EVALUATING THE EFFECTIVENESS OF OSH TRAINING DELIVERED IN A DISTANCE LEARNING FORMAT: CRITICAL FACTORS FOR SUCCESS

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CPWR
THE CENTER FOR CONSTRUCTION RESEARCH AND TRAINING

October 26, 2022

Evaluating the Effectiveness of Occupational Safety and Health Training Delivered in a Distance Learning Format: Critical Factors For Success

SUE ANN SARPY, PH.D.

OCTOBER 26, 2022

Previous Research

CPWR: The Center for Construction Research and Training

Worker Safety courses (ICRA and ICRA/COVID-19)

Compared Distance Learning vs. In-Person

Highly Interactive, Synchronous Distance Learning was Effective

Trainees' Competence with Technology Influenced the Training Outcomes

Created Resources for Distance Learning

https://www.cpwr.com/wp-content/uploads/RR2021-OHST-distance-learning-COVID.pdf

Is Distance Learning Effective for Other Worker Safety Trainings

Effectiveness and Impact:

Trainings of Longer Duration

Designed and Delivered by Various Training Providers

Subjective and Objective Measures of Training Outcomes

Courses Selected

- OSHA 510 and OSHA 500 Trainings
- Provided In-Person Pre-Pandemic
- Modified to Distance during Pandemic
- Delivered by Various Training Providers
- Dates: November 2018 to June 2021

OSHA 510 and OSHA 500 Courses

OSHA 510: Occupational Safety and Health for the Construction Industry

Covers OSHA standards, policies, and procedures in the construction industry.

Topics include scope and application of the OSHA construction standards, construction safety and health principles, and special emphasis on those areas in construction which are most hazardous.

Minimum Student Contact Hours: 26

No Prerequisites

OSHA 500: Trainer Course in Occupational Safety and Health Standards for the Construction Industry

Course designed for individuals interested in teaching the 10- and 30-hour construction safety and health outreach training program

Students must prepare a presentation on an assigned OSHA construction outreach training program topic and pass a written exam at the end of the course.

Minimum Student Contact Hours: 26

Prerequisites: OSHA 510 Course Completion and 5 years safety and health work experience in the construction industry

Distance Learning
vs
In-Person

Which is More Effective?

EVALUATIONS

CPWR Training Evaluation

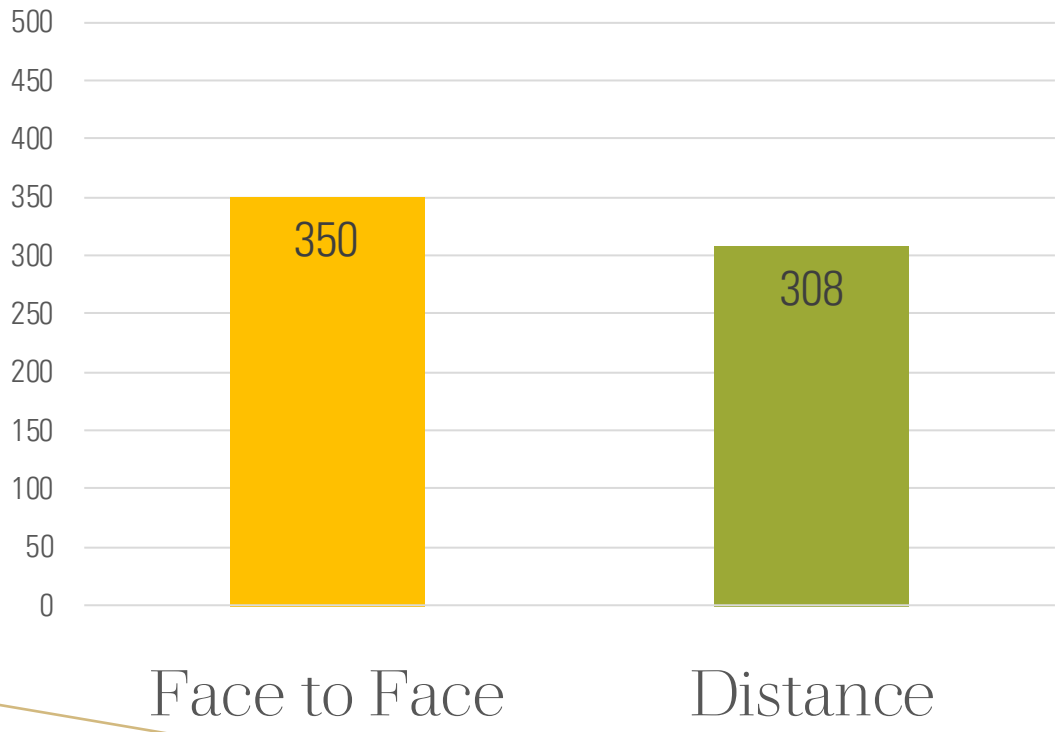
- 26 items immediately following training
- Effectiveness
  - Instructors
  - Training methods/materials
- Learning (safety knowledge and skill)

Testing

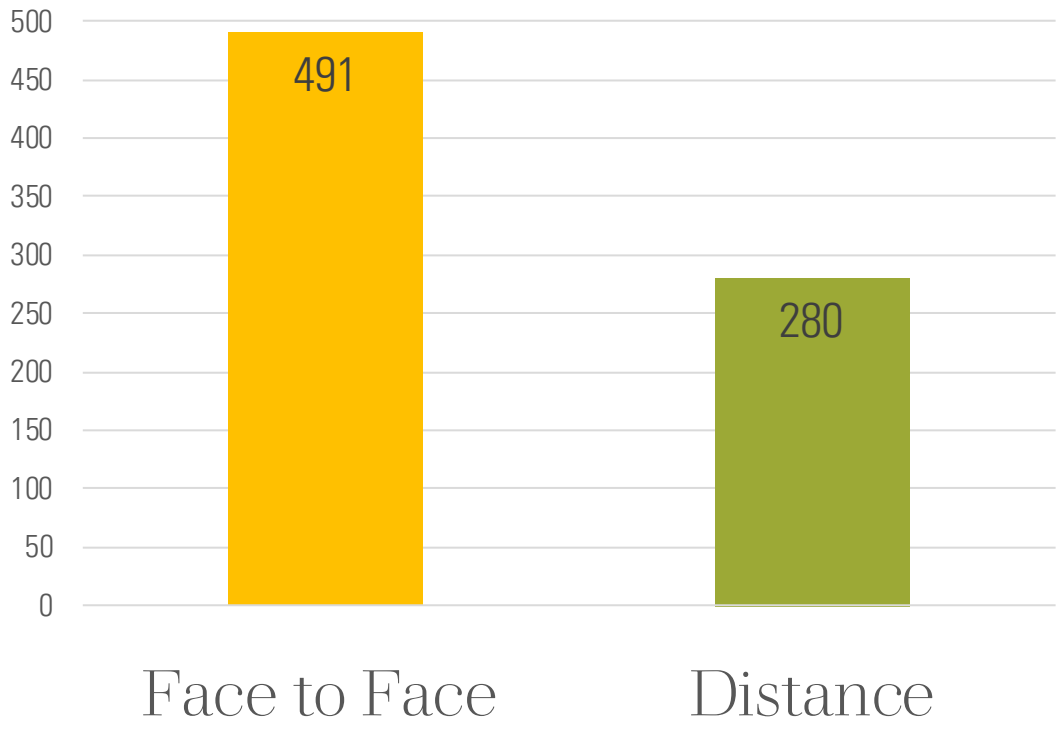
- OSHA 510 test
- OSHA 500 test

How Many Workers Evaluated Trainings?

OSHA 510



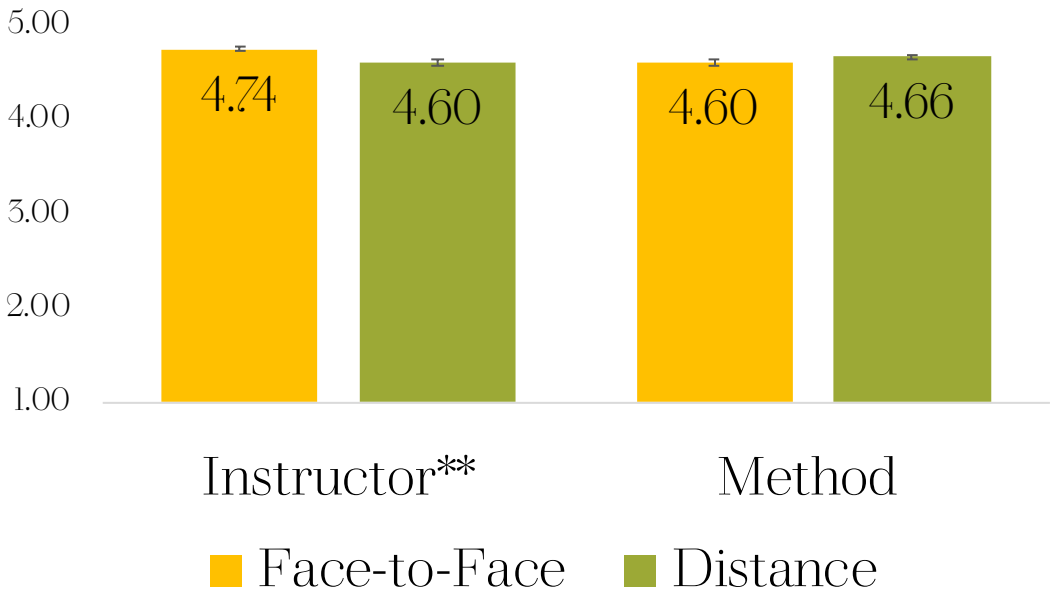
OSHA 500



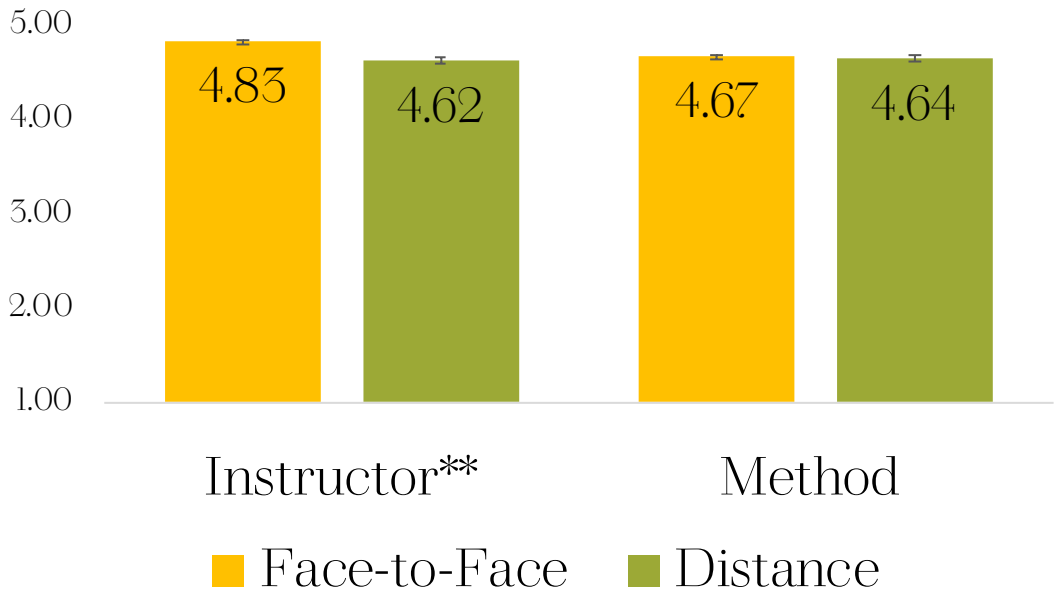
Ratings Of Effectiveness

In-Person Significantly Higher for Instructor Effectiveness OSHA 510 and OSHA 500

OSHA 510

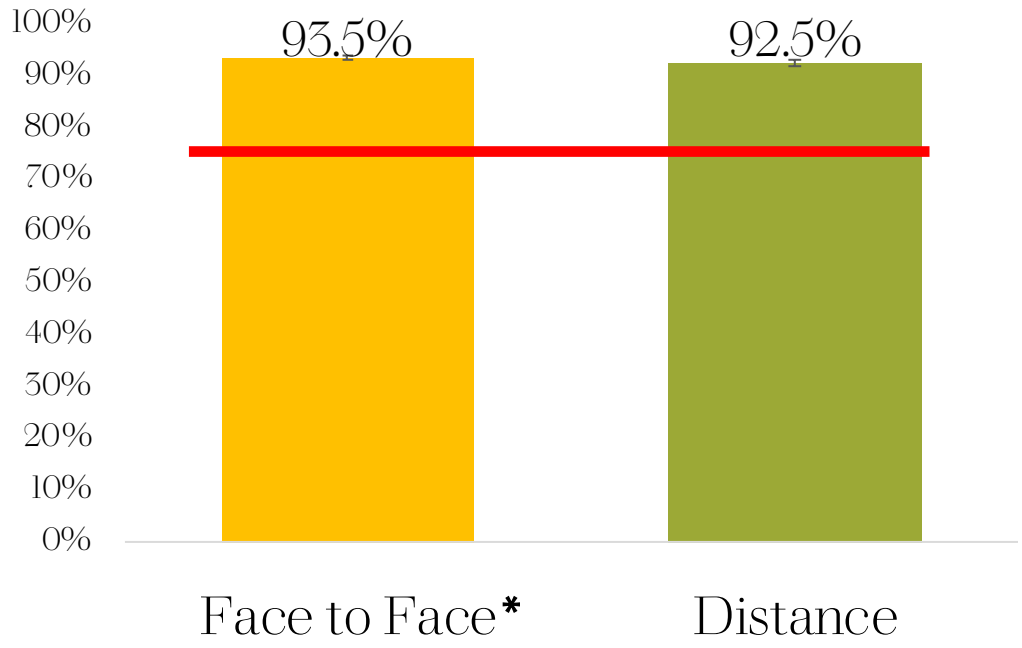


OSHA 500

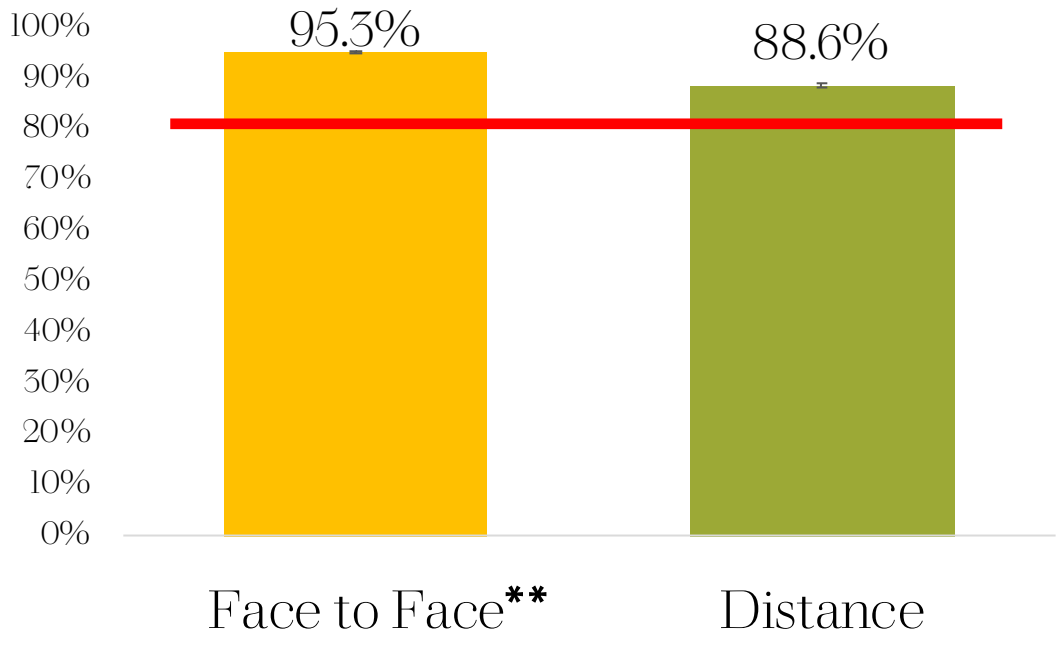


Test Scores
In-Person Significantly Higher:
OSHA 510 and OSHA 500

OSHA 510



OSHA 500



In-Person vs Distance

BOTH demonstrated high ratings of Effectiveness and Learning Gains

Face-to-Face received significantly higher ratings of Instructors' Effectiveness

Face-to-Face produced significantly greater LEARNING

Analysis of Distance Learning

What are the differences in the design/delivery of the various providers?

Similarities/Differences in Design and Delivery

Similarities

Multiple instructors, Orientation Training, Zoom, Interaction (Breakout Rooms), Testing

Differences among Scheduling

Lunch/No lunch	Training Length before breaks	Length of breaks	Consecutive days vs. weekend break

Four Major Schedules Used

Consecutive Days

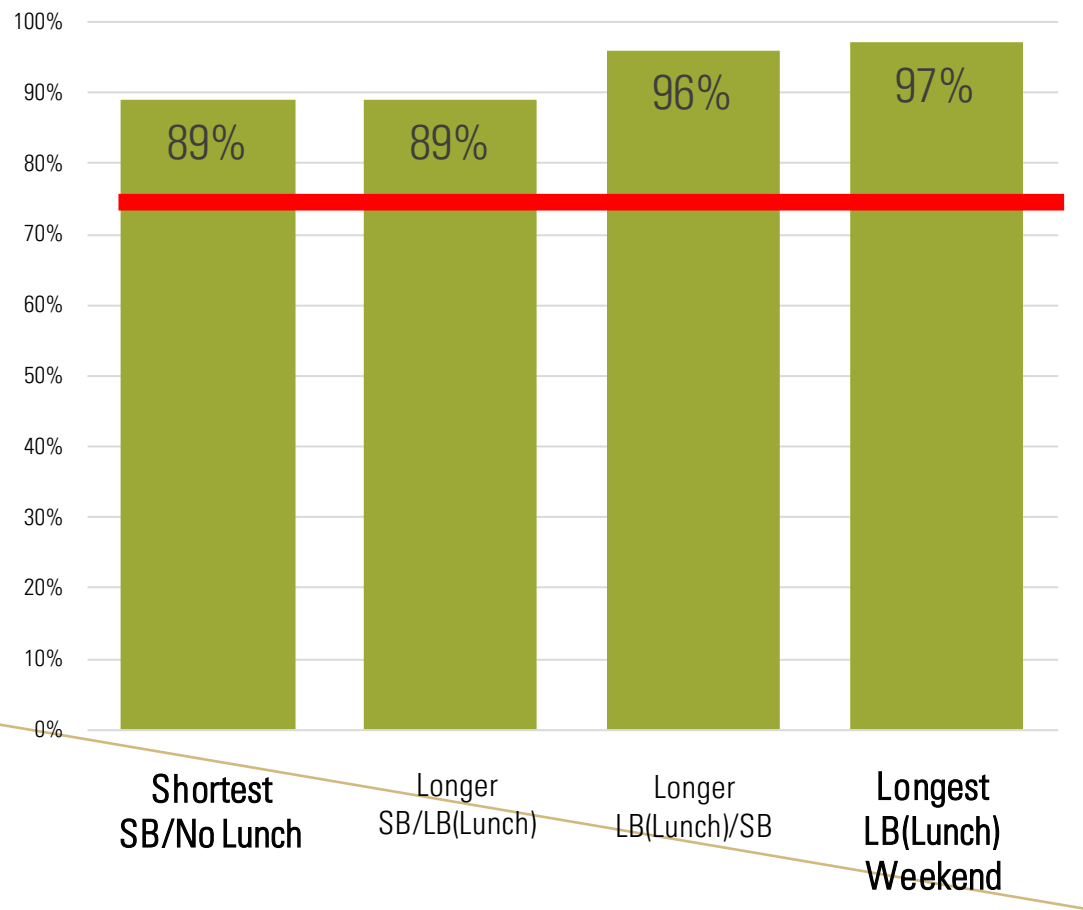
- Shorter training sessions (1 to 1.5 hours) with shorter breaks (10 to 15 minutes) distributed throughout the day
- Longer training sessions (2 hours) with short break (10 to 15 minutes) followed by longer break (30 to 45 minutes lunch)
- Longer training sessions (2 hours) with longer break (30 to 45 minutes lunch) followed by shorter breaks (10 to 15 minutes)

Weekend Break

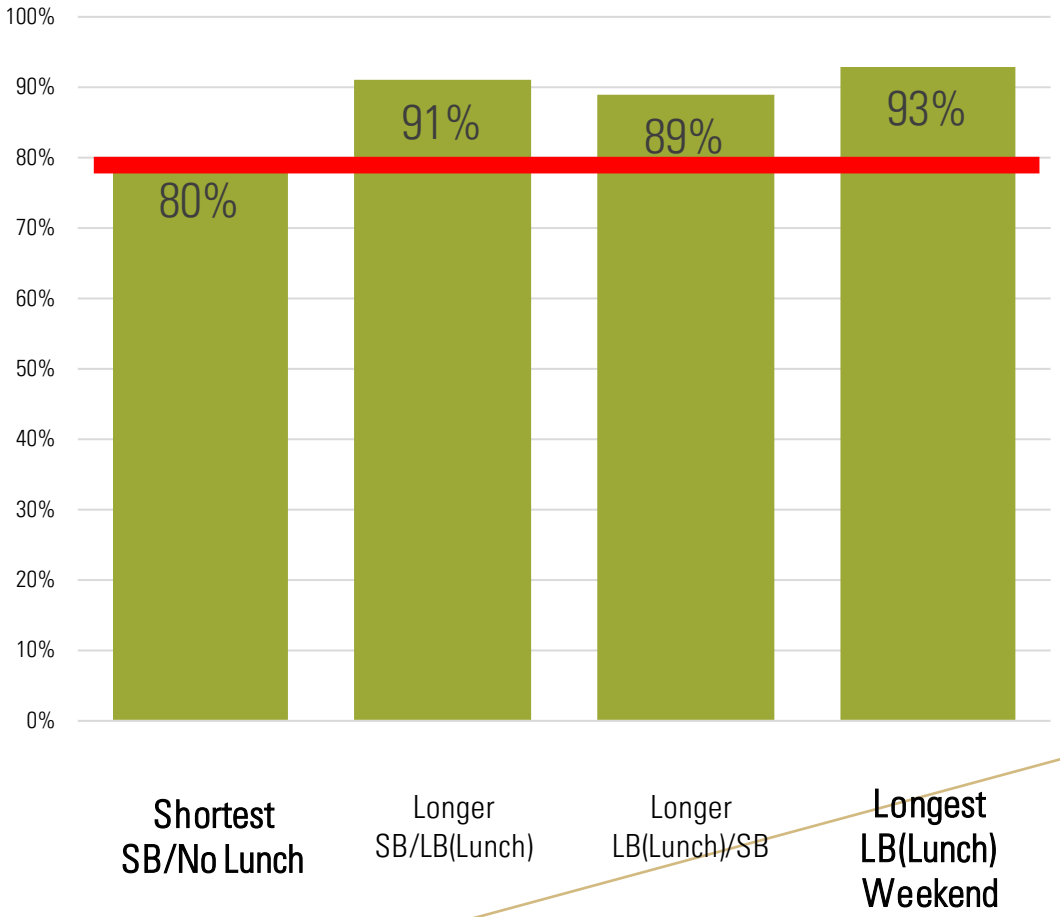
- Longest training sessions (2 to 2.5 hours) with one long break (45 minutes lunch) spread out over several days (weekend break)

Scheduling: Preliminary Findings

OSHA 510**



OSHA 500**



Implications for Scheduling

Scheduling did not generally impact ratings of effectiveness

Longest training sessions with break that includes lunch presented over a longer period of time resulted in the **highest test scores**

Shorter training sessions presented with shorter breaks and no lunch resulted in the **lowest test scores**

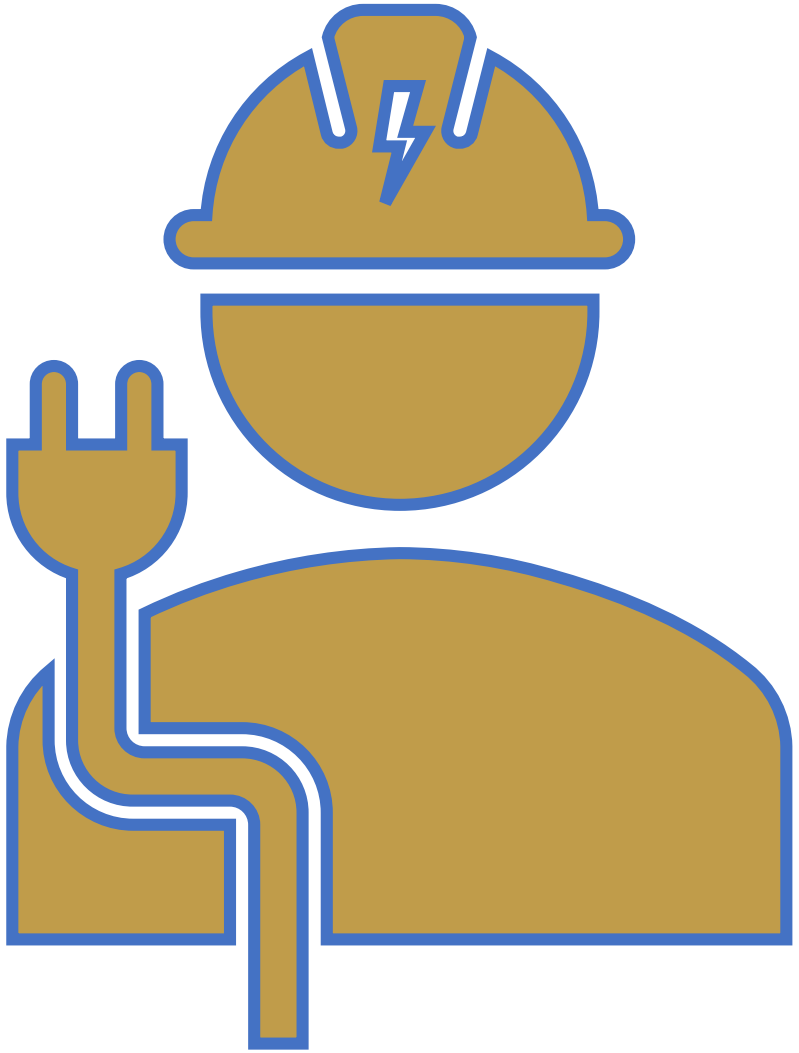
Distance Learning

Impact of Training (3 to 6 Months Later)

Distance Learning Evaluation

- Completed by Trainers (n=16) and Trainees (n=100) on-line 3 to 6 months after training
- 46 items (quantitative and qualitative)
- Effectiveness
  - Instructor
  - Content
  - Format
  - Overall
- Learning/Performance
  - Safety-related Knowledge/Skills
  - Safety Performance
  - Support on-the-job

Did the Trainees' Work Experience Influence Training Outcomes?



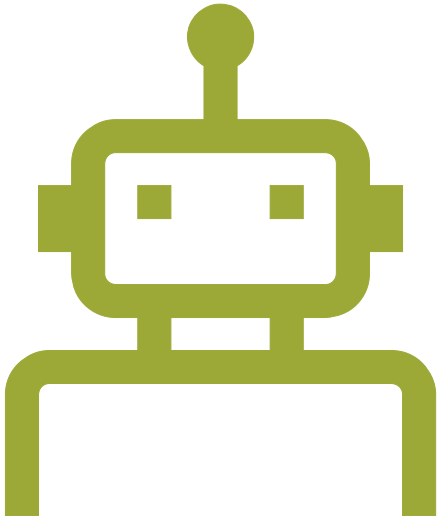
Trade Affiliation

Ten Trades Represented

NO Significant Differences Effectiveness Ratings and Learning/Performance

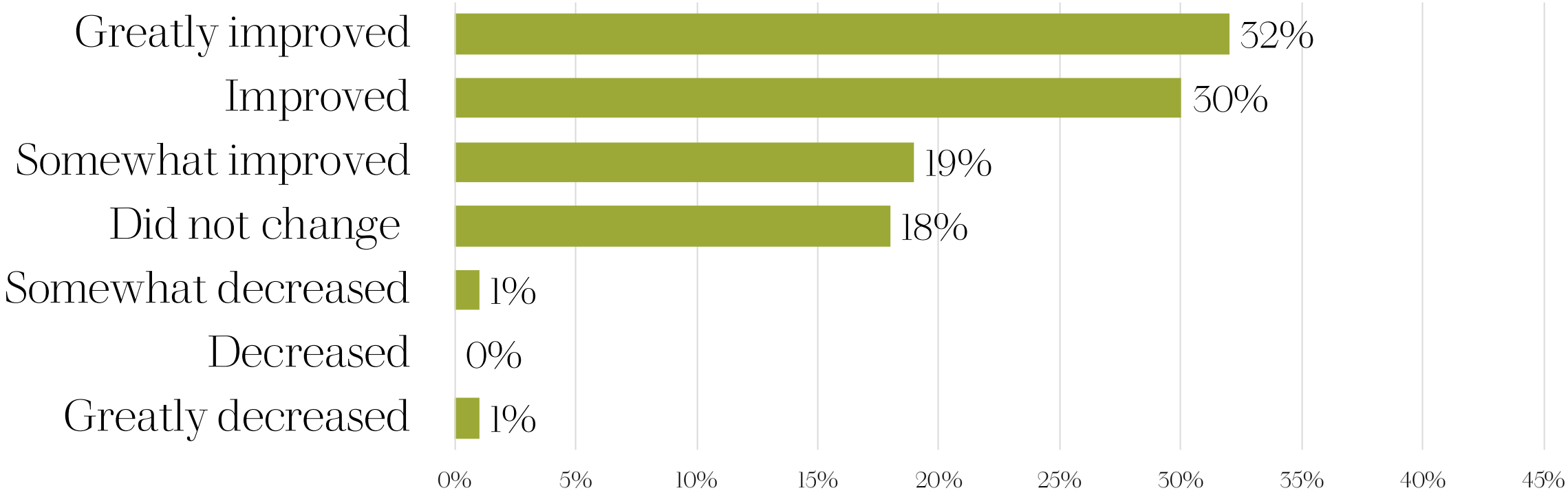
Did Trainees' Technological Competence Influence Training Outcomes?

TRAINEES' TECHNOLOGICAL COMPETENCE

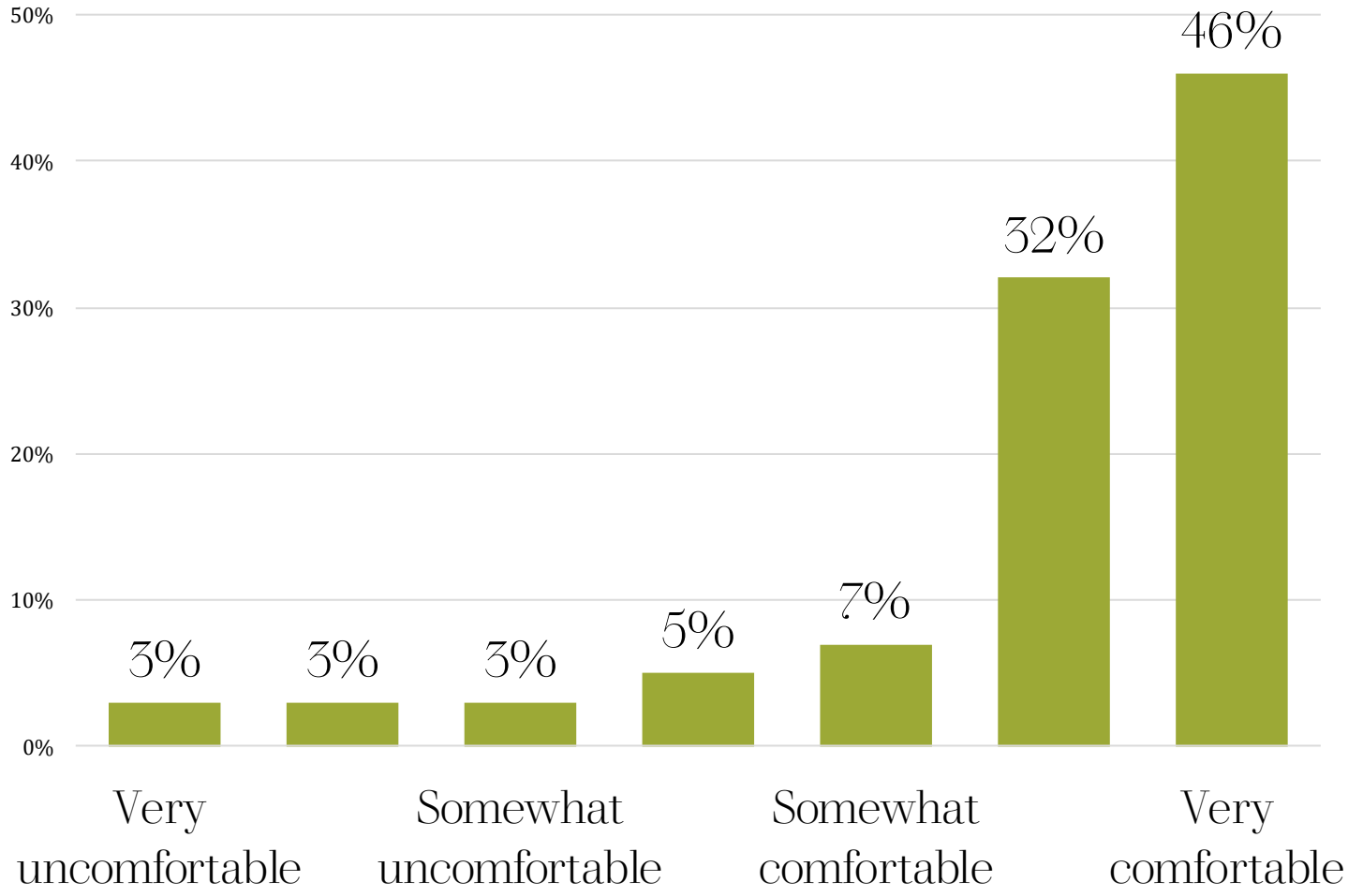


Comfort and Skill with Technology

How much has trainees' Comfort with the Technology CHANGED during the pandemic?



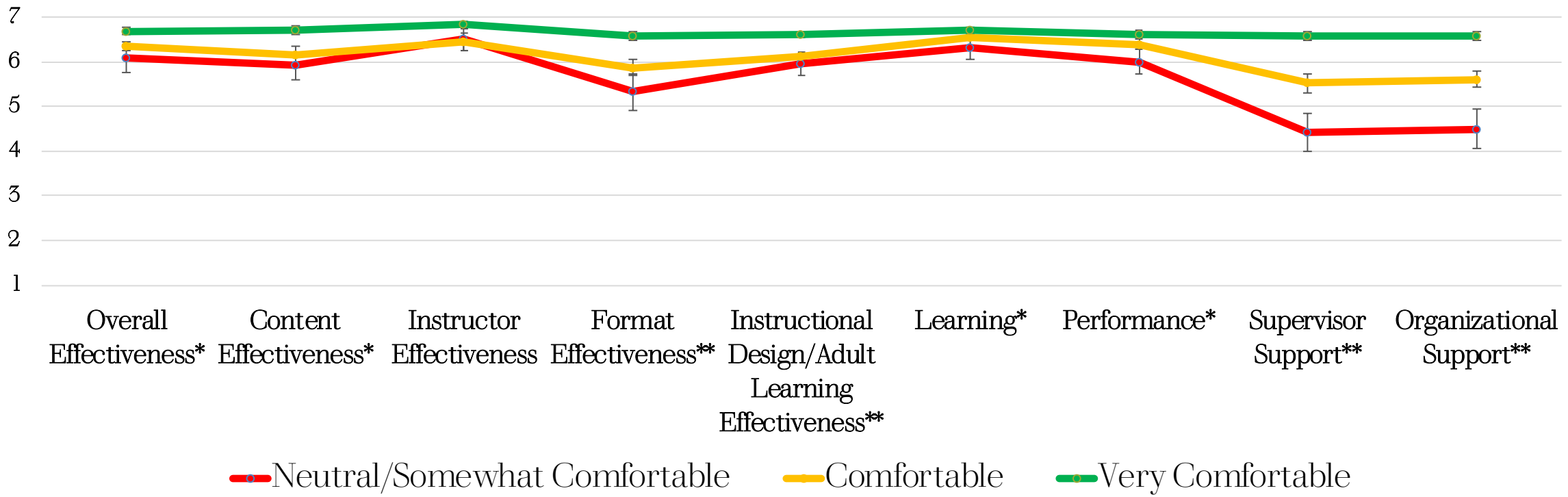
Trainees Comfort With The Technology



3 to 6 Months Later.....

How Did They Rate the Training?

Influence of Trainees' Technological Comfort on Training Outcomes



Trainees' Technological Competence

Trainees' Comfort with and Skill in using the technology has improved during the pandemic

Trainees' Comfort with the Technology significantly influences their Training Outcomes

Trainees and Trainers Perspective

Continued Use of Distance Learning Moving Forward

Net Promoter Score (NPS): Learner Experience

Likelihood to RECOMMEND the OSHA 500 and OSHA 510 courses delivered via DISTANCE LEARNING to others (0 to 10)

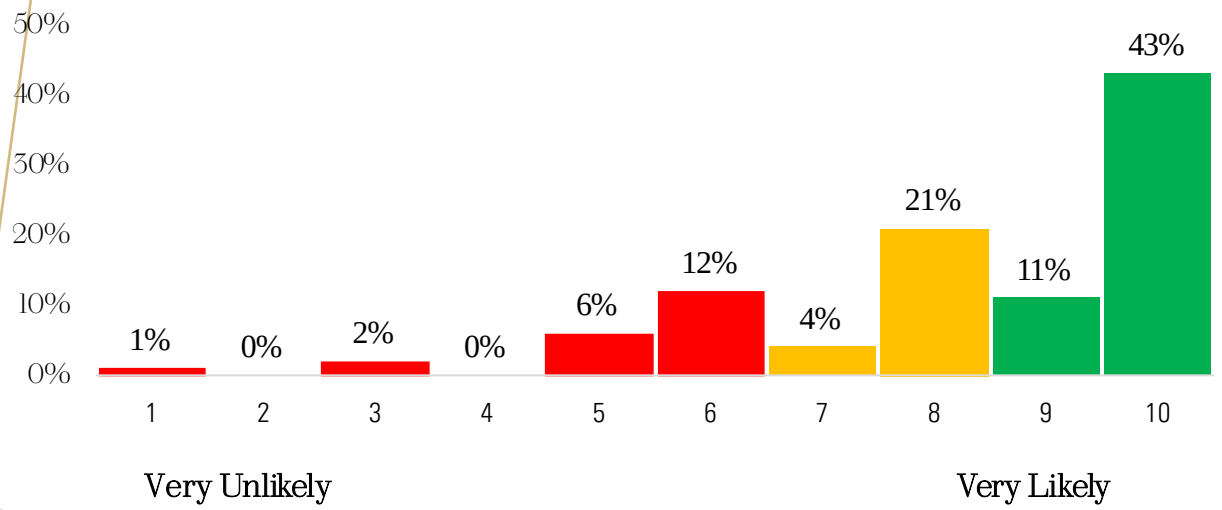
- Promoters: Ratings of 9 or 10
- Passives: Ratings of 7 or 8
- Detractors: Ratings of 0 to 6
- NPS = % Promoters - % Detractors
- NPS can range from -100 to 100

Net Promoter Score: NPS

Net Promoter Scores: Trainees

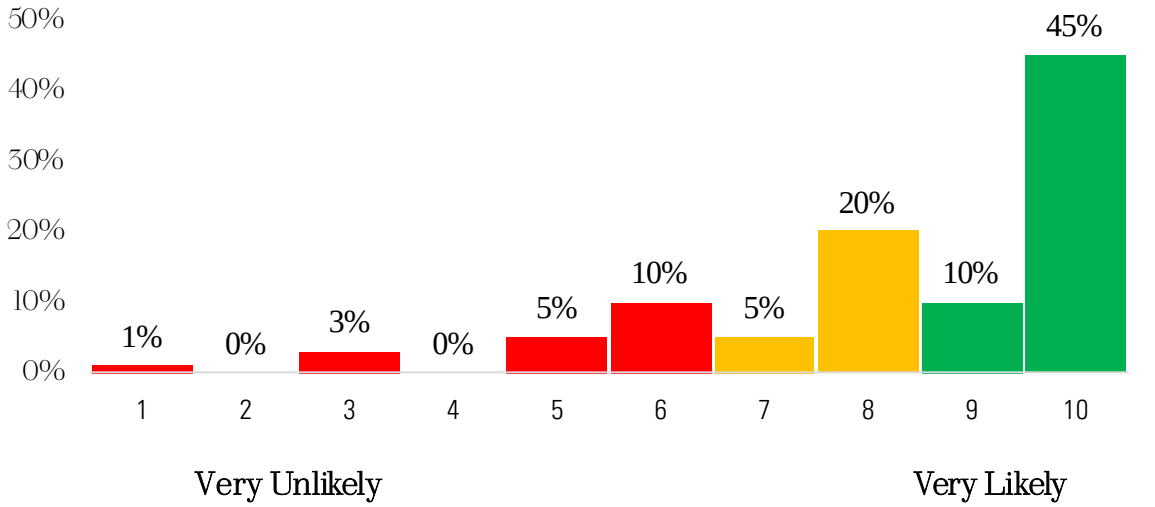
OSHA 510

Net Promoter Score = 33



OSHA 500

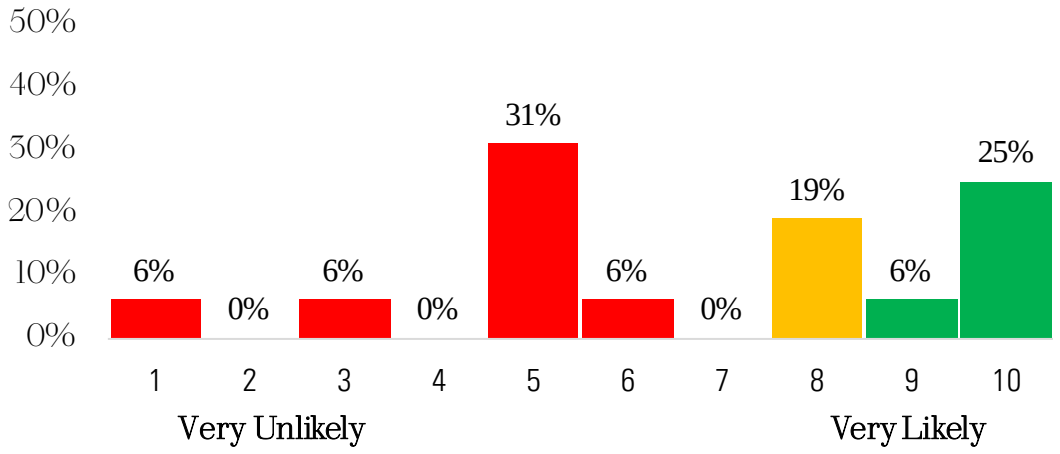
Net Promoter Score = 36



Net Promoter Scores: Instructors

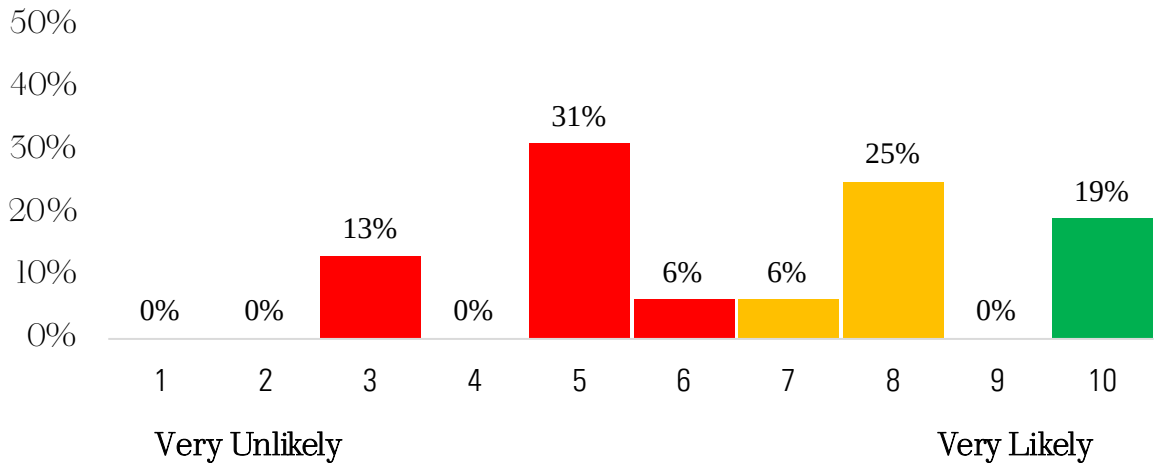
OSHA 510

Net Promoter Score = - 18



OSHA 500

Net Promoter Score = -31



Instructors: Distance Learning for Safety Training

STRENGTHS

- Safety During COVID-19
- Convenience and Efficiency
- Breakout Rooms

WEAKNESSES

- Lack of Social Interaction
- Limits Assessment of Trainees' Comprehension
- In-person Preferred
- Technological/Technical Difficulties
- Limitations to Hands-on Activities
- Limits Student Support
- Student Engagement/Distractions

Future Considerations

Social Interaction and Social Support

Trainee and Training Characteristics

Integration of Face-to-Face (in-person) with Distance (Hybrid formats; Flipped Classrooms)

Net Promoter Scores

Additional Worker Safety Trainings:

40-Hour HAZWOPER

Acknowledgements

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Full report available:

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https://www.cpwr.com/research/published-research/cpwr-reports/evaluation-of-training/

QUESTIONS

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