

A Two-Component Approach to Dangerous Goods Shipping Training

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Introduction

Three years ago, Research Safety began a necessary revision of our Safe Shipping of Biological Materials and Dry Ice training course. Our objectives in redesigning the course were to create a dual-platform training system involving both online and hands-on components. The training was to be specialized to meet the needs of the individuals seeking training. Finally, we wanted to streamline the training and reduce overall run time.

The new training was well-received. We achieved most of these goals but were unable to reduce the overall run time. However, the perception of the trainee is that the course is shorter due to the fact it is divided into two temporally separate components.

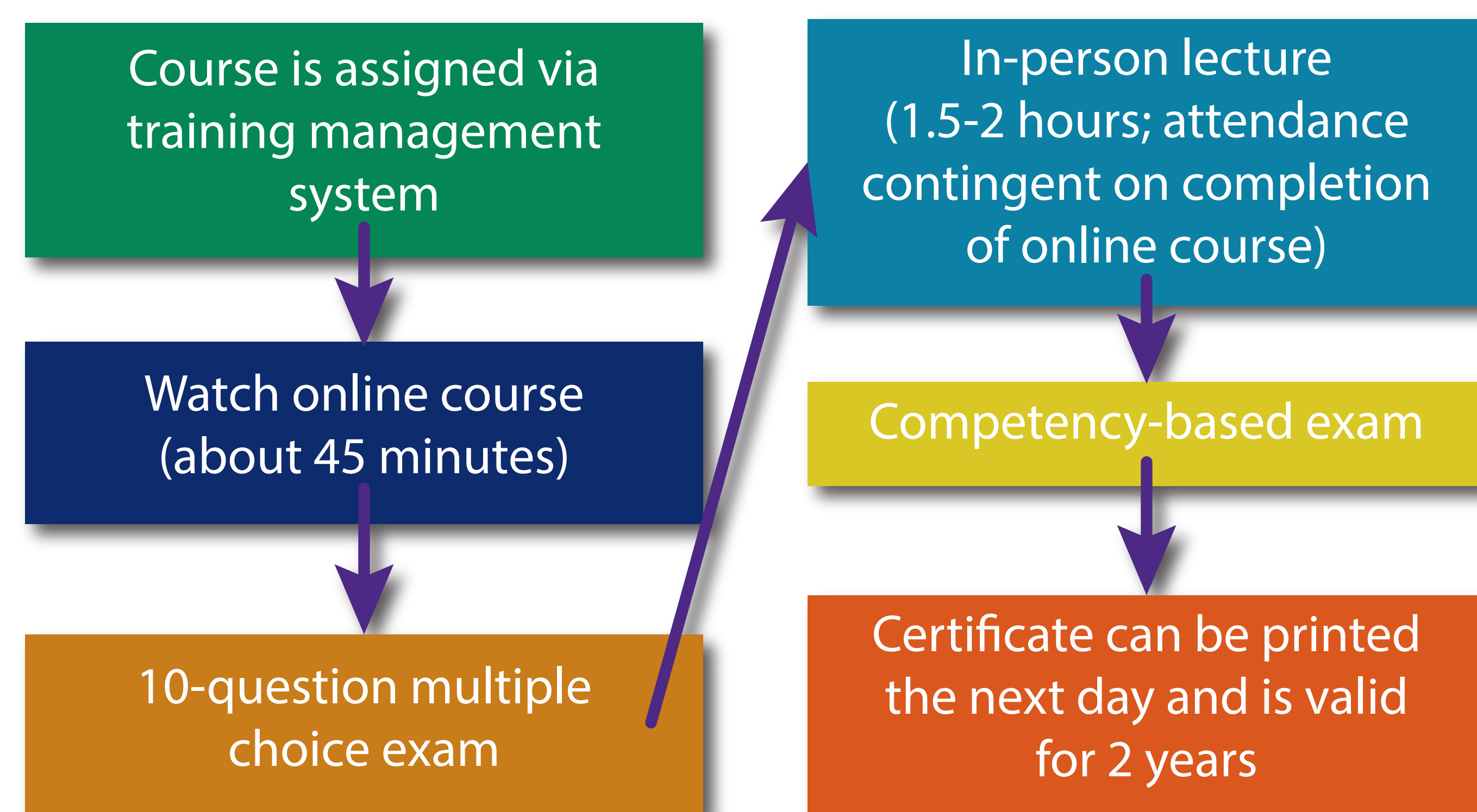
The achievement of which we are most proud is the modifications made to the competency-based testing method. This has received a significant amount of praise from both administrators and trainees.

Goals

The Safe Shipping of Biological Materials and Dry Ice training course is necessarily a living, constantly changing course due to annual revision of IATA Dangerous Goods Regulations. In addition to maintaining the most up-to-date course, we also sought to build a more robust course through two main goals:

- ▲ Revise the course book to be a complete companion guide for shipping.
- ▲ Create a user-friendly, cost-effective, reusable, competency-based exam.

Course Structure

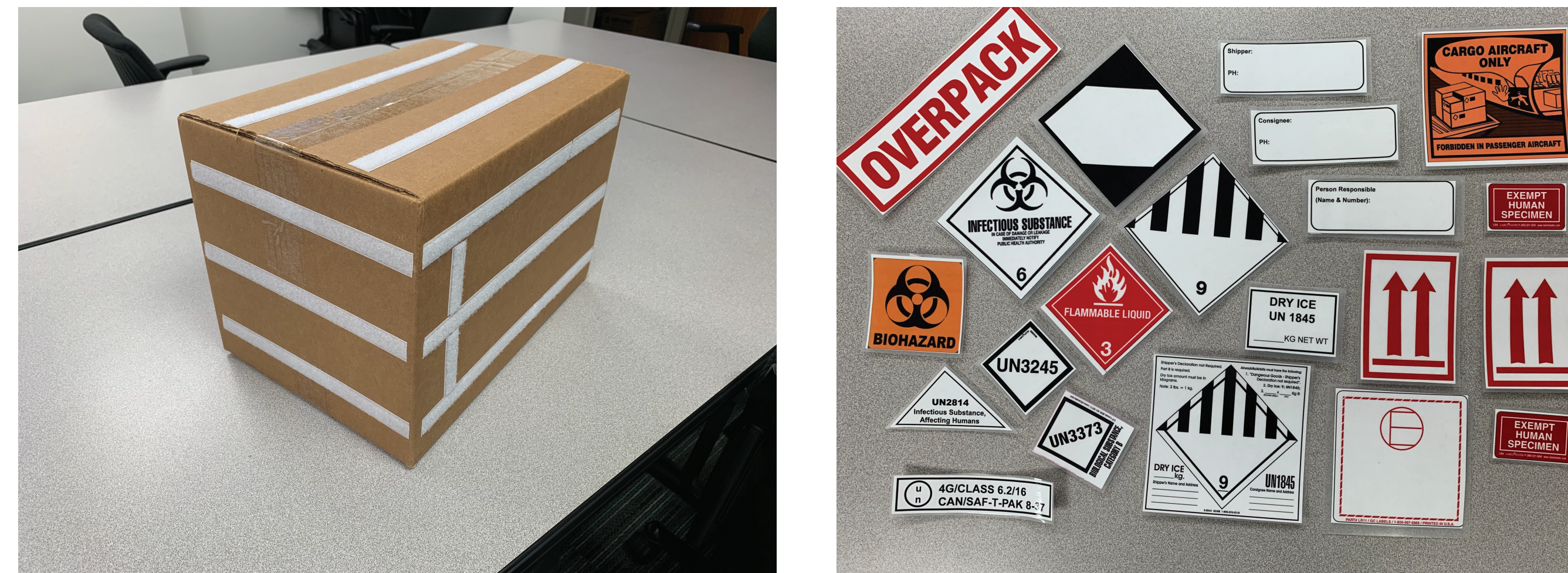


Competency-Based Testing

During the initial redesign of the Safe Shipping of Biological Materials and Dry Ice training course, it was deemed too costly and time-consuming to allow each trainee to pack, mark, and label mock shipments to demonstrate competency. Instead, we devised a testing strategy in which trainees would place numbers corresponding to the necessary marking or label in the appropriate location on a box diagram. This method provided a significantly higher degree of competency-based testing and facilitated knowledge retention.



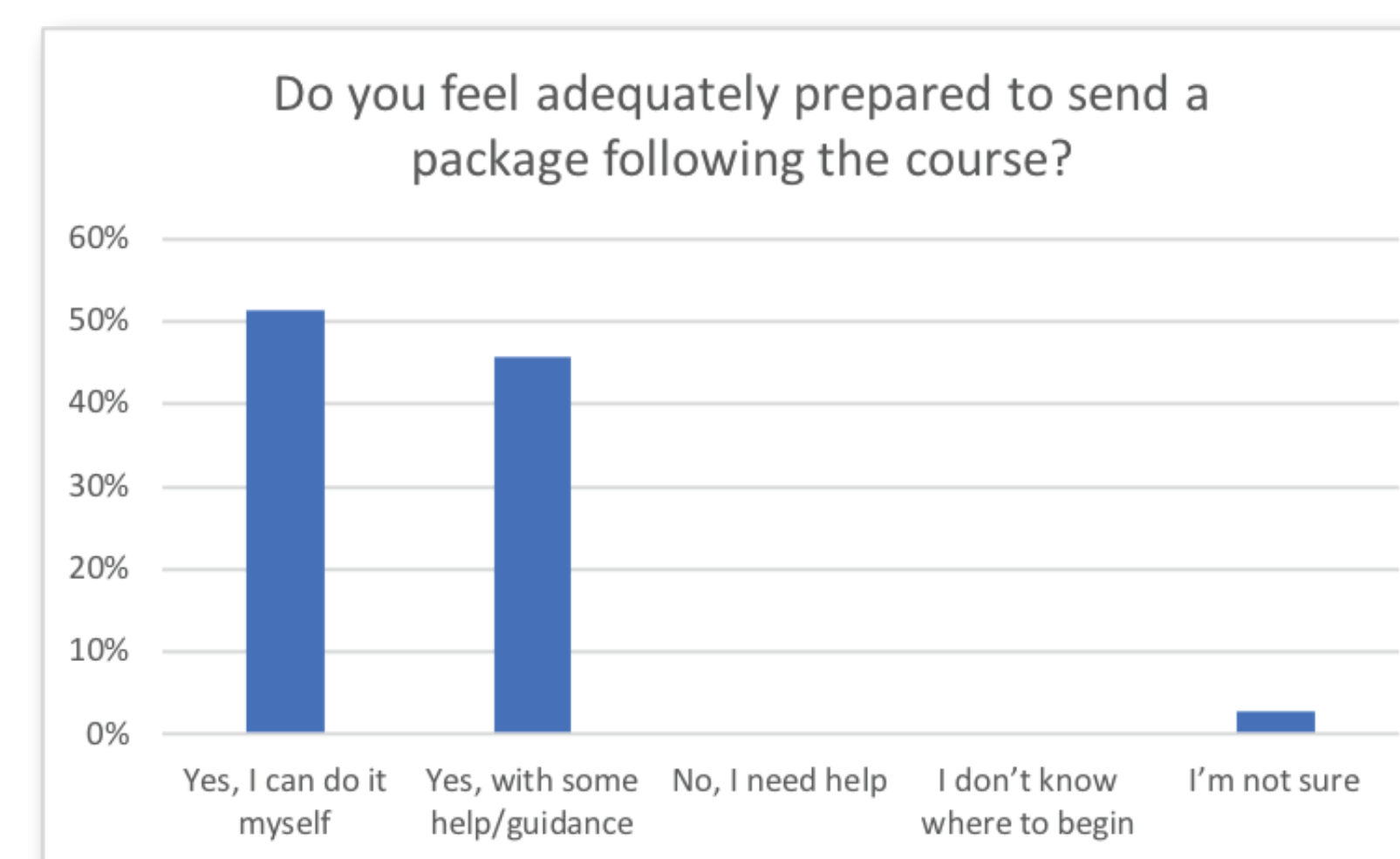
Following this success, we sought to reassess the possibility of using a hands-on competency-based test. Blank boxes were lined with velcro. The companion side of the velcro was placed on laminated labels and markings. This allowed trainees to apply, remove, and reapply the labels and markings multiple times during an exam.



Results

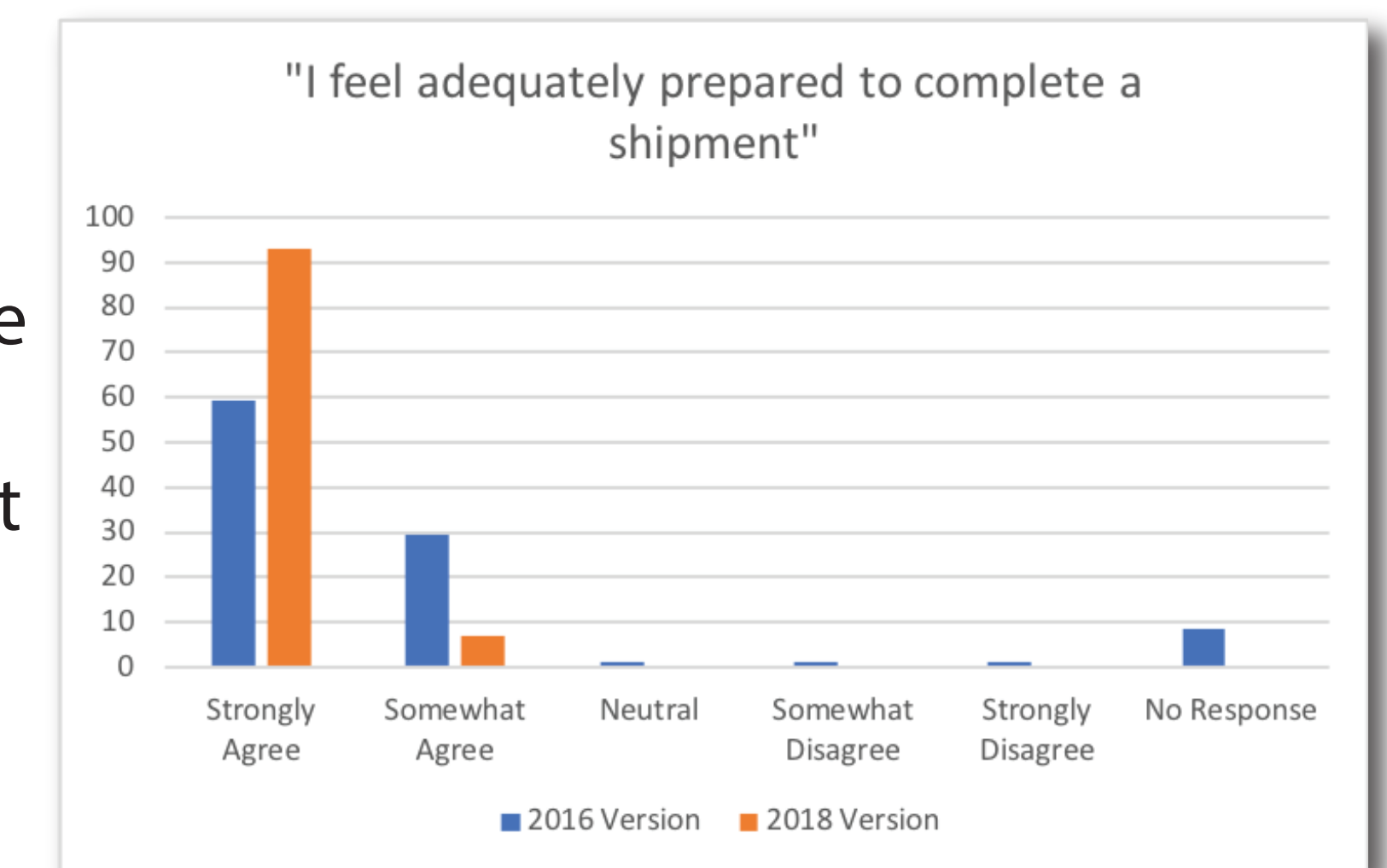
It is difficult to directly measure knowledge retention. Trainees were asked how well-prepared they felt to ship a package. This question was asked in 2016 classes about the course at that time. A similar question was asked between 2018 and 2019 both for the current course and what trainees remembered of the previous course.

In 2016, 51% of trainees felt that they were capable of completing a shipment without assistance. Another 46% felt they could do so with some help.



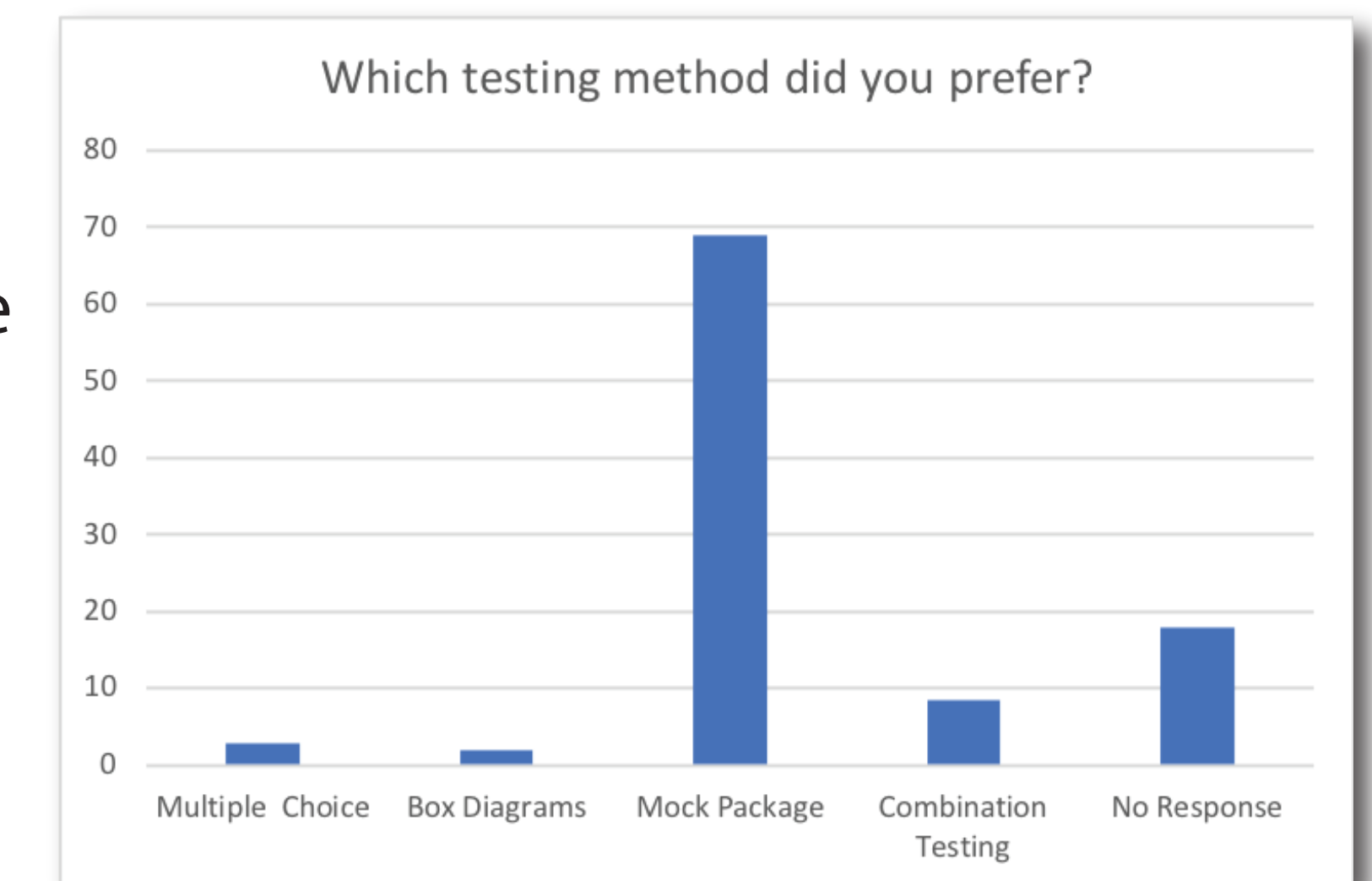
Results (continued)

Between 2018 and 2019, trainees were asked if they felt adequately prepared to complete a shipment. Of the 225 total responses, 93% of trainees strongly agreed that the current course had adequately prepared them. Of those, 106 trainees had also taken the previous iteration of the course and only 59% of them had felt adequately prepared to complete a shipment at that time.



These data show that the trainee's confidence changes over time. It is also reasonable to conclude that subjects feel more prepared following course revisions made from 2016 to 2018.

The biggest change of all between the 2016 course and the 2018 course was the method of testing. Trainees overwhelmingly preferred the mock shipment method of testing to any other format or combination of formats.



Conclusion

The survey responses from more than 200 trainees, half of whom had taken multiple versions of the course, clearly show that the mock package version of the test is the most preferred. Indeed, 94% of respondents strongly agreed that the mock package method appropriately assessed their understanding of the material presented in the course.

There are some significant limitations to this method. Grading each of the trainee's responses is done individually and takes time. Each trainee is given three scenarios to mark and label. In order to balance expedience of grading with the testing effectiveness, three trainers are present during testing and class size is limited to no more than 15 persons. This means that more training sessions must be offered in order to compensate for the number of individuals requesting training.