Case Study

Microlearning in the Mining Industry

TRAINING WORKS
KNOWLEDGE BY DESIGN

Microlearning in the Mining Industry

Project Partners – Signal Gold Ltd., Training Works, Agnico Eagle Mines, Mining Industry Human Resources Council (MiHR)

Total Investment

Future Skills Centre - $930, 000

Industry Partners - $350,000 In-Kind, $50,000 Cash

Overview

Today's workplace is experiencing a shift in its learning environment. The operational reality of many industries limits the amount of time an employee can leave to train. Additionally, today's employees need to be "adaptable learners" and they must be able to react very quickly to disruption and change; therefore, learning must occur in a continuous, effective manner that focuses on behaviour change. The concept of competency-based assessment that would act as the vector to short learning (microlearning), in line of work, either on a mobile phone or tablet, was hypothesized to be an answer to these modern organizational learning challenges.

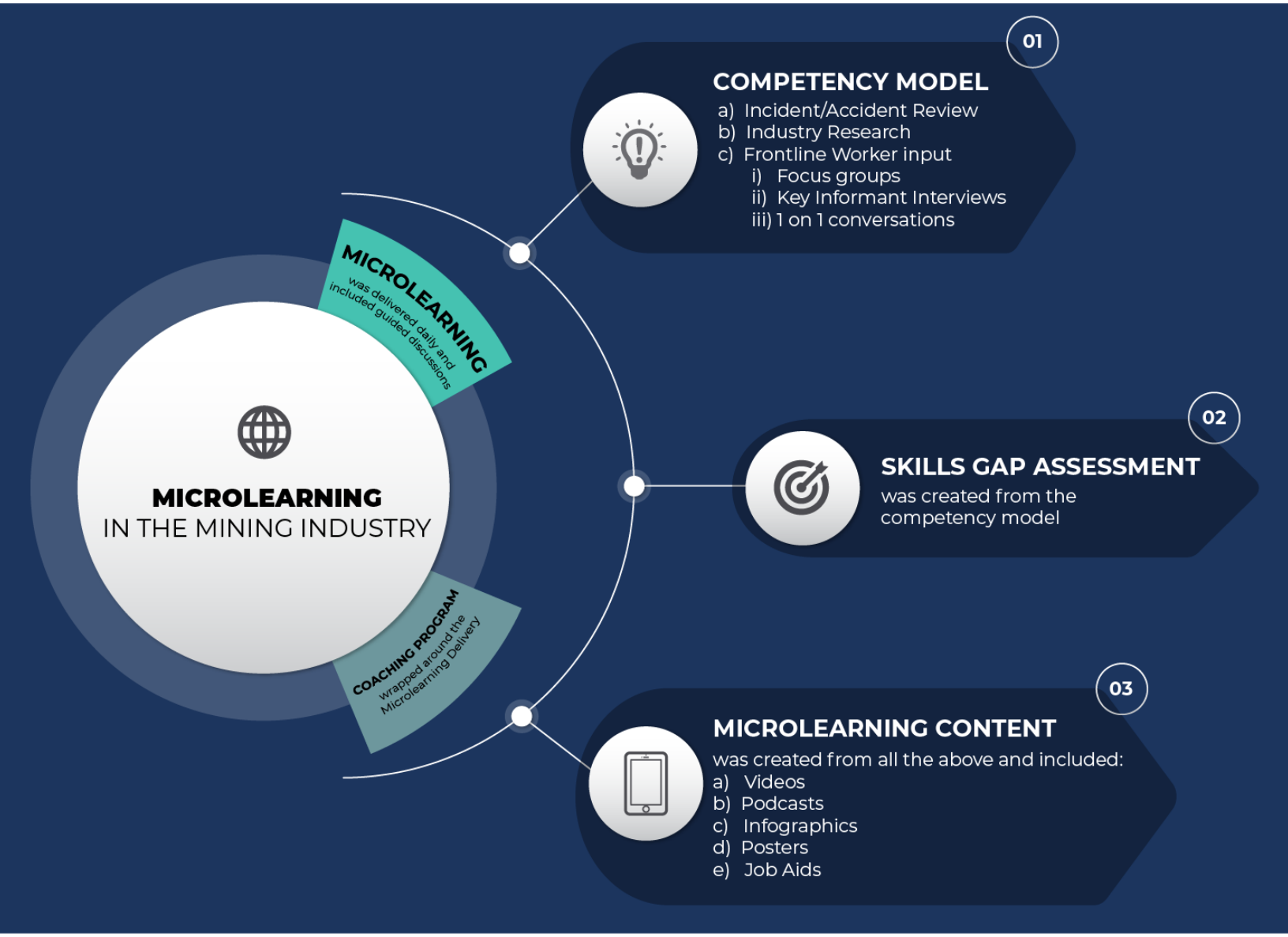
To this end, Signal Gold (formerly Anaconda Mining), Agnico Eagle Mines, Training Works, and the Mining Industry Human Resources Council (MiHR) partnered to create a comprehensive workplace based microlearning delivery model that was piloted and evaluated on over 200 employees within two mining operations (Agnico Eagle Mines -Nunavut; Signal Gold- Newfoundland and Labrador). The key deliverables of this project included:

- Creation of an industry driven microlearning delivery model.
- Delivery of a microlearning program within Signal Gold and Agnico Eagle Mines.
- Creation of a nationally recognized mining micro-credential.
- Creation and implementation of a comprehensive ROI evaluation on the bottom-line impacts of microlearning.

The Future Skills Centre (FSC) invested $930,000 in this project with an industry partner investment of $50,000 cash and $350,000 of in-kind contributions.

Project Methodology

The microlearning model below illustrates the delivery model that was piloted within this project. The primary focus was to evaluate whether this microlearning model was scalable within and beyond the mining industry.



The microlearning model began with engaging employees at both Agnico Eagle and Signal Gold to understand the training needs from a management perspective as well as the frontline worker. The project team interviewed key stakeholders within the management and health and safety teams to gain insight into the organization, the current training model, and requirements. The project execution team, Training Works engaged with frontline workers through interviews, focus groups and one on one discussions to learn about the skills required to do their jobs safely and their learning preferences, as

well as the operational reality and challenges to learning on the job. Using this engagement, a review of incidents and accidents within the organizations, and leveraging industry research, the Training Works team in consultation with Signal Gold and Agnico Eagle created a behaviour-based safety competency model based on the needs of the organizations. (Please note: The behaviors within the model were aligned with MiHR's National Occupational Standards (NOS) to facilitate the granting of a micro-credential upon completion of the program.)

From the competency model, a skills gap assessment was created to assess the employees' understanding of each of the 10 competencies. Training Works utilized their flagship technology Skilltinuous for employee skills assessments and microlearning delivery. Employees answered scenario-based questions as well as self-assessments for each competency.

The microlearning content was developed from the engagement at both organizations, through analysis of the incidents and accidents and the skills gap assessment. During project execution, the training was adapted to also include guided discussions and activities post-microlearning to enhance knowledge transfer.

Microlearning was delivered during the toolbox talks and followed by guided discussions. During these talks the Coach would discuss the topic of the microlearning, deliver it in the form of a video, podcast, poster, infographic, job aid or activity to the team, and then follow up with provided questions to increase engagement and interaction of the more experienced team members with the less experienced. By creating this space to talk safety, the teams had the opportunity to use their communication skills, develop their safety skills further, and the potential to increase their safety culture.

The Coaching program was developed to help deliver the microlearning program and help participants with transferring knowledge into behaviour on the job. Each coach attended training sessions with the Training Works project team and given a presentation to understand the project and the competency model they would be using. Further to that, coaches received a coaching handbook with each competency explained with behaviours to look for on the job. Early in the microlearning delivery, coaches expressed they needed guidance to deliver the microlearning. The program was adapted to include a Coaching overview; for every microlearning delivered the coach received directions on how to present the video, activity, or formats, and provided notes on what to focus on in the training and discussion questions to use in a team conversation.

Evaluation

The evaluation of the microlearning project expanded over the two-year period lasting from June 2020 – December 2022, with the evaluation planning and baseline data collection occurring in 2020 – 2021, program monitoring and evaluation data collection in 2021 – 2022, and evaluation reporting to occur in July 2023 to Future Skills.

Preliminary information was gathered and documented at the beginning of the project through interviews, questionnaires, and document review. This initial research took approximately six months and concluded by December 2020. This information was used to develop the evaluation framework created by a credentialed evaluator is continuous and will ensure the success of the project.

Upon completion of the skills assessments and the microlearning program beginning, a more in-depth review of internal safety training, procedures, competencies, and gaps took place.

Throughout the implementation of the microlearning process, evidence of its effectiveness and outcomes achieved were monitored throughout. A pre-survey was administered to all participants at the onset to achieve a base level on key metrics (early 2021). Once microlearning was launched, participant engagement and success of learning was tracked using individual assessments that were completed as a part of the training (ongoing for 6-month period). Similar to the pre-survey, this was given to both the control and experimental groups to identify changes in learning at this stage. Finally, a post-survey was administered to the two groups after the 6-month training to capture learnings (August 2022).

In order to determine the impact of the program on the organization and to triangulate findings, interviews with coaches/mentors and organizational leaders were conducted at the mid-point of microlearning (May/June 2022) and upon completion (September 2022).

Additionally, evidence for the effectiveness of the training was captured through administrative data in order to track changes in key performance indicators (e.g., number of incidences, profit; completed throughout the process).

Finally, a six-month follow-up survey was implemented 6-months after the training has occurred in order to determine long term impact and to further test the appropriateness of the training (March 2023). Similarly, at this stage the evaluator reached out to the coaches/mentors and organizational leaders for interviews to capture additional evidence of the training (April 2023).

The evaluation covers all aspects noted by the Future Skills Center:

- Evidence
    - The evidence journey began with a rigorous assessment of an intervention's logic model and theory of change. As interventions demonstrate preliminary evidence of success, they are ready for more rigorous evaluation with the ultimate aim of preparing for impact evaluation and cost-benefit analysis to generate the quality of evidence necessary to inform scaling decisions.
- Implementation

- As interventions mature, we have set quality benchmarks and used techniques such as rapid-cycle evaluation to support projects through an ongoing cycle of continuous learning and program improvement.

- Relevance

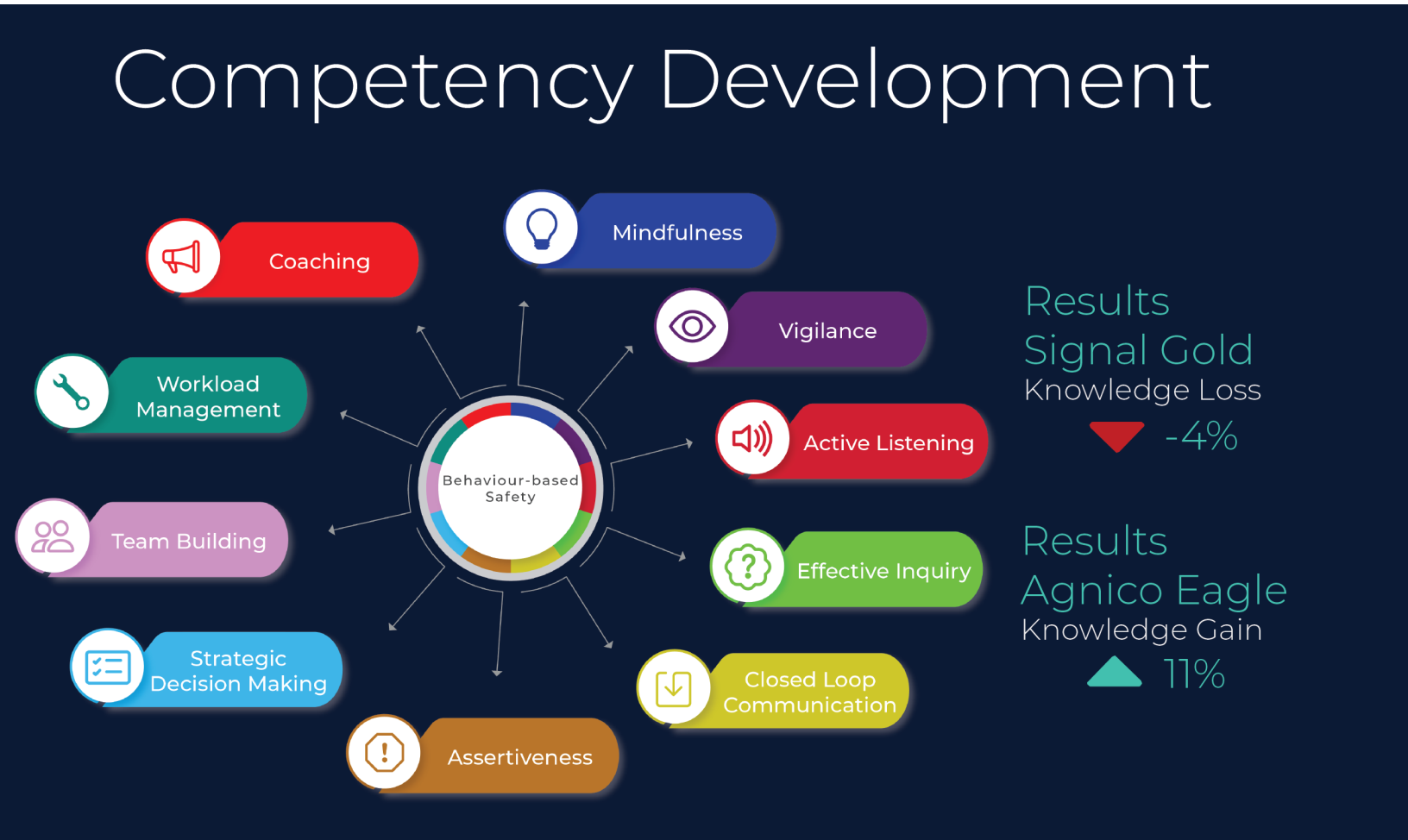
  - As evaluation findings emerge, we update our assessment of each intervention's relevance to our mandate and its potential to have an impact at a pan-Canadian scale. This assessment process is conducted in collaboration with provinces and territories and other key stakeholders in Canada's skills development ecosystems. The results of this assessment are critical input to decision-making for reinvestment.

Below are the results of the post evaluation. A comprehensive analysis and evaluation will be available in July 2023.

Knowledge Gain

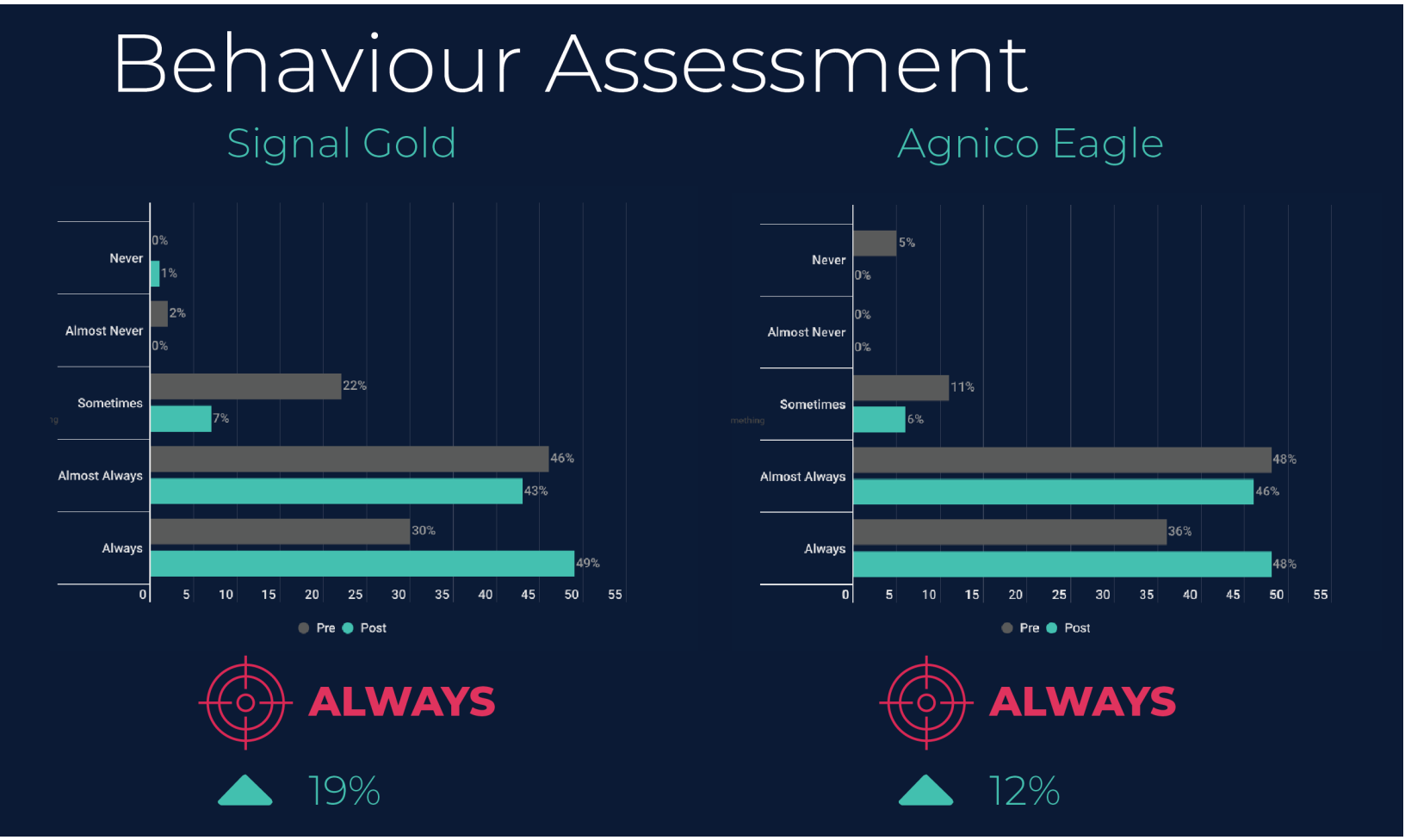
At Signal Gold 69 employees received the Micro-Credential however only 24 people completed both Skills Assessments. This was due to the disruption caused by the announcement of the mine closure at Signal Gold. Signal Gold employees had a 4% decrease in their knowledge across all 10 competencies. However, there were marked knowledge gains in Mindfulness at 3%, Closed Loop Communication at 1% and Workload Management at 2%. The disruption of the anticipation and subsequent announcement of mine closure at Point Rousse reduced buy-in and participation towards the end of the project.

At Agnico Eagle 68 employees received the Micro-Credential with 57 people completing both Skills Assessments. The knowledge gain across the 10 competencies was 11% with largest gains seen in Effective Inquiry at 4%, Active Listening, Decision Making and Workload Management all increasing by 2% each.



Behaviour Change Across the 10 Competencies

The target for behaviour change is the individual performs the key behaviours "always" in their daily tasks. Despite the assessed decrease in knowledge there was a substantial behaviour change assessed with a 19% increase to "always applying" the skills learned through the microlearning model. For those that completed the final behavioural survey at Agnico Eagle there was a 12% increase to always applying the skills learned through the microlearning model. Interviews with key safety leaders at both organizations revealed a noticeable increase in safety conversations and behaviours onsite.



Incidents and Accidents

- Decrease of 46 %

Incidents Involving Materials

- Decrease of 60 %

Waste

- Decrease of 18.2 %

Project ROI Calculation:

The comprehensive ROI calculation conducted by a third-party evaluator for this project yielded a Return on Investment of $294,252 using results from Agnico Eagle. An ROI could not be calculated for Signal Gold due to the limited data and subsequent mine closure; it is common for incidents and accidents to increase when a mine enters a closure cycle.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