



Effectiveness of Short Line Safety Institute's Hazardous Materials Training Program

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Summary

The Short Line Safety Institute (SLSI) offers a Hazardous Materials Training Program to interested railroads. SLSI compared results from a knowledge test before and after its Hazardous Materials Training Program. Results suggest that the program enhances railroad employees' knowledge on hazardous materials transportation safety.

Background

The Short Line Safety Institute (SLSI) is dedicated to the continuous improvement of safety and safety culture across all short line and regional railroads in the United States. In addition to providing Safety Culture Assessments and Leadership Development Training, SLSI offers a Hazardous Materials Training Program free of charge to interested railroads. This one-day training is taught by SLSI's experienced instructors and is tailored to the needs of each railroad. It combines instructor-led lectures, hands-on training, and interactive experience-based discussions in order to provide a comprehensive learning experience. Topics covered in the sessions include Department of Transportation regulations for the rail industry, job function-specific regulations, Homeland Security regulations, and Occupational Safety and Health Administration, Environmental Protection Agency, and other regulatory reporting requirements.

Objectives

This paper presents preliminary evidence of the effectiveness of SLSI's Hazardous Materials Training Program. SLSI compared pre-training and post-training scores on a knowledge test to assess transfer of the training's course material to participants.

Methods

Training class size ranged from 7 to 20 students. Before each module was taught, students answered multiple choice "Knowledge Check" questions in order to gauge their initial pre-training understanding of the topic. After each module was taught, students answered multiple choice "Review" questions in order to assess their knowledge transfer. All questions were developed by SLSI's Hazardous Materials Training professionals. Pre-training and post-training scores were then stripped of any identifying information and analyzed in order to assess the effectiveness of the program.

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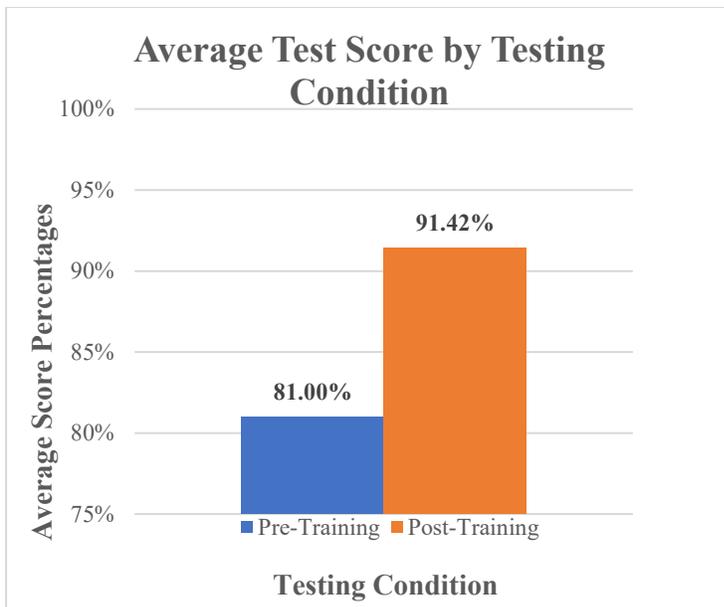
Results

SLSI analyzed 214 pairs of pre-training and post-training tests completed between July, 2018 and November, 2020. The mean pre-training score for the Hazardous Materials Training Program was 81.00% (SD = 18.59), while the mean post-training score was 91.42% (SD = 9.43) (see Figure 1). A t-test for paired samples showed a statistically significant gain; $t(213) = 7.60$, $p < 0.001$. The effect size was 0.56, which is considered a medium effect size (Cohen, 1992). This additional statistic helps to determine the value of the significance test. A medium effect size indicates that the difference between the pre-training and post-training scores was indeed meaningful. Test score improvements suggest that participants learned the course material. Thus, results suggest that SLSI's Hazardous Materials Training Program increases participants' knowledge of the subject matter.

Conclusions

Through its multiple training methods, SLSI's Hazardous Materials Training Program has effectively transferred crucial safety information from instructor to participant within this sample. A significant increase between average pre-training and post-training knowledge test scores suggests that participants learned the course material. Thus, short line and regional railroads across the United States are likely to benefit from their employees participating in this training program.

Figure 1.



References

Cohen, J. (1992). A power primer. *Psychological bulletin*, 112(1), 155.