

## ***Summative Evaluation of the Self-Paced e-Learning (SPeL) Training Program: A Case Study***

### **The Organization:**

The Performance Technology Center (PTC) of the U. S. Coast Guard (USCG) is responsible for the design, development, and delivery of performance improvement products to prepare the workforce for mission execution. The Housing Division is a unit of the USCG's workforce, with the primary objective of providing adequate housing for active duty service members within a reasonable commuting distance to the workplace. A main component of the Housing Division is Leased Housing. The Leased Housing Contracting Officers (LHCOs) are responsible for negotiating contracts and managing properties used by service members and their families.

### **Background:**

The PTC developed a Self-Paced e-Learning (SPeL) training program for the LHCOs in 2014. The USCG's standard operating procedures define a SPeL as "a comprehensive, self-paced learning platform intended to equip learners with the knowledge and skills needed on the job" (Performance, Training, and Education Branch, 2012). The LHCOs support the primary objective of the Housing Division. The Housing Division trained the LHCOs using the SPeL training program in the ensuing years and the USCG sought to evaluate its performance.

### **Opportunity:**

The PTC Design and Delivery Branch Chief (client) decided to evaluate the quality and effectiveness of the SPeL training program in relation to providing the LHCOs with essential knowledge and skills required to:

- Locate adequate housing
- Negotiate contracts
- Manage inventories of properties

### **Rationale:**

During the spring of 2016, a group of graduate students from Boise State University, in collaboration with the client and stakeholders, determined the following evaluative question:

***"Does the SPeL training program provide the LHCOs with essential knowledge and skills needed to meet organizational requirements in locating adequate housing, negotiating contracts, and managing inventories of properties?"***

This project was a goal-based, back-end evaluation (Chyung, 2015a).

The objectives of the project listed by priority were to evaluate the:

- Content of the SPeL training program for applicability and accuracy
- Acceptability of the user interface by the LHCOs
- Compliance of the LHCOs with regulations and reduction of errors in contracts

We determined these objectives in collaboration with the client and key stakeholders, and used the following tools to collect, analyze, and synthesize data.

- **Scriven's (2007) Key Evaluation Checklist:**  
It served as a framework to plan the evaluation and report results in a systematic manner (Davidson, 2005).
- **US Coast Guard Evaluation Standard Operating Procedures (2012), adapted from Kirkpatrick's (1996) Four-Level Training Evaluation Model:**

It helped to develop data collection methodology and target specific criteria needed to assess the reaction of the LHCOs and their ability to apply the content of the SPeL training program to perform well at work.

- **Brinkerhoff’s (2006) Training Impact Model (TIM) and Success Case Method (SCM):**  
The TIM enabled the team to comprehend intended impact of training and performance outcomes. The SCM provided critical steps needed to identify and investigate factors related to the success and non-success cases of performance of the LHCOs.

These tools, coupled with professional standards and client needs, balanced the processes and outcomes effectively. They helped us to determine the dimension and importance weighting criteria to evaluate the quality and effectiveness of each objective listed on Table 1 below.

*Table 1: Dimension and importance weighting criteria*

Category	Dimension-Specific evaluation question, importance weighting, and Kirkpatrick’s levels	Category in Training Impact Model	Data Sources
<b>Process</b>	<p>1. <u>Content applicability and accuracy</u> (content alignment)</p> <p>How applicable and accurate (i.e., based on policy or law) is the course content to the user (LHCO), as well as compared to the leased housing standards and job tasks?</p> <p><b>Critical</b> (Level 1)</p>	<p><u>Input or Resources and Activities</u></p> <p>This dimension will investigate how well the curriculum meets leased housing performance standards and tasks.</p>	<ul style="list-style-type: none"> <li>• Expert review by Leased Housing Subject Matter Experts (SMEs)</li> <li>• Document review of end-of-course exit survey results (Level 1) feedback</li> <li>• Structured telephone SCM interview of LHCOs</li> </ul>
<b>Outcome</b>	<p>2. <u>User acceptability</u></p> <p>Do users (LHCOs) and Supervisors think that the SPeL program and job aids provide learners with the knowledge and skills needed to succeed?</p> <p><b>Very Important</b> (Levels 2 &amp; 3)</p>	<p><u>Critical Actions</u></p> <p>This dimension will measure the degree of user (LHCO) acceptance of the SPeL program and job aids, in terms of providing users with essential knowledge and skills needed to succeed.</p>	<ul style="list-style-type: none"> <li>• Document review of the results of end-of-course assessment (Level 2) feedback</li> <li>• Web-based SCM survey of LHCOs</li> <li>• Structured telephone SCM interview of LHCOs</li> <li>• Web-based Retrospective Pre and Post survey of all LHCOs</li> <li>• Structured telephone interview with Supervisors</li> </ul>
<b>Outcome</b>	<p>3. <u>Contract compliance</u></p> <p>How well have the SPeL program and job aids reduced the number of errors in contracts that occur?</p> <p><b>Critical</b> (Level 4)</p>	<p><u>Key Results</u></p> <p>This dimension will measure the effectiveness and efficiency of the SPeL program and job aids, in terms of reduction in the number of errors in contracts.</p>	<ul style="list-style-type: none"> <li>• Virtual expert review of completed contracts</li> <li>• Structured telephone interview of SMEs for contract compliance and errors in contracts</li> </ul>

## **Application:**

## **Methodology:**

The three key factors involved in the methodology were:

- Type of data gathering tools (interview, survey, extant data, expert review)
- Sequence of data gathering tools
- Target level of the program (upstream, direct recipient, downstream)

The team used **Scriven's (2007) Key Evaluation Checklist** as a framework to plan the evaluation. Team SPeL also used the **US Coast Guard Evaluation Standard Operating Procedures (2012)**, adapted from **Kirkpatrick's (1996) Four-Level Training Evaluation Model** to develop a data collection methodology listed below:

- Web-based Retrospective Pre-and-Post Training Survey with 5-point scale Likert rating
- Structured interviews for LHCO Supervisors, LHCOs, and Subject Matter Experts (SMEs)
- Extant data review checklists

We used **Brinkerhoff's Success Case Method (SCM) (2006)** to evaluate the impact of success and non-success cases of performance of the LHCOs in the context of the dimensions.

Our data collection methodology included:

- Web-based SCM survey to identify success and non-success cases among LHCOs
- Structured interviews for success and non-success cases among LHCOs

The variety of data collection methods used by Team SPeL to investigate each dimension helped to balance the strengths and weaknesses of each method, along with ensuring that we adhered to the principles of triangulation and critical multiplism.

## **Results:**

The team developed and applied rubrics to determine a quality score for each dimension. Thereby, the team was able to assess the overall quality and effectiveness of the SPeL training program using a quantitative synthesis of dimensional results.

The following were the strengths and weaknesses of each dimension:

### **1. Content Applicability and Accuracy:**

#### **Strengths:**

I. LHCOs reported that the course content is highly applicable to performing their job tasks.

II. The mean difference in LHCO self-assessed performance as compared to their knowledge and skills prior to the course was statistically significant at  $p$ -value  $< 0.05$  (Morgan et al, 2013). The Cronbach's alpha score for each construct was  $> .70$ , indicating a high degree of internal consistency. Table 2 illustrates the quantitative analysis result of constructs.

Table 2: Quantitative Analysis Result of Constructs

Learning Objectives	Cronbach's Alpha Pre	Cronbach's Alpha Post	Mean Pre	Mean Post	Difference	P-value
<b>Construct 1: Manage Housing</b>						
LO1 Conduct a housing inspection	<b>0.95</b>	<b>0.93</b>	3.733	4.600	<b>+0.867</b>	<b>0.017</b>
LO2 Complete a multi-purpose inspection form			3.600	4.466	<b>+0.866</b>	<b>0.013</b>
<b>Construct 2: Negotiate Contracts</b>						
LO3 Negotiate a contract following procedures	<b>0.923</b>	<b>0.776</b>	3.267	4.400	<b>+1.133</b>	<b>0.006</b>
LO4 Recognize roadblocks during process			3.467	4.330	<b>+0.863</b>	<b>0.004</b>
<b>Construct 3: Execute Contracts</b>						
LO5 Appraise a completed contract	<b>0.973</b>	<b>0.869</b>	3.600	4.267	<b>+0.667</b>	<b>0.012</b>
LO6 Terminate a contract			3.667	4.400	<b>+0.733</b>	<b>0.028</b>
LO7 Enforce EOE requirements			3.867	4.733	<b>+0.867</b>	<b>0.013</b>
LO8 Recognize mistakes in existing contracts			3.600	4.333	<b>+0.733</b>	<b>0.016</b>
LO9 Complete a residential lease form			3.467	4.400	<b>+0.933</b>	<b>0.010</b>

**Weaknesses:**

I. LHCOs reported that the course content was not comprehensive.

**2. User acceptance:**

**Strengths:**

I. LHCOs reported that the pace of the course was appropriate to pass minimum assessment standards.  
 II. The difference in LHCO self-assessed performance as compared to their knowledge and skills prior to the course was statistically significant at **p-value < 0.05**.

**Weaknesses:**

I. Both LHCOs and their supervisors reported that the course did not strengthen communication skills.

**3. Contract Compliance:**

**Strengths:**

I. LHCOs that have extensive experience in writing contracts make less error as compared to the new hires.

**Weaknesses:**

- I. The infrequent task, coupled with extensive paperwork increase the error rate for LHCOs.
- II. LHCOs submit contracts directly to the finance system without any quality assurance checks. Errors can delay payments and jeopardize a lease.
- III. Extensive regulations and policy govern contract compliance. However, there are no organizational standards to guide an LHCO, while writing a contract.

We determined the overall quality of the SPeL training program after conducting a thorough importance weighting, merit determination, synthesis, and applying evaluative judgement, as represented in Table 3 below.

*Table 3: Overall Quality of the SPeL Training Program*

Dimensions	Importance Weight	Dimension Rubric Result	IW x Min Result	IW x Max Result	Synthesis Rubric for overall result (range between 26 and 54)
Content applicability and accuracy	Critical	24	10	30	<ul style="list-style-type: none"><li>• High Quality: 43-54</li><li>• Good, but improvement needed: 31-42</li><li>• Poor, significant improvement needed: 18-30</li></ul>
User acceptability	Very Important	9	4	12	
Contract Compliance	Critical	4	4	12	
<b>Total:</b>		<b>37</b>	18	54	

**Overall Evaluand Quality Score: 37 = Good, but improvement needed**

**Challenges and Lessons Learned:**

Communication and collaboration helped to overcome challenges and complete our project.

**Organizational value:**

The project provided the client with valid and reliable evaluation data. The client mentioned to the team lead that the SPeL training program curriculum would undergo a revision because of our findings, with focus on content alignment and contract compliance.

## References:

- Brinkerhoff, R. O. (2006). *Telling training's story: evaluation made simple, credible, and effective*. San Francisco, CA: Berrett-Koehler Publishers.
- Chyung, S. Y. (2015a). *Evaluation Project Guidelines I: Steps for developing an evaluation proposal*. Boise, ID: Department of Organizational and Workplace Learning College of Engineering Boise State University.
- Chyung, S. Y. (2015b). *Evaluation Project Guidelines II: Steps for developing an evaluation proposal*. Boise, ID: Department of Organizational and Workplace Learning College of Engineering Boise State University.
- Davidson, E. J. (2005). *Evaluation methodology basics: The nuts and bolts of sound evaluation*. Thousand Oaks, CA: Sage.
- ISPI. (n.d). Why ISPI? Retrieved from [http://www.ispi.org/ISPI/About/Our\\_Society](http://www.ispi.org/ISPI/About/Our_Society)
- Kirkpatrick, D. L. (1996). *Evaluating training programs: The four levels*. San Francisco: Berrett-Koehler Publishers.
- Morgan, G. A. et al., (2013). *IBM SPSS for Introductory Statistics: Use and Interpretation*, Fifth Edition. Routledge, NY.
- Pershing, J. A. (2006). *Handbook of Human Performance Technology* (3rd ed.). San Francisco, CA: Pfeiffer.
- Performance, Training and Education Branch (2012). *Standard operating procedures, Vol 3. Evaluation*. Washington, DC: Coast Guard Force Readiness.
- Scriven, M. (2007). *Key evaluation checklist*. Retrieved from [http://www.wmich.edu/evalctr/archive\\_checklists/kec\\_feb07.pdf](http://www.wmich.edu/evalctr/archive_checklists/kec_feb07.pdf)
- Van Tiem, D. M., Moseley, J. L., & Dessinger, J. C. (2012). *Fundamentals of performance improvement: Optimizing results through people, process, and organizations* (3rd ed.). San Francisco, CA: Pfeiffer.

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