



# Oregon

John A. Kitzhaber, MD, Governor

## Department of Administrative Services

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January 24, 2014

The Honorable Richard Devlin, Co-Chair  
The Honorable Peter Buckley, Co-Chair  
Joint Interim Committee on Ways and Means  
H-178 State Capitol  
Salem, OR 97301

Dear Co-Chair Devlin, Co-Chair Buckley and Committee members:

### **Nature of the Request**

The Department of Administrative Services respectfully submits this letter in response to a budget note contained in 2013 HB 5002-A. The budget note reads:

*The Department of Administrative Services shall conduct a cost-benefit analysis of providing training using web-based applications compared to total costs of providing traditional training (including cost of motor pool vehicles, mileage, fuel, hotel, per diem and work time lost, etc.). The Department will complete this analysis in collaboration with the 24 state agencies represented on the Enterprise Leadership Team and report findings to the interim Joint Committee on Ways and Means by February 2014.*

### **Agency Action**

The Enterprise Leadership Team agencies were asked to complete a survey that gathered cost data associated with online courses and Instructor-Led Training (ILT) classroom courses as well as basic information about all in-house training courses that are offered. Because webinars involve one instructor teaching live, the state agency trainings that were offered by webinar are included in Instructor-Led Training results.

There are important differences between the two types of courses. Online courses provide schedule flexibility, immediate access initially and archived access to return to course materials over time, as well as allowing a higher number of participants than a classroom course. Instructor-Led Training classroom courses provide highly interactive and in-the-field/on-the-job experiences that require lab like settings for learning, facilitator adaptability to adjust to learning styles of participants, as well as allowing collective learning from the classroom participants' direct interaction with each other.

State agency training is typically classified into three different categories:

- New Employee Orientation – training for new hires, typically introducing them to the policies and procedures of the agency or preparing them for skills needed to perform their work.
- Professional Development – training that is provided to increase the skill capacity of the personnel (i.e. customer service training, management development training, etc).

- Annual Training – training that is offered annually, usually designed as a refresher course or specialized training, including mandatory trainings (i.e. blood borne pathogens, etc).

Overall, the participating agencies reported a total of 1740 training courses offered in the last biennium. Approximately 29% of the courses offered were delivered through online learning, the remaining 71% were delivered through instructor-led training.

The attached report shows a cost-comparison model that differentiates between that cost for delivering an ILT course and an online course using averages for the 2011-2013 biennium. This included the classroom make-up (management and non-management personnel) and the costs of logistics (facility costs, materials, etc). It also provides a list of training courses offered for in-house staff members, a description of the course, the delivery method and justification for why the delivery method was chosen.

**Action Requested**

The Department of Administrative Services respectfully requests acknowledgment of receipt of this report.

**Legislation Affected**

No Legislation Affected

Sincerely,

A handwritten signature in cursive script, appearing to read "Michael Jordan", with a long horizontal flourish extending to the right.

Michael Jordan, COO  
DAS Director

cc: Paul Siebert, Legislative Fiscal Office

## Overview

The Department of Administrative Services (DAS) was asked to respond to the following budget note:

*The Department of Administrative Services shall conduct a cost-benefit analysis of providing training using web-based applications compared to total costs of providing traditional training (including cost of motor pool vehicles, mileage, fuel, hotel, per diem and work time lost, etc.). The Department will complete this analysis in collaboration with the 24 state agencies represented on the Enterprise Leadership Team and report findings to the interim Joint Committee on Ways and Means by February 2014.*

To complete the request, DAS worked with members of the Enterprise Leadership Team (ELT) to collect quantitative data regarding instructor-led training and online training cost and qualitative data to help assess the benefits of each type of delivery method.

## Background

Training is typically classified as either *asynchronous (Online)*, no facilitator or instructor, or *synchronous*, or instructor or facilitator led. Additionally, there are blended courses which have both online and in-class components. State agencies typically have the capacity to develop both types of training. However, resources such as limited funding, limited human resources and demand can be major contributing factors in an agency decision to deliver one type of course over the other. Therefore, some agencies chose to contract with a vendor or borrow training programs from other programs and adapt them to meet their specific needs.

State training is typically classified in three different categories

- AT – Annual Training – training that is offered annually, designed as a refresher course or specialized training
- NEO – New Employee Training – training for new hires, typically introducing them to the policy and procedure of the organization or preparing them for the skills needed to perform specialized or daily skills
- PD – Professional Development – training that is provided to increase the skill capacity of the personnel

There are agencies, such as the Oregon Employment Department (OED) that classify their training into specialized categories such as policy training, which focuses on OED statewide policy; technical training, which focuses on skills needed to completed daily tasks of the position; or manager training, which is specifically developed to increase the managerial skills of a manager or supervisor.

## Data Collection Process

To keep the scope of the budget note manageable, DAS considered online and instructor-led trainings developed only for state employees. Due to the potential borrowing of courses from other agencies, DAS included data from *non-state vendors* that agencies may have contracted with in order to minimize duplicative entries but account for agencies that may not have the human resources to develop their own training.

## **Cost-Benefit Analysis of Classroom vs. Online Training in State Government**

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The ELT agencies had their human resource and training managers complete a cost-benefit model. There were two parts to the model:

- The first was a cost-comparison model that looked at the difference in cost for delivering an Instructor-Led Training (ILT) course and an online course using averages for the 2011/13 biennium. This included the classroom makeup (management and non-management personnel) and the cost of logistics (facility cost, materials, etc).
- The second part of the model asked for a list of the training courses offered for in-house staff members, a description of the course, the delivery method and justification for why the delivery method was chosen.

### **Cost Analysis**

The cost comparison model asked the agencies to take the averages on specific line items for all ILT and online training courses developed within the last biennium, 2011-2013.

There were three categories of costs used in determining the total delivery costs for training courses developed in the biennium.

#### **Development Costs**

Using baseline data from the Chapman Alliance LLC, a highly respected training development and delivery researcher, development costs were calculated using the average hourly rate (varying from each agency) with the average development time of a training course and the average number of hours spent in training.

#### **Logistics Costs**

This included averages for room setup, facility rental fee, instructor or facilitator costs (to account for a facilitator or instructor who is solely delivering the content and did not design the course).

#### **Student Costs**

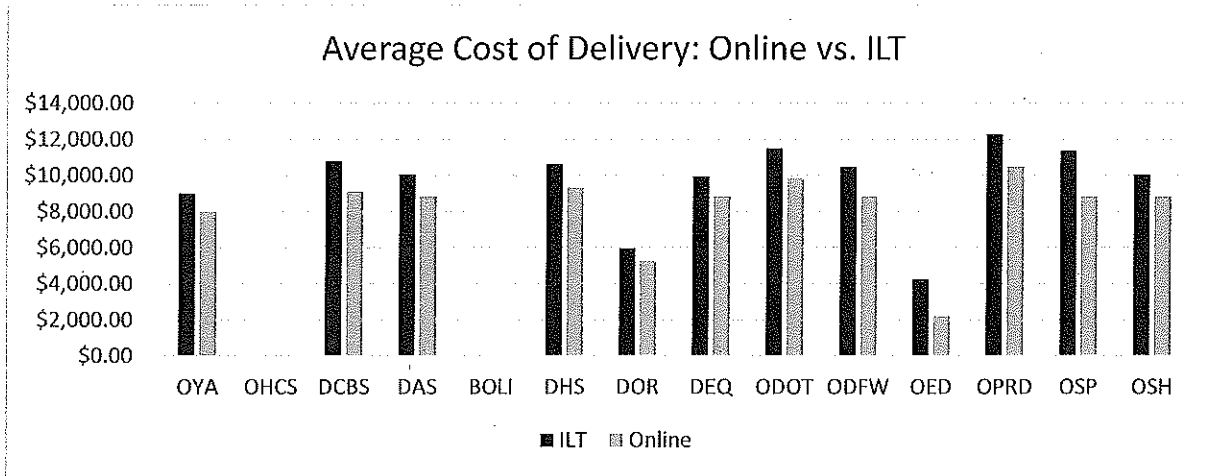
This information was used to calculate cost of hours spent on training using average hours away from work duties (excluding travel time) and average number of management and non-management personnel.

For any online course developed in the biennium, agencies were asked to report on the same categories with the exception of "Logistics Costs." It is assumed that the participant is taking the training in their workspace and there is no instructor, hence eliminating the logistics costs.

## Cost-Benefit Analysis of Classroom vs. Online Training in State Government

### Agency costs for delivering an Instructor-Led or Online training course

The chart, below, presents the agency average cost of developing and delivering a single training course. The cost of delivery was calculated by adding the development costs and logistics costs.



BOLI and OHCS had no numbers to report because the agencies did not have any trainings developed within the defined scope (11-13 biennium). BOLI trainings were either developed prior to the biennium or were borrowed from other agencies. In the case of OHCS, they used an existing training course and built upon the context. Therefore, eliminating much of the delivery costs with the exception of logistics costs (\$56.96). As a comparison between agencies, it is a statistically insignificant number.

The average cost of delivering an instructor-led course was \$8,319.95 compared to the average cost of delivering an online course which was \$7,025.38.

### *Average cost of hours spent on training*

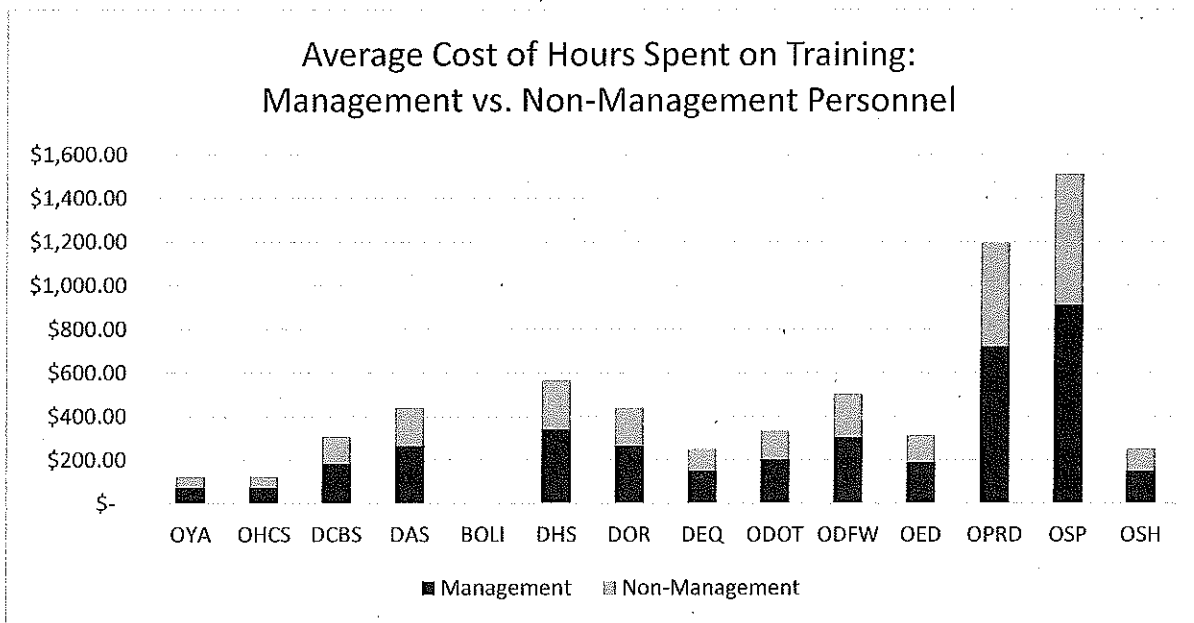
The average cost of hours spent on training was calculated for each agency using the statewide average hourly rate of a manager (\$38) or the statewide average hourly rate of non-management personnel (\$25). The calculated average number of hours out of the office for an ILT training course is 7.23, with a median of 5.17 hours. The cost of hours spent on training for online courses were calculated using the average duration of courses from iLearnOregon – 1.5 hours. The figures below are the averages for a manager or non-management personnel taking a single ILT or online course across agencies.

<i>Personnel Type</i>	<i>ILT Courses</i>	<i>Online Courses</i>
Management	\$274.77	\$57.00
Non-management	\$180.77	\$37.50

## Cost-Benefit Analysis of Classroom vs. Online Training in State Government

### Summary of cost of hours spent on training by course type

The cost chart below shows the average cost of hours spent on training for management and non-management personnel by agency. The average number of hours-out-of-office recorded by each agency was the major determining factor.



\* BOLI did not develop any training in the biennium, and therefore, did not provide student costs.

It is important to note a few major outliers. OSP has a recorded average number of hours-out-of-office of 24 hours due to the extensive academy training and hands-on tactics and weapons courses. OPRD had an average of 19 hours-out-of-office due to their specialized in-the-field training for their personnel.

### Webinar Costs

Webinars are a special form of instructor-led training. They are considered *synchronous* training because of the live instructor. A major advantage of using a webinar platform is a participant can access a webinar remotely and the platform allows for higher level of participation. Because of the definition used to define instructor-led training or what the budget note refers to as "traditional training," webinars were grouped into ILT courses averages.

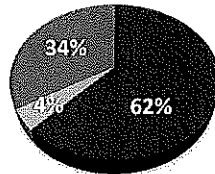
The cost of using a webinar as a delivery method is significantly lower than traditional in-classroom training, as it eliminates the logistics costs and the cost of travel for a participant. For example, OED offered nine training courses where all or parts of the training was delivered through a webinar platform. The cost of the service is \$12 per year per instructor. The platform will allow them to train up to 1000 in one session. This approach significantly decreases their training cost as travel cost is eliminated and logistics cost is lower.

## Cost-Benefit Analysis of Classroom vs. Online Training in State Government

### Average cost makeup by course type

The pie graph below shows the average makeup of delivering an Instructor-led Training Course. Over 60% of the total cost is dedicated to the development and design of the course.

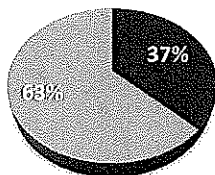
#### Average Cost Makeup: Instructor-Led Training Course



■ Development Costs ■ Logistics Costs ■ Student Costs

However, in the pie chart below, Average Cost Makeup of an Online Course, the development cost is approximately 37% and the student costs, or the work time lost, are over 60% of the total costs. This is because the volume of participants in an online course (Median=220) is considerably higher than that of an ILT course (Median=22). There are also no logistics costs as it is assumed that the participant is completing the courses in their office.

#### Average Cost Makeup: Online Course



■ Development Costs ■ Student Costs

Training for employees who typically do not have a computer (i.e. custodial staff), or who speak another language, or who require sign language will boost the cost of online courses.

## Cost-Benefit Analysis of Classroom vs. Online Training in State Government

### Travel Costs

#### *Travel Scenarios*

Below is a table of potential travel costs for an overnight, two day training. The methods used to calculate each value are described after this table.

<b>From:To</b>	<b>Approximate Miles</b>	<b>Lodging Rate</b>	<b>Meals and Incidentals</b>	<b>Car Rental*</b>	<b>Total Cost of Travel</b>
Portland to Salem	45	\$83	\$46	\$90.72	\$219.72
Portland to Bend	156	\$107	\$61	\$117.20	\$285.20
Medford to Salem	225	\$83	\$46	\$133.64	\$262.64
La Grande to Salem	301	\$83	\$46	\$151.76	\$280.76

\*assuming Fleet Rental is available for a Standard Sedan

*Lodging and Meals are calculated using the GSA Per Diem Rates:*

<b>Destination County</b>	<b>Lodging Rate</b>	<b>Meals and Incidentals**</b>
Standard	\$83	\$46
Washington	\$106	\$51
Deschutes	\$107*	\$61
Clackamas	\$90	\$61
Lane	\$94	\$51
Lincoln	\$121*	\$56
Multnomah	\$126	\$66
Clatsop	\$138*	\$51

\*Rates subject to change depending on the season. Rates listed are for summer months July 1- August 31 at the time, lodging rates are the highest.

\*\*Meal per diems are split Breakfast – 25%, Lunch – 25%, and Dinner – 50%.

#### *Car Rental – DAS Fleet Rental, Private Car Rental Rates, And Oregon's Reimbursement Policy*

There are two options for travel within the state. A state employee can rent a car from DAS or use a personal vehicle and be reimbursed for their miles charge.

If personal vehicle use is authorized, there are no government-owned vehicles available, and/or it has been proven more affordable/feasible to use a personal vehicle versus a fleet vehicle, state employees will be reimbursed \$0.56 for every mile traveled.

If a government-owned vehicle is available but is not used, the reimbursement rate is \$0.24 for every mile traveled.



### Benefits Analysis

The second part of the cost-benefits model looked at the contextual information for each training course delivered in the past biennium. There was a total of 1740 training courses offered from the responding agencies in the past biennium. Of the total courses, approximately 71% courses were Instructor-Led courses and 29% were delivered online. Next, DAS went through an exercise of coding all the listed ILT courses based on their course descriptions and the responses to “why was this delivery method chosen for the training?”

- Highly interactive or in-the-field training/on-the-job training
- Could be delivered online (courses focusing on informing the participant of policies, rules, process or procedures) and
- Blended courses – courses that could have both an online and in-classroom component

The following major benefits were identified by responding agencies:

#### **Instructor-Led Training Courses**

##### *Establishing a dialogue*

A major advantage of training courses offered in the traditional classroom setting is the interaction between the individual participants and with the instructor. Participants are able to learn from each other’s experience and therefore increase learning and retention. This can also be an opportunity to build their personal and professional network. Depending on the objectives of the agency and the responsibilities of the job, the benefits associated with a strong professional and personal network can outweigh the actual cost, as this can be carried into daily interactions and enforce a collaborative workplace environment, diminishing workplace silos.

##### *Facilitator Adaptability*

A disadvantage of online delivery is the training is developed through a series of presentations and materials that are written materials. Depending on the use of visuals, this can be difficult for a person who is not accustomed to this learning style to retain the subject matter. By offering the course in a face-to-face environment, the facilitator/instructor can adjust the training context to the needs of the participants and ensure complete understanding of the subject. It also provides the opportunity for the instructor to offer individualized attention to participants who have trouble with the subject matter.

There were also several ILT courses that were primarily training the participant on how to navigate through a new information technology system. For example, almost half of the Oregon State Hospital training courses are focused on the navigation of their computer system.

## **Cost-Benefit Analysis of Classroom vs. Online Training in State Government**

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### *Highly Interactive and In-The Field/On-The-Job Training*

Of the total courses delivered in the past biennium, seventy percent were considered instructor-led, of that number over 78% of them were coded as highly interactive and in-the-field/on-the-job training. Many of these courses need the interaction between the facilitator and participant to develop the skills needed to perform the responsibilities of work. Transitioning training into a virtual interactive platform would possibly compromise the effectiveness of the subject content.

Almost all of the agencies had a high percentage of courses with content that could not transition. The highest percentage with DHS, OYA, DCBS, DOR, DEQ, ODFW, OPRD, OSP and OSH.

These classes dealt directly with equipment handling, tactical and weapons training (OSP), emergency response, physical conflict resolution, emotional intelligence, or learning signs of physical, emotional, and mental abuse (DHS).

### **Online Training Courses**

#### *Work Efficiency*

In delivering a course online, the participants are able to take courses at a time which fits their schedule, implying work time loss is lower and work efficiency is not affected. The average hours out of the office dedicated to an ILT course was 7.2 hours versus the average length of time in an online delivered training course of 1.5 hours, according to iLearnOregon. Participants are able to work at their own pace, convenience and desk for a fraction of the time it takes to deliver traditional training.

#### *Higher Volume of Participants*

The agency median classroom makeup of an ILT course is 22 participants versus 220 participants for an online course. This is particularly important in considering the training needs of field personnel who cannot travel long distances for a one day training.

#### *Courses are Immediate*

Online training courses are available immediately and typically are archived so the participants may return to the material as often as they wish. If the course materials are up to date and relevant to the work, the return on investment for an agency can outweigh the initial development and delivery cost. Because courses are archived, if an agency has the demand for a particular topic or has an ongoing need for the subject matter, online delivery is a highly cost effective delivery method.

## **Conclusion**

The ultimate aim of training is to enable employees to be able to perform their work. The type of training utilized depends both upon the best way to convey the knowledge in a format the employee can absorb and the personal learning style of the individual. If those items are not taken into account, as well as the cost, the training will be much less effective. State agencies should continue to look to maximize the use of technology to deliver courses in a cost effective way, when doing so does not fundamentally compromise the quality of the learning environment.

# Cost-Benefit Analysis of Classroom vs. Online Training in State Government

## Appendix A Training Cost Data - By Agency

Training Delivery Costs							
Agency	Instructor Led			Online	Student Costs		Average hours out of office - per student for an ILT
	Development	Logistics	Total	Development	ILT	Online	
OYA	\$ 8,729.00	\$ 291.25	\$ 9,020.25	\$ 8,004.00	\$ 776.00	\$ 39,450.00	2
OHCS	\$ -	\$ 56.96	\$ 56.96	\$ -	\$ 854.00	\$ -	2
DCBS	\$ 9,933.00	\$ 872.79	\$ 10,805.79	\$ 9,108.00	\$ 3,254.58	\$ -	4.9
DAS	\$ 9,632.00	\$ 436.30	\$ 10,068.30	\$ 8,832.00	\$ 3,682.00	\$ 3,156.00	7
BOLI	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0
DHS	\$ 10,170.79	\$ 472.24	\$ 10,643.03	\$ 9,326.04	\$ 6,999.75	\$ 18,596.73	9
DOR	\$ 5,719.00	\$ 247.72	\$ 5,966.72	\$ 5,244.00	\$ 7,714.00	\$ 10,730.40	7
DEQ	\$ 9,632.00	\$ 317.20	\$ 9,949.20	\$ 8,832.00	\$ 2,104.00	\$ 25,248.00	4
ODOT	\$ 10,706.57	\$ 809.09	\$ 11,515.66	\$ 9,817.32	\$ 1,573.95	\$ 6,680.86	5.33
ODFW	\$ 9,632.00	\$ 855.00	\$ 10,487.00	\$ 8,832.00	\$ 4,208.00	\$ 26,826.00	8
OED	\$ 4,128.00	\$ 130.15	\$ 4,258.15	\$ 2,208.00	\$ 4,505.00	\$ 4,023.90	5
OPRD	\$ 11,438.00	\$ 860.00	\$ 12,298.00	\$ 10,488.00	\$ 7,619.00	\$ 3,747.75	19
OSP	\$ 9,632.00	\$ 1,746.62	\$ 11,378.62	\$ 8,832.00	\$ 13,536.00	\$ 1,499.10	24
OSH	\$ 9,632.00	\$ 399.60	\$ 10,031.60	\$ 8,832.00	\$ 2,104.00	\$ 26,826.00	4
AVERAGE:	\$ 7,784.60	\$ 535.35	\$ 8,319.95	\$ 7,025.38	\$ 4,209.31	\$ 11,913.20	7.23
MEDIAN:							5.165

# Cost-Benefit Analysis of Classroom vs. Online Training in State Government

Agency	ILT Courses - Classroom Makeup (Ratio 1:9)			Online Makeup (Ratio 1:9)	Cost of Hours Spent on Training - ILT (per person)	
	# Management	# Non- management	Total		Management	Non-Management
OYA	1	14	15	1000	\$ 76.00	\$ 50.00
OHCS	4	11	12	0	\$ 76.00	\$ 50.00
DCBS	3.4	21.4	25	0	\$ 186.20	\$ 122.50
DAS	2	18	35	80	\$ 266.00	\$ 175.00
BOLI	0	0	0	0	\$ -	\$ -
DHS	5	23	28	471	\$ 342.00	\$ 225.00
DOR	4	38	42	272	\$ 266.00	\$ 175.00
DEQ	2	18	20	640	\$ 152.00	\$ 100.00
ODOT	1.6	9.38	141	169.35	\$ 202.54	\$ 133.25
ODFW	2	18	20	680	\$ 304.00	\$ 200.00
OED	2	33	35	306	\$ 190.00	\$ 125.00
OPRD	2	13	15	95	\$ 722.00	\$ 475.00
OSP	3	18	70	38	\$ 912.00	\$ 600.00
OSH	2	18	20	680	\$ 152.00	\$ 100.00
AVERAGE:	2	18	34.1	316.6	\$ 274.77	\$ 180.77
MEDIAN:			22.5	220.7	\$ 196.27	\$ 129.13

# Cost-Benefit Analysis of Classroom vs. Online Training in State Government

Cost of Hours Spent on Training - Per Course					
Agency	ILT Courses			Online Courses	
	Management	Non-Management	Management	Non-Management	
OYA	\$ 76.00	\$ 700.00	\$ 5,700.00	\$ 33,750.00	
OHCS	\$ 304.00	\$ 550.00	\$ -	\$ -	
DCBS	\$ 633.08	\$ 2,621.50	\$ -	\$ -	
DAS	\$ 532.00	\$ 3,150.00	\$ 456.00	\$ 2,700.00	
BOLI	\$ -	\$ -	\$ -	\$ -	
DHS	\$ 1,812.60	\$ 5,187.15	\$ 2,686.98	\$ 15,909.75	
DOR	\$ 1,064.00	\$ 6,650.00	\$ 1,550.40	\$ 9,180.00	
DEQ	\$ 304.00	\$ 1,800.00	\$ 3,648.00	\$ 21,600.00	
ODOT	\$ 324.06	\$ 1,249.89	\$ 965.30	\$ 5,715.56	
ODFW	\$ 608.00	\$ 3,600.00	\$ 3,876.00	\$ 22,950.00	
OED	\$ 380.00	\$ 4,125.00	\$ 581.40	\$ 3,442.50	
OPRD	\$ 1,444.00	\$ 6,175.00	\$ 541.50	\$ 3,206.25	
OSP	\$ 2,736.00	\$ 10,800.00	\$ 216.60	\$ 1,282.50	
OSH	\$ 304.00	\$ 1,800.00	\$ 3,876.00	\$ 22,950.00	
AVERAGE:	\$ 751.55	\$ 3,457.75	\$ 1,721.30	\$ 10,191.90	
MEDIAN:	\$ 456.00	\$ 2,885.75			

# Cost-Benefit Analysis of Classroom vs. Online Training in State Government

## Appendix B

### Types of Training Courses Offered - By Agency

Agency	Types of Courses Offered				DAS Courses Coding			
	# of ILT Courses	# of Online Courses	Blended Courses	Total	High Interaction / In-The-Field / On-The-Job Codes	Online Possibility	Possible Blended course	% of High Interaction / In-The-Field / On-The-Job Codes
OYA	106	47	0	153	92	14	0	86.79%
OHCS	3	0	0	3	0	3	0	0.00%
DCBS	78	4	0	82	67	9	2	85.90%
DAS	255	107	1	363	217	27	0	85.10%
BOLI	6	0	0	6	5	1	0	83.33%
DHS	172	14	0	186	157	0	15	91.28%
DOR	22	25	0	47	18	1	3	81.82%
DEQ	70	23	3	96	59	11	0	84.29%
ODOT	286	63	0	349	187	83	16	65.38%
ODFW	51	8	0	59	41	8	2	80.39%
OED	55	44	0	99	24	10	5	43.64%
OPRD	29	113	0	142	23	4	2	79.31%
OSP	80	24	0	104	64	11	5	80.00%
OSH	21	30	0	51	17	4	0	80.95%
Total:	1234	502	4	1740	971	186	50	
Percentage:	70.92%	28.85%	0.23%		78.69%	15.07%	4.05%	