



Pay for Performance in Manufacturing

Evaluation Report

June 2, 2023

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This report was produced as part of a project funded by the Future Skills Centre (FSC), with financial support from the Government of Canada's Future Skills Program.

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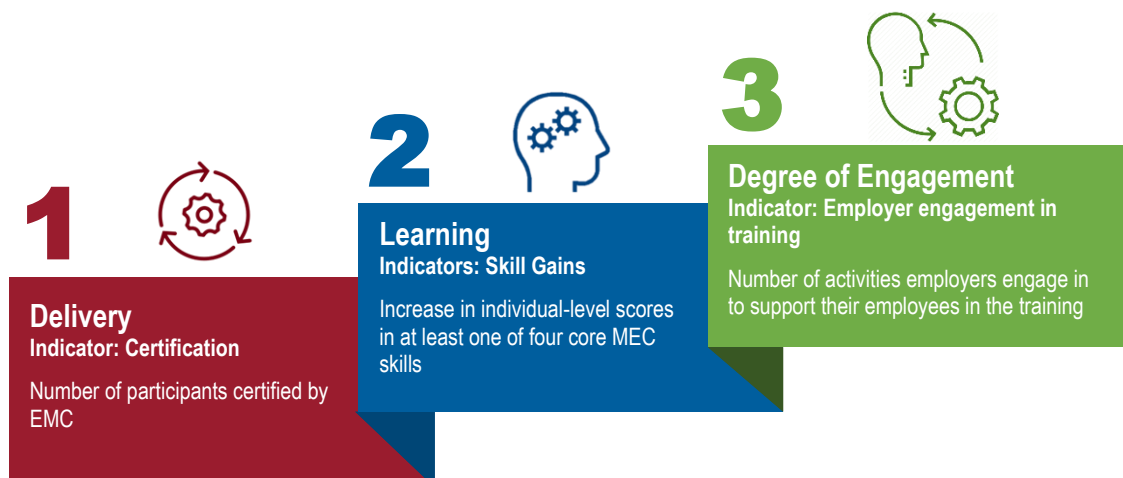
EXECUTIVE SUMMARY

The Pay-for-Performance (PFP) in Manufacturing pilot project is a collaborative research project between the Social Research and Demonstration Corporation (SRDC) and Excellence in Manufacturing Consortium (EMC). With funding from the Government of Canada's Future Skills Centre, SRDC and EMC piloted the PFP model in support of the MEC training program, starting in January 2021, and ending in March 2023.

For many employers, the costs to train their workers limit their ability to train their workforce, despite training needs. In fact, EMC's research found that many Canadian manufacturers are not making the necessary investments to improve workers' skills. The PFP model provides an outcomes-based mechanism for partially reimbursing participating employers for the costs incurred through the program. The model incentivizes employers—the primary risk-bearer—to achieve better results. The model itself was designed in part to respond to barriers that prevent employers from making the necessary investments in training

PFP Model Design

The PFP model was designed through an iterative process, following a series of consultations with employers in the manufacturing sector, discussions with EMC, and a review of best practices in the design and implementation of PFP models. The finalized model included three outcomes: Delivery of the program (measured by the number of MEC participants who are certified at the end of the training), Learning (measured by the number of MEC participants who demonstrate skill gains in at least one of four core MEC skills), and Degree of Engagement (the number of supportive activities employers or supervisors complete throughout the training).



PFP Reimbursement Formula

The PFP reimbursement formula was designed to include the **direct program costs** paid by employers (\$3,000) plus a measure of **productivity loss** (\$30 per hour for 40 hours of training, equivalent to \$1,200 per participant).

Direct program costs		Productivity loss
\$3,000	+	\$1,200*
\$4,200		
X 50%	=	\$2,100
Maximum Reimbursement Amount (MRA) per participant		

The partial reimbursement rate was set at 50%. However, when the productivity loss is considered, employers could receive up to 70% of their direct costs. The maximum reimbursement amount (MRA) per participant is \$2,100.

Each indicator of success (e.g., certification, skill gains, employer engagement) was weighted equally in the formula. Therefore, each outcome was worth a third of the MRA (i.e., \$700) when the threshold for reimbursement was met.

Methodology

SRDC designed an evaluation plan that included an assessment of the funding model's implementation, an assessment of the MEC program's outcomes as they relate to the PFP model, and an assessment of the PFP outcomes. EMC recruited 55 companies to participate in the PFP pilot, enrolling a total of 203 individual participants in the MEC program. Nearly all employers had participated in an EMC program in the past.

In addition, EMC and SRDC designed the Motivations and Engagement of Employers in Training (MEET) study. The voluntary survey was embedded within EMC's annual ManufacturingGPS labour market information (LMI) study and was responded to by 748 employers.

Reimbursement statistics

The total reimbursement paid to employers amounted to \$395,500, for a difference of \$30,800 from the total eligible amount. The average reimbursement amount per participant was \$1,948, corresponding to 65% of the initial registration cost per worker (\$3,000), slightly lower than the 70% eligible reimbursement rate.

The reimbursement rate and amounts by milestone are presented in the table below.

Milestone 1		Milestone 2		Milestone 3	
Success rate	Total Reimbursed	Success rate	Total Reimbursed	Success rate	Total Reimbursed
96%	\$136,500	87%	\$123,200	96%	\$135,800

Implementation research findings

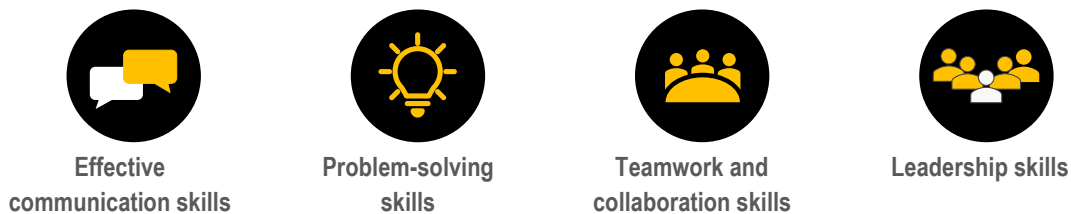
The PFP pilot project was launched in January 2021, following a four-month delay due to the COVID-19 pandemic. SRDC sought and obtained a one-year extension for the project, which allowed the last training session to end in December 2022 and the last reimbursements to be issued to employers in March 2023. Throughout the pilot, SRDC and EMC documented factors that affected the success of the pilot, with highlights listed below:

- Familiarity with wage subsidies and other training incentives had a positive effect on employers' reaction to the PFP funding model.
- The financial registration process was far more time intensive for companies and SRDC than initially anticipated.
- The complexity of the model affected employer engagement throughout the project, and increased the level of effort of both EMC and SRDC staff.
- Despite efforts on the part of EMC staff, there was confusion among employers around the reimbursement amounts, the fact that they would not necessarily receive the maximum reimbursement amount, and when they would receive their reimbursement.
- EMC staff estimated that the administrative effort to implement the PFP model required twice the time they had spent organizing the national MEC pilot.
- SRDC and EMC received push-back from stakeholders regarding the use of participant skills gains—measured using evaluation surveys—in the PFP model for ethical reasons (i.e., the right not to answer evaluation surveys).
- EMC staff noticed a marked difference in employer behaviours when the company's money was at stake: there was greater engagement and more motivation to succeed.

Outcomes evaluation

MEC training program

The soft skills section of the survey includes 20 items, combining measures of communication, leadership, teamwork, and problem-solving skills. These skills were identified by EMC and by employers participating in the program as being the key outcomes of the program, consistent across all MEC streams. They are referred to as the four core MEC skills.



A paired t-test was conducted to compare participants' average self-assessed skills across the four core MEC skills between baseline and follow-up. The results indicate a **statistically significant increase in participants' core MEC skills** in all four areas, suggesting that the training was effective in improving participants' skills.

The analysis also found statistically significant increases in participants' psychological capital and their attitudes towards work after the training. However, no significant differences were found in participants' earnings nor their access to employers-provided benefits.

MEET Study

The purpose of the MEET study was to collect information regarding employer experiences with workplace training, their motivation to train, and the barriers that prevent employers from accessing or investing in training. The MEET study was combined with EMC's annual ManufacturingGPS labour market information (LMI) study. Overall, 748 manufacturing employers completed the voluntary survey.

Findings from the MEET study confirm that employers understand their responsibility to train their workers but are looking for financial support to make the necessary investments.

Among the three items that are most likely to affect future investments in training, two are related to the costs of training. Over half of respondents (56 per cent) agreed or strongly agreed that the indirect costs of training—the productivity loss due to pulling workers off the production line—is a strong disincentive to invest in training, while 42 per cent believe that the costs of training are too high.

The MEET study findings suggest that most employers do not see training programs as aligning close enough with the specific needs of their workplace. This finding is important for training organizations such as EMC: The stronger the alignment, the more likely employers will invest in training.

Outcomes from the PFP Pilot

As part of our evaluation, SRDC sought to document why employers signed up for the pilot, the extent to which employers were satisfied with the model, its reimbursement levels, and its various elements.

The most reported reason for participating in the PFP pilot was interest in the MEC training. Employers reported high levels of satisfaction with the various features of the PFP model. All were either satisfied or very satisfied with the total reimbursement amount. An equivalent proportion of employers (95 per cent) were either satisfied or very satisfied with the model overall, the documentation explaining the model, and the metrics used to measure success. Satisfaction with the frequency of reimbursements was slightly lower at 85 per cent.

Importantly, no employer indicated being dissatisfied with the PFP model.

Findings show that, following their participating in the PFP pilot, nearly all employers agree or strongly agree that they are more likely to invest in training in the future (91 per cent) and more likely to offer training programs (93 per cent).

Lessons Learned

Lessons from MEC for other training programs

- The MEC training program increases participants skills
- Targeting lower-skilled workers should be a priority for future programs
- Applied learning is the key to the MEC program's success
- Understanding the long-term effects of training requires a longer timeframe
- Engaging employers can increase future participation in training

Lessons for future PFP models in Canada

- Ensuring the reliability and objectivity of outcomes-based model is crucial

- Reliably measuring soft skills remains a challenge
- Ensure that results can be validated
- Ensure a clear risk-responsibility relationship
- Communication and engagement with employers are key to the success of a PFP model

Lessons for policymakers

- Employers consider workforce training to be a shared responsibility, but PFP is not necessarily the preferred option

INTRODUCTION

Excellence in Manufacturing Consortium (EMC) has been working to ensure that manufacturing companies across Canada have access to relevant training programs to enhance the skills of their workforce and increase the competitiveness of the sector overall. EMC's suite of programs was designed according to best practices and its curricula were customized to meet the needs of its employers, culminating in its flagship program, the Manufacturing Essentials Certification (MEC) program.

The MEC program was piloted from 2018 to 2021, with funding from Employment and Social Development Canada (ESDC)¹. The Social Research and Demonstration Corporation (SRDC) conducted the evaluation of this pilot, in which training costs were covered by ESDC for up to 500 participants. With great enthusiasm from employers across the sector, all 500 spots were filled and EMC's capacity for delivering the training was expanded.

During this pilot, EMC heard from employers that the *availability* of these programs does not necessarily make them *accessible* to all manufacturing companies. The direct and indirect costs (e.g., productivity loss by removing workers from the production line) are real constraints on small employers. Without knowing the return on investment of the training program, the financial risk borne by employers was often too high and they opted not to train.

EMC and SRDC collaborated to design a pay-for-performance (PFP) framework to reward success, encourage investment in training, and provide both governments and industry with evidence that could inform the development and implementation of similar outcomes-based funding models in support of customized training programs. The original model was refined several times sector over a period of three years following consultations with employers across the manufacturing. The final model incorporated incentives that would respond to the financial barriers faced by employers as well as other barriers identified in the literature and in consultations with employers.

With funding from the Government of Canada's Future Skills Centre, SRDC and EMC piloted the PFP model in support of the MEC training program, starting in January 2021, and ending in March 2023.

In support of the PFP pilot, SRDC also worked with EMC to design a sector-wide LMI study on a range of topics seeking to understand their preferences for funding models and their degree of

¹ The MEC pilot 2018-2021 is referred to as the "National MEC Pilot" in this report to differentiate it from the PFP pilot.

engagement in training programs, titled the Motivations and Engagement of Employers in Training (or MEET study).

This final report on the PFP project includes a review of outcomes-based funding models, an overview of the process for designing the PFP model and the underlying theory of change, and a description of EMC's MEC training program. We also provide an overview of the research methodology, followed by findings from the implementation research and the outcomes evaluation. Finally, these findings culminate in a series of lessons learned to inform the implementation of future PFP models and to guide policy makers seeking to provide funding for sector-based training programs.

PROJECT RATIONALE

From 2018 to 2020, the Office of Literacy and Essential Skills (OLES) funded a national pilot of the Manufacturing Essentials Certification program for up to 500 participants. Employers could participate in the program without having to pay any direct costs.

Following the national MEC pilot, EMC intended to continue delivering its MEC programs to manufacturers across Canada, but employers would be expected to pay for the costs of the training, set at \$3,000 per participant. For many employers, these costs are a barrier to training, limiting their ability to train their workforce, despite training needs.

In fact, EMC's research found that many Canadian manufacturers are not making the necessary investments to improve workers' skills. Results from a 2017 EMC survey found that only 51% of employers offered workplace training in essential skills and 8% in literacy. Most employers preferred investing in training programs that satisfied regulatory requirements, such as occupational health and safety trainings, or technical skills training.

Employers face a number of barriers that prevent them from investing in workplace training programs including:

- Insufficient evidence of the training's effectiveness;
- Costs and risks of financial loss as the benefit of the training to the company is uncertain;
- Productivity loss when removing workers from the production line; and
- Relevance of the content to the needs of the firm and the participants selected for the training.

To sustain the MEC training program beyond the fully funded pilot, EMC asked SRDC to design a Pay for Performance (PFP) model. The PFP model provides an outcomes-based mechanism for partially reimbursing participating employers for the costs incurred through the program. The model incentivizes employers—the primary risk-bearer—to achieve better results.

In a review of existing pay for performance (PFP) models, SRDC found that PFP funding models are attractive to policy-makers due to their ability to increase efficiency and maximize the return on investment to employers. Previous studies have demonstrated that, when implemented correctly, outcomes-based funding agreements can increase efficiency, reduce costs, and increase the success of the program (Beeck Center, 2014).

Some models have been shown to provide an incentive to improve program delivery by keeping service providers accountable for their own performance in the delivery and implementation of the program (Palameta et al., 2014). Furthermore, by focusing on results rather than compliance, PFP funding models can help stimulate innovation and provide stakeholders with incentives to ensure success (Palameta et al., 2014).

PROJECT OBJECTIVES

Ultimately, the PFP in Manufacturing pilot project was developed to meet the following objectives:

- To find new approaches to increase investment in training throughout the manufacturing sector;
- Support training programs that address identified skills gaps across the manufacturing sector;
- Increase employers' engagement in training; and
- Demonstrate the effectiveness of workplace training on skills.

REVIEW OF PAY-FOR-PERFORMANCE FUNDING MODELS

EVIDENCE OF EFFECTIVENESS

The effectiveness of Pay-for-performance funding (PFP) models has been supported by a growing body of evidence. Studies show that when designed well, PFP models can provide the right mix of incentives and flexibility for implementers to deliver meaningful results, leading to improved services (Instiglio, 2017).

For example, in the Democratic Republic of the Congo, health facilities participating in a PFP project demonstrated comparable or better services and quality of care compared to control districts, despite lower external funding. These facilities also experienced increased revenues without burdening the poorest households with higher out-of-pocket health spending (Soeters et al., 2011).

Furthermore, Washington State's Student Achievement Initiative demonstrates the effectiveness of PFP models in driving innovative practices (Shulock & Jenkins, 2011). The initiative aimed to accelerate adult learning pathways and help learners achieve labour market success and economic gain. The introduction of the PBF features altered the cost-benefit analysis for colleges, providing strong incentives for colleges to explore and implement new approaches that could help learners meet academic benchmarks.

LIMITATIONS OF OUTCOMES-BASED MODELS

While PFP models demonstrate effectiveness, it is important to acknowledge their limitations and assess their overall effectiveness in different contexts. One area where the effectiveness of these models has been questioned is in higher education. Recent American studies (Ortagus, et al., 2020; Whitley & Moss, 2022) demonstrated that PFP models in higher education often yield null or modest positive effects on intended outcomes such as grant degrees, retention, and graduation rates. Furthermore, there is compelling evidence that OBF models can lead to unintended outcomes related to restricting access, gaming of the system, and disadvantages for underserved student groups and under-resourced institutions.

In addition, PFP models tend to prioritize short-term metrics such as graduation earnings or employment outcomes, which may not fully capture the full range of educational or societal benefits. This emphasis on these narrow outcomes can potentially overshadow the importance of developing graduates who possess critical thinking skills and creativity and can thrive in

professional domains and lead fulfilling lives (Spooner, 2019). It was also found that using intermediate outcomes as proxies for long-term positive outcomes posed challenges in attracting investors and gaining acceptance from participants and service providers (Brennan et al., 2019).

Despite the limitations associated with PFP models, there are best practices that can help mitigate these challenges and enhance the effectiveness and long-term impact of the PFP initiative. Drawing from SRDC's experience in PFP projects and a review of relevant literature, the next section explores key best practices.

BEST PRACTICES IN THE DESIGN AND IMPLEMENTATION OF PAY-FOR-PERFORMANCE FUNDING MODELS

Selecting the right payment metrics

Payment metrics form the cornerstone of PFP models, serving as a foundational element in determining program effectiveness and success. Best practices involve the selection of multiple outcomes that reflect the full range of potential achievements by participants, which can help reduce pressure on service providers and participants to perform well on a single outcome and ensure that program delivery is aligned with multiple program goals. Additionally, selecting multiple outcomes can help track participants' progress towards longer-term outcomes and ensure that program goals are being achieved along the way (Brennan et al., 2019).

Social Finance has proposed a set of criteria to guide the selection of metrics for pay-for-performance funding (Miragliuolo et al., 2020). A key consideration is ensuring the metric is meaningful and relevant to the communities served. Additionally, selecting metrics based on evidence from past research is important to ensure that the metric can be achieved through high-quality delivery. Another important criterion is ensuring that the metric is feasible to track. This entails the ability to regularly observe and measure the metric using reliable and accessible data sources within a reasonable timeframe. Finally, the metric should also generate meaningful social and financial benefits, creating value for outcomes funders.

Selecting outcome metrics is challenging for stakeholders as they need to balance measures that capture a program's full impact with those that can be quantified in a shorter timeframe. One approach to address this challenge is to include a mix of some metrics that capture short-term outcomes and others that prioritize long-term impact (Miragliuolo et al., 2020). SRDC has recommended the inclusion of delivery indicators in addition to outcomes metrics (SRDC, 2018). These indicators are intended to serve as small incentive payments to encourage participation and ensure proper program delivery. However, it is important to ensure that the incentives tied

to delivery outputs do not undermine the ultimate objective of outcomes-based models, which is payment for outcomes.

Choosing the right evaluation methodology

Measuring outcomes is a critical component of PFP models, as it enables the evaluation of program effectiveness and the determination of payment based on achieved results. Various approaches to measuring outcomes have been utilized. The most rigorous method is experimental designs, such as randomized controlled trials (RCTs), which establish causal links between interventions and outcomes by comparing the treatment group with the control group. Quasi-experimental designs (QEDs), such as propensity score matching, provide an alternative approach by utilizing a comparison group composed of individuals similar to the beneficiary group, enabling the comparison of outcomes between the two groups. Additionally, less rigorous non-experimental or observational designs, such as pre-post analysis without measuring outcomes against a comparison group, have been preferred to evaluate changes within a program due to their administrative and political feasibility (Instiglio, 2017).

Mitigating gaming behaviour

In PFP models, focusing on performance outcomes rather than volume of services is proposed to provide service providers with more flexibility to deliver effective services. However, this approach can also incentivize service providers to select participants more likely to succeed in meeting success targets, leading to “gaming” behaviour. To mitigate this risk, it is good practice to implementing clearly defined and transparent participant selection criteria and/or involve a third party in making the selections. A good example is provided in the Skilling UP pilot, where workers were selected for Essential Skills training based on workplace needs and skill gaps identified during organizational needs assessments (Brennan et al., 2019). Another approach to mitigating gaming behaviour in participant selection is to include weighting for participant characteristics into the repayment formula (Brennan et al., 2019).

Beyond participant selection, gaming can also occur during data collection, program delivery, or verifying payment milestones. To mitigate the risk of real or perceived gaming, best practices again point to having well-documented processes and use of third-party validation.

PAY FOR PERFORMANCE IN MANUFACTURING MODEL

EMPLOYER CONSULTATIONS SUMMARY

In developing the PFP in manufacturing model, SRDC considered a number of factors, including:

- Which stakeholders should receive financial reimbursements to increase success in the training;
- Which outcomes should trigger reimbursement, and at which point during the training should they be paid out; and
- What level of reimbursement would be most appealing to employers, while encouraging longer-term investments.

SRDC consulted employers in the manufacturing industry to gauge their reception to a PFP funding model. In collaboration with EMC, SRDC consulted 21 employers from manufacturing companies across Canada, including the Maritime Provinces, Ontario, and Alberta. All employers were either currently or had previously been engaged in the delivery of the MEC training in their workplace. Three waves of consultations were carried out with employers:

1. **Wave 1, fall 2018:** explored the feasibility of a generic PFP model. Discussions focused on understanding their preferred metrics and identifying indicators for inclusion in an outcomes-based model.
2. **Wave 2, spring 2019:** By the second round of consultations, SRDC had designed a draft one-page PFP model and the reimbursement formula, which was shared with employers ahead of the meetings. Employers were asked to share their thoughts on the proposed model, its ease of understanding, and the proposed metrics.
3. **Wave 3, fall 2020:** The final wave of consultations occurred at the beginning of this project and allowed researchers to validate the final version of the PFP model before its implementation.

Throughout its engagement with key stakeholders in the manufacturing sector, SRDC modified its proposed PFP framework to reflect the feedback shared by employers. However, in every iteration, SRDC kept a clear focus on ensuring the model would achieve three clear goals:

**ENCOURAGE
INVESTMENT**



Employers pay the cost of training for their workers up front.

**REWARD
SUCCESS**



At specific milestones, employers get some of that money back when program outcomes are met

**IMPROVE
SKILLS**



The training's success will improve workplace performance and provide a ROI for employers

The following provides a summary of SRDC's conversations with employers. The findings are not a definitive measure of the attitudes and opinions of all employers in the industry, but rather an informed perspective on the viability of a PFP funding model for training programs in the manufacturing industry. Their comments provided guidance that supported the development of the model, from interested parties operating in various regions of the country and in sectors of the manufacturing industry.

Motivations for investing in workplace training

During SRDC's initial consultations with employers, a key question sought to uncover why employers choose to invest—or not—in skills training. This is what we heard:

- **Invest in success:** Employers were clear that a key motivation for investing in workplace training is its effect on their bottom line. If investing in their workforce's skill development will translate into a more productive workplace, then the investment is worthwhile, regardless of whether they are reimbursed.
- **Evidence of success:** Expanding on the previous point, some employers suggested that providing employers who have no experience in workplace training with "hard-and-fast success stories" would be enough to convince them to invest in a training program.
- **Competing funding sources:** Financial incentives can help encourage employers to participate in training programs. However, some suggested that *conditional reimbursement* would not be sufficient to entice new employers to participate. Alternative funding

programs—such as the Canada Job Grant, which provides funding to eligible employers without conditions— may be more appealing to employers who have no experience with workplace training.

The information gathered from these questions proved invaluable to both SRDC and EMC, but the small sample size was limiting. To learn more about employer motivations and engagement in training, SRDC and EMC agreed to integrate a survey expanding on these questions within EMC’s annual ManufacturingGPS LMI study with manufacturers across Canada.

The Motivations and Engagement of Employers in Training (MEET) study engaged employers from across the sector within MEC’s network of over 10,000 members. This study acted as a complement to findings from the PFP project by providing more detailed understanding of employer motivations in training.

Reimbursement recipients

At the start of the project, SRDC and EMC explored several options for incentivizing success. As a first step, SRDC wanted to identify which stakeholders should be paid when outcomes are achieved. Three stakeholder groups were identified as potential payment recipients: program participants, MEC program facilitators (hired contractors paid for by EMC to deliver the training), and participating companies.

These were presented to employers and to EMC as part of the first round of consultations. Table 1 presents a summary of what we heard:

Table 1 PFP Employer consultation summary regarding reimbursement recipients

Program Participants	
Pros	<ul style="list-style-type: none"> Participants are directly involved in the delivery and are therefore affected by the training. Financial rewards could help encourage greater engagement in training. Financial incentives could encourage attendance in training, increasing dosage in the intervention and potential leading to higher skill gains.
Cons	<ul style="list-style-type: none"> Some companies pay their workers while they attend training, which is already seen as a financial incentive. Any additional financial incentive could raise issues of fairness, especially if workers in non-PFP training sessions do not receive a financial incentive. By being chosen to participate in a training program was deemed a sufficient reward by some employers (i.e., investment in their human capital).
Decision	Participants should not be paid

Manufacturing Companies	
Pros	<ul style="list-style-type: none"> Employers face the greatest risk since they make the initial investment in training. Reimbursements should therefore go towards them. The promise of a financial incentive would help minimize the risk of investing in training. Reimbursements for the costs of training could help attract new employers, particularly those who view training as a cost rather than an investment.
Cons	<ul style="list-style-type: none"> Some employers believed that the benefits of training already justify their investments.
Decision	Employers should be paid
MEC facilitators	
Pros	<ul style="list-style-type: none"> Facilitators are delivering the training. Tying a financial incentive to the success of the program could encourage higher quality delivery.
Cons	<ul style="list-style-type: none"> Providing a high-quality program delivery is a condition of their employment, rather than something that should be incentivized. Facilitators are hired by EMC. Therefore, any reimbursement made to them could be seen as a conflict of interest.
Decision	Facilitators should not be paid.

Outcomes and indicators of success

The outcomes and indicators selected for inclusion in the model changed several times over the course of its development, in accordance with best practices, employer preferences, and EMC's objectives. From an evaluation perspective, SRDC considered indicators of success that were measurable, reliable, and meaningful to employers.

The following provides an overview of the measures of success and the indicators that were considered for discussion with employers and those that were ultimately selected for the model.

Measure of Success 1: Program Delivery

- Considered indicators of success:** Participant attendance in training, Certification
- Selected indicators of success:** Certification
- Unit of analysis for reimbursement:** Participant

- **Threshold for success:** EMC confirms that all program requirements are met by the participant

SRDC explored multiple indicators that would encourage participation and engagement in the training, including attendance and certification.

Employers preferred tying reimbursement to certification rather than attendance, as it is more informative of the participant's commitment and engagement.

Measure of Success 2: Learning and Skill Gains

- **Considered indicators of success:** None (employers were asked to share their preferences)
- **Selected indicators of success:** Problem-solving skills, Effective communication skills, Teamwork skills, Leadership skills
- **Unit of analysis for reimbursement:** Participant
- **Threshold for success:** Difference in pre-post scores equal or greater to 0.

SRDC designed its baseline and post-training surveys to collect subjective assessments of their skills. In consultations with employers, interpersonal and other soft skills such as problem-solving, teamwork, and communication skills were of highest importance. Leadership skills were also singled out as important skills.

The four core skills are measured in the survey by asking participants to rate their level confidence with each of a series of related activities that they could reasonably be asked to perform in the workplace. Examples are listed in Table 2 below:

Table 2 Core MEC skills

Core MEC Skills	Examples of self-assessed skills
Effective Communication Skills	<ul style="list-style-type: none">▪ Understand information▪ Speak in front of a group▪ Communicate information clearly
Collaboration and Teamwork	<ul style="list-style-type: none">▪ Ask for help or advice from colleagues▪ Collaborate with others to solve problems▪ Contribute ideas and suggestions in group decisions

Core MEC Skills	Examples of self-assessed skills
Problem-solving Skills	<ul style="list-style-type: none"> Spot errors and correct them Use past experience to solve problems Identify reasonable options to address a problem
Leadership skills	<ul style="list-style-type: none"> Be a mentor to others Work with limited supervision Give feedback to others on their work

SRDC and EMC explored the possibility of conducting objective observations of teamwork and problem-solving skills. However, these proved too complex and time consuming for facilitators to administer, particularly during the COVID-19 pandemic.

One of the challenges of PFP models is to set benchmarks for success that are clear, relevant, measurable, and achievable. If the thresholds for participant skill gains were set so high that they are out of reach for most participants, then the model would not provide an adequate incentive for engagement in the training.

SRDC tested several methods for setting success thresholds using the MEC pilot evaluation data. Researchers revised the methodology to ensure it was fair in terms of the likelihood of measuring skill gains. Individuals were determined to have gained skills if there was either no change in pre-post scores (e.g., post minus pre scores equals 0) or if there was an increase in scores between baseline and post program survey scores in at least one of the four core skills. The decision to include a no-change result was to avoid punishing participants with high baseline scores with no room to grow (i.e., a ceiling effect).

The process was a helpful reminder that setting the standards for success at thresholds that are attainable, operationally sound, and reliable indicators of success, ensures the PFP model best serves aims of the project.

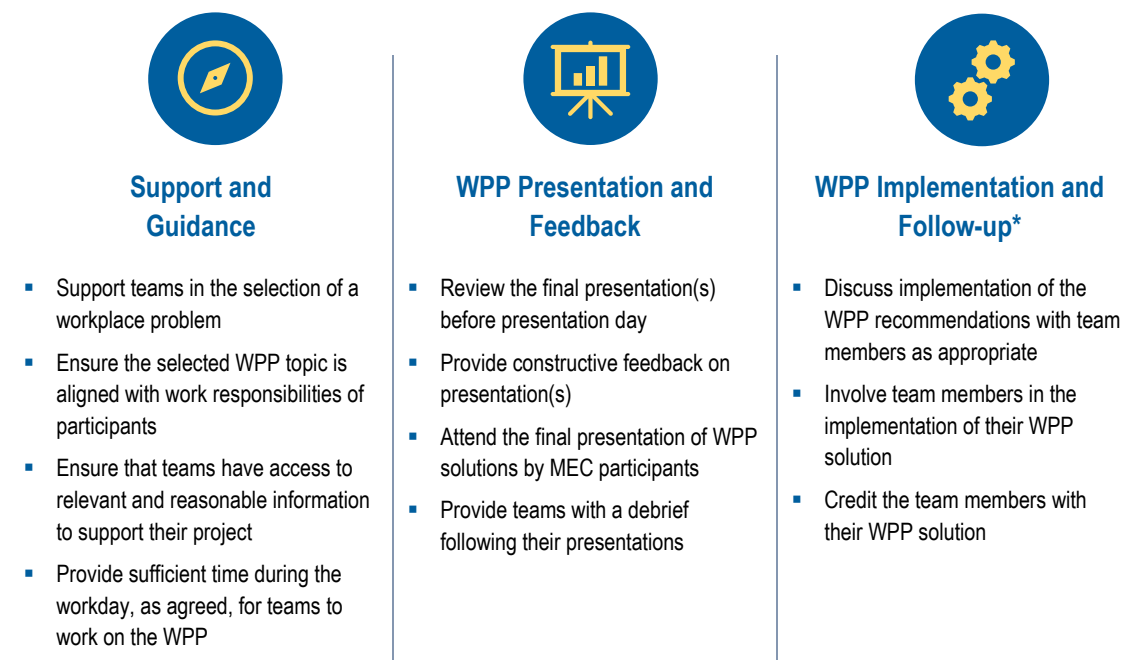
Measure of Success 3: Workplace performance / Employer engagement in training

- **Initial indicators of success:** Key performance indicators related to WPP, Engagement in training
- **Selected indicators of success:** Degree of employer engagement in training
- **Unit of analysis for reimbursement:** Company
- **Threshold for success:** Tiered reimbursement

The final dimension was modified from its original intent. Initially, SRDC wanted to measure the effects of the training on key performance indicators and productivity in the workplace. However, the scope and orientation of the WPP varied from team to team, and the availability and quality of measured KPIs varied from company to company. Additionally, the decision to implement the WPP solution and resolve the workplace problem was left to the discretion of employers. Finding comparable KPIs across sites that accurately assessed the program's effects on KPIs was infeasible.

Instead, EMC and SRDC opted for the degree to which employers were engaged in the training, providing them with a list of activities that employers could be reasonably expected to do during the training, during the presentation and after the training in support of their employees. The rationale for this approach is based on previous research indicating that employees can achieve and maintain better skills gains in a nurturing work environment (Gyarmati et al. 2014).

Figure 1 Degree of employer and supervisor engagement in training



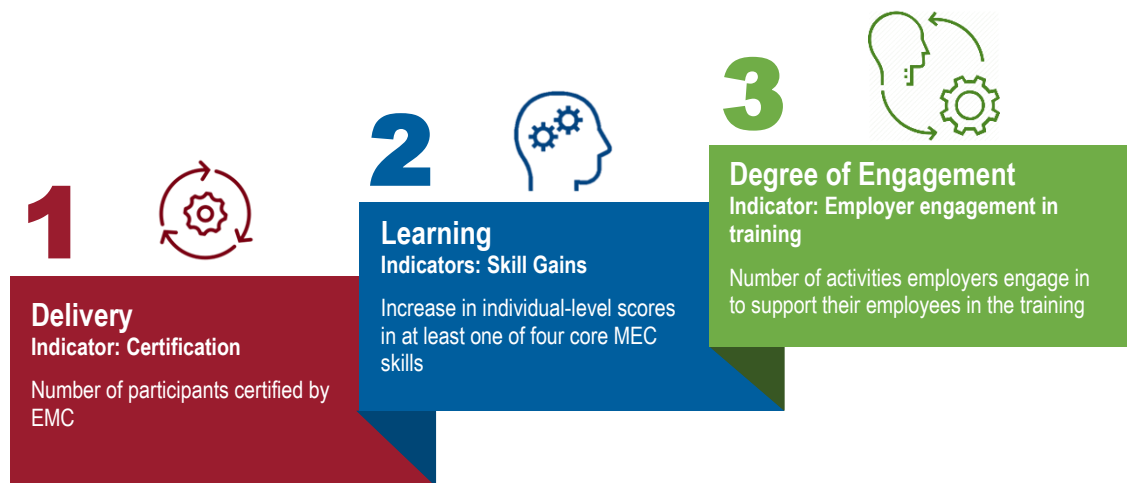
***Note:** Companies that did not implement the WPP solution were asked whether they had completed a separate series of activities: Inform teams before their presentation that their WPP solution could not be implemented, Provide team members with reasons explaining why their WPP solution will not be implemented, and Work with the team to come up with an alternative approach.

The amount a company could receive was tied to the number of activities they had completed and reported in the employer post-program survey. Obtaining reimbursement for this indicator was therefore conditional on completion of the post-program evaluation survey (see the Reimbursement Formula section for more information).

FINALIZED PFP MODEL

The finalized PFP model is presented in Figure 2 below, with each of the selected outcomes and indicators used to measure the MEC program's success. Once indicators of success are met, they trigger reimbursements to employers.

Figure 2 Finalized PFP model



REIMBURSEMENT FORMULA

The final step in the pay-for-performance framework required determining the level of reimbursement attached to the achievement of each indicator in the reimbursement formula. Employers provided the following guidance:

- **Partial reimbursement rate:** The total eligible amount for reimbursement should be competitive to other funding models (e.g., Canada Job Grant). Most employers were satisfied with, at minimum, a 50% reimbursement level.
- **Compensation for productivity loss:** Employers indicated that training their workers comes with a cost, even when training costs are covered. Removing workers from the production line affects their bottom line. To compensate for this, the model should include some form of compensation for productivity loss. SRDC included a measure of productivity loss per employee, equivalent to \$30 per hour for 40 hours of training (\$1,200) per participant.

- **Maximum reimbursement by outcome categories:** Initially, SRDC proposed varying maximum reimbursement amounts to certain outcomes to emphasize their importance in the training. Employers discouraged this approach: certification, for example, should not be deemed more important than skill gains or employer engagement in training. Also, different reimbursement maximums could include unnecessary complexity to the formula.

Using this information as a guide, SRDC defined its PFP formula, which set the maximum reimbursement amount (MRA) per participant. As shown in the diagram to the right, the MRA per participant is equal to 50% of the costs of the training + a measure of compensation for productivity loss resulting from the training.

Direct program costs		Productivity loss
\$3,000	+	\$1,200*
\$4,200		
X 50%	=	\$2,100
Maximum Reimbursement Amount (MRA) per participant		

During consultations, employers were clear that each outcome in the model should be weighted equally. Therefore, to calculate the maximum reimbursement amount per outcome, the MRA was divided by the number of outcomes (3). Thus, the maximum payout per outcome per participant was set to \$700.

Reimbursement schedule

The PFP reimbursement schedule coincided with key milestones. The first two milestone payments were issued per participant (N) who met the threshold for reimbursement; the third was determined following the employer's responses in the employer survey and was issued for the company overall.

Table 3 PFP payment schedule and formula for each milestone

Milestones	Outcomes	Timing	Payment Formula
Milestone 1	Certification	Following last session	N * \$700
Milestone 2	Participant skill gains	Two months following the last session	N * \$700
Milestone 3	Degree of engagement	Two months following the last session	See Table 4

The amount of reimbursement for each tier was determined by the number of participants enrolled in a session from each company (n) multiplied by the payment percentage for that tier

(Table 4) multiplied by the maximum reimbursement allowed per participant per outcome (\$700).

Table 4 Reimbursement thresholds for employer engagement in training

Number of activities completed	Payment % of total	Amount reimbursed
9 to 11 Activities	100 %	\$700 * n * 100%
5 to 8 Activities	75 %	\$700 * n * 75%
1 to 4 Activities	50 %	\$700 * n * 50%
0 Activities	0%	\$700 * n * 0%

ADMINISTRATION AND SUCCESS VALIDATION

Roles and responsibilities of SRDC and EMC

EMC and SRDC shared responsibility for the administration of the PFP model. As part of the collaborative agreement, clear and distinct roles were defined for both organizations at the outset of the pilot project, avoiding any perceived or realized conflicts of interest.

EMC	SRDC
EMC maintained direct contact with employers and program participants throughout their participation in the project.	SRDC was responsible for the overall research design, including data collection instruments, and
EMC was responsible for outreach and recruitment of participating companies in the project, including responding to any questions about the PFP model, the reimbursement mechanisms, and the conditions for reimbursement.	SRDC had final say on the PFP model, including its indicators and reimbursement mechanisms.
Companies would pay EMC for the direct costs of training.	SRDC was responsible for providing EMC with information about the PFP model, including the company contract, a summary of the project, and a frequently asked questions (FAQ) document for EMC staff to answer employer questions.
EMC would host research surveys on its Voxco platform, monitor completion of research surveys by both participants and employers, and follow-up with them directly to ensure completion.	SRDC was responsible for validating the PFP results by ensuring thresholds were met and confirming outcomes were achieved through data shared by EMC via the DMIS portal.
EMC would share survey data with SRDC through a secured Data Management Information System (DMIS) developed for this project.	SRDC was responsible for issuing reimbursements through its finance department.

Data Management Information System (DMIS)

The DMIS was designed in collaboration by SRDC, EMC, and an external contractor to support the delivery of the program, the evaluation of the program, and the dissemination of findings from the program. In its ideal format, the DMIS would streamline data collection, provide access to programming information, and ensure a rapid check for validating that PFP thresholds were met.

The DMIS portal was intended to act as a “one-stop-shop” for accessing and sharing information between SRDC and EMC, but also with employers and program participants.

Two types of accounts would provide users with access to the DMIS:

- **Type 1:** Access to the front-end DMIS (e.g., for use by participating employers, program participants, and program facilitators to consult and access information)
- **Type 2:** Access to the back-end DMIS (e.g., for use by both EMC and SRDC staff to access administrative and survey data; in the case of SRDC, access would be limited to data required to validate the PFP reimbursement model).

As part of the design, considerations were made to ensure the confidentiality of user data (e.g., automatically generating unique ID codes for each participant/employer linked to their email, to ensure data tracking over time). A core concern was ensuring that data housed on the portal would be secured. EMC would ultimately become the custodian of the DMIS portal.

A working group composed of members from both organizations explored these options—and others—that could reasonably be operationalized within in the DMIS portal and within the project’s timeframe. Options included:

- Housing all EMC administrative data (e.g., data from the company’s master tracking sheet) to ensure data tracking and alignment across all EMC data collection activities;
- All evaluation data collection activities (e.g., employer surveys, participant surveys, facilitator observations/notes) would be hosted on the DMIS and linked to administrative data;
- All participant learning materials (e.g., manuals and learning tools) would be accessible or downloadable from the website;
- The DMIS should extract administrative and evaluation data (including calculated scales) and signal when participants/employers have met PFP thresholds for reimbursement;

- Program reports, including evaluation findings for each company, should be populated using administrative and evaluation results, and be downloadable on the website.

The DMIS was developed in the summer of 2020, shortly after the start of the COVID-19 pandemic, while many companies were shifting their operations online. SRDC and EMC were unable to secure a contract with a web developer that could complete the project within the necessary timeframe. Instead, EMC and SRDC opted for a simplified DMIS portal that would focus on data sharing between the two organizations.

The portal operationalizes the PFP model by housing PFP-related survey data, extracting pre-post data, and determining whether thresholds are met. A company summary sheet is generated with PFP outcome results listed, including the anonymized results by participants.

EMC and SRDC have discussed plans to enhance the model according to its original design, but no funding has been secured at this time.

PAY FOR PERFORMANCE THEORY OF CHANGE MODEL

The theory of change (see Figure 3) illustrates the various components of the PFP in Manufacturing model, and how they work in concert to support investment in a workplace training program, the Manufacturing Essentials Certification (MEC) program.

The model addresses two key problems that affect employee performance and productivity in the manufacturing sector:

1. Underinvestment by employers in workplace training programs; and
2. Low participation in workplace training programs that address the specific skills gaps of workers in the manufacturing sector.

The model identifies the four barriers that prevent investment in workplace training programs. These barriers were identified in SRDC's evaluation of the AWES Skilling UP pilot (Brennan et al., 2019) as well as SRDC preliminary work with EMC for the design of the PFP model (SRDC, 2020). They include both financial and non-financial barriers.

As previously discussed, the PFP model was designed to address all barriers, by incorporating strategies that minimize or remove barriers to investment.

Table 5 Barriers to investment and PFP strategies to address them

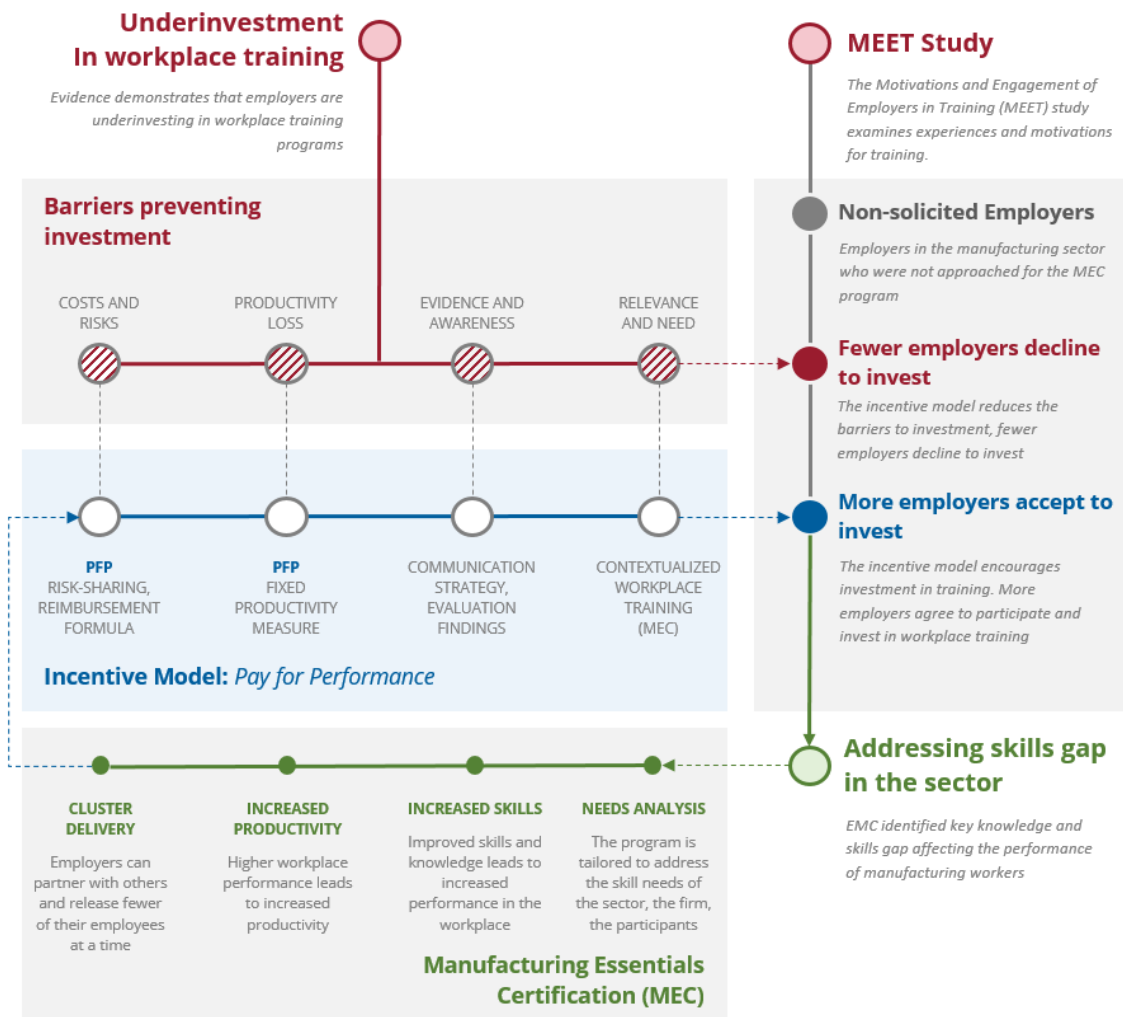
Barriers	Description	PFP strategies
Lack of awareness and evidence demonstrating the training's effectiveness	Insufficient evidence that demonstrates the effectiveness of a program or lack of awareness of existing evidence can deter employers from investing in training.	Funders, including employers, are motivated to invest in effective programs (Brennan et al., 2019; see Employer Consultations Summary in SRDC, 2020). SRDC and EMC developed a communications strategy and materials to convey the benefits of industry-contextualized skills training programs, including evidence from the MEC pilot.
Costs and risks of financial loss	The benefit of the training to the company is uncertain. For many employers, the initial cost of the training can be prohibitive.	The PFP model reduces both financial risks as employers can recoup a significant portion of their investment and reduces the risk of failure by encouraging employers to achieve outcomes at various milestones. The reimbursement model is founded on existing research and previous models (Palameta et al., 2014, Brennan et al., 2019).
Productivity loss	Removing or replacing workers from the production line comes at a cost.	The PFP model includes a fixed “productivity loss” benefit, equivalent to 40 hours of labour at the average production worker’s wage (30\$/hour, or \$1,200 per participant) to compensate for any work stoppage or loss in production that may occur because of the training.
Relevance of the content	Employers want to engage in a program that will address the needs of their workforce (see Employer Consultations Summary in SRDC, 2020).	EMC conducted an extensive needs assessment with the sector to identify skills gaps, designed a curriculum to meet those needs, and piloted the program to assess its effectiveness. This approach follows best practices in workplace training demonstrated by the UPSKILL pilot (Gyarmati et al., 2014).

If the model sufficiently and accurately addresses barriers to invest in workplace training, an **increase** in employers’ willingness to invest would be expected. SRDC conducted pre-post surveys to gauge effects on their attitudes toward investing in training, and whether they would continue to invest in training if the financial incentives were removed.

Employers participate in the MEC workplace training program either as part of a cluster with other employers, or single-firm delivery. While the program is expected to achieve a number of outcomes for participants and firms, in the context of the PFP project, it will be important to

assess the extent to which the program's delivery and its outcomes address barriers to investment.

Figure 3 Theory of change for the *Pay for Performance in Manufacturing* project



THE MANUFACTURING ESSENTIALS CERTIFICATION (MEC) PROGRAM

As previously stated, the PFP funding model was designed to support the delivery of the Manufacturing Essentials Certification (MEC) program. The MEC training program and its curricula were designed to respond to the training needs of manufacturers across Canada, in alignment with ESDC's Essential Skills Framework (recently updated to the Skills for Success framework).

Although the program targets underlying essential skills, the program is branded as "Manufacturing Essentials," which avoids stigma that can be associated with workplace LES training. In effect, this training is intended to build the skills workers need to succeed in a manufacturing context, to increase their productivity in the workplace, and to become more effective employees.

Program Structure and Design

Offered over a period of eight to ten weeks, the program is modular in its design and customizable to meet the learning needs of each group. Initially, MEC was designed to provide supervisory skills to manufacturing workers and was then expanded to production workers. Now, the MEC training program is offered in multiple streams: Supervisor Stream, Production Worker Stream, Health and Safety Stream, Psychological Health and Safety Stream, Productivity and Continuous Improvement Stream, and Leadership Stream.

The MEC streams differ primarily in their content. For example, the supervisor stream targets participants' abilities to lead and motivate others, to apply team management and project management skills, and to successfully resolve conflicts.

However, all MEC streams follow a similar structure: a combination of classroom LES training with an applied Workplace Performance Project (WPP). The WPP is a problem-solving exercise completed by a small group of participants from the same company. Through the WPP, participants have an opportunity to work collaboratively with their colleagues to identify and resolve a workplace problem affecting business outcomes. This bottoms-up approach to workplace problem solving is intended to help build workers' confidence and self-efficacy, allowing them to apply their skills to a real-world workplace problem.

Theory of Change Model for the MEC Program

The program's outcomes are illustrated in Figure 4. The diagram presents the logical flow from the program's activities towards the expected changes in participants and their firm. As previously described, the MEC program is a combination of LES training with a Workplace Performance Project (WPP). The two components are parts of a whole, as the former provides the necessary knowledge for workers to complete the practical exercises in the WPP. The diagram illustrates this relationship and the interaction between the two program components.

At the core of the MEC program is the theory that by enhancing supervisors' and production workers' literacy and essential skills through workplace training, employers can expect to see a positive increase in workers' productivity. Indeed, there is increasing evidence suggesting that employer-funded workplace training can help increase productivity and foster innovation across industry. Research conducted by the Conference Board of Canada has shown that businesses that spend money training their employees reduce their turnover rates, have high employee engagement, and improve their productivity (Munro, 2014).

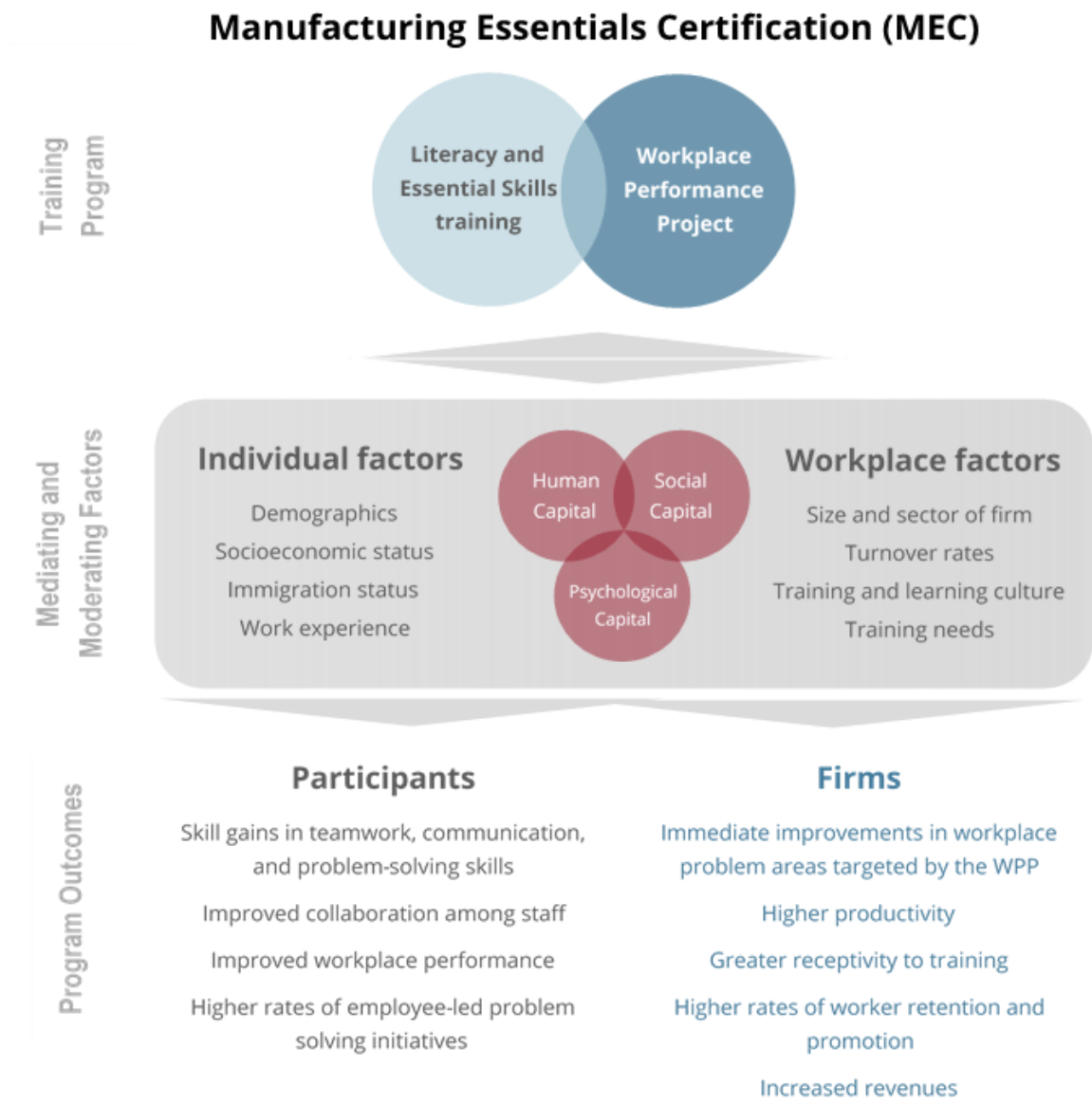
Previous evaluations of workplace training programs including UPSKILL, a large-scale demonstration project of workplace literacy and essential skills training, have proven that workplace training can provide large positive impacts on workers' skills and job performance, while simultaneously contributing to significant positive financial returns to businesses that choose to invest in their workers (Gyarmati et. al., 2014). Additionally, the Workplace Literacy and Essential Skills Research (WLESR) Project studied the relationship between LES and returns to businesses in 10 case studies and, in most cases, demonstrated the effectiveness of such strategies in providing positive outcomes for businesses, including cost savings and positive ROI (Gillis & Bailey, 2015).

The link between LES training and performance, if aligned correctly, is clear and direct. By targeting the underlying essential skills necessary for a worker to complete their tasks through contextualized training, workers can enhance their performance leading to higher productivity for businesses over the long term.

In the case of MEC, businesses are expected to benefit from an immediate boost in their productivity, as well as improvements in other targeted business outcomes as a result of the WPP. By design, workers are expected to resolve a workplace problem affecting business outcomes, while building the skills they need to problem solve and work productively as part of a team.

In the context of the present evaluation, many of these longer-term outcomes are out of scope, and thus, remain hypothetical.

Figure 4 Program model for the Manufacturing Essentials Certification program



METHODOLOGY

As part of our evaluation of the PFP in Manufacturing project, SRDC designed an evaluation plan that included an assessment of the funding model's implementation, an assessment of the MEC program's outcomes as they relate to the PFP model, and an assessment of the PFP outcomes. At this time, the evaluation of the PFP model's efficiency—the resources required to see an increase in outcomes—is not possible.

EVALUATION QUESTIONS

Below, main research questions are listed by component of the project: the PFP model, evaluation of Manufacturing Essentials Certification training, and the national study of employer motivations and engagement in training.

PFP Implementation Research Questions

- To what extent was the PFP model implemented as expected?
- What challenges affected the implementation of the PFP model? How can these challenges be avoided in a future implementation?
- How well was the PFP model received by employers?
- Which aspects of the model and its implementation need to be modified to meet employers' expectations?

MEC Program Evaluation Research Questions

- To what extent does the MEC program improve the skills of workers in the manufacturing sector?

MEET Study research questions

- What are employers' experiences with and attitudes toward workplace skills training for their workers?
- What incentives motivate employers to engage and invest in workplace training programs?

- What types of funding models are most effective in encouraging participation in training programs?

PFP evaluation questions

- Does the PFP model encourage employers to invest in workplace training programs?
- Does the PFP model include sufficient incentives to sustain investment and participation in workplace skills training program?

DATA COLLECTION STRATEGY

To answer the study’s research questions, SRDC devised a mixed-methods data collection strategy that included qualitative interviews with employers, facilitators, and EMC staff; and participant and employers surveys.

The data collection strategy operated on two levels: (1) monitoring the implementation and effects of the MEC training program on participants, (2) assessing outcomes from the PFP funding model in support of the MEC training program, and (3) collecting sector-wide data in support of the MEET study.

Table 6 lists the data collection instruments that were developed and used over the course of the project, along with the timeframe of their administration. The list of indicators used as part of the PFP and MEC evaluation can be found in APPENDIX A:. The data collection instruments can be found in Appendix C.

Table 6 Data collection instruments and administration timeframe

Data collection instrument	Timeframe
PFP Implementation Research	
Facilitator interviews	End of the project
Employer recruitment consultations	Ongoing throughout the project
MEC Program Evaluation	
Participant baseline survey	Before or during the first week of training
Participant follow-up survey	Two months after the last day of training
Employer baseline survey	Before or during the first week of training

Data collection instrument	Timeframe
Employer follow-up survey	Two months after the last day of training
MEET Study	
MEET Study Survey	Fall of 2020, administered with the ManufacturingGPS LMI study
PFP Outcome Evaluation	
Employer follow-up survey	Two months after the last day of training

SAMPLE DESCRIPTION

Characteristics of PFP-Participating Companies

SRDC and EMC initially set its recruitment targets to 30 companies for the PFP pilot project. In the end, EMC was able to recruit 55 companies. However, only 32 employers completed the baseline survey. It is important to note that the baseline survey was optional and no PFP reimbursements were tied to its completion. Additionally, every question in the survey was optional and respondents could choose not to answer.

Consequently, some employers opted not to complete the baseline survey, resulting in a limited number of responses to questions regarding company characteristics. For instance, out of the 30 employers who had invested in training in the past, less than five responded to the follow-up question regarding per-employee expenditures on skill development.

To ensure the confidentiality of respondents, characteristics of participating companies with fewer than five responses are omitted from our analysis. Unfortunately, this limits our analysis to two characteristics: the size of the company by the number of employees and whether the company has previously participated in workplace training programs.

There are nevertheless important data points that can provide an understanding of the kinds of companies that enrolled in this project. For instance, nearly two thirds of companies (62 per cent) were medium-sized (workforce between 100 and 499 employees), with very few from small or large-sized companies (19 per cent from each type).

Additionally, nearly all employers (94 per cent) have offered workplace training programs in the past.

Characteristics of MEC program participants

Sociodemographic characteristics

A total of 203 employees participated in MEC training sessions that were involved in the PFP pilot. The tables in this section present the sociodemographic characteristics of the employees based on their responses to the baseline survey.

Nearly three quarters of participants were men (73 per cent). Most respondents were between the ages of 31 and 40 years (37 per cent), while nearly three quarters (73 per cent) were married or in common-law partnerships. More than half are not primary caregivers for children 17 years of age or under (59 per cent).

Table 7 Sociodemographic characteristics of MEC participants

Characteristics	#	%
Gender (N = 197)		
Man	144	73%
Woman	53	27%
Age group (N = 203)		
30 or younger	43	21%
31 to 40	76	37%
41 to 50	55	27%
Older than 50	29	14%
Marital status (N = 147)		
Not married (single, divorced, separated, widowed)	40	27%
Married or common law	107	73%
Primary caregiver for any children aged 17 or under (N = 145)		
No	85	59%
Yes	60	41%

Source: Participant baseline survey.

As shown in Table 8 below, two thirds (67 per cent) of MEC participants were born in Canada, with 5 per cent identifying as Indigenous. Among the third (33 per cent) of participants born outside Canada, over one half (60 per cent) have lived in Canada for more than ten years, while about 22 per cent are arrived within the last five years. One in ten (9 per cent) newcomers arrived in Canada as refugees.

Table 8 Citizenship and cultural identity of MEC participants

Characteristics	#	%
Country of birth (N = 200)		
Canada	134	67%
Other	66	33%
Time in Canada (N = 65)		
Between 1 and 5 years	14	22%
Between 5 and 10 years	12	18%
More than 10 years	39	60%
Refugee status (N = 54)		
Not a refugee	49	91%
Yes, a refugee	5	9%
Indigenous person (N = 129)		
No	123	95%
Yes	6	5%
Language spoken at home (N = 203) [†]		
English	194	95%
French or other	25	12%

Source: Participant baseline survey.

Notes: [†]Percentage adds up to more than 100 due to multiple responses.

Experience in education and training

Participants reported a wide range of education levels. While over two thirds (69 per cent) reported post-secondary education, 31 per cent had only a high school education or less. Notably, nearly a third (31 per cent) reported having at least a bachelor's degree. Two thirds (69 per cent) were interested in taking more formal education or training in the future, including trades, vocational, apprenticeship, college, university, or other diplomas.

Over three quarters (78 per cent) had participated in a workplace-training program before MEC. WHMIS, 5S, and Supervisor Training were the three most cited programs.

Table 9 Education and training characteristics of MEC program participants

Characteristics	#	%
Educational attainment (N = 189)		
High school or less	59	31%
Apprenticeship or trades/vocational diploma or certificate	19	10%
College, CEGEP or other non-university certificate or diploma	42	22%
Some university courses or diploma (below the bachelor level)	11	6%
Bachelor's degree	39	21%
Master's degree or Doctorate	19	10%
Interest in pursuing further education/training (N = 169)		
No	52	31%
Yes	117	69%
Type of education/training interested (N = 117) †		
High school diploma, apprenticeship or trades/vocational diploma or certificate	22	19%
College, CEGEP or other non-university certificate or diploma	41	35%
Some university courses or diploma (below the bachelor level)	34	29%
Bachelor's degree	19	16%
Master's degree or Doctorate	21	18%

Characteristics	#	%
Other	14	12%
Previous participation in workplace training (N = 199)		
No	44	22%
Yes	155	78%
Workplace training programs participated in before (N = 155) †		
WHIMS	125	81%
5S	77	50%
Supervisor training	66	43%
Interpersonal workplace behaviour	64	41%
Lean Manufacturing	57	37%
Technical training	55	35%
Problem-solving	49	32%
Kaizen	40	26%
Other	20	13%

Source: Participant baseline survey.

Notes: †Percentages add up to more than 100 for multiple-answer questions.

Experience in employment

Most participants are long-term employees, with a third (33 per cent) working for their current company for more than 10 years and nearly a quarter (23 per cent) between 5 and 10 years. The top three manufacturing industries represented were Food, beverage and tobacco; machinery; and motor vehicle and parts. Over half the participants were either Production Managers (12 per cent) or Production Supervisors (39 per cent).

Table 10 Work experience of MEC participants

Characteristics	#	%
When did you start working at the company (N = 200)		
Less than a year	23	12%
Between 1 and 5 years	66	33%
Between 5 and 10 years	45	23%
More than 10 years	66	33%
Industry (N = 202)		
Food, beverage & tobacco	65	32%
Machinery	40	20%
Motor vehicle & parts	21	10%
Plastics & rubber	20	10%
Fabricated metal	19	9%
Miscellaneous	15	7%
Computer & appliances, non-metallic mineral, primary metal, furniture, wood & paper	14	7%
Aerospace	8	4%
Functional groups (N = 202)		
Production Supervisor	79	39%
Development, Engineering and Quality Control	35	17%
Production Manager	24	12%
Administration Manager	19	9%
Shipping and Receiving	18	9%
Maintenance Trades	10	5%
Sales and Business Development, Production Machine Operator, Production Labourer	17	8%

Characteristics	#	%
Department (N = 201)		
Production	111	55%
Plant Management, Health & Safety, Maintenance	25	12%
Quality Assurance, Transportation & Logistics	21	10%
Other, please specify	44	22%

Source: Participant baseline survey.

Earnings and benefits

Over half of MEC participants (52 per cent) reported an annual employment income between \$60,000 and \$80,000, and 24 per cent earned between \$80,000 and \$100,000. Moreover, 11 per cent had an annual income over \$100,000. Among the 16 participants who accessed income supports in the last year, over two thirds (69 per cent) accessed CERB and nearly one third (31 per cent) accessed Employment Insurance.

Table 11 Income and earnings of MEC participants

Income and earnings	#	%
Annual earnings (N = 102)		
\$40,001 to \$60,000	14	14%
\$60,001 to \$80,000	53	52%
\$80,001 to \$100,000	24	24%
More than \$100,000	11	11%
Income supports (N = 16)		
CERB	11	69%
Employment Insurance (EI)	5	31%

Source: Participant baseline survey.

IMPLEMENTATION RESEARCH

The PFP pilot project was launched in January 2021, following a four-month delay due to the COVID-19 pandemic. SRDC sought and obtained a one-year extension for the project, which allowed the last training session to end in December 2022 and the last reimbursements to be issued to employers in March 2023.

SRDC conducted implementation research throughout the pilot period, collecting data from multiple sources: EMC staff, MEC training facilitators, and participating employers. The findings are presented in this section of the report and integrated into Lessons Learned section.

PFP REIMBURSEMENT STATISTICS

Overall, 55 companies participated in the PFP pilot project, registering a total of 203 participants. While most companies enrolled participants in a single session, several companies registered in multiple MEC sessions: 44 companies registered for one session only, 7 companies registered for two sessions, 3 companies in three sessions, and one company registered for five sessions.

As shown in Table 12, employers contributed a total of \$609,000 to EMC to train their workforce, at a cost of \$3,000 per worker. As stated in the PFP reimbursement formula, the maximum reimbursement amount was set at 70% of the direct costs per participant (i.e., \$2,100 per participant); thus, the total eligible reimbursement amount was equivalent to \$426,300.

By the end of the PFP pilot, the total reimbursement paid to employers amounted to \$395,500, for a difference of \$30,800 from the total eligible amount. The average reimbursement amount per participant was \$1,948, corresponding to 65% of the initial registration cost per worker (\$3,000).

Table 12 PFP reimbursement statistics

Enrolment	
Number of unique companies enrolled	55
Number of Participants Registered in all MEC Sessions	203
Eligible Reimbursement Amounts	
Total training costs paid by participating companies	\$609,000
Total eligible reimbursement (70% of total amount paid)	\$426,300

Maximum reimbursement amount per participant	\$2,100
Maximum rate of reimbursement	70%
Actual Reimbursements	
Total amount reimbursed	\$395,500
Average reimbursement amount per participant	\$1,948
Actual Rate of Reimbursement	65%

The success rate for each success metric was also quite high. Of the 203 participants enrolled in a PFP-funded MEC session, 195 were certified, providing a 96% success rate for Milestone 1. Milestone 2 (skills gains) had the lowest success rate at 87%, as 176 participants showed some degree of positive change between baseline and follow-up in at least one of the four core MEC skills. Reimbursement for the Milestone 3 (employer engagement) was issued by tier. Nevertheless, the success rate was very high, at 96%.

Table 13 PFP model success rate by milestone payments

Milestone 1 - Certification	
Number of participants who achieved Milestone 1	195
Success rate	96%
Total amount paid for Milestone 1	\$136,500
Milestone 2 - Skills Gains	
Number of participants who achieved Milestone 2	176
Success rate	87%
Total amount paid for Milestone 2	\$123,200
Milestone 3 - Employer Engagement	
Number of times employers completed 9 to 11 activities in Milestone 3 (100% reimbursement)	63
Success rate	96%
Total amount paid for Milestone 3	\$135,800

*Note: Some employers enrolled workers in multiple PFP-funded sessions. Employers were eligible reimbursements for Milestone 3 in every session for which they enrolled participants, hence why the number of employers who met the 100% reimbursement thresholds exceed the number of unique employers enrolled in the PFP pilot.

RECRUITMENT TO THE PFP PILOT

Response to the cost-sharing model

As described earlier in the report, EMC and SRDC led discussions with employers during pilot development indicated an appetite for a performance-based funding model in support of workplace training programs. The pilot provided a real-world test of how acceptable such an offer would be.

The national MEC pilot had offered training at no cost to employers. Consequently, even a cost-sharing model such as the PFP resulted in an increase in training costs. For some firms, this was not an issue as they would have paid full price for the MEC training anyway. According to EMC, some firms opted not to train, or sought free training opportunities elsewhere. It is noteworthy that starting in spring 2023 MEC training is being offered at full cost, which will inform EMC of the extent to which demand for the training is sustained when costs are no longer subsidized.

Familiarity with wage subsidies and other training incentives influenced employers' reaction to the PFP funding model. Knowledge of the Canada Job Grant (CJG), for example, meant that firms could compare the relative benefits of the PFP model with the CJG. While the latter offers certainty in repayment, the PFP reimbursement was more generous—if all three milestones were achieved.

Some employers who were approached by EMC rejected the offer to participate in the PFP pilot after hearing about the administrative and reporting requirements. In some cases, employers opted to pay for the training but refused the PFP funding, in order to avoid surveys and other necessary paperwork.

"I think sometimes employers take themselves out of [the conversation] when they find out that there's work that has to be done on their side to get the funding."

EMC Staff

On the other hand, a number of companies accepted the PFP funding model because they "relied on that reimbursement to be able to get approval to send the participants to the training."

Recruitment and registration

Outreach to employers was conducted by EMC via ad campaigns, newsletters, social media, and via email through EMC's mailing list. Outreach materials included a two-page overview of the model, which included a timeline explaining the model's outcomes, milestones, and reimbursement formula.

PFP-participating firms were required to sign a Participation Agreement—confirming they had read and understood the terms of the funding model—and provide SRDC with either the company’s banking information to allow SRDC to deposit reimbursement directly into their account or contact information of an individual to whom SRDC could send a cheque through the mail.

The financial registration process was far more time intensive for companies and SRDC than initially anticipated. Although the Participation Agreement stipulates that banking information is submitted to SRDC, firms were recruited to the project by EMC and were hesitant to share sensitive financial information to a third-party organization. Additionally, the person signing the Participation Agreement did not always inform responsible staff to submit banking information to SRDC, leading to delays in reimbursements.

Effects of COVID-19 on recruitment

The PFP pilot was originally scheduled to start in September 2020 but was delayed by the ongoing effects of the COVID-19 pandemic. The project officially launched in 2021, but temporary shutdowns, reduced operations, economic uncertainty, and public health guidelines limiting the number of workers, slowed the recruitment of companies to the pilot. Many employers who had initially signalled a willingness to enroll in the pilot project were no longer interested.

With the delay in launch of the training, SRDC and EMC decided to bring forward the MEET study survey in the fall of 2020 rather than wait until the spring of 2021 and use this opportunity to better understand how employers were expecting to change their training plans in the face of the pandemic.

Employers felt that they could not afford to invest in training during the pandemic, even with a model that promised partial reimbursement. They were being challenged with rapid changes in shifts and teams; staff shortages due to substantial layoffs or parents having to stay home to care for children; anxiety at work due to risks of catching COVID; difficulties hiring staff with the right skills; and CERB-related reluctance of some workers to take short-term assignments.

As EMC continued its recruitment efforts throughout 2021, some manufacturers described coming out of a “COVID fog,” plagued by a high degree of exhaustion, uncertainty regarding the future, low supply of labour, and increased risk to the health and safety of workers. An extension was sought and obtained, allowing the project to finish in March 2023. EMC met its target of 200 MEC program participants by late 2022.

IMPLEMENTATION OF THE PFP MODEL

Complexity of the reimbursement model

The complexity of the model was a factor affecting employer engagement throughout the implementation. EMC staff spent a great deal of time during the recruitment process explaining the model and sharing the model overview materials with employers. EMC staff described how it took a *“good amount of communication effort to make sure the employers understand what they’re signing up for and that they do have to pay up front.”*

The PFP in manufacturing model, with three milestones paid at different times, is complex. It was designed based on best practices and was informed by employers in manufacturing. The implementation study confirms that a simpler model would have improved stakeholder comprehension and reduced the time spent explaining the model.

According to EMC staff, some employers did not fully understand the requirement to pay full training costs up front and receive reimbursement later. Mostly, there was confusion around the reimbursement amounts, the fact that employers would not necessarily receive the maximum reimbursement amount, and when they would receive their reimbursement. Several companies believed that they were only expected to pay one-third of the program costs, rather than pay the full costs and then be reimbursed.

“We try our best to explain and provide all the information, but people don’t always read...they pick up on bits and pieces and they make assumptions.”

EMC Staff

Further confusion was caused by a lack of internal communication within firms. The person signing the contract and supervising participants in the training were not always the same. EMC realized that, although they were informing the contract signatory of the firm’s responsibilities and the conditions of the model, this information was not always being passed along to those who would be responsible for meeting the model’s outcomes. As a result, some firms were left confused, often scrambling to ensure their supervisors completed the employer engagement activities.

Administration of PFP is both resource- and time-intensive

The PFP pilot followed on the heels of the national MEC pilot. Other than some improvements made to the program’s curricula (e.g., EDI integrated content, new program streams), and a shift to online delivery, the program itself had not changed.

"We still have to explain the model to them and there's quite a bit of additional administration documents to gather as well.

"And then the communications within our team to make sure that all the data has been collected...and [employers] communicating with us to make sure they have everything needed on their side."

EMC Staff

Yet, EMC staff estimated that the administrative effort to implement the PFP model required twice the time they had spent organizing the national MEC pilot.

The level of effort required issuing reimbursements to participating firms was significant both for SRDC and EMC. Considerable efforts were associated with acquiring banking information, confirming transfers, and fielding employer questions about repayment amounts.

The lines of communications were not efficiently organized. Employers would contact EMC regarding status updates on their payment information, EMC would contact SRDC for clarity, SRDC would reply to EMC, and EMC would forward the message to the employer. SRDC recognizes that a DMIS that would allow employers to access information, ask questions and receive answers, and communicate directly with both EMC and SRDC through a single access point would have simplified communications and should be considered for the future.

LIMITATIONS AND VALUE OF THE PFP MODEL

Measurement of skills gains

The key outcome of the MEC training is to increase workers' skills. Specifically, their soft skills. Including a measure of improvement across these skills was therefore understood to be an important feature of the PFP model. However, this presented challenges for the PFP's implementation:

- Reliable, objective, and time-efficient measures of interpersonal skills were not available;
- Failure to meet the thresholds for success in skills gains could place participants in conflict with their employer; and
- Participants could potentially "game" the system by deliberately scoring low on the baseline survey and high on the follow-up survey.

Efforts were made by both EMC and SRDC to mitigate these concerns, but not avoid them entirely. Maintaining participants' confidentiality was a priority for both EMC and SRDC throughout the project: participants' names and scores were never shared with employers.

However, when a small number of workers from a company were enrolled in the PFP pilot, it was possible for the employer to identify which participants did not meet the thresholds of success.

Rewarding performance

During the PFP pilot, stakeholders interviewed were asked to share their views on each of the three milestone measures. Tying reimbursement to skills gains received the most push-back. Many felt that some workers who face test anxiety could face stress ahead of the assessment. SRDC and EMC attempted to minimize these fears ahead of the implementation and included a disclaimer in the survey to assuage fears of a test.

Additionally, from an ethical perspective, using a voluntary survey to assess scores used for a milestone payment created a potentially problematic situation. SRDC and EMC went to great strides to inform participants of their rights within the evaluation. Yet, participants were required to complete the skills assessment module in both the baseline and follow-up assessments for their employer to be reimbursed. Employers were also required to complete the follow-up survey prior to receiving reimbursement for the third milestone.

One employer strongly objected to the use of the skill gains as an incentive and did not want their performance to be tied to a financial reward. They believed that it would distract their workers and place undue pressure on their performance, instead of allowing them to focus on learning and increasing their skills.

“Skin in the game”

During the recruitment process, EMC heard from employers about how valuable it was to give them some “skin in the game.” Essentially, the model provides them with conditional repayment: employers have to demonstrate that the program works for their workers, which means that they have to stay engaged throughout the training. This incentive—tied to the third milestone—was overwhelmingly well received by employers.

Interviewees provided specific examples:

- Participants were more motivated to attend classes, to participate in the class and complete their assignments;
- Facilitators actively sought to work with absent participants to make up lost time or missed activities;

- Employers encouraged workers to attend all sessions or make them up if they had to be absent;
- Supervisors were more active during WPP planning sessions with their staff and provided feedback and encouragement to their workers ahead of their presentations.

EMC staff noted the contrast in employer behaviours between the free training offered in the national MEC pilot and those in the PFP pilot. The biggest difference observed was in the way employers selected participants, seeking out employees who were committed and engaged, who wanted to be present and succeed. When the company's money was at stake, employers were motivated to achieve success.

"When it's free training, no one has any skin in the game. Essentially, they can select who they want and if they don't show up, it's nothing other than that they're out a few hours of work."

EMC Staff

OUTCOMES EVALUATION

OUTCOMES FROM THE MEC TRAINING PROGRAM

The soft skills section of the survey includes 20 items, combining measures of communication, leadership, teamwork, and problem-solving skills. These skills were identified by EMC and by employers participating in the program as being the key outcomes of the program, consistent across all MEC streams. They are referred to as the four core MEC skills.



Effective
communication skills



Problem-solving
skills



Teamwork and
collaboration skills



Leadership skills

The ***Effective Communication skills*** scale is a five-item scale that combines a number of skills that assess a participant's ability to communicate clearly, understand information, ask questions to gather information, restate information shared by a colleague, and speak in front of a group of people.

The ***Leadership skills*** scale is a four-item scale that touches on activities and skills related to the management of others, effective decision-making, leadership abilities, or the capacity to work autonomously.

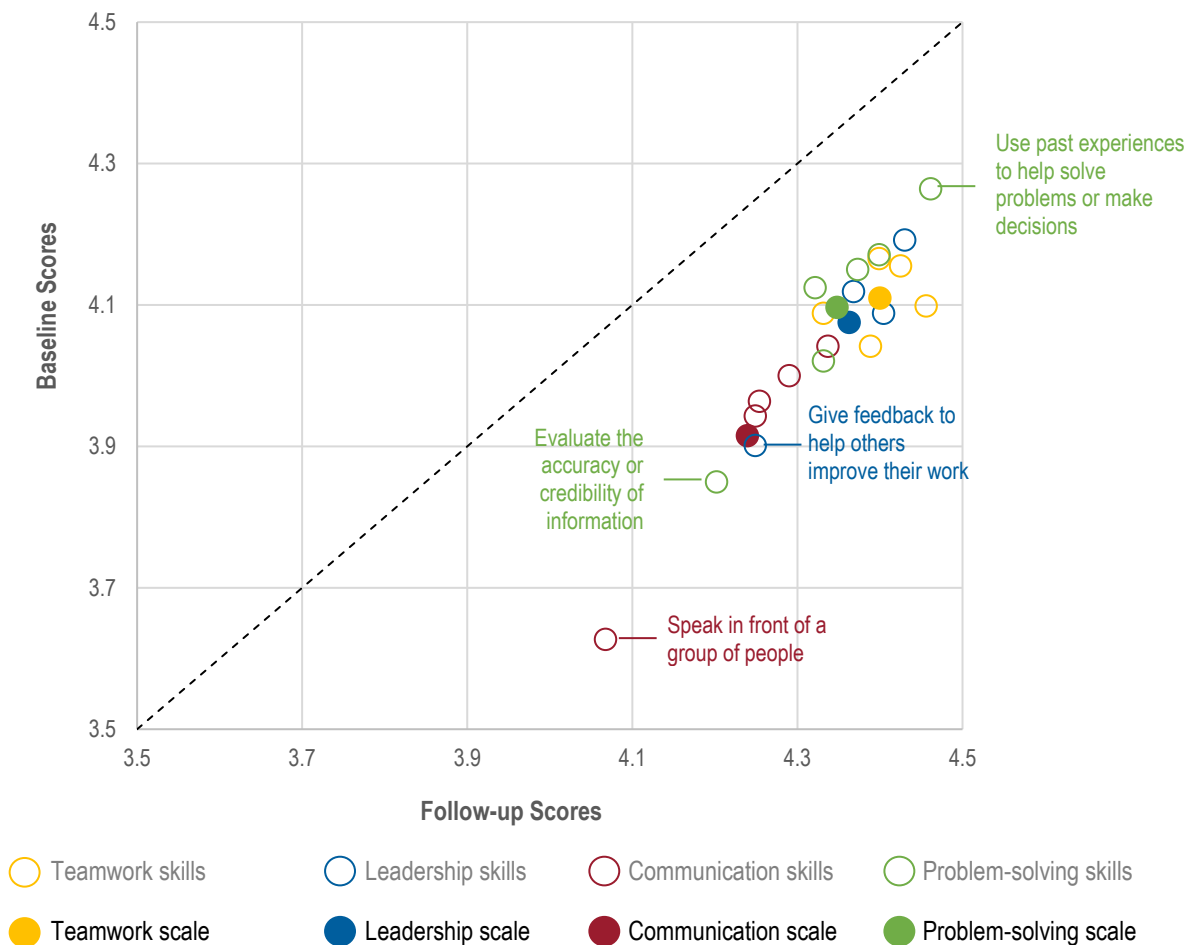
The ***Teamwork and collaboration skills*** scale is a five-item scale that includes a number of items that assess a participant's ability to collaborate with co-workers to solve problems, participate in making group decisions, ask for help or advice, understand and follow directions, and use feedback to improve work.

The ***Problem-solving skills*** scale is a six-item scale that asks participants to self-assess their abilities to identify a problem, and to collect necessary information in order to propose viable and reasonable solutions to resolve the problem.

All 20 items were measured on a 5-point scale ranging from **strongly disagree** (1) to **strongly agree** (5). Mean scores were calculated for each of the four scales at baseline and follow-up. An increase in mean scores at follow-up compared to baseline is therefore indicative of an increase in skills following the training. Importantly, SRDC did not assess any causal relationships, and therefore cannot determine, with confidence, whether—and to what magnitude—the training was responsible for the changes observed.

Figure 5 provides a high-level overview of participants' score between baseline and follow-up on each of the 20 items used to measure MEC's core skills. Items that have the highest or lowest average scores within a scale are labelled on the graph.

Figure 5 High-level comparison of mean baseline and follow-up scores of core MEC skills, according to item and scale



Source: Participant baseline and follow-up surveys.

Note: The figure above is intended to provide a high-level view of the changes in average scores across all items and scales measuring MEC's core skills.

How to interpret this graph: The **vertical axis** maps out the average baseline scores for each item and scales across the four core skills of the MEC program. The **horizontal axis** maps out average scores from the follow-up survey. The dotted diagonal line is the "equality line": the items on this line have the same average scores at baseline and at follow-up.

The circles furthest away from the equality line indicate a large difference in scores between baseline and follow-up. The circles on the right side of the line have higher scores at follow-up than at baseline.

Pre-post analysis on core MEC skills

A paired t-test was conducted to compare participants' average self-assessed skills across the four core MEC skills (communication, leadership, teamwork, and problem-solving skills) between baseline and follow-up.

The results indicate a statistically significant increase in participants' core MEC skills in all four areas, suggesting that the training was effective in improving participants' skills. Table 14 presents the results of the paired t-test for each of the four skills.

Table 14 Comparison of mean scores on core MEC skills between baseline and follow-up

Core Skills	N	Mean Scores on a five-point scale		Diff (SE)
		Baseline	Follow-up	
Communication	193	3.92	4.24	0.32 (0.05) ***
Leadership	193	4.08	4.36	0.29 (0.04) ***
Teamwork	193	4.11	4.40	0.29 (0.04) ***
Problem-solving	193	4.10	4.35	0.25 (0.04) ***

Source: Participant baseline and follow-up surveys.

Note: Statistical significance is denoted as follows: * < 10%, ** < 5%, *** < 1%.

Pre-post analysis on core MEC skills by participant skill level

While essential skills training can provide a benefit to all learners, those with lower skill sets prior to the training are more likely to benefit from training. To test this theory, SRDC conducted a median split analysis. This analysis involved dividing participants into two groups (lower-skilled workers and higher-skilled workers) according to their baseline scores in each of the four core MEC skills and testing the differential effects of the training on these subgroups.

As predicted, Table 15 shows that participants with lower baseline scores had more room for improvement, and thus the gains observed in this group were relatively large and significant.

Participants with higher baseline scores have less room for improvement at follow-up and therefore face a ceiling effect. Nevertheless, higher-skilled participants showed positive improvements in skills after the training. On average, the size of gains for this group were

smaller, though statistically significant gains were found in leadership skills and in teamwork skills.

Overall, the training had a positive impact on both lower-skilled and higher-skilled workers, indicating that the training has broad applicability and benefits for a range of participants.

Table 15 Median split analysis of mean scores on core MEC skills between baseline and follow-up

Core Skills	Subgroups	N	Baseline	Follow-up	Diff (SE)
Communication	Low-skilled workers	82	3.39	4.10	0.71 (0.07) ***
	High-skilled workers	111	4.31	4.34	0.04 (0.05)
Leadership	Low-skilled workers	54	3.40	4.22	0.82 (0.09) ***
	High-skilled workers	139	4.34	4.42	0.08 (0.04) **
Teamwork	Low-skilled workers	46	3.45	4.25	0.80 (0.09) ***
	High-skilled workers	147	4.32	4.45	0.13 (0.04) ***
Problem-solving	Low-skilled workers	61	3.53	4.25	0.71 (0.09) ***
	High-skilled workers	132	4.36	4.40	0.04 (0.04)

Source: Participant baseline and follow-up surveys. Sample size is 193 participants.

Note: Statistical significance is denoted as follows: * - 10%, ** - 5%, *** - 1%. Low-skilled workers are defined as having baseline scores below the median (<4.00); high-skilled workers are defined as having baseline scores at or above the median (≥4.00).

Employer assessment of participants' core MEC skills

Employers were also asked in both baseline and follow-up surveys to rate their workers' skills on the same scale. While this analysis was done at a group level rather than an individual level, it does provide some degree of confirmation as to whether skills following the training are indeed increasing.

A paired t-test was conducted to compare employers' perception of their employees' core MEC skills. It should be noted that employers who were involved in multiple PFP-funded MEC sessions were asked to complete a single baseline survey but completed follow-up surveys following each session. Each follow-up survey was paired with the same baseline survey. This allows us to analyze the changes in employer perceptions of their employees' core MEC skills over time for those who completed both surveys.

The results showed a significant increase in employers' perceptions of their employees' core MEC skills in the four areas from baseline to follow-up (Table 16). These findings suggest that the training had a positive impact on employees' core MEC skill development, as perceived by their employers.

Table 16 Employer perceptions of participants' core MEC skills at baseline and follow-up

Core Skills	N	Baseline	Follow-up	Diff (SE)
Communication	38	3.95	4.37	0.42 (0.19) **
Leadership	38	3.82	4.50	0.68 (0.21) ***
Teamwork	38	4.05	4.50	0.45 (0.17) **
Problem-solving	38	3.95	4.45	0.50 (0.20) **

Source: Employer baseline and follow-up surveys.

Note: Statistical significance is denoted as follows: * - 10%, ** - 5%, *** - 1%.

Pre-post analysis on attitudes towards work and psychological capital

Psychological capital refers to a person's attitudes and mental well-being and can act as mediating and moderating factors in the context of a workplace training program. These factors can explain the relationship between the training and its outcomes or the degree of influence of the training on its outcomes. The survey also measured changes in attitudes towards work

Table 17 provides an overview of the paired t-test analysis. Overall, participants we find a positive increase across all indicators of participant's psychological capital from baseline to follow-up. Most indicators of participants' attitudes towards work are also increasing, though we do find some non-significant decrease in average scores regarding participants' opportunities for career growth and promotion, and in their overall job satisfaction.

Nevertheless, these results suggest that the MEC training not only led to improvements in soft skills but also positively impacted employees' other factors that have a positive effect on their job performance, including their self-esteem, their resilience, and their attitudes toward training.

Table 17 Comparison of mean scores on attitudes towards work and psychological capital between baseline and follow-up

	N	Baseline	Follow-up	Diff (SE)
Self-esteem - I see myself as someone who has high self-esteem	192	3.73	3.86	0.13 (0.06) **
Resilience	193	3.31	3.45	0.14 (0.04) ***
I am able to adapt to change	193	3.36	3.49	0.13 (0.05) ***
I tend to bounce back after illness or hardship	193	3.25	3.40	0.15 (0.06) **
Attitudes towards work	192	4.03	4.16	0.13 (0.04) ***
In my job, I feel accepted by other employees	192	4.05	4.18	0.14 (0.05) ***
My job helps me with my specific career goals	192	3.90	4.01	0.11 (0.06) *
I am able to succeed in my job even when the work is challenging or difficult	192	4.14	4.29	0.15 (0.05) ***
Attitudes towards training	192	4.34	4.45	0.11 (0.05) **
I am more likely to get a better job if I get the proper training	192	4.17	4.34	0.17 (0.06) ***
Learning new things makes me more confident	192	4.52	4.56	0.05 (0.05)
Getting qualifications takes too much effort	192	2.17	2.24	0.07 (0.06)
Job satisfaction	193	3.99	4.05	0.06 (0.04)
The opportunities to use your skills and experience	193	4.01	4.11	0.10 (0.05)**
The opportunities to use your own initiative and make decisions	193	4.03	4.16	0.12 (0.06)**
Your job security	193	4.00	4.06	0.06 (0.05)
Support from your supervisor or manager	193	4.00	4.11	0.11 (0.06)*

	N	Baseline	Follow-up	Diff (SE)
The opportunities for career growth and promotion	193	3.86	3.84	-0.02 (0.06)
The opportunities for learning new things and developing your own abilities	193	4.02	4.04	0.03 (0.05)
Overall job satisfaction	193	4.05	4.04	-0.01 (0.05)
Trust in others	192	2.21	2.23	0.02 (0.04)
A neighbour who lives close by	192	2.37	2.38	0.01 (0.05)
An employee at a local business	192	2.06	2.09	0.03 (0.05)

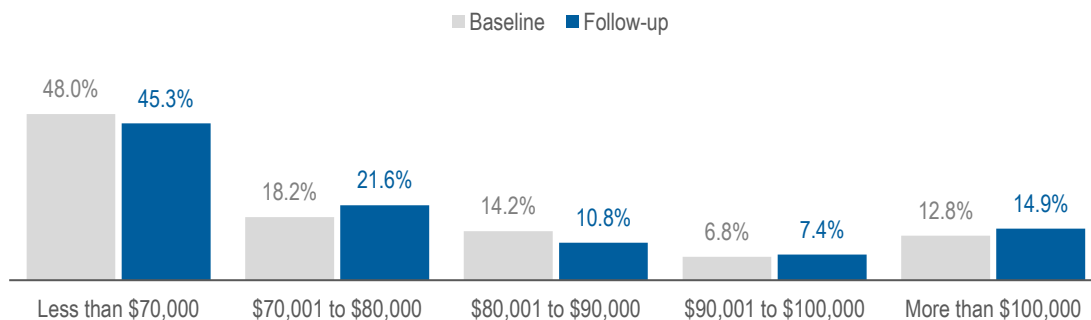
Source: Participant baseline and follow-up surveys. Statistical significance is denoted as follows: * - 10%, ** - 5%, *** - 1%.

Pre-post analysis on earnings and benefits

An increase in earnings after participating in a training program is an important indicator of a program's success. It provides an indication that an increase in skills translates into a recognizable and valuable increase in their performance in the workplace. It can also indicate that participants are able to take on greater responsibilities or be promoted to higher positions within their workplace.

MEC participants' earnings were tracked at both baseline and follow-up, in a variety of ways (e.g., hourly wages and hours of work per week) and converted into comparable annual earning brackets. The proportion of MEC participants according to the annual earnings before and after the training are presented in Figure 6.

Figure 6 Proportion of MEC participants according to annual earnings brackets at baseline and follow-up



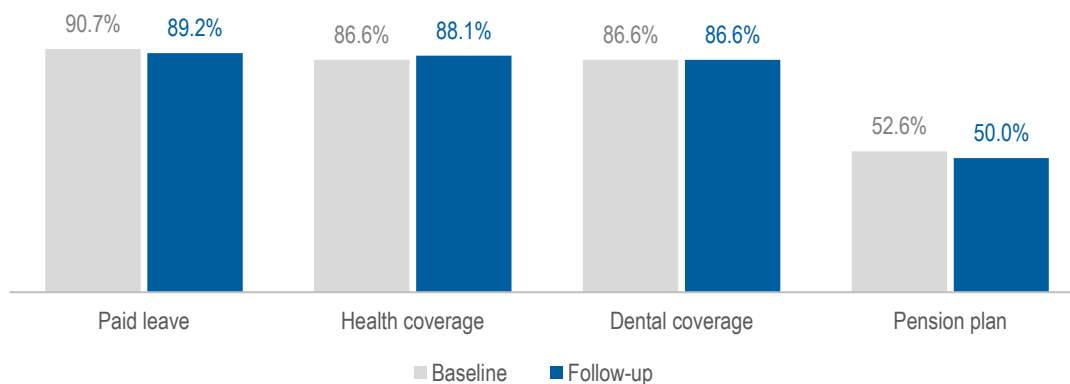
Source: Participant baseline and follow-up surveys. Sample size is 148 respondents.

While we do see a decrease in the proportion of MEC participants reporting annual earnings less than \$70,000, and increases in higher earning brackets (e.g., 90,001 to 100,000, and more than \$100,000), the variations observed in the pre-post analysis were not statistically significant. This result is not entirely surprising as the time horizon between the start of the program and the follow-up survey is only four months. A longer assessment period, with a reliable comparison group, may provide stronger evidence on the effects of the program on earnings.

The survey also assessed the benefits they receive from their employers. Participants were asked to select from a list all benefits provided to them by their workplace, which ranged from paid leave (e.g., paid vacation time, paid sick leave, parental leave, and paid personal leave), health benefits, dental care, and access to a pension plan. Receipt of benefits were tracked at both baseline and follow-up, like earnings, to detect whether participation in the training has any effect on their receipt of employer-provided benefits.

Figure 7 illustrates the proportion of MEC participants who report having access to employer-provided benefits at baseline and follow-up. The results show a slight decrease in the proportion of participants who reported receiving paid leave at follow-up. There was a small increase in the proportion of participants with health coverage, but no change in the receipt of dental coverage. Regarding the pension plan, there was a slight decrease after the training. None of these results were not statistically significant, which suggests that the training did not have a significant effect on participants' access to employer-provided benefits.

Figure 7 Comparison of proportions of participants with paid leave benefits between baseline and follow-up



Source: Participant baseline and follow-up surveys. Sample size is 193 MEC participants.

MOTIVATIONS AND ENGAGEMENT IN TRAINING (MEET) STUDY

The purpose of the MEET study was to collect information regarding employer experiences with workplace training, their motivation to train, and the barriers that prevent employers from accessing or investing in training. SRDC also sought to understand the various types of funding mechanisms and training incentives that would increase engagement in workplace training programs.

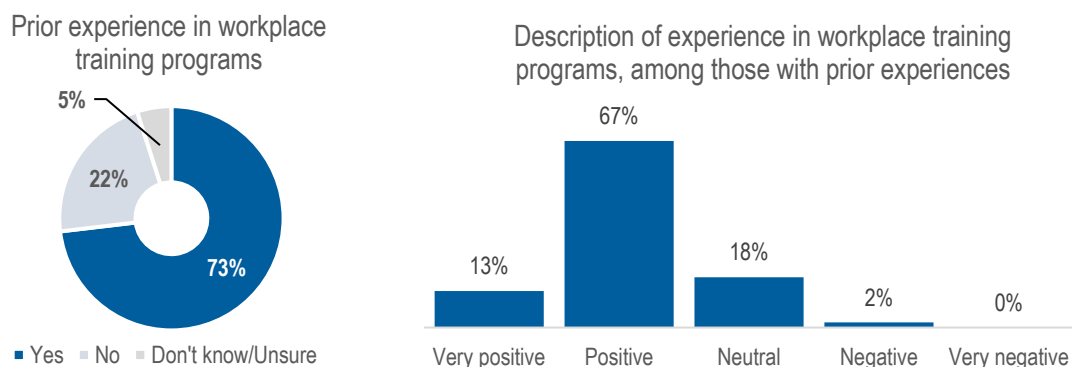
By integrating the MEET study within EMC's annual ManufacturingGPS labour market information (LMI) study administered to its 10,000 members across Canada's manufacturing sector, SRDC was able to obtain a larger sample compared to its PFP pilot. Overall, 748 respondents completed the voluntary module.

Prior experience in training

To start, respondents were asked whether they had participated in workplace training programs in the past. Just under three quarters (73 per cent) could confirm that their company had participated in a workplace training program for their staff. Just under a quarter of respondents (22 per cent) had not, while the remaining 5 per cent did not know or were unsure.

Among those who had participated in such programs, the reaction was positive according to 67 per cent of respondents. Another 13 per cent rated their experience as very positive. While 18 per cent remained neutral regarding their experiences, very few (2 per cent) had a negative experience.

Figure 8 MEET Study results: Prior experience in training



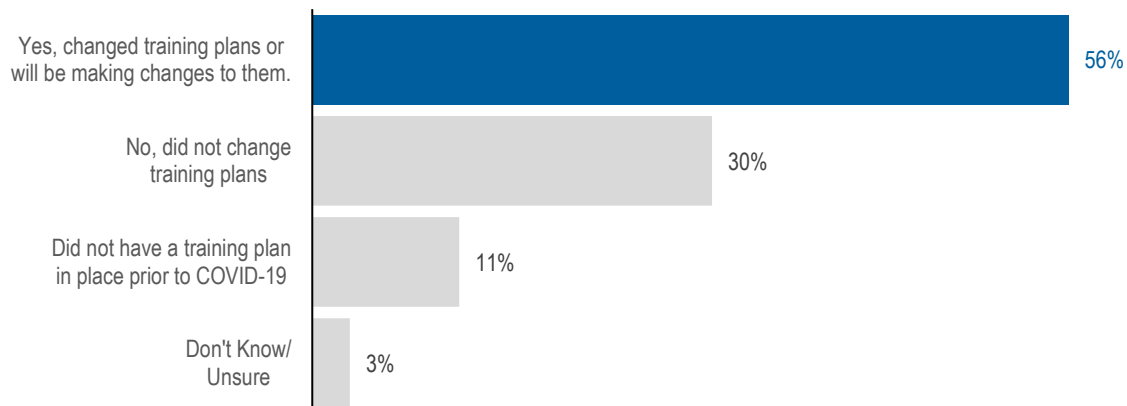
Source: MEET Study, 2020. Sample size is 748 respondents.

Effects of COVID-19 on training plans

At the time of the MEET study, the COVID-19 pandemic had already had significant effects across the Canadian economy, and the manufacturing sector was no exception. As part of our study, we wanted to understand whether manufacturers would change how they train, how often they would train, or how much they were willing to invest in training as a result of the pandemic.

The MEET study asked respondents whether they had made any changes to their learning plans as a direct result of the COVID-19 pandemic or the subsequent economic downturn. Over half of the study's respondents (56 per cent) indicated that they had changed their training plans or were expecting to make changes to these plans because of the COVID-19 pandemic. Just under a third (30 per cent) did not make any changes to their plans, while a very small number (3 per cent) were unsure. Interestingly, 11 per cent of respondents did not have a training plan in place prior to the pandemic.

Figure 9 MEET Study results: Changes to training plans due to COVID-19

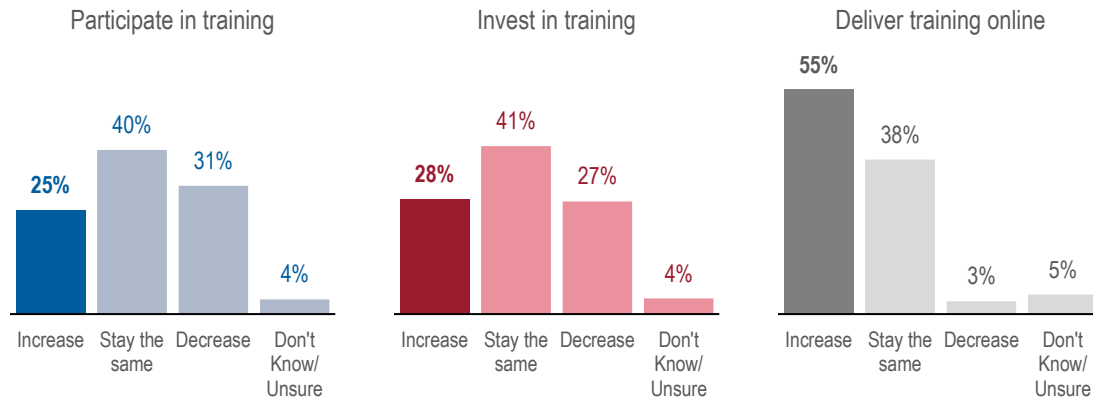


Source: MEET Study, 2020. Sample size is 748 respondents.

Respondents who indicated that they either had changed or were expecting to make changes to their training plans were asked to specify whether these changes would have any effects on their company's participation in workplace training programs, the level of investment in workplace training programs, and their participation in online training programs.

As shown in Figure 10, roughly one quarter of respondents expected their company's participation in workplace training (25 per cent) or their investments in workplace training (28 per cent) to increase following changes to their training plans. The majority expected both participation and investments to stay the same (40 per cent and 41 per cent, respectively),

Figure 10 MEET Study results: Anticipated changes to training plans



Source: MEET Study, 2020. Sample size is 423 respondents.

Attitudes towards training

To assess employers' attitudes towards training, the MEET study included nine items measuring various dimensions of training, including skill development, work readiness, value for money, productivity, and alignment with business objectives. Respondents were asked to rate their level of agreement with each of the statements.

As shown in Figure 11, the results are generally consistent and positive across all dimensions that measure employers' attitudes towards training. In fact, the pattern of response shows that even as the proportion of respondents with positive attitudes towards training starts to diminish, we see an increase in the proportion of respondents who selected the "neutral" category, and only a slight increase in negative views.

Results showed a pattern of responses among items with similar objectives.

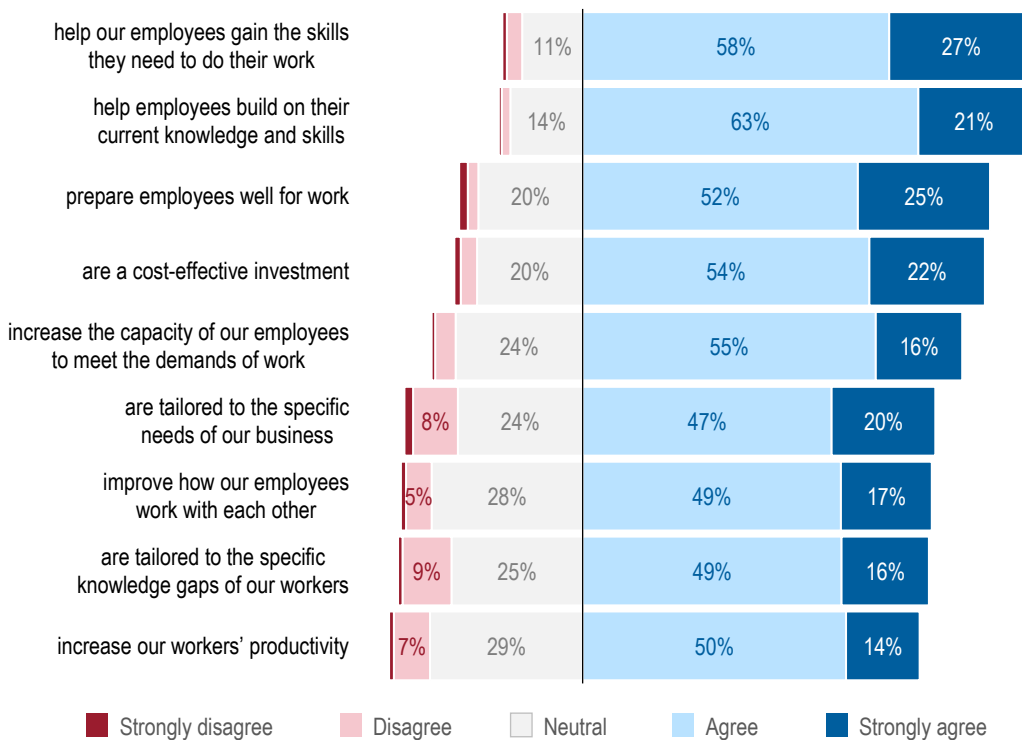
- Skills development:** The two items with the highest degree of satisfaction among employers are those related to skills development: training helps build new skills (85 per cent agree or strongly agree) and training builds on current knowledge and skills (84 per cent agree or strongly agree). This finding confirms that employers in the manufacturing sector believe that workplace skills training can help workers increase their skills.
- Work readiness and cost effectiveness:** The next three items in the figure follow a similar distribution. They include two items regarding work readiness, such as increasing the capacity of employees to meet the demands of work (71 per cent agree or strongly agree) and in preparing workers for their work (77 per cent). Additionally, respondents provided a

similar level of agreement when asked whether they believe that training programs are a cost-effective investment (76 per cent agree or strongly agree).

- **Collaboration and productivity:** The two items with the highest proportion of neutral responses asked respondents if they agreed that training increases collaboration (28 per cent were neutral) or productivity (29 per cent). Nonetheless, it is important to note that close to two-thirds of employers still agreed or strongly agreed that workplace training programs do achieve these outcomes.
- **Alignment with training needs of workers:** Two-thirds of respondents agreed or strongly agreed that workplace training programs are tailored to the specific needs of their workplace (67 per cent) or to the specific knowledge gaps of their workers (65 per cent), yet items also include the highest proportion of respondents who disagreed (10 per cent disagreed or strongly disagreed with both items). This finding suggests that there are still employers seeking training solutions but are unable to find some that address the specific skill gaps of their workers.

Figure 11 MEET Study results: Attitudes towards workplace training programs

Workplace training programs...



Source: MEET Study, 2020. Sample size is 748 respondents.

Disincentives to invest

This section of the MEET study sought to understand the factors that could explain why employers were not making the necessary investments in training or that were most likely to prevent further investments.

Interestingly, respondents overwhelmingly disagreed with the statement “*It is not the responsibility of employers to train their workers.*” With 89 per cent disagreeing, this is a strongly positive finding, indicating that employers recognize their responsibility to train workers.

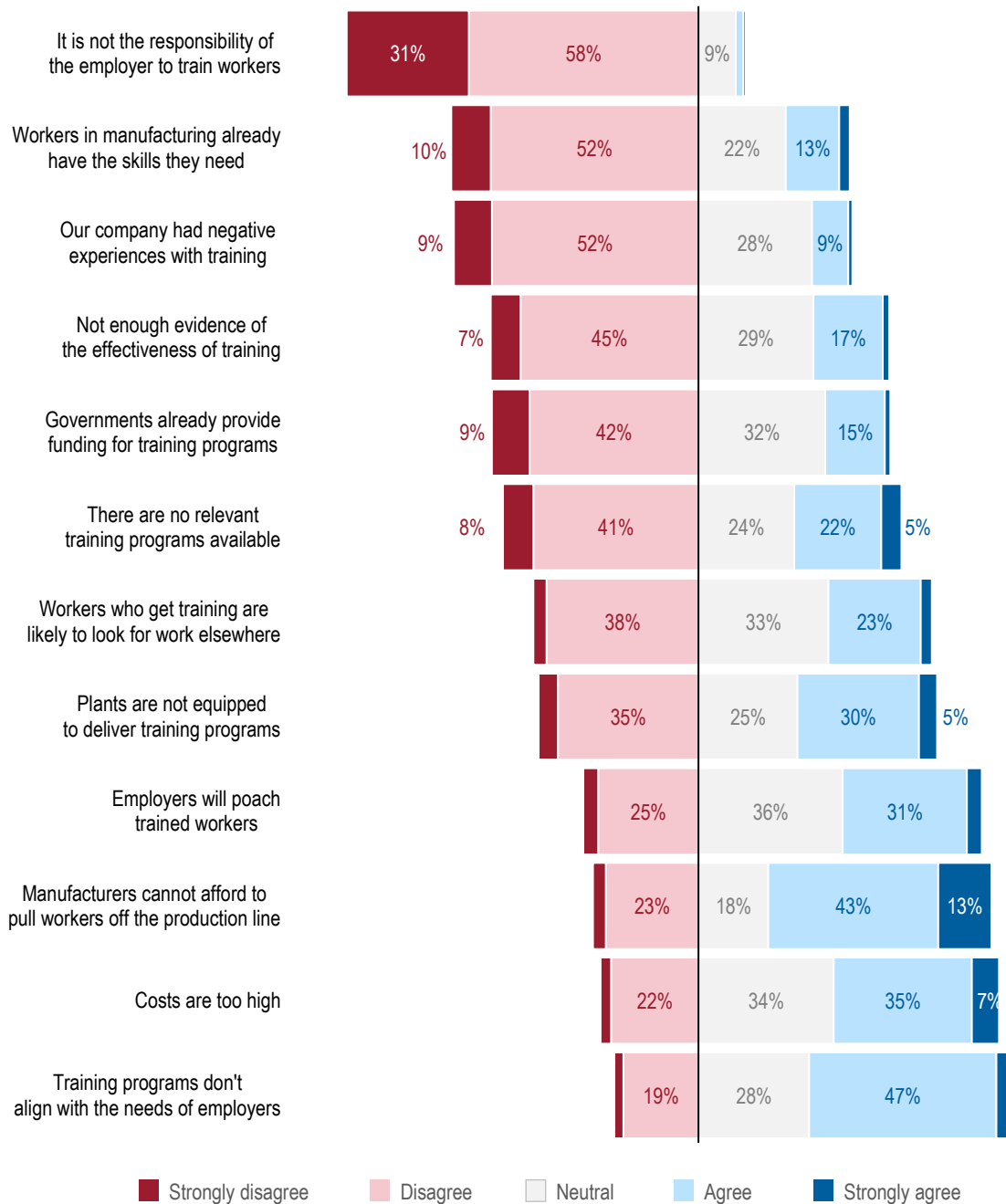
Among the three items that are most likely to affect future investments in training, two are related to the costs of training. Over half of respondents (56 per cent) agreed or strongly agreed that the indirect costs of training—the productivity loss due to pulling workers off the production line—is a strong disincentive to invest in training, while 42 per cent believe that the costs of training are too high.

The biggest disincentive to invest in training among manufacturing employers is the belief that there is not a strong enough alignment between skills training and their workers’ needs. Only 21 per cent of respondents disagreed with this statement. Similar results also appear in our analysis of employers’ attitudes towards training (Figure 11) and incentives to encourage investment (Figure 13).

The MEET study findings suggest that most employers do not see training programs as aligning close enough with the specific needs of their workplace. This finding is important for training organizations such as EMC: The stronger the alignment, the more likely employers will invest in training.

To encourage investment in training programs, additional efforts should be made to ensure a clear alignment between the training curricula and the needs of manufacturers. Efforts should also be made to communicate how these programs will meet their training needs and address their workers’ skills gaps.

Figure 12 MEET study results: Reasons for not investing in training



Source: Motivations and Engagement of Employers in Training (MEET) study.

Note: Proportions below 5% are omitted from the graph.

Program design to increase investment in training

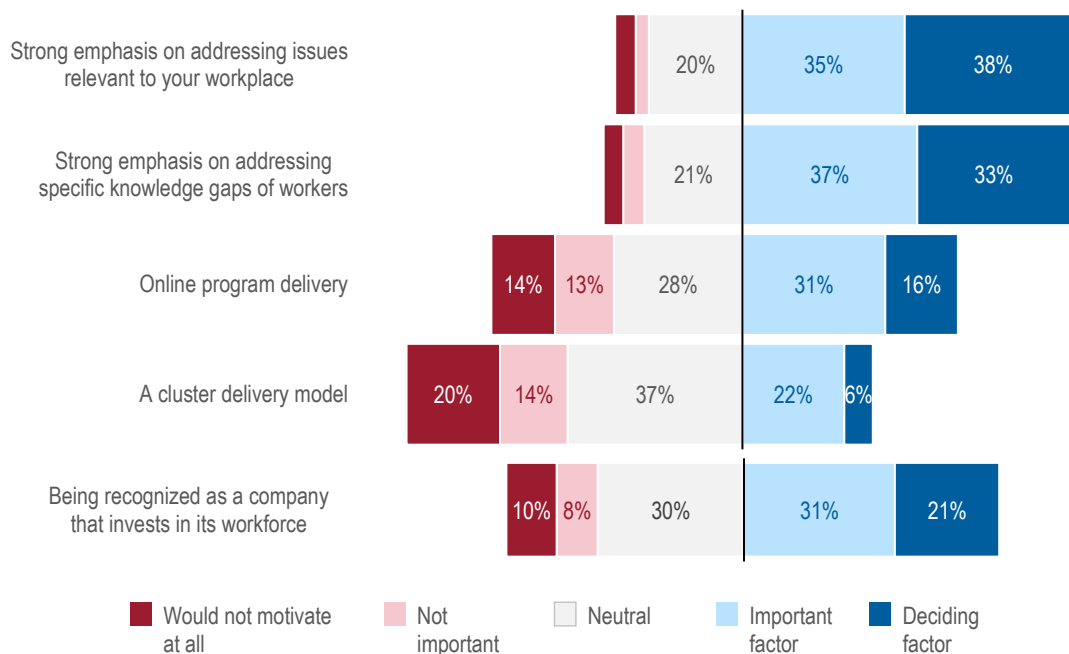
In parallel to factors that discourage investment in training, the MEET study explored factors that could encourage employers to invest in training. The first question in this section of the MEET study asked respondents to rate the extent to which various program components would increase their motivation to invest in training.

As previously mentioned, most employers are motivated by the effectiveness of training programs in addressing relevant issues in their workplace (73 per cent believe this is an important or deciding factor) and addressing the knowledge gaps of their workers (70 per cent).

Conversely, training programs delivered online were less of an enticement (47 per cent believe this is an important or deciding factor) and even less so for clustered delivery models (28 per cent).

Still, over half of employers (52 per cent) see value in being recognized as a company that invests in its workforce, indicating that this would be an important or deciding factor to invest in training.

Figure 13 MEET study results: Factors that would increase motivations to invest in training



Source: Motivations and Engagement of Employers in Training (MEET) study.

Note: Proportions below 5% are omitted from the graph.

Training outcomes that encourage investment

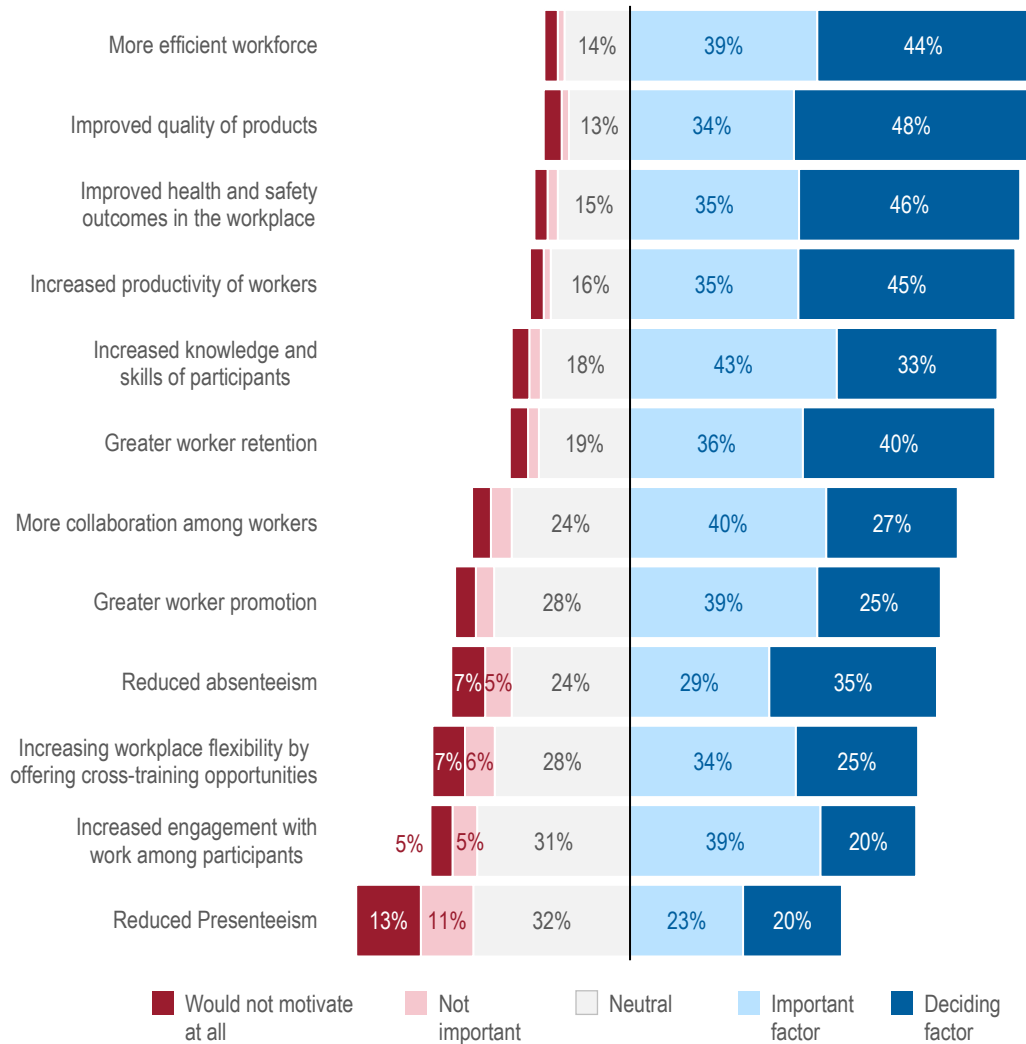
Well-designed workplace training programs should have a strong alignment across its curricula, the skills gaps of workers, and the business outcomes of employers. The MEET study confirmed that employers are willing to invest in training programs that provide such an alignment—and are unwilling to invest in those that do not.

The study aimed to understand which training outcomes targeted by training programs are more likely to encourage employers to invest. As presented in Figure 14, a majority of respondents responded favourably to all outcomes presented, with the exception of a reduction in presenteeism, where less than half (43 per cent) of respondents stated this outcome would encourage them to invest in training.

We do not see much variability in the top six items: increasing efficiency and productivity, improving product quality and health & safety in the workplace, increasing knowledge and skills of workers, and retaining workers. Between 76 and 83 per cent of respondents consider these outcomes important in their decision to invest. Seeing positive changes across these outcomes are clearly top of mind for employers when considering training programs.

Employers were more ambivalent (neutral) in terms of training programs that contribute to an increase in collaboration among workers, that result in greater numbers of workers being promoted, or that reduce absenteeism. Opportunities for cross-training were also deemed less favourable, as were training programs that increase participants' engagement with work.

Figure 14 MEET Study results: Training outcomes that increase employers' motivation to invest in training



Source: Motivations and Engagement of Employers in Training (MEET) study.

Note: Proportions below 5% are omitted from the graph.

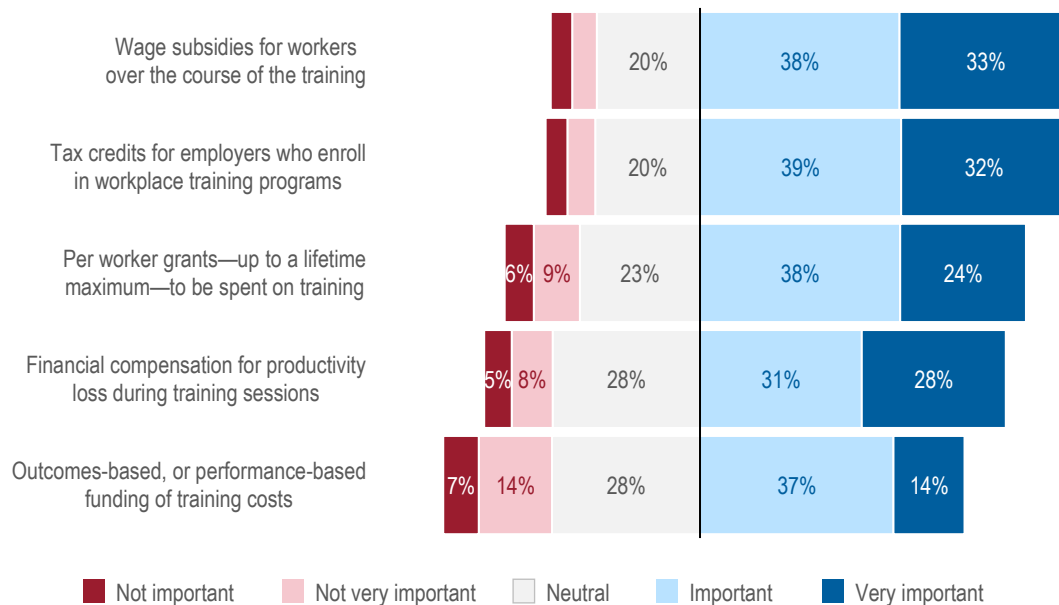
Preferences for funding models to support training

In support of the PFP pilot project, SRDC and EMC wanted to hear directly from employers across the manufacturing sector about the types of funding models that would best support them and their training objectives. Respondents to the MEET study were asked to rate the degree to which various partial funding models would encourage them to invest in training programs.

Generally, over half of employers considered every listed funding model to be either important or very important in their decision to train. The results indicates that employers are willing to accept financial supports in various formats to minimize their costs of training.

The results indicate that funding supports in the form of wage subsidies (71 per cent) or tax credits (71 per cent) are considered either important or very important by more than two thirds of respondents when considering whether to sign up for training. The offer of training grants for workers—up to a lifetime maximum—also received strong support from respondents with 62 per cent. Of note, the least preferred financial models—compensation for productivity loss (59 per cent) and outcomes-based or performance-based funding models (51 per cent)—are those featured by the PFP model; however, this may in part be due to respondents' unfamiliarity with these types of models

Figure 15 MEET Study results: Preferred funding models to support training



Source: Motivations and Engagement of Employers in Training (MEET) study.

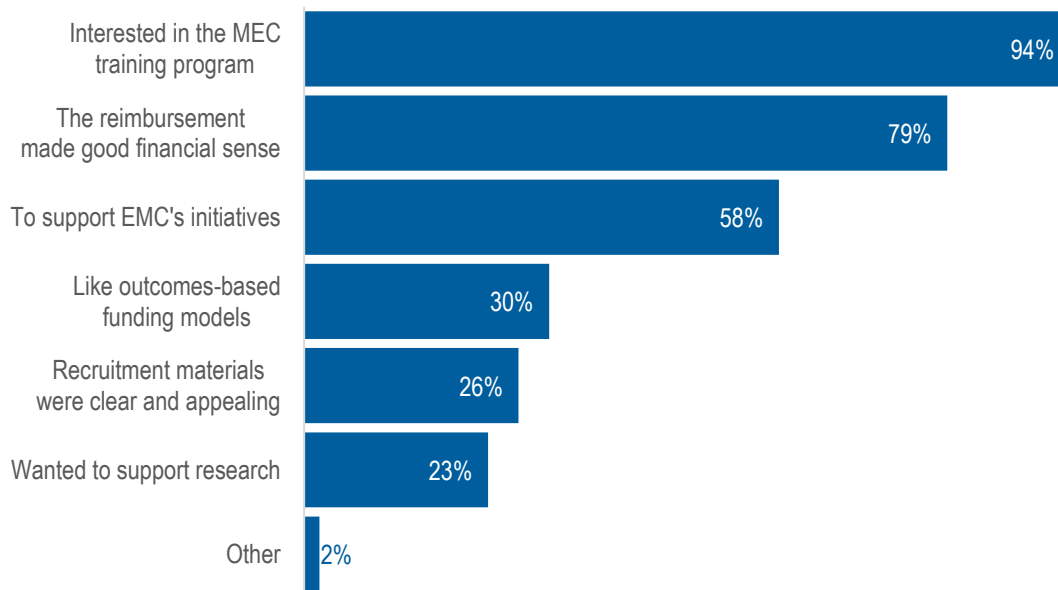
Note: Proportions below 5% are omitted from the graph.

OUTCOMES FROM THE PFP FUNDING MODEL

Reasons for participating in the PFP project

Figure 16 illustrates several key reasons for participating in the PFP project. The most commonly reported reason was the interest in the MEC training, with 94 per cent of employers indicating this as a motivating factor. The large majority of employers (79 per cent) also stated that the reimbursement made good financial sense, which was a key factor in their decision to participate in the project. Additionally, 58 per cent of employers expressed support for EMC's initiatives, and 30 per cent liked outcomes-based funding models. A quarter of employers (26 per cent) found the recruitment materials to be clear and appealing, and 23 per cent expressed a desire to support research.

Figure 16 Reasons for participating in the PFP project



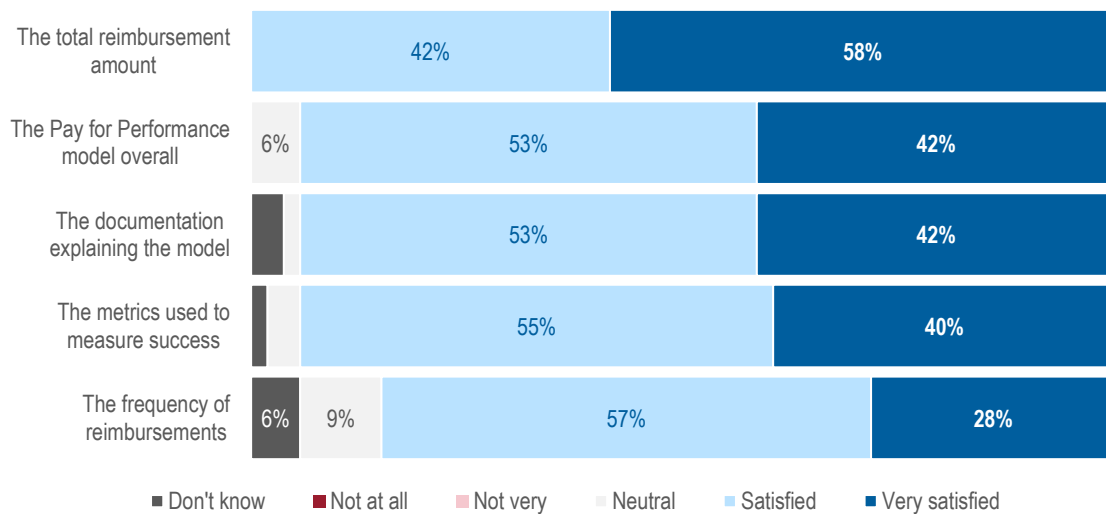
Source: Employer follow-up survey. Sample size is 53 employers.

Satisfaction with the model

Although SRDC worked closely with employers in the manufacturing sector to validate the model, these consultations were primarily a conceptual exercise. Once implemented, participating employers could have very different reactions. As part of our evaluation, SRDC sought to document the extent to which employers were satisfied with the model, its reimbursement levels, and its various elements.

As shown in Figure 17, employers reported high levels of satisfaction with the various features of the PFP model. All were either satisfied (42 per cent) or very satisfied (58 per cent) with the total reimbursement amount. An equivalent proportion of employers (95 per cent) were either satisfied or very satisfied with the model overall, the documentation explaining the model, and the metrics used to measure success. Satisfaction with the frequency of reimbursements was slightly lower at 85 per cent. Importantly, no employer indicated being dissatisfied with the PFP model.

Figure 17 Employer satisfaction with the PFP model



Source: Employer follow-up survey. Sample size is 53 employers.

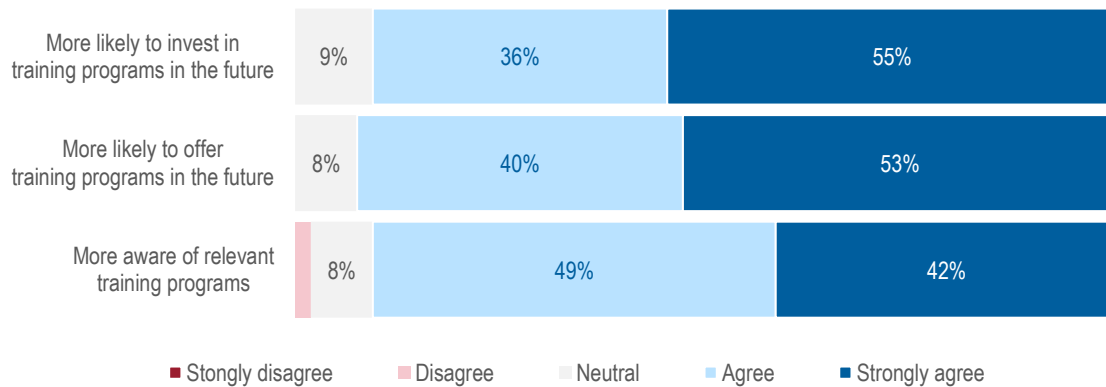
Effects of the PFP pilot on employers' engagement in future training

One of the key indicators of success for the PFP pilot is the degree to which the model affected employers' willingness to train and to invest in training. These findings are directly related to the theory of change and the hypothesis that the funding model could help encourage employers to make more investments in the future.

Findings presented in Figure 18 show that, following their participating in the PFP pilot, nearly all employers agree or strongly agree that they are more likely to invest in training in the future (91 per cent) and more likely to offer training programs (93 per cent). While these findings are encouraging, longer-term analysis is needed to determine whether PFP-participating employers are, in effect, more likely to offer and to invest in training in subsequent years.

Employers were also asked to whether the PFP pilot increased their awareness of relevant training programs. Findings suggest that, indeed, most employers (91 per cent) were more aware of relevant training programs available for their workforce.

Figure 18 Employer engagement in future training



Source: Employer follow-up survey. Sample size is 53 employers.

LESSONS LEARNED

LESSONS FROM MEC FOR OTHER TRAINING PROGRAMS

The MEC training program increases participants skills

The evaluation the Manufacturing Essentials Certification program demonstrates the effectiveness of the training in increase skills across a range of soft skills. SRDC's analysis of participants' self-reported abilities in communication, leadership, teamwork, and problem-solving found statistically significant improvements across all items. More than 80% of employers also reported improvements in their workers across each of the four core MEC skills after the training.

The training not only led to improvements in soft skills but also positively influenced participants' overall well-being at work, including self-esteem, attitudes towards work and training, resilience, and job satisfaction. This suggests that **the training had broader benefits** beyond increasing participants' soft skills.

It is important to note our analysis does not provide evidence of a causal relationship between the training and skills gains; rather, the findings show changes in skill levels following participation in the MEC training. In the future, an experimental design could allow researchers to better isolate the effects of the MEC training on participants.

Targeting lower-skilled workers should be a priority for future programs

The selection process for MEC program participants is left up to the discretion of manufacturing companies. Representatives from participating companies shared their selection process, which focuses on addressing their workforce's skills need across the following priorities to:

- Reward hard-working, committed employees;
- Enhance skills and knowledge of high-performing individuals with potential for growth in the company;
- Upskill new employees who lack core manufacturing skills; and
- Train underperforming workers.

MEC program participants had relatively high baseline scores in soft skills, suggesting that employers may be investing in workers who already have a certain level of the targeted skills. This result is perhaps unsurprising given that firms invest in employees with potential for growth. However, our analysis suggests that workers with lower skills, as well as low levels of resilience or negative attitudes toward training or work, are more likely to benefit from MEC training. For example, workers with low confidence at baseline in their ability to succeed at work report bigger gains in leadership skills after the training. Similarly, those who have greater difficulty bouncing back after illness or hardship report bigger gains in teamwork skills after training.

This finding should not diminish the gains made by high-skilled workers. Importantly, the training had a positive impact on both lower-skilled and higher-skilled workers, suggesting its broad applicability and benefits for a range of participants. Even though the gains for higher-skilled workers were not as large due to a ceiling effect, they still showed improvement in specific areas, such as leadership and teamwork skills.

Nevertheless, employers who are seeking to maximize the impact of the training could do so by enrolling lower skilled workers in training programs.

Applied learning is the key to the MEC program's success

As previously described, the MEC program combines a sector-customized essential skills training program with an applied team-based project—the Workplace Performance Project, WPP—that aims to solve a real-life problem within the team’s workplace.

Both employers and participants have indicated that this training model has been highly effective in increasing participants’ knowledge and skills relevant to their workforce by allowing participants to put into practice their new skills over the course of the training and with the support of their supervisors or managers.

The WPP has made the MEC program an increasingly attractive training program within the manufacturing sector.

Understanding the long-term effects of training requires a longer timeframe

The time horizon of the evaluation limits our understanding of longer-term effects of the MEC training program, especially on productivity and participants’ earnings. Although the results were not statistically significant, there were promising trends in participants’ average earnings following the training. The proportion of participants in higher income brackets increased, suggesting that the training could have positive impacts on employment earnings.

However, the time horizon is too short to truly measure the earnings trajectory of program participants; similarly, although short term outcomes – skill gains – were achieved, it is not known whether not these led to productivity/safety improvements in the workplace. Further investigation, with a longer time horizon, is needed to determine the extent to which these relationships exist.

Engaging employers can increase future participation in training

A key component of the PFP model was the inclusion of an incentive that encouraged employers and supervisors to be fully engaged in the training program and to support workers throughout the process.

In addition to employers reporting improvements in their workers' skills, employers also report being more likely to be aware of, offer, and invest in training programs in the future. Nearly 60 per cent of employers' report that the PFP pilot has made them more aware of relevant opportunities and more likely to invest and offer training in the future.

Further study is needed to explore how the model's incentives can be improved to encourage not only employer investments in training, but also their meaningful engagement in activities that establish conditions for successful training outcomes - especially among employers who have less experience in offering and supporting training.

LESSONS FOR FUTURE PFP MODELS IN CANADA

Overall, employers who participated in the PFP pilot were satisfied with the model, including the reimbursement amounts, the frequency of payments, the metrics used to measure success, and the supporting documentation.

Ensuring the reliability and objectivity of outcomes-based model is crucial

The selection of outcomes for the PFP model was an iterative process, conducted over a period of three years. The process relied on evidence from the evaluation of the MEC pilot, consultations with employers in the manufacturing sector, EMC's own expectations regarding employers' responsibilities in training programs, and best practices from previous evaluations of outcomes-based funding models. Inclusion criteria also required that indicators be reliable, measurable, and fair for all companies involved.

The model relied primarily on outputs and self-assessed outcomes. While neither are ideal for an outcomes-based funding model, the selected indicators provided the best assessment of the

program's success and the best incentives for employers to encourage success, considering the context.

Future PFP models should explore the feasibility and reliability of more objective measures. However, as the next point makes clear, some outcomes of interest are difficult to assess objectively.

Reliably measuring soft skills remains a challenge

The four core MEC skills that were identified by employers as the key learning outcomes from the program are known as soft skills—interpersonal and thinking skills. These skills are difficult to measure objectively through surveys or questionnaires as they are contextually dependent and observed in social situations. In the absence of observed behaviours, subjective self-assessments of individuals' skills were the most reliable measures available to researchers.

Unfortunately, subjective measures are not ideal for a PFP model. When payment is tied to the results of the training, and these results can be self-determined by participants—by lowering their scores at baseline or increasing their scores at follow-up, regardless of their actual perceived skills—the model can be gamed to maximize return.

SRDC tested for this possibility and is confident that there is no evidence of gaming. However, whether real or perceived, the potential for gaming is an issue to be addressed in future PFP models.

It should be noted that SRDC explored objective assessments of MEC's core skills, but the options available were infeasible and impractical to administer at two points in time (at baseline and at the end of the training), especially during the COVID-19 pandemic.

Nevertheless, employers are increasingly seeking training programs that enhance soft skills. As a result, researchers and program developers need to find and adopt rigorous evaluative methods that can assess the effectiveness of these interventions on soft skills. Until such measures can be tested and easily adopted, self-assessments will remain an important instrument to measure improvements in soft skills.

Ensure that results can be validated

Assessment of employer outcomes faced similar validation challenges. Employers were asked to identify how they engaged with and supported staff throughout the training, and were reimbursed based on the number of engagement activities they did. The point here was to increase engagement in training. However, there was no mechanism in place to confirm whether

employers actually did these activities. Due to COVID, facilitators were not on site; they would normally have been present during weekly sessions to better validate employers' engagement and participation in training. Our intention was not to penalize employers, but rather to encourage engagement, so by tying reimbursement to engagement, the hope was that employers would participate in ways they may not have otherwise. However, without a way to confirm their engagement, there's no way to verify whether the incentives had the intended effect on employer behaviours.

Ensure a clear risk-responsibility relationship

Employers were reimbursed when participants showed positive changes in outcomes. But employers are not directly responsible for the delivery of the training—a responsibility owned by EMC and program facilitators—nor are they responsible for their workers' participation in the training.

Certainly, employers have a role to play in the certification process – by ensuring their staff can attend the training, by selecting staff that have a need for training and are committed, by providing opportunities to apply new skills in the workplace. Employers also have a responsibility to engage in the training and support their workers throughout. However, in larger companies, the contact at the firm paying for the training and the manager supporting staff in the training are not the same person.

The implementation research findings concluded that the guidelines of the PFP pilot were not always communicated across the firm, and in some cases, reimbursement was tied to the behaviours and actions of individuals who may not have been aware of all the parameters.

The lesson from this experience is to ensure that those who are being incentivized have a greater role in affecting changes in outcomes.

Communication and engagement with employers are key to the success of a PFP model

Employers who participated in the PFP pilot reported satisfaction with the various features of the PFP model. However, in discussions with EMC, employers indicated that they were frustrated by several aspects of the project and would like to see improvements made.

Specifically, employers needed to be reminded of the reimbursement requirements and conditions. They also were surprised and confused when they did not receive the full reimbursement.

Many employers also lamented the administrative burden of outcomes-based model: having to fill out forms, complete surveys, and ensure participants had completed follow-up surveys. These forms were completed through different processes and platforms. Although some employers felt that this process was no different than applying for a grant, employers were clear that a simplified process would improve their experience.

This lesson makes clear that minimizing the administrative burden on employers should be a priority. SRDC recommends revisiting the DMIS portal and providing employers with user access tailored to firms. A modified portal would allow employers to register for training, sign up to available funding programs, provide secure payment information, share company characteristics, and view statistics on their workforce's training progress. The DMIS could become an efficient single point of access for employers, relieving burden from EMC employees and facilitators.

LESSONS FOR POLICYMAKERS

Employers consider workforce training to be a shared responsibility, but PFP is not necessarily the preferred option

The MEET study confirms that employers across the manufacturing sector understand their responsibility to train their workers. However, many employers believe that investing in upskilling the manufacturing workforce should be a shared responsibility between companies and government.

Despite a high degree of satisfaction with the model by participating employers in the PFP pilot, responses to the MEET study favoured wage subsidy models. This may be related to their familiarity with the various models. And as was made clear during the pilot, employers will choose fully funded training programs before conditional funding models such as a PFP model.

Employers expressed hesitation about the financial uncertainty inherent in PFP models. In effect, the PFP model provides employers with a conditional reimbursement up to 70% of their direct costs. The conditional reimbursement meant that, while they could plan for an upper-bound—30% of their costs would not be reimbursed—the amount they could expect to receive from the remaining 70% was uncertain. Many employers indicated they prefer certainty because it allows them to forecast their expenses.

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APPENDIX A: EVALUATION MEASURES

PARTICIPANT-LEVEL INDICATORS

Factors	Indicators	Sources
Demographic characteristics	<ul style="list-style-type: none"> Gender Age Ethnicity Newcomer status Disability status Racialized status Indigenous identity Languages spoken Province/city of employment 	Baseline Participant survey
Work experience	<ul style="list-style-type: none"> Number of years of experience in their field Number of years of experience working in their current position Average number of weekly work hours at their job Employment history Unemployment history Annual household income 	Baseline Participant survey

COMPANY-LEVEL INDICATORS

Factors	Indicators	Sources
Manufacturing industry	<ul style="list-style-type: none"> Options: Automotive & transportation; plastics; food & beverages and agribusiness; wood products; mining; metal processing; textiles & apparel; aerospace & aviation; medical pharmaceutical, bio product & nutraceutical, other 	Employer survey
Size of the company	<ul style="list-style-type: none"> Total number of employees Breakdown of employees by category (e.g., production workers, supervisors/foremen, operations, HR, H&S, VP, etc.) Turnover rates in the last year, last 3 years, last 5 years 	Employer survey
Company revenues	<ul style="list-style-type: none"> Annual revenue in the last fiscal year Changes in revenue over the last five years Forecasted changes in revenues over the next year(s) 	Employer survey
Business needs	<ul style="list-style-type: none"> Business areas affected by workers' performance gaps 	Employer survey/

Factors	Indicators	Sources
	<ul style="list-style-type: none"> Extent to which business outcomes are affected by workers' performance gaps 	

MEDIATING AND MODERATING FACTORS FOR PARTICIPANTS

Description	Indicators	Sources
Social Capital		
<p>Social capital refers to the positive effect that social networks can have on adult learning by providing the supports and resources required to learn new or enhance existing skills.</p> <p>Strong social relations between individuals provide a number of processes that have been demonstrated to be important toward learning, such as trust and support, while also providing access to larger channels for information sharing (Scrivens & Smith, 2013).</p>	<ul style="list-style-type: none"> Trust in others (e.g., trust in strangers, willingness to cooperate with others) Civic engagement (e.g., participation in group activities or volunteering in the community) Personal relationships (e.g., size of one's social network; interactions with neighbours, friends, family, colleagues) Social Network Support (e.g., relying on others for help) 	Participant survey
Psychological Capital		
<p>Psychological capital refers to a number of dimensions that relate to an individual's attitudes and their capacity to overcome challenges in order to be more effective in their work (Luthans et. al., 2004).</p> <p>Positive psychological capital can inform the extent to which an individual has a positive attitude toward their occupation and their training, and whether they have the necessary emotional resources to manage the challenges they face and succeed in their tasks.</p>	<ul style="list-style-type: none"> Self-efficacy (e.g., ability to solve problems independently) Self-esteem Resilience (e.g., adaptability, ability to ensure hardship) Persistence (e.g., ability to persevere in spite of challenges) Attitudes toward learning and training 	Participant survey
Human Capital (Skills)		
<p>Human capital is "the investment in training and education" intended to help develop an individual's skills and cognitive capacities (Scheffler et. al., 2010).</p> <p>An individual's cognitive functioning can influence their ability to learn new information. Cognitive functioning refers to an individual's ability to perform mental</p>	<ul style="list-style-type: none"> Experience in education and training (e.g., Highest level of education achieved, experiences with workplace training, experience with training generally) 	Participant survey

Description	Indicators	Sources
activities that are related to learning, including executive functions, working memory, attention, reasoning, and problem solving, among others. In the context of workplace literacy training, human capital includes an individual's experiences in education and their level of skill in the areas targeted by training.	<ul style="list-style-type: none"> ▪ Baseline measures of targeted LES (e.g., initial assessment of document use, numeracy, working with others, problem solving skills) 	

MEDIATING AND MODERATING FACTORS AFFECTING BUSINESSES

Factors	Indicators	Source
Training culture and experience	<ul style="list-style-type: none"> ▪ Number of training sessions organized by the employer ▪ Attitude toward workplace training ▪ Annual budget allowance for employee training and skills development ▪ Opportunities for employees to practise new skills in the workplace 	Employer survey

INDICATORS OF PARTICIPANT SKILL GAINS

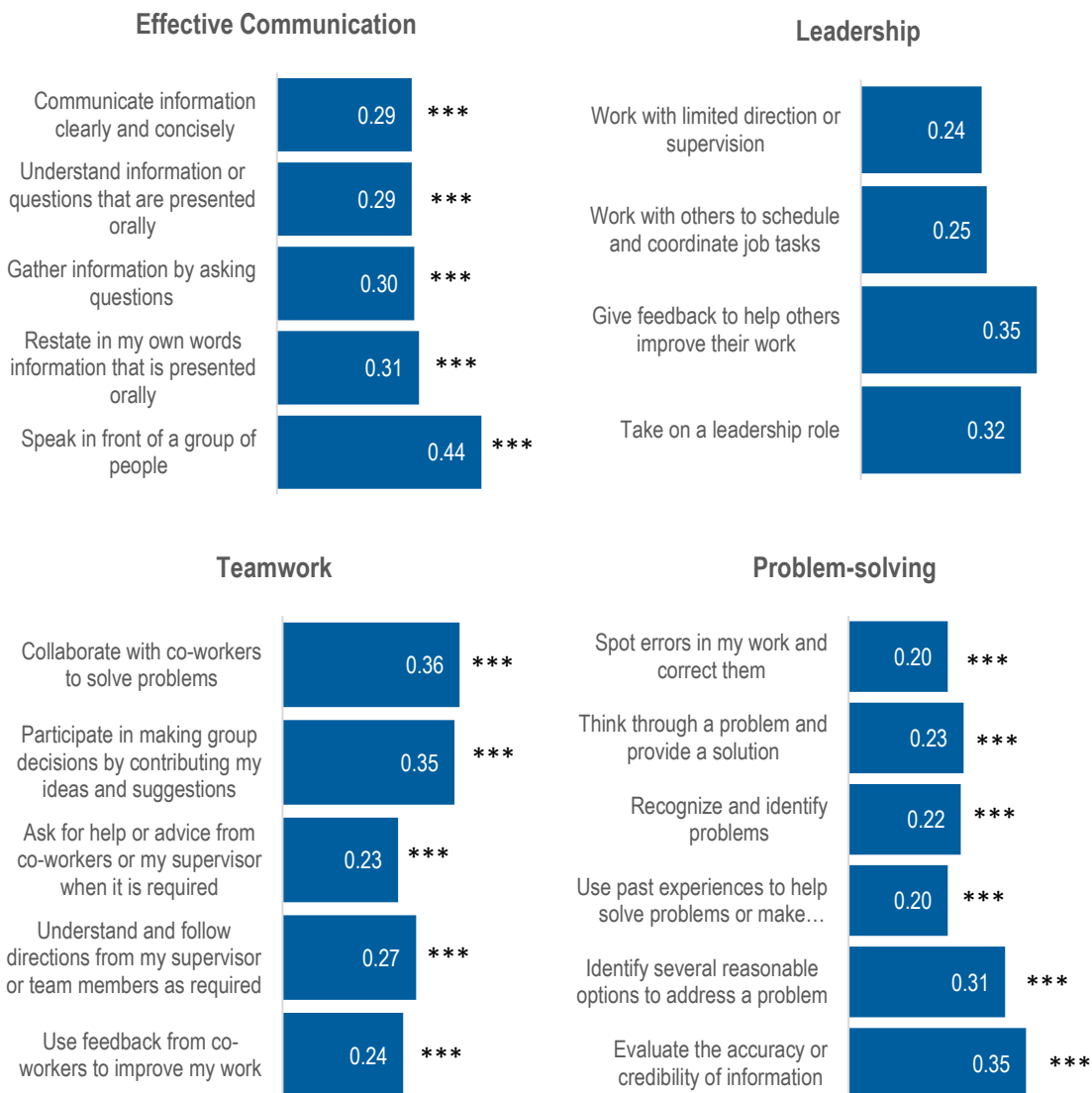
Subscales	Items	Source
Problem-solving Skills	<ul style="list-style-type: none"> ▪ Recognize and identify problems. ▪ Spot errors in my work and correct them. ▪ Think through a problem and provide a solution. ▪ Evaluate the accuracy or credibility of information. ▪ Use experiences to help solve problems or make decisions. ▪ Identify several reasonable options to address a problem. 	Participant survey
Effective Communication Skills	<ul style="list-style-type: none"> ▪ Understand information or questions that are presented orally. ▪ Gather information by asking questions. ▪ Restate in my own words information that is presented orally. ▪ Speak in front of a group of people (e.g., lead a discussion with about a work-related issue). 	Participant survey

Subscales	Items	Source
	<ul style="list-style-type: none"> Communicate information clearly and concisely (e.g., explain a work-related issue to a supervisor). 	
Collaboration and Teamwork Skills	<ul style="list-style-type: none"> Ask for help or advice from co-workers or my supervisor when it is required. Collaborate with co-workers to solve problems. Complete my assigned work on time so that team deadlines are met. Understand and follow directions from my supervisor or team members as required. Use feedback from co-workers to improve my work. Participate in making group decisions by contributing my ideas and suggestions. 	Participant survey
Management Skills	<ul style="list-style-type: none"> Take on a leadership role (e.g., mentor, advisor). Work with others to schedule and coordinate job tasks. Work with limited direction or supervision. Give feedback to help others improve their work. 	Participant survey

APPENDIX B: ANALYSIS SUPPLEMENT

CORE MEC SKILLS: AVERAGE SCORES BY ITEM

Figure 19 Changes in core MEC skills from baseline to follow-up



Source: Participant baseline and follow-up surveys. Sample size is 193 participants.

Note: Statistical significance is denoted as follows: * - 10%, ** - 5%, *** - 1%.

APPENDIX C: DATA COLLECTION INSTRUMENTS



OTTAWA • VANCOUVER • CALGARY • HAMILTON • LONDON

MONTREAL • REGINA • ST. JOHN'S • TORONTO • WINNIPEG