Canadian Manufacturing Consortium

Workplace Literacy and Essential Skills Research

Canplas Supervisory and Team Problem-Solving Skills Impact Analysis

canplas INDUSTRIES LTD

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Executive Summary

Canplas: Supervisory and Team Problem-Solving Skills

This case study examines the business value and return on investment of problem solving training acquired by participants in the course of a supervisory training program. The participants were "high potential" employees recently promoted to supervisory roles in Canplas, a Barrie, Ontario based manufacturer of thermoplastic products. Canplas was chosen as a case study examining the bottom line returns from investing in Literacy and Essential Skills (LES) in manufacturing settings. Canplas manufactures injection molded, thermoplastic products for the construction industry which is distributed from the Barrie facilities and five other locations in Canada and the United States. Researchers implemented an evaluation strategy using the Gillis and Bailey High Impact Evaluation methodology to examine the key impact questions: How successfully did the training program develop new capabilities in participants and how effectively were those new capabilities transferred to the job? To what extent did the new skills impact business outcomes and deliver a positive return on investment?

A Supervisory Certificate Program was implemented in part to help new supervisors enhance their problem solving skills. The program, delivered in an online format, was also intended to help the organization enhance its capability to continuously improve safety, quality, and customer satisfaction. In particular, the firm hoped to use problem-solving analysis to improve workplace safety by finding ways to eliminate or reduce the use of compressed air for cleaning. A second key problem-solving objective was to implement a customer approval rating (CAR) system to better monitor and improve the key metrics that determine the success of Canplas customer —fill rate, accuracy, on-time delivery, and quality. Canplas considers customer satisfaction as a key strategic success driver. During training, problem-solving teams were formed to address one of the two objectives.

Participants' ratings show that the training was highly successful in building Capability (learning and intentionality to use new skills on the job). Additionally, evaluation revealed that 71% of participants report a high degree learning application to the job. 83% of participants reported "high" levels of improvement in their problem-solving skills. Two-thirds of participants reported "high" levels of performance improvement and 100% perceived that the training was worthwhile investment for Canplas.

The problem-solving activities related to the compressed air safety issue activities achieved cost savings of $5,000 annually. Canplas plans to apply the same solution to seven other areas. The project demonstrated substantial value for money with a total return on training investment of 65% annually.

The complexities of measuring and monetizing the value of improved customer satisfaction puts this task beyond the scope of this study. It was clear, however, that the CAR system gives Canplas critical new insights into what our customers value. In its first year, it proved to be a strategically important tool to help Canplas for the first time to identify and resolve serious distribution problems with the potential to negatively impact customer satisfaction and future sales.

Case Study

Canplas: Supervisory and Team Problem-Solving Skills

By Canadian Manufacturing Network with research & report contributed by Lynette Gillis Ph.D. & Allan Bailey, Centre for Learning Impact "

Study Background

Overview of Canplas

Canplas is a manufacturer of plastic products employed in the building materials industry for residential and commercial building markets as well as for the industrial and public utility sectors. Canplas has more than 230 employees in six locations in Canada (Barrie, Ontario; Edmonton, Alberta; and, Langley British Colombia) and the United States. With almost 50 years experience in injection molding, the company has built a reputation for the design and manufacture of thermoplastic products in four product groups—plumbing, vacuum, ventilation, and sustainable water.

Canplas' Barrie manufacturing facility includes over 30 injection molding machines and a number of assembly stations, producing over 2,000 part numbers. The Barrie operations are also supported by a 200,000 square foot warehouse and distribution centre.

A distinguishing feature of Canplas is its focus on quality and innovation. The company is ISO 9001 and ISO 14001certified. As an innovator, Canplas has registered more than fifty patents and design registrations for products. The company constantly promotes innovation across all activities from product design thru manufacturing to order fulfillment.

Training Rationale

Canplas management made a decision to implement training initiatives to enhance its capability to continuously improve safety, quality, and customer satisfaction. This focus on improvement is reflected in the company's mission statement "Canplas invests in people who, in turn, invest their efforts to the continual improvement of the company."

Canplas had two specific objectives for adopting the training initiative. The first was to improve safety in the production facilities by reducing or eliminating the use of compressed air for cleaning. The second objective was to implement quality improvements to enhance customer satisfaction and approval.

The Training

The training program, the Supervisory Certificate Program. Participants were individuals identified as "high potential"—those most capable of moving to the next level of management.

Participants had been recently promoted to supervisory roles and were therefore identified as appropriate candidates for supervisory and team problem solving skills training.

The Supervisory Certificate Program involves a blend of leadership and management skills combined with a case study component in which gives participants an opportunity to apply skills such as problem solving to their jobs. The training, which occurs during work hours, involves five to six hours per week over ten weeks. The majority of the training is delivered in an online learning format (24 hours in duration) combined with facilitated online meeting/discussion/networking sessions (16 hours duration). The case study component is completed in approximately 20 hours.

This case study focuses on the problem solving skills acquired by participants in the course of the training. In particular, it was hoped that the training would influence two specific business outcomes: enhanced safety and improved service quality and customer satisfaction. The safety objective was to reduce or eliminate the use of compressed air for cleaning in the manufacturing plant. The other objective was to leverage the new problem-solving capabilities to develop and implement a customer approval rating system that could help Canplas monitor and simultaneously improve service quality, productivity, and customer satisfaction.

Methodology: High Impact Evaluation

The Case Study Methodology

The Learning Value Chain™ The Canplas case study adopts the Learning Value Chain evaluation approach—the core evaluation framework and instrument-set developed for the Gillis and Bailey High Impact Evaluation model. The Learning Value Chain™ framework offers an uncomplicated, field-tested framework for evaluating the learning effectiveness and the business value of training and human resource investments (Figure 1).

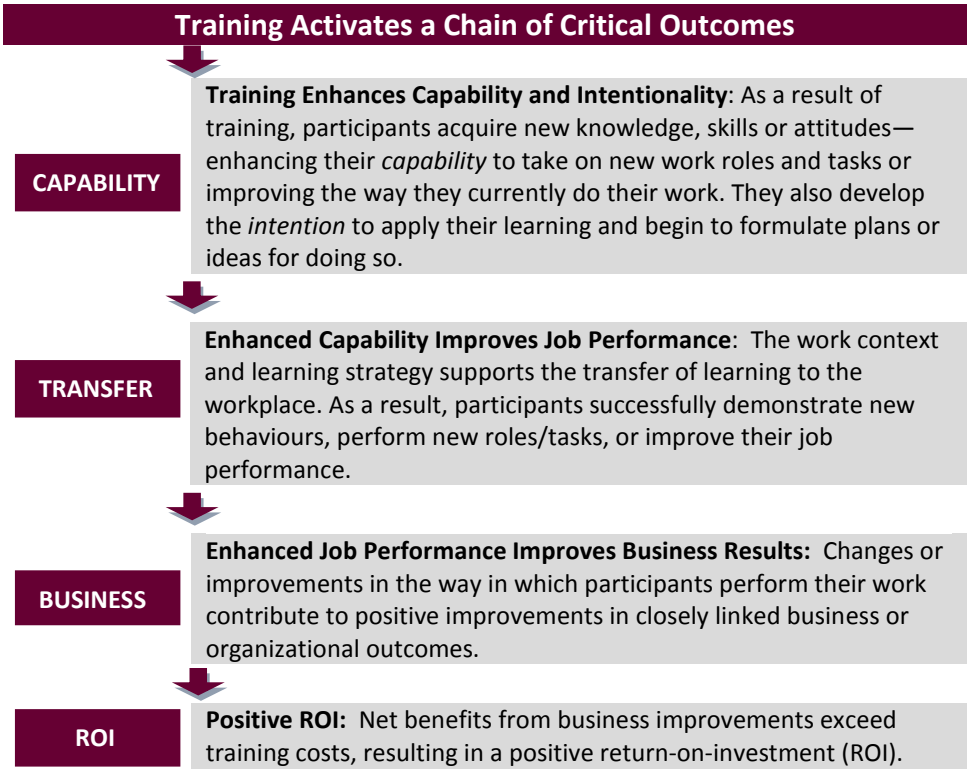
In the Learning Value Chain™, the training program triggers a chain of critical outcomes. Monitoring this chain of outcomes adds an innovative and critically important predictive value to the evaluation process. As desired outcomes are achieved at each link along the chain, greater value is added and the likelihood increases that training will result in positive business outcomes and return on investment. Conversely, if training fails to meet outcomes at any link, value is diminished and the prospect of positive business results and return on investment is at risk.

Using the Learning Value Chain™ framework, the training program is evaluated at each of four links (Capability, Transfer, Business Results and ROI). At each link, data is gathered to assess the extent to which the training has achieved key outcomes, added value and enabled the next critical event in the chain to occur.

The Learning Value Chain™ model also incorporates a diagnostic strategy to investigate training practices and strategies that may strengthen or weaken outcomes at each link and subsequently influence business impact and return on investment.

Figure 1

The Learning Value Chain™



Capability Results

Evaluation Questions: Did training participants develop new *capability*: acquire new knowledge and skills, adopt new attitudes, improve existing skills, or discover new and more productive ways of doing work? Did participants also develop the *intention* to apply their learning or improve their job performance?

Training enhances learning and had a high impact on other Capability indicators such as Confidence, Motivation and Perceived Value

To assess Capability—the first link in the Learning Value Chain™—course participants were asked to complete the Capability Questionnaire at the conclusion of the Harvard Supervisory Certificate Program training.

The findings suggest that the Supervisory Certificate Program enhanced participants' capability. Self assessments by participants suggest overall gains in learning. The majority of learners also perceive the training as "highly" valuable (96%) and express a "high" level of confidence in their ability to apply their learning (55%). Learners are "highly" motivated (67%) to apply their learning and while 33% are moderately motivated. In the course of training, 50% of participants reported that they had done a moderate level of planning to apply their learning to the workplace. Key questionnaire results are described below and summarized for all program participants in the Capability Index (Figure 2).

Skills & Knowledge: Before training, 57% of training participants rate their knowledge and skill level as “moderate” and 27% rate their knowledge as 'high." After training, 70% rate their knowledge and skill level as “high”—a gain of 43%.

Confidence in Applying Learning: The largest proportion of participants (55%) report a "high" level of confidence in their ability to effectively apply their problem solving knowledge and skills to their jobs. Of those remaining, 40% report a "moderate" level of confidence.

Perceived Value: Most participants (96%) perceive the program's value as "high" (i.e., credible, practical, relevant, and essential).

Motivation to Apply Learning: Most (67%) report that they are "highly" motivated to apply their learning; 33% are "moderately" motivated.

Plans for Action: Half the group report having developed at least some plans or ideas for using their problem solving skills in their work. 17% report having a lot of plans or ideas for learning application.

Risk Alert for Transfer

Some participants suggested that the online webinars could be made more engaging. Since webinars served a wider audience that included participants from other organizations. Some participants suggested that the online sessions might have been more interesting and engaging if there had been opportunities at the beginning of sessions to meet face-to-face with the participants from other organizations. A pre-orientation session would have built some familiarity within the groups.

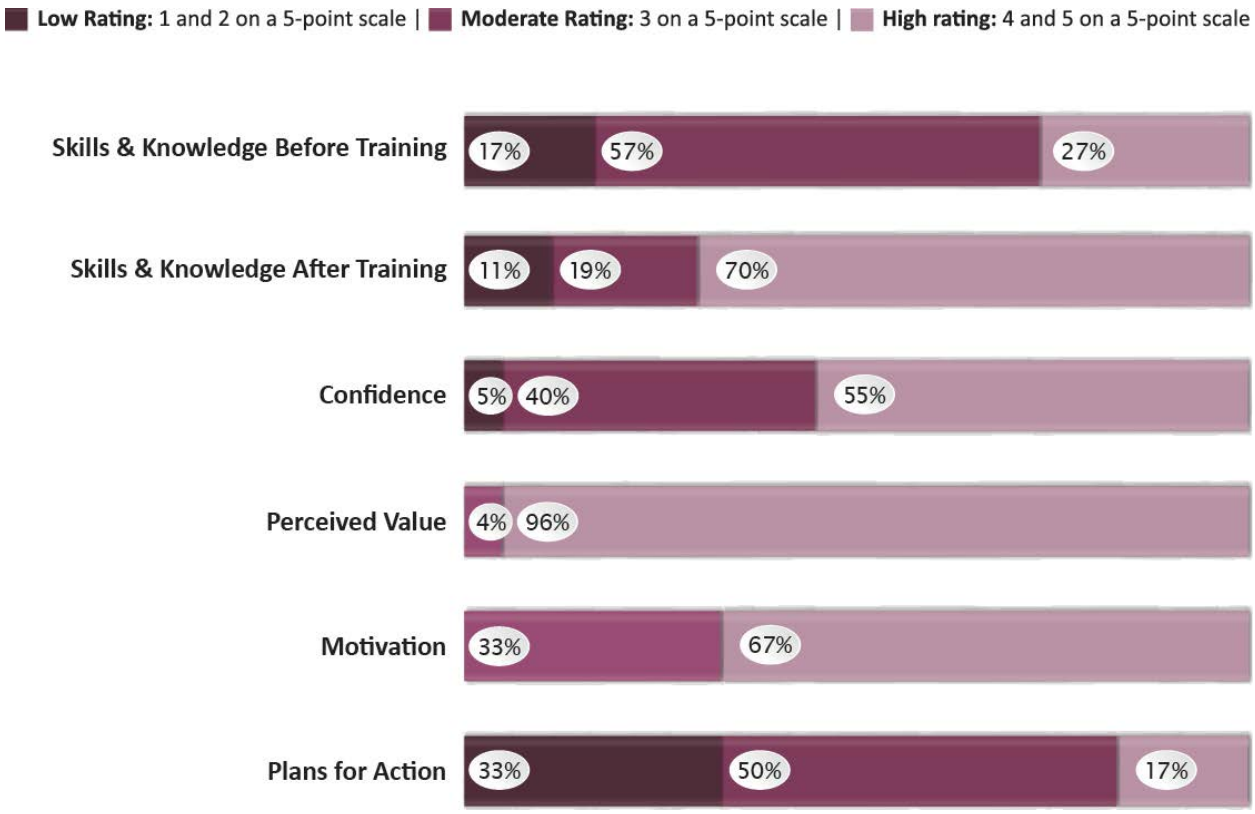
At the end of the Supervisory Certificate Program 83% of participants report they have few or only some ideas or plans for using their training on the job. Usually, this low level of planning suggests a risk for transfer. In this training program, however, it was anticipated that trainees will formulate their plans when they develop their workplace learning project.

Effective Practices

The following practice was identified by participants as having contributed positively to the learning:

- The topic tests at the end of each Supervisory Certificate Program learning modules provided effective realistic, working world scenarios that challenged participants to demonstrate their comprehension of the new materials and their abilities to apply new concepts in real world settings.
- Most participants cited the work arrangements for training were especially conducive to the learning process. In particular, participants noted such practices as: re-arranging of work schedules so co-workers could attend together, scheduling training during work hours, and preventing work interruptions during training.
- All participants cited "support from my manager or supervisor" as a key practice that helped them apply their new learning to their jobs.

CFLI Capability Index



RISK ALERTS: Plans for action: at the end of training, 83% have few or only some ideas or plans for using their training on the job. Typically this low level of planning poses a risk for transfer. In this training, however, it's expected that participants will formulate their plans when they develop their workplace learning project.

Transfer Results

Evaluation Questions: Did the work environment and learning strategy support the transfer of learning to the job? Did training participants apply their learning to their jobs, and did the application of learning impact their work or job performance?

Training improves job performance and organizational outcomes including productivity, teamwork, and communications. All participants and managers report problem solving training as a 'worthwhile investment.'

To assess Transfer—the second link in the Learning Value Chain™—participants in the Supervisory Certificate Program were asked to complete Transfer Questionnaire (TQ) approximately two months following training.

The findings suggest that approximately three-quarters of those who were trained applied their learning on the job. Two thirds of participants improved their performance on the job. 100% of participant reported that the training improved organizational outcomes such as quality and productivity.

The Transfer Index that follows summarizes these key results:

- Learning Application: 71% of participants report a "high" degree of learning application to their jobs.
- Performance Improvement: Overall, 66% of respondents reported a "high" level of performance improvement as a result of the training. 33% report moderate improvement. In particular, 83% of participants and all three managers perceived the greatest improvement was in participants' ability to identify opportunities for improvement and ability to employ problem solving to improve quality and productivity.
  All managers also reported a "high" performance improvement in employees' abilities to 'effectively supervise subordinates and foster teamwork' and to 'effectively lead a problem solving team.'
- Organizational Results: Two thirds of respondents perceived a "high" level of improvement in organizational results (improved productivity, teamwork, and communications). Two thirds reported "moderate" improvement in product quality and customer satisfaction.
- Perceived Value: 100% of respondents and all three managers also reported that the problem solving training was a 'worthwhile investment for Canplas.'

Effective Practices Enabling Transfer

The following strategies and practices were identified by participants as having contributed to the training event's success:

- Workplace performance project: Participant teams engaged in workplace performance projects which offered opportunities to apply the new skills and knowledge in on-the-job settings. The projects (developing customer approval rating system and reducing unsafe use of compressed air in the plant) encouraged greater consolidation and utilization of the learning and enhanced employee engagement.

Canplas Transfer Index

Low Rating: 1 and 2 on a 5-point scale | **Moderate Rating:** 3 on a 5-point scale | **High rating:** 4 and 5 on a 5-point scale

TRANSFER RISK ALERTS No Risk Alerts. Favourable ratings on all key indicators suggest learning has transferred for most participants and has the potential to impact business results and ROI.

Business Results (per learning value chain pg#2)

Evaluation Questions: Did the work environment and learning strategy support the transfer of learning to the job? Did training participants apply their learning to their jobs, and did the application of learning impact their work or job performance?

Did the application of learning or improvements to job performance impact business results? What were the intangible benefits from the training? Did enhanced skills and knowledge or job performance improvements impact the organizations strategic objectives?

Organizational Outcomes: From the outset, the business objectives for implementing the Supervisory Certificate Program were two-fold: first Canplas intended to use problem solving techniques to improve workplace safety and, secondly, Canplas planned also to use the same techniques to improve customer satisfaction.

A key component of the training is the workplace performance project. Project teams analyze a workplace problem or challenge using problem solving techniques acquired in training. Ideally, the analysis and resulting case study benefits the team by providing real-world application of new skills and, at the same time, result in some business benefit to the organization by resolving recognized problems.

Six "high potential" employees were selected for the training program and split into two cohorts of three participants. Each of the two cohorts tackled one of two identified challenges:—either, i) how to improve workplace safety by reducing unsafe use of compressed air, or ii) how to improve customer satisfaction by developing a customer approval rating system.

Feedback from the Supervisory Certificate Program training evaluation revealed that approximately two thirds of participants experienced a "high level" of performance improvement as a result of the training. As well, all managers reported a "high" level of improvement in participants' problem-solving performance following training.

This evaluation separately examines each of the organizational goals—part 1: Elimination of unsafe compressed air use (enhanced safety) and, Part 2: Customer approval rating system (improved customer satisfaction).

Part 1: Elimination of unsafe use of compressed air": As a result of its Joint Health and Safety Committee recommendation, Canplas set a goal of eliminating the unsafe use of compressed air in the workplace. Restricted in many jurisdictions, the use of compressed air for cleaning workstations has long been a recognized safety hazard. In the interest of care and concern for its employees, Canplas identified the compressed air safety issue as a suitable challenge for the workplace performance improvement project.

The team assigned to the compressed air safety employed their newly acquired problem solving techniques to analyze the root causes of workplace hazards that result from the unsafe use of compressed air for cleaning equipment, workstations, etc. Their analysis simultaneously explored the costs relating to energy waste caused by unnecessary or excessive running of air compressors.

The team conducted risk analysis that pinpointed two key sources of hazard—compressed air use by unskilled workers and inadequate standards for operating compressed air equipment (even for skilled employees).

The team's solution:

- Develop new and more rigorous operating standards for compressed air use in the workplace.
- Limit compressed air use skilled workers.
- Develop and launch a plant-wide safety training and marketing programs to promote safe use of compressed air throughout the manufacturing and warehouse facilities.
- Adopting alternative cleaning options for use by unskilled employees including:
  - workstation modifications such as installation of clear screens in lathes and milling machines to reduce release of waste particles and cuttings
  - the use of vacuum equipment.

Business Benefit from the Supervisory Certificate Training

The reduction of the uncontrolled use of air compressing equipment resulted in cost savings to the organization. The removal of compressed air use in one area alone (the production of grease interceptors) resulted in an annual cost savings of $5,000 annually. **Total cost savings: $5,000**

As a result of the enhanced workplace safety and the cost saving realized, Canplas plans to extend this compressed air safety initiative to seven more areas.

Calculating the total cost savings from reducing compressed air use in the seven new locations must await actual implementation. Based on the savings already realized, however, it seems safe to assume that similar cost reductions will be realized. For the purposes estimating the true value for money of the supervisory training, however, this case study chooses to assume a very conservative factor of 33%. In other words, to be safe it assumes each of the seven additional implementations will realize only one third of the cost saving of the original cost saving.

The assumed additional annual cost saving, therefore, is $11,550 (7 X $5,000 X 0.33).

The total annual benefit from the Supervisory Certificate training is:

$5,000 (the original implementation) + $11,550 (anticipated future benefits) = $16,550 per year.

Part 2: Customer Approval Rating System (CAR) The other improvement project undertaken as part of the supervisory training project work was the development of a rating system to monitor customer satisfaction—a customer approval rating system (CAR). Canplas had identified a need to gain deeper insight into the needs, preferences, and concerns of its customers.

The CAR project was led by the second team of three training participants. The goal of the project was to use problem solving skills acquired in the supervisory training program to help Canplas track, analyze, and improve customer satisfaction.

The team's initial analysis identified four key criteria for monitoring customer satisfaction: order accuracy, fill rate, on-time delivery, and quality. These metrics are critical to Canplas' success. Underperformance in any of these operational metrics is likely to affect customer satisfaction.

A key goal of the CAR project was to develop a tracking system to help staff identify and rectify areas of underperformance thus avoiding the 'soft costs' typically associated with each customer

complaint (e.g., rework, administration, re-shipping, and negative customer impact).

The CAR system exposed shortcomings in the order fulfillment operations soon after implementation. The tracking system surprised observers by revealing unexpectedly high levels of errors in fill rate and accuracy only a few months after launch.

When the team started monitoring the accuracy of order fulfillment they noticed that accuracy suddenly began to drop precipitously. The accuracy began falling from a nominal rate of 98% accuracy at the start of observations down to an accuracy rate of 78% four months later. (Accuracy means the order received by customer matches the order placed.) Similarly, fill rate plummeted from 98% to a low of 81% only two months after launch. (Fill rate is the ratio of items actually shipped compared to the number of items ordered.)

Prior to the development of the CAR system, shipping staff would have been unaware that there were problems impacting customers. Based upon these new insights, the CAR team applied their problem solving skills to identify the root causes and rectify them. In a matter of a few months the fill rates and accuracy returned to the 97%-98% levels.

From the CAR results, it seems safe to infer that the introduction of the new tracking capabilities is delivering positive business impact, possibly substantial impact on Canplas' bottom line results. Calculating the actual business benefits of the CAR system involves complexities and resources beyond the scope of this analysis.

ROI

Evaluation Questions: Did the net business benefits of training exceed its total costs (Benefit/ Cost Ratio)? What was the return on investment (ROI)?

Return on Investment (ROI) of Training:

From the high Capability, Transfer, and Business Results, it seems clear that the Supervisory Certificate Program has helped Canplas improve bottom line results as well meet its critical commitments to its customers. This holds true for both projects—the compressed air safety project as well as the customer approval rating (CAR) project.

This case study seeks to further evaluate the impact of the training by comparing, where possible, the bottom line value of the program with its costs—its return on investment. To do this we can compare the quantifiable bottom line results directly attributable to the program with the total cost of the delivering the training. However, only the compressed air project has associated financial outcomes. As noted earlier, the results of the CAR project, while a strategic win for Canplas, are intangible outcomes. Intangible outcomes, such as improved customer satisfaction, are notoriously difficult to track and monetize. It is important to be clear that intangible does not mean the result is a 'soft' benefit or an unimportant one. While it may be difficult to place a dollar value on enhanced customer approval, the program's success is clearly a highly critical strategic success for Canplas.

Cost of Training (Compressed air project)

The cost of the training to Canplas is a combination of the costs to acquire the program as well as the costs to have employees "off the job" during training sessions—opportunity cost.
External course acquisition and facilitation costs
The total subscription cost for the Harvard Supervisory Certificate Program for the three team members in the compressed air project: $5,400 ($1,800 X 3)

Participants' Salaries Total Time in Training:
Participant salaries are calculated for the time off the job during online or classroom sessions—a total of 40 hours (5 days).
Average salary (including 35% burden rate): $80,000/year = $1,540/week

Total participant costs (opportunity cost): $4,620
Total cost of training: Program purchase + Participants salaries
= $5,400 + $4,620
= $10,020

Benefit Cost Ratio

$$\text{BCR} = \frac{\text{Total Business Benefits}}{\text{Total Costs}} = \frac{\$16{,}550}{\$10{,}020} = 1{:}1.65$$

Return on Investment (ROI)

$$ROI = \frac{\text{Total Benefits} - \text{Total Cost}}{\text{Total Cost}} \times 100\%$$

$$= \frac{\$16,550 - \$10,020}{\$10,020} \times 100\% = \frac{\$6,530}{\$10,020} \times 100\% = 65\%$$

As a consequence of Canplas' investment of resources, time, and money in the Harvard Supervisory Certificate Program (course acquisition, facilitators and participants salaries, etc.), the organization received substantial, quantifiable business benefits. For every dollar invested, Canplas received that dollar back and an additional $0.65 in profit as a result of reducing energy costs.

(Note: For most private organizations, the typical hurdle rate (the minimum acceptable rate of return for giving the go-ahead to a planned project) is between 10% and 20%. Also, very few organizations hold their Training and Human Resource functions to the level of financial scrutiny employed by this study.

Intangible and Strategic Benefits

In addition to the quantifiable benefits addressed in this ROI analysis, there are non-quantifiable, intangible outcomes. Intangible outcomes from training are those benefits that are not easily convertible to monetary metrics. (Typical training intangibles might include metrics such as enhanced employee engagement, reduced workplace stress, reduced staff turnover, etc.)

The CAR project addresses an important strategic concern for Canplas. Customer relationship is a core value and is a centrepiece of the firm's mission statement as expressed in this phrase: "We are successful when our customers value us as a supplier." While customer satisfaction is notoriously difficult to quantify in 'dollars and cents,' it is important to recognize that the new CAR system is of strategic importance to Canplas.

The capabilities of the CAR tool provide management with new and robust insights into the quality effectiveness of their product distribution operations. Importantly, as the customer approval ratings project illustrated, the CAR system and the new problem solving capabilities of Canplas supervisors gives the organization new tools to troubleshoot errors and improve accuracy and quality—in short, to proactively improve customer satisfaction levels on an ongoing basis.

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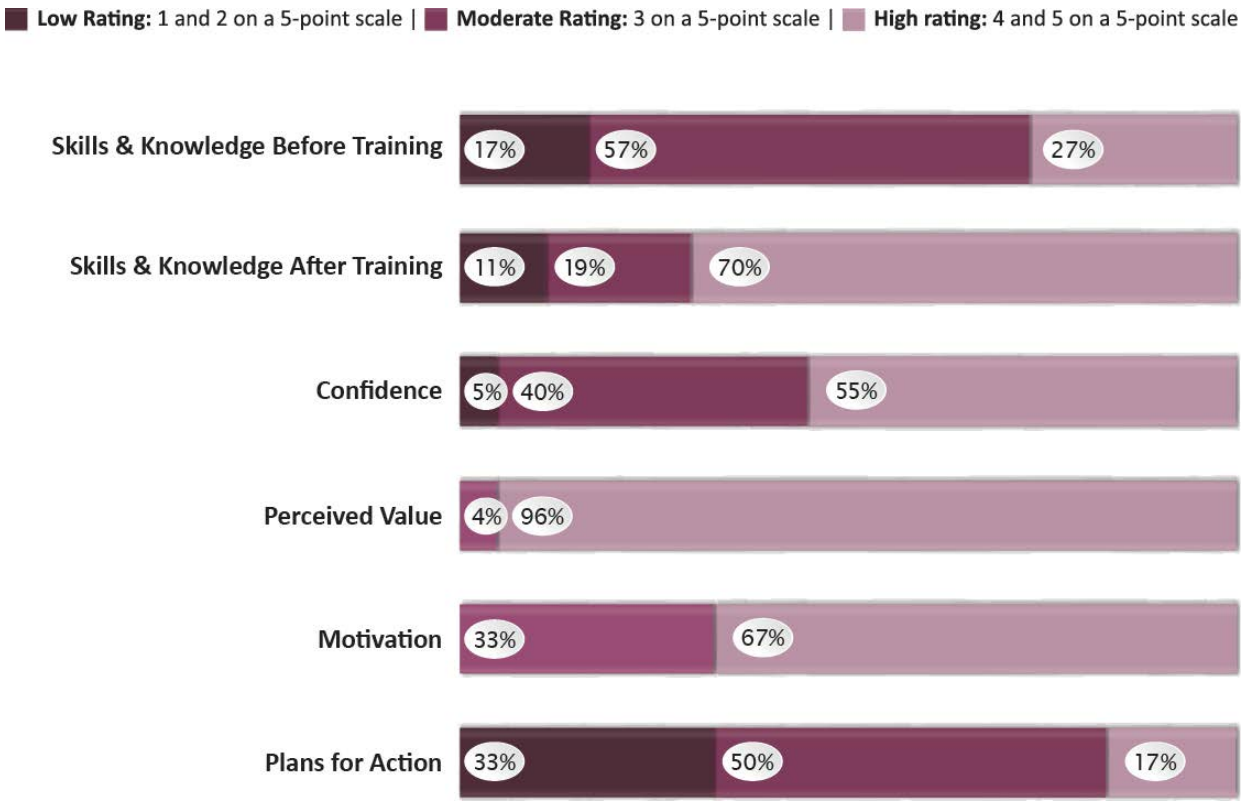
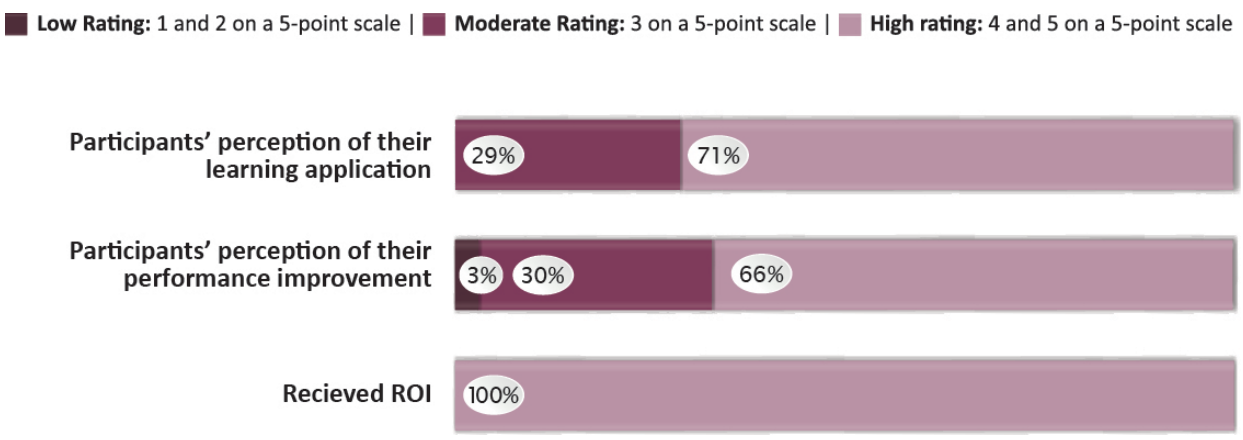
Canplas Capability Index



RISK ALERTS Plans for action: at the end of training, 83% have few or only some ideas or plans for using their training on the job. Typically this low level of planning poses a risk for transfer. In this training, however, it's expected that participants will formulate their plans when they develop their workplace learning project.

Canplas Transfer Index



TRANSFER ALERTS No Risk Alerts.

Most Frequently Mentioned Barriers to Transfer:

- Unable to dedicate the time required to practice new skills or adopt new ways of doing things
- Too difficult to break old habits
- Lack relevant situations or opportunities to apply learning

Capability Results: Supervisory Skills Certificate Program

Response Rate: All six participants in the Supervisory Skills Certificate Program completed the Capability Questionnaire—a 100% response. Data was collected from two training sessions—one in 2012 and the second in 2013.

Learning: Table 1: Please rate your knowledge and skill level before training in each of the following areas. The table below reports the percent of respondents rating their knowledge and skill on a 5-point scale as 'low' (a rating of 1 or 2), 'average' (a rating of 3), or 'high' (a rating of 4 or 5).

LEARNING OBJECTIVE	% LOW	% AVERAGE	% HIGH
Defining a problem and developing a problem statement	17	67	17
Understanding the importance of each step in the Seven-Step Problem Solving Method	17	67	17
Identifying the various data collection tools and data management techniques and when to use them	17	67	17
Determining the root cause of a problem	17	33	50
Developing, reviewing, evaluating and implementing a solution to a problem	17	50	33
MEANS	***17%***	***57%***	***27%***

Total Number of Respondents = 6

Table 2: Please rate your knowledge and skill level after training in each of the following areas.

LEARNING OBJECTIVE	% LOW	% AVERAGE	% HIGH
Defining a problem and developing a problem statement	-	-	100
Understanding the importance of each step in the Seven-Step Problem Solving Method	-	17	83
Identifying the various data collection tools and data management techniques and when to use them	-	-	100
Determining the root cause of a problem	-	-	100
Developing, reviewing, evaluating and implementing a solution to a problem	-	17	83
MEANS	***11%***	***19%***	***70%***

Total Number of Respondents = 6

Table 3: Comparison of mean ratings on each objective before and after training.

LEARNING OBJECTIVE	Before Training	After Training	Change Score
Defining a problem and developing a problem statement	3	4	1
Understanding the importance of each step in the Seven-Step Problem Solving Method	3	3.8	.8
Identifying the various data collection tools and data management techniques and when to use them	**3**	**4.2**	**1.2**
Determining the root cause of a problem	3.3	4.2	.9
Developing, reviewing, evaluating and implementing a solution to a problem	3.2	3.8	.6
MEANS	***3.1***	***4***	***.9***

Table 4: To what extent did the program meet your personal skills gap (in the topic area)?

RATING	% LOW	% MODERATE	% HIGH
	-	33	67

Total Number of Respondents = 6

Confidence in Applying Learning

Table 5: How confident are you in your capability to effectively apply knowledge and skills on the job? The table reports the percent of respondents rating their confidence level as low, moderate, or high following training.

LEARNING OBJECTIVE	% LOW	% MODERATE	% HIGH
Defining a problem and developing a problem statement	-	40	60
Identifying the various data collection tools and data management techniques and when to use them	-	60	40
Determining the root cause of a problem	-	40	60
Developing, reviewing, evaluating and implementing a solution to a problem	20	20	60
MEANS	***5%***	***40%***	***55%***

Total Number of Respondents = 5

Workplace Readiness

Table 6: How confident are you that it will be possible to effectively apply this learning given your specific workplace situation, conditions, or setting (e.g., have the time, manager's support, resources, or appropriate opportunities)? The table reports the percent of respondents rating their confidence level as low, moderate, or high following training.

MODULE	% LOW	% MODERATE	% HIGH
	-	-	100

Total Number of Respondents = 3

Motivation to Apply Learning

Table 7: How personally motivated are your to apply this learning to your job? The table reports the percent of respondents rating their motivation level as low, moderate, or high following training.

MODULE	% LOW	% MODERATE	% HIGH
	-	33	67

Total Number of Respondents = 6

Plans for Action

Table 8: Do you have plans or ideas for how or where you can apply this learning in your job?

MODULE	A few or no plans or ideas	Some plans or ideas	Several or a lot of plans and ideas
	33	50	17

Total Number of Respondents = 6

Perceived Value

Table 9: How would you describe this program? Participants used a 5-point scale to rate how credible, practical, relevant or essential they perceived the program. For each descriptor, the table reports the percent of respondents assigning low, moderate, and high ratings. Tables report response to each module.

	LOW	MODERATE	HIGH
	%	%	%
Credible	-	-	100
Practical	-	-	100
Relevant	-	-	100
Essential	-	17	83
	MEANS 0	***4%***	***96%***

Total Number of Respondents = 6

Effective Practices for Facilitating Learning

Only participants in the second training session evaluated effective practices (3 participants). They rated all but one practice as effective; the remaining practice they rated as moderately effective. The tables below report mean ratings on a five-point scale ranging from "Not Effective" to "Very Effective."

EFFECTIVE PRACTICES

The re-arranging of work schedules so co-workers could attend together	4.6
Scheduling training during work hours	4.6
Preventing work interruptions during training	4.6
Forming small study groups for the Workplace Performance Project	4.6
Using a dedicated training room	4.6
Using a blend of learning delivery formats (e-learning, webinars, hands-on project, discussion group)	4.6
Orientation session for participants	4.3
Self-study e-learning module on the Seven-Step Problem Solving Technique	4.3
Problem solving exercises in the e-learning module	4.3
Quizzes in the e-learning module	4.3
Pre-work assigned before the Problem Solving Webinar	4
Problem Solving Webinar group discussion	4

MODERATELY EFFECTIVE PRACTICES

Program information on Knowledge Network, including Certificate's participants and possible project topics	**3.7**

Effective Practices for Facilitating Learning (continued)

The three participants in the second training session also evaluated the quality of the instruction. They rated all but two aspects of instruction as effective. The tables below report mean ratings on a five-point scale ranging from "Not Effective" to "Very Effective."

EFFECTIVE PRACTICES

	4.7
Providing useful response to questions, guidance or clarification	4.3
Clearly communicating the learning and performance objectives	4.3
Engaging and sustaining learners' interest	4.3
Presenting key concepts clearly and logically	4.3
Providing opportunity for learning assessment or reflection	4.3
Presenting realistic and work-related practice activities	4.0

MODERATELY EFFECTIVE PRACTICES

Eliciting learners' prior knowledge or experience in related areas	**3.7**
Providing opportunity for collaboration, discussion, and learning from others	**3.7**

Transfer Results: The Supervisory Certificate Program

Response Rate: Six participants from two training sessions responded to the Transfer questionnaire—a response rate of 100%.

Learning Application (Participants' Perceptions)

Table 10: To what extent have you applied the knowledge, skills or attitudes taught in the Problem Solving training? Participants rated their degree of learning application on a 5-point scale where a rating of 1 or 2 was considered 'low' impact, a rating of 3 'moderate' impact, and 4 or 5 'high.'

LEARNING OBJECTIVE	% LOW	% MODERATE	% HIGH
Defining a problem and developing a problem statement	-	33	67
Identifying the various data collection tools and data management techniques and when to use them	-	33	67
Determining the root cause of a problem	-	17	83
Developing, reviewing, evaluating and implementing a solution to a problem	-	33	67
MEANS	***-***	***29%***	***71%***

Total Number of Respondents =6

Learning Application (Manager's Perceptions- 3 Managers)

Table 10: To what extent have you applied the knowledge, skills or attitudes taught in the Problem Solving training?

LEARNING OBJECTIVE	# LOW	# MODERATE	# HIGH
Defining a problem and developing a problem statement	-	1	2
Identifying the various data collection tools and data management techniques and when to use them	-	1	2
Determining the root cause of a problem	`	-	3
Developing, reviewing, evaluating and implementing a solution to a problem	-	-	3

Total Number of Managers =3

Performance Improvement (Participants' Perceptions)

Table 11: To what extent has this Problem Solving training improved your performance in the following areas. Course participants rated the degree of improved job performance using a five-point scale ranging from “Not at All" to "To a Very Great Extent." The table reports the percent of respondents rating their performance as 'low,' (rating of 1 or 2), 'moderate' (rating of 3), or 'high' (rating of 4 or 5).

LEARNING OBJECTIVE	% LOW	% MODERATE	% HIGH
Effectively supervising subordinates and fostering teamwork	-	50	50
Enhancing work flow management	17	17	67
Identifying opportunities to improve quality and productivity through the use of problem solving	-	17	83
Effectively leading a problem solving team	-	33	67
Effectively communicating problem solving opportunities and potential solutions	-	33	67
MEANS	***3%***	***30%***	***67%***

Total Number of Respondents =6

Performance Improvement (Manager's Perceptions - 3 Managers)

Table 12: To what extent has this Problem Solving training improved your employees' performance in the following areas.

LEARNING OBJECTIVE	No. LOW	No. MODERATE	No. HIGH
Effectively supervising subordinates and fostering teamwork	-	-	3
Enhancing work flow management	-	1	2
Identifying opportunities to improve quality and productivity through the use of problem solving	-	-	3
Effectively leading a problem solving team	-	-	3
Effectively communicating problem solving opportunities and potential solutions	-	1	2

Enablers and Barriers to Learning Application

Enablers: Table 13: Which factors, if any, helped you to apply your learning from this training to your job? Check all that apply.

FACTORS ENABLING APPLICATION	% SELECTING THE FACTOR
1. Clear performance expectations	67
2. Adequate time and resources	50
3. Adequate motivation and incentive	83
4. Feedback on my performance	33
5. Support from my manager or supervisor	**100**
6. Follow-up discussions or coaching	67
7. Support from my colleagues or peers	50
8. Sufficient level of knowledge and skill	**100**
9. Information, reference materials, tools, or job aids	83

Total Number of Respondents = 6

Barriers

Table 14: Which of the following barriers, if any, hindered or prevented you from applying what you learned in training? Check all that apply.

BARRIERS TO APPLICATION	% SELECTING THE FACTOR
1. Too difficult to break old habits	17
2. Unable to dedicate the time required to practice new skills or adopt new ways of doing things	33
3. Lack relevant situations or opportunities to apply my learning	17

Total Number of Respondents = 6

Perceived Organizational Results (Participants)

Table 15: To what extent has this training helped you to achieve the following business outcomes?

Participants rated the impact on business outcomes on a 5-point scale: 'low' (rating 1 or 2), 'moderate' (rating of 3), or 'high' (rating of 4 or 5).

BUSINESS OUTCOMES	LOW No.	MODERATE No.	HIGH No.
1. Improve product quality	-	2	0
2. Improve productivity	-	1	2
3. Enhance teamwork	-	1	2
4. Enhance communication	-	1	2
5. Improve customer satisfaction	-	2	1

Total Number of Respondents = 3

Note: The question was only asked in the second training; hence, there were only 3 respondents.

Perceived Organizational Results (Managers)

Table 16: To what extent has this training helped you to achieve the following business outcomes?

The managers of participants rated the impact on business outcomes on a 5-point scale: 'low' (rating 1 or 2), 'moderate' (rating of 3), or 'high' (rating of 4 or 5).

BUSINESS OUTCOMES: INTRODUCTION TO PNEUMATICS	LOW No.	MODERATE No.	HIGH No.
Improve product quality	1	-	2
Improve productivity	-	1	2
Enhance teamwork	-	2	1
Enhance communication	-	1	2
Improve customer satisfaction	-	1	2

Total Number of Managers = 3

ROI Perceived by Participants.

Table 17: To what extent would you agree or disagree that the Problem Solving training has been a worthwhile investment for Canplas?

DISAGREE %	NEUTRAL %	AGREE %
-	-	100

Total Number of Respondents = 6

ROI Perceived by Managers

Table 18: To what extent would you agree or disagree that this training has been a worthwhile investment for Canplas?

DISAGREE No.	NEUTRAL No.	AGREE No.
-	-	3

Total Number of Respondents = 3

Other Comments

Participants

- I would like to see the work assignment reflecting the webinar completed previous to the webinar rather than after the webinar.

- I think it would be better if the workplace project was separated from the learning and webinar section. The workplace project could be presented after all the areas were learned. Perfecting and doing the project at all the same time is a little ambitious.

Manager

- Works well in its current form.