



Safety Center's Level 3 Training Evaluation

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Training evaluation methodology

Historically, transportation training has been evaluated at Kirkpatrick Level 2 – Learning. Figure 1 shows how Level 2 is related to the other levels. Kirkpatrick Level 2 measures how well the participants were able to internalize the knowledge and skills conveyed in the training.

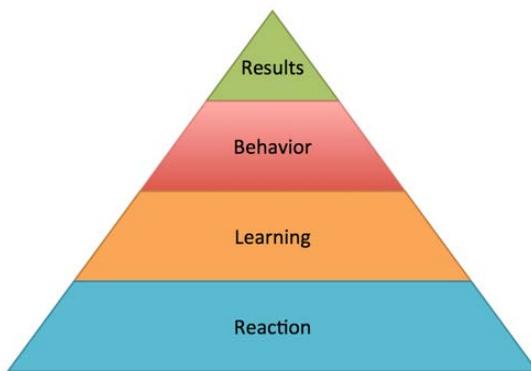


Figure 1 - Kirkpatrick's Four Levels of Learning

The National Center for Rural Road Safety (Safety Center) consciously evaluates training events at Kirkpatrick Level 3 – Behavior. This level measures to what extent the participants have applied or shared their new knowledge and skills. This is more indicative of the cultural shift the center seeks to produce.

But it had to work across the multiple training delivery methods used by the Safety Center including webinars, instructor-led training (ILT) and video-based events. Our challenge then became conducting an objective evaluation within the logistics, time and budget constraints under which the Safety Center operates.

Evaluating ILT and webinar events

To achieve this goal within the constraints, the team chose a two-stage survey-based evaluation for webinars and ILT. The first stage what is a traditional Kirkpatrick Level 2, while the second stage is our adapted version of Kirkpatrick Level 3.

The Level 2 evaluations were conducted using a combination of true/false and multiple-choice questions to assess participant mastery of each training event's stated learning outcomes. The evaluations were conducted by electronic survey to all registered training event participants.

The Level 3 evaluations consisted of a self-assessment of knowledge along with new skills application and sharing – conducted three months after the training event. While not following the traditional Level 3 methodology, it does provide an indicator of a cultural shift within target organizations while honoring the Safety Center's constraints.

For webinars and ILT, the Safety Center Level 3 survey follows a five-question format:

- Question #1 screens the survey participants to ensure they attended and remember the training.

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- Questions #2 and #3 quantitatively measure at what level the participant has applied the new knowledge, as represented by the learning outcomes, to their job responsibilities.
- Question #4 quantitatively measures how broadly the participants have shared that knowledge with their colleagues.
- Question #5 collects qualitative feedback on how the knowledge has been applied and shared.

The following are examples of the five questions from one of the Safety Center's webinars:

1. Did you attend the Rural Safety Center's "Converting Paved Roads to Unpaved" webinar that was held April 4, 2017?
2. I can identify the reasons why a road might be a candidate for conversion from paved to unpaved.
3. I can recognize the differences between practices that increase the likelihood of a successful unpaving project, and those practices that may reduce an unpaving project's effectiveness.
4. With how many members of my organization have I shared my knowledge and understanding of why and how roads may be converted from paved to unpaved?
5. Please provide examples of how you have evaluated roads for conversion or have executed an unpaving project.

Evaluating video-based training events

Because asynchronous video-based trainings such as YouTube do not capture viewer ID, we could not use a survey evaluation. That means capturing a Level 2 evaluation is not possible.

But we still wanted to identify an indicator of Level 3 application and sharing, so we did an exhaustive literature review. After extensive research, the team determined that video viewership over time could provide a *qualitatively-correlated* measurement for evaluation.

We start by capturing the total viewership of the video at the following points in time: **Day 1, Day 3, Day 7, Week 2, Month 1** and **Month 3**. Then, we plot the results over time to create a trend line. The shape of this trend line indicates how extensively the video was shared¹ – whether the video "went viral."

To further compare video-based, ILT and web-based training events, we have supplemented the slope analysis of the video trend line with a more traditional metric. With an additional year of measurement for year 2 video-based training events, we can now also use a more traditional total view measurement for the videos.

¹ Keith A Trimels, Ilse van Goth, *Evaluating the Effectiveness of Video-Based Instruction*, IDT Group, 6 April 2016.

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So with this year 3 report, we've incorporated total video views and calibrated it against ILT and webinar training events. The goal is to provide the Safety Center and others with knowledge – even if implied – that can help predict the cost vs. impact of future training efforts.

Overall training results through year 3

To conduct the ultimate analysis at Kirkpatrick Level 3, there is a three-month window between the training event and the follow-up Level 3 data collection. Therefore, we've analyzed the data for training events from August 2016 through July 2017, which equates to an October 2017 Level 3 evaluation.

The training priorities identified by the Stakeholder Group, with input from FHWA, drove most of the Safety Center's training during this period to webinar-based and video-based training events. Because of the Safety Center's Safety Summit, no webinar was conducted in September 2016. And no webinar was conducted in October 2016.

Of the ILT training conducted by Safety Center personnel, all were conducted in conjunction with other transportation organizations or their conferences. As a result, we did not have access to the ILT attendee list for follow-up surveys. So our training analysis through year 3 includes only webinars and video-based events.

Level 2 for webinar events

As with year 2, every Safety Center webinar training event achieved average participant mastery above the typical 70% competency threshold (Figure 2). In fact, the lowest level for year 3 was 85.0% in May 2017 compared to a year 2 low of 79.8% in July 2016.

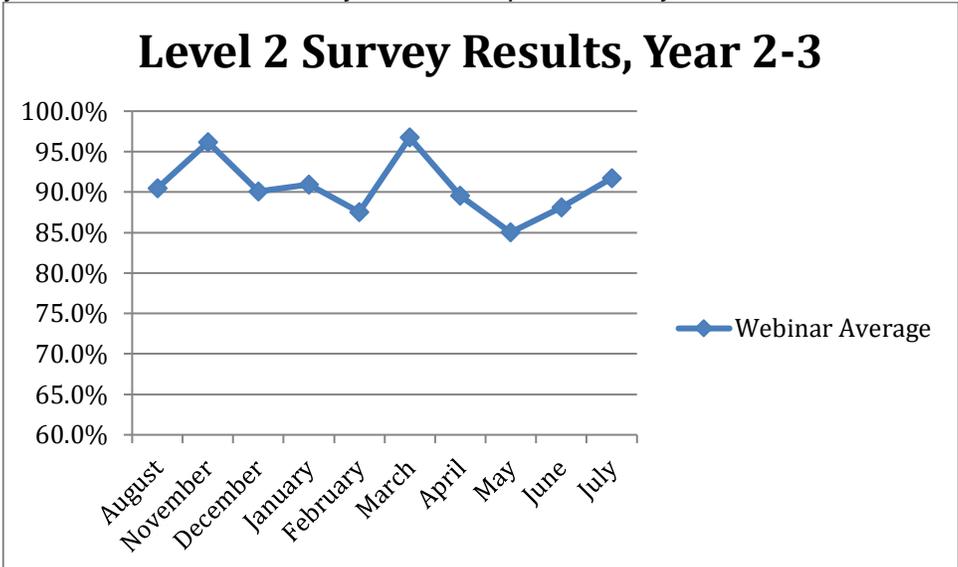


Figure 2 - Average Level 2 mastery measurement

In further analyzing the year 3 results, we found the Level 2 survey results averaged 90.6% across all webinars. Mirroring the absolute low for the year, this compares favorably to the 86.9% average across a smaller webinar sample size in year 2.

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Determining direct causation, if any, for the increased Level 2 results is difficult. Multiple factors contribute to Level 2 competency including:

1. How clearly the learning outcomes are crafted
2. How well learning outcomes align with participant goals
3. How well the instructional content aligns with the learning outcomes
4. How effectively the course instructors convey the content
5. How well Level 2 assessment questions align with the learning outcomes and content

Adding to this complexity, several year 2 webinars were conducted by experts from outside the Safety Center. This means in many cases, Safety Center staff had minimal, if any, direct influence over items 1-4 on the above list.

By year 3, however, the Safety Center processes for web-based training were well established. So it's likely the Safety Center expectations for these items were more clear to both Safety Center staff conducting training events as well as staff coordinating training events conducted by experts outside the Safety Center.

Level 3 for webinar events

As described in the *Evaluating ILT and webinar events* section, survey questions #2 and #3 provide a qualitative indicator of how the participants have applied the new knowledge to their job. For the answers, a 3 rating equates to *neutral*, 4 to *agree* and 5 to *strongly agree*.

As Figure 3 shows, the training events scored in the 3.6 – 4.2 range. That means that qualitatively, the participants were consistently applying or sharing their new knowledge as part of their job responsibilities.

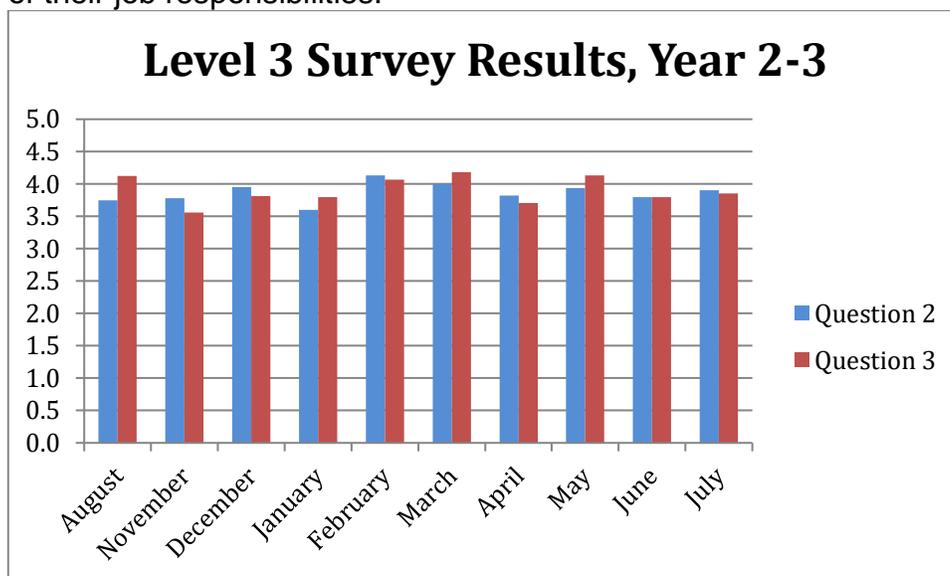


Figure 3 – Self-assessed application and sharing of learning

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Question #4 sought to quantify the breadth at which the participants shared the information they gained with their colleagues. The answers represented ranges of sharing from none to more than 10 colleagues.

Over ten webinars, the sharing ranged from a statistical none to a statistical more than 5 colleagues. The average rating for year 3 was a 2.3, which approximates to an additional 2½ transportation professionals per attendee who were exposed to each webinar's information.

The number of webinar participants ranged from a low of 42 in August 2016 to a high of 103 in December 2016, with an average of 71 participants per webinar throughout the analysis period. In addition, webinars have been streamed an average of 45 times on-demand after the actual webinar was held.² This brings the total average webinar viewership to 116 per webinar.

From question #4 of the Level 3 survey, these attendees shared the knowledge gained from the webinar with an average of 2½ colleagues – or an additional 290 transportation professionals. So without accounting for possible duplicate views, we can extrapolate that an average webinar reached 406 transportation professionals with the information.

Level 3 for video-based events

As with year 2, we analyzed the views over time. In *Evaluating the Effectiveness of Video-Based Instruction*, we noted an accelerating increase in the slope of views over a short period of time is known as a video “going viral.” This behavior suggests a high rate of sharing regardless of the total number of views.

Through October 2017, the Safety Center has released three video-based training events – one in each year of the Safety Center's operation. To date, none have shown this short-duration pattern that reflects a virally-shared video. But the YouTube view data does offer an additional analysis opportunity.

² From WTI web streaming data. This is a total streamed number and does not track unique views.

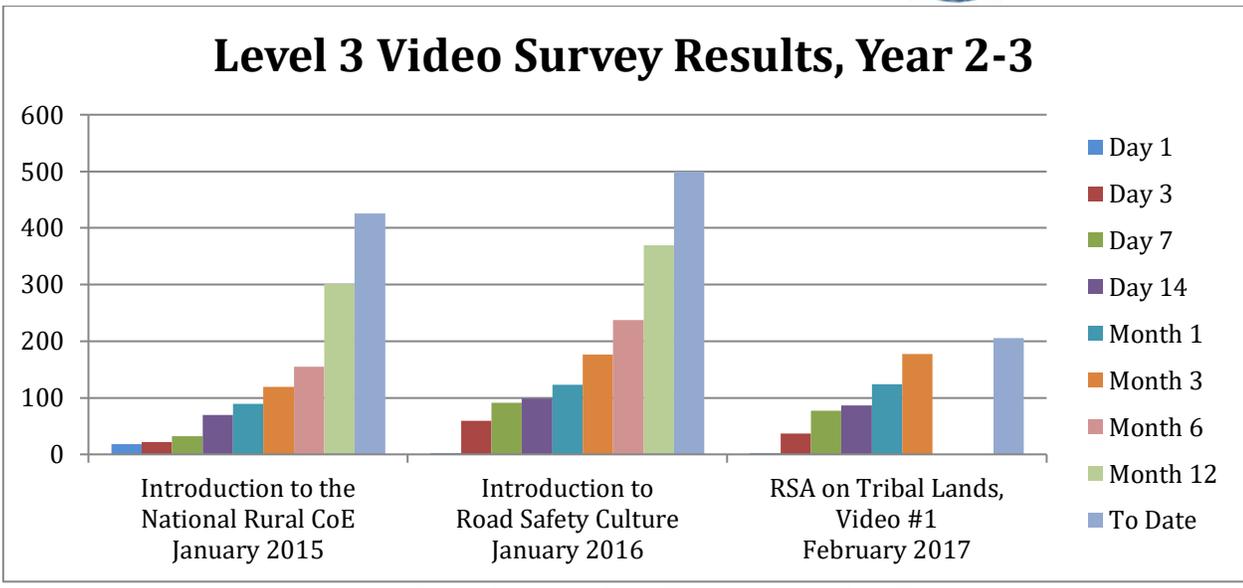


Figure 4 - Video-Based Training Views Over Time

First additional analysis point

As Figure 4 shows, the total number of views for the first two videos has continued to grow over time – albeit at a slower pace than in the months following the release. For these videos, after the first year they have attracted an additional 125 and 131 views respectively. And this comes after each were viewed over 300 times in the first 12 months.

The result is that the first two videos have each been viewed over 425 times, with the Road Safety Culture video receiving 500 views to date.³ These numbers exceed the 406 transportation professionals reached through an average Safety Center webinar training event.

One important note: It is not possible to directly measure how video viewers may or may not have applied the knowledge in their workplace. By contrast, we have self-certified survey data from the Safety Center webinars supporting the application of knowledge to the workplace, and the subsequent culture change that can be extrapolated from knowledge application.

Second additional analysis point

For the video views, we also looked at how viewers found the videos – especially during the initial release. By comparing the total number of video views to the click-throughs from the emails, we can determine the percentage of people who saw the video as a result of Safety Center marketing efforts and how many saw it from other sources such as sharing.

For the Tribal RSA video, 142 of the total 205 views came from Safety Center email links. So over 30% of the video views have come from outside Safety Center marketing efforts. This reflects sharing, of course, and likely some organic search results as well.

³ From YouTube web streaming data. This is a total streamed number and does not track unique views.

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Also, following up on one of last year’s annual report recommendations, we compared the open rates and click through rates for two different Safety Center email formats announcing new video-based training events. In addition to the traditional email newsletter format, we also used innovative email marketing techniques for the first Tribal RSA video.

For the innovative email announcing this video, we borrowed heavily from direct response marketing techniques used outside the transportation industry. The email was sent to 1,163 addresses and opened by 380 recipients for an open rate of 32.67%. Further, the video was selected and viewed by 115 recipients for a click through rate of 9.89%

A subsequent email with a link to the video followed the more traditional format. This email was sent to 1,217 addresses and opened by 300 recipients for an open rate of 24.65%. Further, the video was selected and viewed by 27 recipients for a click through rate of 2.22%. Admittedly, this was the second notification and many recipients may have viewed the video from the original innovative format email.

The important note is how these results compare to industry standards. We’ve extracted the data below from the closest comparable industries from email marketing provider MailChimp’s customer results.⁴

Industry	Open Rate	Click Through Rate
Construction	22.10%	1.95%
Consulting	19.54%	2.26%
Education and Training	22.00%	2.63%
Government	26.33%	3.62%
Non-Profit	24.98%	2.76%

As you can see, the traditional email format mirrors the open rates and click through rates that can be expected across comparable industries. But the innovative email techniques produced results that far exceed the results of these comparable industries, particularly for the important click through rate. In fact, the innovative email techniques produced results that exceeded any industry that MailChimp tracks.

For open rates, the innovative techniques exceeded standards for any industry by a range of 48% to 147%. And for the even more critical click through rate, the innovative techniques exceeded standards for any industry by a range of 93% to 691%. We can clearly conclude that using innovative email marketing techniques maximizes how well our message is disseminated.

⁴ MailChimp, [Email Marketing Benchmarks](#), Updated 1 February 2017.

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Summary and future recommendations

The analysis shows that for the webinars the participants are retaining a high level of learning, and are consistently sharing it with their colleagues. However, it doesn't appear to reach as wide of an audience as videos, even accounting for average number of shares with colleagues per webinar attendee or subsequent on-demand views.

In contrast, the video-based events appear to spread the knowledge to a much larger group. However, we currently have no reasonably cost-effective ways of measuring whether these views translate to applying the knowledge and by extension cultural changes. With this knowledge, the cost vs. impact of future training efforts would be an excellent evaluation target.

For example, the video-based training events appears to consistently attract more views, and can reach a larger audience than comparable webinar training events even accounting for attendee information sharing. So for training topics where application or culture change can be measured in other ways, video-based training may in fact outperform webinars.

We have seen that regardless of the training method chosen, much of the success of that training event is predicated on using an effective, innovative email marketing campaign. And having grown the mailing list from below 100 contacts when the Safety Center officially opened to over 1,200 now, this 12x growth shows the demand for Safety Center resources does exist within the industry.

Likely because their content is not in demand by a large percentage of the population-at-large, the Safety Center video-based training events haven't exhibited a viewership slope that suggest viral-type sharing. But the open and click through rates clearly show the power of combining engaging video-based training content with well-executed email marketing.

Now, the Safety Center is entering the final year of operation. But because of the follow-up summit schedule in what would be year five of Safety Center operations, we will be using the final year's budget to fund almost 2 calendar years of operations. This will constrain the Safety Center's options for implementing new recommendations.

The Safety Center will continue to deliver web-based training, although at a lower frequency. And for any initiatives, we will leverage innovative email marketing techniques to maximize the impact of our growing mailing list.

We will also evaluate the possibility of creating and disseminating information in other ways including standalone job aids. If budget allows, these downloadable tools such as checklists, reminders, how-to's, etc. might be a cost-effective technique to expand and extend the Safety Center's reach in these final two years.

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