree	0.989	(0.764)	0.319	(0.280)	1.228	(0.760)	0.450	(0.270)	0.495	(0.774)	0.202	(0.290)
Household income (Reference: Under $20,000)												
$20,000 to under $40,000	0.518	(0.768)	0.144	(0.245)	0.006	(0.791)	-0.033	(0.244)	0.087	(0.706)	-0.011	(0.254)
$40,000 or more	0.761	(0.795)	0.204	(0.237)	0.450	(0.813)	0.117	(0.248)	0.432	(0.749)	0.114	(0.255)
Distance from the labour market (Reference: Did not work past 3 years)												
Worked for 1.5 years or less	1.485**	(0.680)	0.303	(0.187)	1.475**	(0.610)	0.327	(0.202)	1.358**	(0.660)	0.277	(0.209)
Worked for more than 1.5 years	1.657*	(0.841)	0.412	(0.270)	1.592**	(0.782)	0.401	(0.279)	1.415*	(0.756)	0.319	(0.269)
Essential Skills												
Baseline scores	0.005	(0.006)	0.002	(0.002)	0.007	(0.007)	0.001	(0.002)	0.014*	(0.008)	0.003	(0.003)
Gains	0.030	(0.630)	0.012	(0.209)	-0.471	(0.822)	-0.250	(0.234)	0.439	(0.872)	0.021	(0.285)
Missing indicator (global)	0.531	(0.819)	0.015	(0.267)	0.347	(0.835)	-0.026	(0.258)	0.423	(0.848)	0.004	(0.272)
Constant	-2.254	(1.979)	-0.688	(0.677)	-2.691	(2.463)	-0.555	(0.756)	-4.541**	(2.106)	-1.175*	(0.672)
Observations	47		47		47		47		47		47	
R-squared	0.347		0.297		0.393		0.330		0.389		0.312	

Notes: Statistical significance is denoted as follows: * = 10%, ** = 5%, *** = 1%. Robust standard errors are in parentheses.

Table 11   Predicting likelihood of having a high-skilled job – Gains in each of Career Adaptability scales (ordered logistic regressions)

	Career Planning		Career Decision-making Self-efficacy		Job Search Clarity		Job Search Self-efficacy	
Gender (Reference: Female)								
Male	0.707	(0.904)	0.476	(0.911)	0.416	(0.909)	0.292	(0.858)
Age (Reference: 30 or younger)								
31-40	0.798	(1.180)	0.358	(1.114)	0.620	(1.174)	0.180	(1.080)
41-50	0.690	(1.238)	0.149	(1.171)	0.440	(1.263)	0.139	(1.079)
51 or older	1.198	(1.162)	0.739	(1.106)	1.093	(1.200)	0.559	(1.142)
Marital status (Reference: Married/Common Law)								
Not married	0.817	(0.868)	0.844	(0.884)	1.006	(0.903)	1.056	(0.844)
Having children (Reference: No)								
Yes	0.530	(0.732)	0.562	(0.785)	0.610	(0.815)	0.745	(0.798)
Immigration status (Reference: Canadian-born)								
Immigrant	0.677	(0.713)	0.339	(0.723)	0.394	(0.763)	0.228	(0.746)
Educational attainment (Reference: High school or less)								
PSE, non-university	-0.465	(0.944)	-0.287	(1.048)	-0.572	(0.992)	-0.137	(1.171)
PSE, university degree	1.608**	(0.685)	1.694**	(0.663)	1.621**	(0.706)	1.859***	(0.710)
Household income (Reference: Under $20,000)								
$20,000 to under $40,000	0.639	(0.755)	0.689	(0.738)	0.838	(0.738)	0.664	(0.751)
$40,000 or more	0.848	(0.979)	1.206	(0.896)	1.245	(0.911)	1.146	(0.892)
Distance from the labour market (Reference: Did not work past 3 years)								
Worked for 1.5 years or less	-0.630	(0.886)	-0.354	(0.901)	-0.500	(0.904)	-0.231	(0.918)
Worked for more than 1.5 years	0.016	(1.051)	0.062	(0.995)	0.112	(1.003)	0.055	(0.923)
Missing indicator (global)	1.016	(2.344)	1.323	(2.724)	1.239	(2.333)	1.130	(2.600)
Career Adaptability scales								
Baseline	-0.446	(0.405)	0.337	(0.597)	-0.287	(0.509)	0.662	(0.474)
Gains	0.146	(0.416)	0.483	(0.442)	-0.082	(0.392)	0.858*	(0.460)
Constant cut 1	0.965	(3.419)	3.606	(4.278)	1.492	(3.778)	4.568	(3.609)
Constant cut 2	2.762	(3.478)	5.377	(4.362)	3.243	(3.843)	6.395*	(3.698)
Constant cut 3	4.335	(3.500)	6.928	(4.394)	4.774	(3.863)	7.986**	(3.738)
Observations	71		71		71		71	

Notes: Statistical significance is denoted as follows: * = 10%, ** = 5%, *** = 1%. Robust standard errors are in parentheses.

Table 12   Predicting likelihood of having a high-skilled job – Gains in other psychosocial scales (ordered logistic regressions)

|	Attitude towards Learning		Future Orientation		Social Networks	
Gender (Reference: Female)						
Male	0.268	(0.867)	0.500	(0.867)	0.249	(0.824)
Age (Reference: 30 or younger)						
31-40	0.550	(1.182)	0.139	(1.109)	0.419	(1.038)
41-50	0.336	(1.203)	-0.025	(1.218)	0.057	(1.135)
51 or older	1.070	(1.282)	0.400	(1.264)	0.935	(1.108)
Marital status (Reference: Married/Common Law)						
Not married	1.047	(0.908)	0.781	(0.921)	1.203	(0.809)
Having children (Reference: No)						
Yes	0.692	(0.824)	0.871	(0.833)	0.870	(0.690)
Immigration status (Reference: Canadian-born)						
Immigrant	0.376	(0.715)	0.372	(0.842)	0.480	(0.709)
Educational attainment (Reference: High school or less)						
PSE, non-university	-0.500	(1.054)	-0.336	(1.177)	-0.432	(1.038)
PSE, university degree	1.653**	(0.721)	1.570**	(0.695)	1.801**	(0.721)
Household income (Reference: Under $20,000)						
$20,000 to under $40,000	0.852	(0.732)	0.692	(0.712)	0.553	(0.785)
$40,000 or more	1.303	(0.888)	1.221	(0.940)	1.200	(0.986)
Distance from the labour market (Reference: Did not work past 3 years)						
Worked for 1.5 years or less	-0.386	(0.969)	-0.464	(0.900)	-0.289	(0.889)
Worked for more than 1.5 years	0.174	(1.017)	-0.115	(1.127)	0.026	(1.083)
Missing indicator (global)	1.280	(2.403)	1.135	(2.746)	1.308	(2.641)
Attitude toward Learning						
Baseline	-0.008	(0.567)	0.860	(0.562)	0.708**	(0.341)
Gains	0.198	(0.733)	0.761	(0.658)	0.638	(0.389)
Constant cut 1	2.561	(3.530)	5.047	(3.857)	4.913	(3.308)
Constant cut 2	4.309	(3.646)	6.834*	(3.986)	6.735**	(3.423)
Constant cut 3	5.836	(3.668)	8.397**	(4.026)	8.319**	(3.446)
Observations	71		71		71	

Notes: Statistical significance is denoted as follows: * = 10%, ** = 5%, *** = 1%. Robust standard errors are in parentheses.

Table 13   Predicting likelihood of having a high-skilled job – Gains in each of the three Essential Skills

	Numeracy				Document Use				Reading			
	Qualitative		NOC A (Quantitative)		Qualitative		NOC A (Quantitative)		Qualitative		NOC A (Quantitative)	
Gender (Reference: Female)												
Male	0.085	(0.416)	0.011	(0.174)	0.206	(0.343)	0.116	(0.157)	0.381	(0.373)	0.117	(0.172)
Age (Reference: 30 or younger)												
31-40	0.299	(0.679)	-0.065	(0.262)	0.714	(0.583)	0.066	(0.254)	0.955	(0.716)	0.178	(0.314)
41-50	0.309	(0.639)	-0.201	(0.272)	0.892*	(0.497)	-0.006	(0.240)	1.006	(0.687)	0.058	(0.320)
51 or older	0.405	(0.695)	0.011	(0.228)	0.883	(0.612)	0.181	(0.232)	0.961	(0.705)	0.223	(0.261)
Marital status (Reference: Married/Common Law)												
Not married	0.621	(0.474)	0.123	(0.225)	0.778*	(0.445)	0.218	(0.201)	0.749	(0.542)	0.196	(0.263)
Having children (Reference: No)												
Yes	0.149	(0.459)	0.108	(0.143)	0.253	(0.483)	0.144	(0.160)	0.574	(0.487)	0.268	(0.169)
Immigration status (Reference: Canadian-born)												
Immigrant	0.048	(0.423)	-0.078	(0.183)	0.341	(0.424)	0.104	(0.176)	0.301	(0.401)	-0.001	(0.188)
Educational attainment (Reference: High school or less)												
PSE, non-university	0.221	(0.403)	-0.185	(0.156)	0.307	(0.411)	-0.248	(0.168)	0.310	(0.459)	-0.136	(0.182)
PSE, university degree	0.835*	(0.429)	0.313	(0.212)	0.785*	(0.441)	0.186	(0.208)	0.617	(0.542)	0.274	(0.264)
Household income (Reference: Under $20,000)												
$20,000 to under $40,000	0.015	(0.524)	0.092	(0.212)	-0.220	(0.531)	0.099	(0.206)	-0.309	(0.494)	-0.034	(0.173)
$40,000 or more	0.457	(0.492)	0.043	(0.199)	0.479	(0.511)	0.150	(0.196)	0.390	(0.461)	0.033	(0.213)
Distance from the labour market (Reference: Did not work past 3 years)												
Worked for 1.5 years or less	-0.124	(0.724)	-0.100	(0.278)	-0.074	(0.795)	-0.078	(0.313)	-0.091	(0.719)	-0.077	(0.277)
Worked for more than 1.5 years	0.031	(0.721)	0.012	(0.282)	-0.093	(0.798)	-0.054	(0.307)	-0.179	(0.741)	-0.063	(0.281)
Essential Skills												
Baseline scores	0.006**	(0.003)	0.002**	(0.001)	0.008*	(0.004)	0.003	(0.002)	0.007	(0.006)	0.002	(0.003)
Gains	0.027	(0.369)	0.055	(0.186)	0.181	(0.474)	0.322*	(0.180)	0.084	(0.577)	-0.011	(0.305)
Missing indicator (global)	-0.301	(0.954)	-0.071	(0.324)	0.011	(0.933)	0.164	(0.341)	-0.072	(0.865)	0.013	(0.291)
Constant	-0.284	(1.655)	-0.497	(0.695)	-1.790	(2.110)	-1.333	(0.796)	-1.471	(2.018)	-0.698	(0.874)
Observations	47		47		47		47		47		47	
R-squared	0.415		0.334		0.414		0.348		0.377		0.288	

Notes: Statistical significance is denoted as follows: * = 10%, ** = 5%, *** = 1%. Robust standard errors are in parentheses.
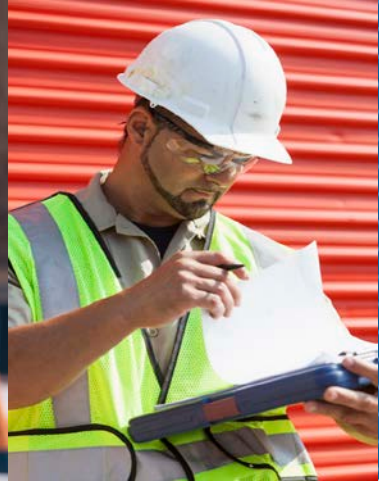
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