

@One Training for Distance Education Courses

Evaluation Report

July 5, 2017

INTRODUCTION

@ONE is a state funded project intended to assist California Community College faculty and staff with using technology to enhance student learning. As part of their services, @ONE provides online training, courses, and other valuable resources. Citrus College utilized @ONE's courses and resources for the professional development of distance education (DE) instructors in spring 2015, spring 2016, and fall 2016. The workshops were intended to help faculty with several aspects of DE instruction, including redesigning their course web page. By the end of the third training period (fall 2016), 48 DE instructors had completed the @ONE training. Subsequently, the Dean of Social and Behavioral Sciences and Online Education was interested in how the @ONE training may have affected success and retention rates in courses taught by these instructors. As such, this report is an evaluation examining these effects.

METHODS

Data and Sample

Data in this study was acquired through correspondence with the Dean of Social and Behavioral Sciences and Online Education. After obtaining the training attendance records from the dean, the Citrus College local database was utilized to query additional information.

The course reference number (CRN) was the unit of analysis. There were 70 CRNs; however, after cleaning the data, 16 could not be included in this analysis because the instructor who taught that CRN did not teach that section again after the @ONE training—there was no follow-up data to report on. The total number of CRNs included in this analysis was $N = 54$. There were three training periods. The training period that reached the most DE CRNs was the first one, spring 2015 ($n = 30$); spring 2016 ($n = 9$) reached much less, though the last training period, fall 2016 ($n = 15$), saw an increase in CRNs reached.

Analytic Plan

There are two outcomes of interest in this study: post-training success and post-training retention. In order to compute the success and retention rates, enrollment, success, and retention counts had to first be obtained through the database. All analyses were performed using statistical package R version 3.3.0. The study design was one-group pretest/posttest; however, many of the instructors trained for specific CRNs never taught the course prior to being trained, thus, no pre-training data exists for these CRNs. Instead of rendering this data as unhelpful, this pre-experimental posttest only design was combined with the pretest/posttest design to form a synthetic evaluation design intended to

strengthen results of the analysis. The number of CRNs in each respective design is shown in the table below:

Table 1. CRN count by design type

Posttest only (n = 17)	X	O1		
Pretest/posttest (n = 37)		O2	X	O3

X = Training
O = Observation

RESULTS

Descriptive Statistics

The primary analysis was conducted on the CRNs that had both pre and post training data. As shown below in table 2, the mean success rate pre-training was 58.3% and the mean success rate post-training was 56%; this is nearly a 2% drop from pre-to-post. Similarly for retention, the mean retention rate pre-training was 83.1% and the mean retention rate post-training was 82.5%; the drop in the average retention rate was a meager .6%.

Table 2. Descriptive Statistics

	Success Rate			Retention Rate		
	Pre	Post	Diff.	Pre	Post	Diff.
Min.	33.00%	30.00%	-3.00%	61.00%	55.00%	-6.00%
1st Qu.	44.00%	46.00%	2.00%	74.00%	75.00%	1.00%
Median	59.00%	56.00%	-3.00%	85.00%	82.00%	-3.00%
Mean	58.30%	56.62%	-1.68%	83.08%	82.49%	-0.59%
3rd Qu.	71.00%	68.00%	-3.00%	91.00%	93.00%	2.00%
Max.	87.00%	92.00%	5.00%	97.00%	100.00%	3.00%
Var	2.68%	2.49%	-0.20%	1.02%	1.56%	0.54%
SD	16.38%	15.76%	-0.61%	10.10%	12.48%	2.38%

Based upon the descriptive statistics, it is well understood that the effects of @ONE—on average—are not in the direction anticipated. However, a dependent t-test was conducted to determine the statistical significance of the difference in pre-and-post average success and retention rates.

Inferential Statistics

A dependent t-test was conducted to compare the pre-training success rate with the post-training success rate. On average, there is no statistically significant difference in the post-training success rate ($M = 56.62\%$, $SE = 2.59$) than from the pre-training success rate ($M = 58.30\%$, $SE = 2.69$), $t(36) = -0.81$, $p > .05$.

A dependent t-test was conducted to compare the pre-training retention rate with the post-training retention rate. On average, there is no statistically significant difference in the post-training retention rate ($M = 82.49\%$, $SE = 13.56$) than from the pre-training retention rate ($M = 83.08\%$, $SE = 13.66$), $t(36) = -0.30$, $p > .05$.

Synthetic Design

One-group pretest/posttest study designs have many possible threats to internal validity. In order to be more confident in the results of the inferential test, the researcher used the one-group posttest only data (n = 17) to strengthen the claims made above. In table 3 shown below, success rates for the two design types (posttest only and pretest/posttest) are shown with their corresponding observation point.

Table 3. Success Rates

Posttest only (n = 17)	X	O1: 56.04%		
Pretest/posttest (n = 37)		O2: 58.30%	X	O3: 56.62%

X = Training

O = Observation

The value in this synthetic design is based upon logic: if the @ONE training had an effect, than O1 should be larger than O2 (O1 is post-training while O2 is pre-training). Similarly, to circumvent the possibility of other bias, the difference between O3 and O2 should be roughly similar to the difference between O1 and O2. Interestingly, the difference is similar, but it is negative. Moreover, the difference is very small, and it may be unreasonable to conclude that the changes to DE courses based upon the @ONE training is harmful. What can be readily ascertained is the confirmation of the analysis that suggests no statistically significant effect of the training.

The same design was also used for retention rates. Table 4 shows the retention rates for both design types.

Table 4. Retention Rates

Posttest only (n = 17)	X	O1: 82.77%		
Pretest/posttest (n = 37)		O2: 83.08%	X	O3: 82.49%

X = Training

O = Observation

As with the success rate data, we see that the difference is similar; however, it is very small and negative. Again, this design corroborates the findings in the statistical analysis presented above.

CONCLUSION

The results of this study strongly suggest that @ONE training is ineffective at increasing success and retention rates in DE courses. A rather weak study design was strengthened by integrating theory-driven evaluation perspectives concerning impact assessments into the one-group pretest/posttest design. Despite these results, @ONE training may still have some value that is undetectable with the current analysis and design. For instance, the effects of @ONE training may vary by instructor, and therefore a multi-level model with CRNs housed within instructors could be more insightful. Similarly, the extent at which instructors implement the @ONE training could moderate the effects as well; the current analysis is too simplistic to reveal this. And lastly, a more thorough evaluation would require the collection of student level data to specify intervening mechanisms that may be the link in a causal chain, such as student satisfaction with the web redesign, number of log-ins, and so on.