Show Me The Money, In IT Training!

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ABSTRACT

IT Staff Training, are you getting your money's worth? That is the question that is often asked by CIOs and always asked by CEOs. And what can you show them? What return can you show for your training investment? Universities receive benefits from training, but can you show a connection between your IT staff training costs and the benefits received?

The University of Virginia invests \$2,500 per person in IT staff training, which will increase during an Oracle ERP implementation over the next five years. As part of the University's ERP effort, IT training must demonstrate benefits provided to the University.

The IT Training Group of the University has done this in the past for select workshops having a Return of Training Investment of over \$10.75 to \$1. For the ERP effort, the IT Training Group must demonstrate the relation of IT training costs to benefits for the entire program. This will be done using Kirkpatrick's Four Levels of Evaluation and an Investor's Return on Investment.

- 1) Satisfaction of Participants
- 2) Knowledge Learned
- 3) Knowledge Used
- 4) Benefits from Knowledge Used
- 5) Return on Investment

This SIGUCCS presentation (paper) will outline a) the investment Universities make in IT Training, b) the benefits that can be obtained, c) how to measure the costs and benefits, d) the limitations of training benefit analysis, and e) methods to communicate benefits for maximum results.

Keywords

IT Training, Evaluation, Certification, ROI (Return on Investment).

1. INTRODUCTION

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Starting in 2000 the University of Virginia (UVa) will invest \$1,250,000 annually to provide training to implement and support Oracle Applications. This investment represents 10% of the total cost of the University's Enterprise Resource Planning (ERP) implementation. In comparison, a Computerworld article states that training for ERP implementations average 10% to 20% of the project's budget¹. Additionally, this investment will increase IT Training at the University of Virginia by 87%. With such a massive increase in IT Training, how can the University document the effects of this investment?

That is easy: Kirkpatrick's Levels of Evaluation² and an Investor's Return on Investment (ROI)³.

Kirkpatrick's model has four levels of evaluation: Reaction, Learning, Behavior, and Results.

Reaction (Level 1: Satisfaction) measures participant satisfaction and reactions to training. This level of evaluation is seen in the familiar workshop evaluation sheet, known in the training trade as "smile sheets".

Learning (Level 2: Test) measures what participants learned from training. This evaluation is seen in quizzes, tests, and certifications of learning.

Behavior (Level 3: Application) reviews how the training is implemented into the work place. This is seen in post training reviews that determine how knowledge is used.

Results (Level 4) looks to see if training provided a business result. This type of evaluation is also seen in post training reviews to determine if training improved business.

Return On Investment (ROI) (Level 5) goes beyond looking for business results, and tries to determine if training had an effect on the business bottom line. Did training have a significant ROI? ROI ratio is the benefits divided by the costs of training. Level 5 is not part of Kirkpatrick's levels of evaluation, but is an expansion of Level 4 by Jack Phillips.

Level 1 evaluations (Reaction) are common for University IT staff training. But, like corporations, as the level of evaluation

¹ Craig Stedman, "In House Training For ERP often Preferred", *Computerworld*, 11/9/98

² Donald Kirkpatrick, *Evaluating Training Programs: Four Levels*, Berrett-Koehler, 1994

³ Jack Phillips, Patricia Pullman, William Wurtz, "Level 5 Evaluation: ROI", *Info-Line*, ASTD, 1998

increases, the amount of evaluations conducted by corporations and universities decrease. Level 5 (ROI) evaluations are very uncommon. In a survey by the American Society for Training and Development (ASTD) on 1200 organizations, Level 5 (ROI) evaluations are only used 10% of the time.⁴ At the University of Virginia, Level 5 is used for less than one percent of the time. Table 1 is a summary of usage from the ASTD survey and of the University of Virginia's ITC Training Services.

Table 1. Training Evaluation Usage

	ASTD 1998⁵	UVA 1999	ASTD 1999⁶
#1 Reaction (Satisfaction)	100%	100%	95%
#2 Learning (Quiz)	50%	2%	37%
#3 Behavior (Usage)	30%	1%	13%
#4 Results	20%	1%	3%
#5 ROI	10%	1%	

An example of evaluation usage at the University of Virginia can be seen in the Computer Survival Skills Program (CSS).⁷ The Computer Survival Skills Program is designed to give clerical personnel baseline computer support skills so they can provide primary support to their academic departments. This program over the last three years has gone under special scrutiny to ensure that the program was meeting the participants' and the University's needs. This scrutiny included evaluating the effectiveness of training using all five levels of evaluation. Table 2 is a summary of evaluation results for Computer Survival Skills.

Table 2. Computer Survival Skills Evaluations:

Reaction (Level 1 - Satisfaction):
140 Participants
100% Participation in the Evaluation
92% Evaluated the Program Very Good to Excellent

⁴ Jack Phillips, Patricia Pullman, William Wurtz, "Level 5 Evaluation: ROI", *Info-Line*, ASTD, 1998

⁵ Jack Phillips, Patricia Pullman, William Wurtz, "Level 5 Evaluation: ROI", *Info-Line*, ASTD, 1998

⁶ Daniel P. McMurrer, Mark Van Buren, & William Woodwell, *The 2000 ASTD State of the Industry Report*, 2000, p. 20

⁷ Lisa Harcourt Black, "Computing Survival Skills: Training the Workforce to Stay Abreast of Technology", *Cause/Effect*, EDUCAUSE, Volume 21, Number 4, 1998

Learning (Level 2 - Test):

80% Participation in the Exam

95% Passed the Examination

Behavior (Level 3 - Application of Knowledge):

36% Participation in Survey

83% Participants used the Programs Knowledge at Work

Results (Level 4 - Impacting the Bottom Line):

36% Participated in Survey

83% Saw positive results that lead to . . .

16.48% productivity improvement.

Return of Investment, ROI

(Level 5 - Improves the Bottom Line):

UVA Invested \$121,493 in the program during 1997-99

The 16.48% productivity improvement is equal to \$1,307,239.

ROI for CSS is \$1 to \$10.76 for 1997-1999.

During the implementation of Computer Survival Skills the goal of evaluation was to show participant satisfaction (Level 1) and acquisition of knowledge (Level 2). Management reviewed these Levels to determine the success of the program. Levels 3 - 5 were reviewed by the design staff and IT training management, but were of limited use to upper level management due to the program's predetermined budget.

With the University's implementation of the Oracle Applications, Level 3 -5 evaluations become more important, since showing the impact of training and any return on investment are required as part of the project's success measures. Application (Level 3) and Results (Level 4) evaluations will be measured in the Oracle implementation by survey and analysis, but the key evaluation factor for the project will be training's return on investment (Level 5). The implementation training effort is a significant investment in the University's infrastructure. For this investment to continue beyond the implementation a positive ROI must be shown.

2. Return on Investment Measures

The training costs are easy to determine and may include instructors, designers, supplies, computers, promotion, registration, and participant's time. Participants' time is often forgotten as a training cost. At UVA, participants' costs have been a one-third to one-half of the total cost of training.

The benefits of training are more difficult to determine. According to the American Society for Training and Development (ASTD), there is a link between investment in training and an organization's performance in:⁸

Profitability

⁸ Laurie Bassi & Mark Van Buren, *The 1999 ASTD State of the Industry Report*, June 1999, p. 24

Quality of Products and Services
Customer Satisfaction
Employee Satisfaction
Ability to Retain Essential Employees

ASTD's areas of organizational performance are prime places to look for measurable benefits from training for corporations and universities. While profitability typically is not a performance area for non-profit Universities, cost saving that is part of the profitability equation, is a University performance area. For the Oracle Implementation, UVa will review these areas with primary focus on:

IT Productivity
IT Turnover Reductions
End-User Work Productivity
End-User Training Productivity
Customer/Employee Satisfaction

The first four performance areas can have a measurable financial benefit. In University settings, employee and customer satisfaction may not create a measurable financial benefit, but do produce a significant intangible benefit.

The expected ROI at the University of Virginia is still to be determined, but if history is any guide a ROI in the range of 1 to 1 or 1 to 1.5 is possible. This is low compared to corporations, but is within normal ranges. In a study conducted by the American Society for Training and Development (ASTD) in 1993, management-training programs saw an average ROI of 9.2 to 1,⁹ while in companies in ASTD's Benchmarking forum reported cost savings to training costs (near ROI) of 30 to 1¹⁰. In a more recent ASTD article, Magnavox produced a 7.4 to 1 ROI for its literacy skills training program.¹¹

As stated earlier there are four major areas where the University should expect a Return on Investment: IT Productivity from Certification, IT Turnover from Training Benefit, End-User Productivity, and End-User Training Productivity.

3. IT Productivity Benefits

The benefits resulting in IT Productivity from training seems to be one of the most discussed in recent articles. This is due to efforts to show how, by obtaining vendor certifications, organizations will experience cost savings. In a 1997 IDC study, corporations experienced on average \$13,812 productivity gain per IT Professional with Oracle certification.¹² If this is true, the

⁹ Jack Phillips, "ROI: The Search for Best Practices," *Training & Development*, Feb. 1996, pp. 42-47.

¹⁰ Donald Ford, "Benchmarking HRD", *Training and Development Journal*, June 1993, pp. 37-42.

¹¹ Jack Phillips, "ROI: The Search for Best Practices", *Training and Development Journal*, 2/96, pp. 42-47.

¹² Letter from Robert Pedigo, Oracle Certification Program, Based on IDC Report on Oracle Certification

University of Virginia would experience a productivity savings of \$250,000 annually if the IT staff is trained to Oracle certification levels. In support of the study, IDC has seen that companies that advocate certification report 50 percent less downtime than companies that do not advocate certification. Additionally, firms that advocate certification state that their IT staffs handle 40% more support calls per IT employee. The savings from increased effectiveness usually pays for the Oracle certifications in less than nine months.¹³ Similar, Dataquest has seen with Microsoft Certification, companies decrease costs by \$2,530 per year per MCP (Microsoft Certified Professional). Also, these companies saw a 43% productivity improvement of MCP over non-MCPs.¹⁴ MCPs can cost as low as \$2,100. The higher-level MSCE (Microsoft Certified System Engineer) can cost \$12,000 with 30 days of training.¹⁵

Additionally, in an IDC report corporations with MCPs experienced a savings of \$2,500 per server from help desk savings and decreased down time.¹⁶ The study showed a 12% savings per help desk call, a 50% decrease in server downtime, and a decrease in consultant usage.

4. IT Turnover Reduction Benefit

Retention is the top concern among IS organizations today according to Computerworld.¹⁷ A Meta Group study reports that IT industry-wide turnover rates are between 11% and 20%.¹⁸ The University of Virginia IT turnover during 1998 was 26%. The turnover rates in the IT industry are predicted to continue. Gartner Group reports that 20% of all IT positions will remain unfilled until 2003.¹⁹

In order to retain employees, organizations need to determine what benefits to offer. Training is the number one requested item from IT entry-level and experienced staff when job hunting. This is over flexible schedule and higher salaries.²⁰ Oracle Education promotes that employees who receive training have better retention rates.²¹ An IDC study showed that employers believe

¹³ Dawn Barrs, "The New DBA", *Oracle*, March/April 1999, pp. 42-63.

¹⁴ Jennifer Mateyaschuk, "Certification Pays Off", *Information Week*, 10/26/98

¹⁵ Jeremoney Muskowitz, "The Certification Myth," *Inside Technology Training*, March 1999, p. 16

¹⁶ Rebecca Segal and Stella Chen, "Financial Benefits to Supporters of Microsoft Professional Certification", *IDC White Paper*, (1998)

¹⁷ "Top 100 Best Places to Work", *Computerworld*, 5/25/98

¹⁸ Monica Fuettes, "Training and Retaining", *Information Week*, Oct. 19, 1998.

¹⁹ Jennifer Mateyaschuk, "Certification Pays Off", *Information Week*, 10/26/98

²⁰ Peter Fabris, "Disparate Times, Creative Measures", *CIO*, December 15, 1997, www.cio.com

²¹ Letter from Robert Pedigo, Oracle Certification Program. Based on IDC Report on Oracle Certification

that if they invest in their employee's certification (training), they are more likely to retain those employees.²²

A matrix used at the University of Virginia shows the cost to replace an employee is equal to 20% of that employee's annual salary and fringe benefits. This cost consists of down time, and hiring costs. In a *CIO* survey, the hiring costs alone to fill IT vacancies ranged from \$9,777 for entry-level workers to \$19,219 for experienced staff.²³ According to the matrix, if UVa reduces IT turnover by just one percent that would be a \$230,000 annual saving from decreased turnover.

If training is the #1 requested item IT employees desire in a job, then how much do corporations and universities need to invest in their employees to retain them? What is the amount the University of Virginia needs to invest to improve retention?

The amount to invest in training can be measured two ways, by the dollar amount or by the number of workdays. The American Society for Training and Development found in 1999 that, on average, corporations invested \$649 per employee, for IT companies it was \$943, and for those "Tops in Training" it was \$1957.²⁴ Additionally, ASTD found that companies that spend an average of \$900 per employee a year on training were 57% more profitable than their counterparts who spend a third as much.²⁵ This is the same ASTD study that stated that there is a link between investment in training and an organization's performance in Profitability, Product Quality, Customer Satisfaction, Employee Satisfaction, and *Employee Retention*²⁶.

The ASTD study is not without flaw or critics. While in the ASTD study, the corporations that were IT companies and "Tops in Training" spent \$943 and \$1957 per employee on training respectively, the employees from organizations in Computerworld's Best Places to Work received \$7,300 and 14 days for training on average.²⁷ This raises some questions about the magical number that Universities and Corporations need to invest in people to obtain an increase in their retention rates.

The study was also brought into question by Doug UpChurch, Executive Director of the Information Technology and Training

Association, "It is not just training (that leads to profitability). It's more about having a corporate culture that values knowledge."²⁸ While Mr. UpChurch was mainly talking about the connection between training investments and corporate profitability, the same thing can be said about employee retention.

Retention rate is also hard to measure, since other things such as the un-employment influences the retention rate. For the University of Virginia, the amount invested in IT employee training will increase from \$1333 in fiscal year 1999 to \$2,500 in fiscal year 2000. Whether this will have any impact on the University of Virginia's IT retention rate is yet to be seen.

5. End-User Productivity

End-User Productivity is the measurement of how training impacts the productivity of the non-IT university staff. This measurement is of both faculty and staff. While measuring IT staff training costs and benefits is easy, end-user productivity is more difficult to measure in the University setting due to the number and diversity of participants. End-User Productivity can be seen in decreased work-time, increased production, and the elimination of work-tasks. The End-User Productivity measurement can be obtained by a) employee self-assessment, b) supervisor assessment, or c) position analysis. Each method has its costs and its reliabilities. As stated earlier the participants in University of Virginia's Computer Survival Skills workshop had a 16.48% productivity improvement, resulting in a ROI of 10.76 over two years. While this measurement was easy to obtain through an employee self-assessment, a more reliable measurement could have been obtained through supervisor assessments or position analysis. Both of these techniques would have been at an increased cost.

Even though self-assessment may be less reliable, end-user productivity is still a useful measurement for colleges and universities. In the upcoming ERP implementation, a 2.5% productivity increase due to training would lead to a productivity savings of \$3,462,000 annually -- a 2.76 ROI.

6. End-User Training Productivity

End-User Training Productivity will be examined as part of UVa's ERP training effort on a limited basis. Traditionally End-User training productivity evaluations are the examination of one training method over another, such as One-on-One Job Training over Instructor-Lead Training. More recently, end-user training productivity evaluations examine Instructor-Lead training over Web-Based training. The University of Virginia will conduct productivity evaluations looking at the effectiveness of Instructor-Based versus CD-Rom based IT Staff Training. Also, the effectiveness of Instructor-Based versus Web-Based End-User training will be examined. One major limitation of measuring end-user training productivity at the University is the current lack of any end-user training on administrative systems. The measurement of "No Training" versus "Any training" is the same measurement as end-user productivity improvement discussed earlier.

²² Jeremoney Muskowitz, *The Certification Myth*, Inside Technology Training, March 1999, p. 57

²³ Peter Fabris, "Desperate Times, Creative Measures," *CIO*, Jan. 1, 1998, p. 60.

²⁴ Laurie Bassi & Mark Van Buren, *The 1999 ASTD State of the Industry Report*, June 1999, p. 7.

²⁵ Laurie Bassi & Mark Van Buren, *The 1999 ASTD State of the Industry Report*, June 1999, p. 24

²⁶ Laurie Bassi & Mark Van Buren, *The 1999 ASTD State of the Industry Report*, June 1999, p. 24

²⁷ Sharon Watson, "Train to Retain", *Computerworld - Best Places to Work*, 6/28/99, p.22.

²⁸ Barb Cole-Gomalski, "Training Benefits Scrutinized, Link Profitability Hard to Prove", *Computerworld*, 6/15/98

7. Customer and Employee Satisfaction

Benefits

In addition to the tangible productivity savings that will occur from providing business skills training, the University will also see the following benefits that were not measurable at this time.

Customer & Employee Satisfaction

Increased Customer Service, from IT staff knowing how to use the system

Decreased consulting on basic issues by central offices

Better communications between the central services and the department, due to knowledgeable users.

These benefits will be measured by the University, but not for tangible productivity improvements and harvestable savings.

8. Measuring UVA's Results

If the University of Virginia is expecting to have a positive Return on Investment, how will it be measured? The answer is *Surveys*, *Benchmarking*, and *Analysis*.

8.1 Surveys

The University's *Surveys* will look at the five levels through a series of four or five evaluations. The first evaluation will be conducted immediately following the workshop. This evaluation will be a Level 1 evaluation examining participant satisfaction, but it will also examine perceived impact (Level 3 and 4). The second evaluation will be a quiz of participant knowledge (Level 2). Due to the requirements placed on the University's Oracle system that participants have a certain baseline level of knowledge prior to using the application, most participants will be required to pass an examination prior to gaining access to the administration systems. The third evaluation will be a follow-up survey of participants 30 days after the Oracle Application goes live. This evaluation may be conducted 45 to 60 days after the training. The goal of this evaluation is to determine if the participants are using the skills learned (Level 3), and determine if the training and application is having impact on their work (Level 4). This evaluation will also be used to determine if follow-up training or technical services are required. Finally, the fourth and fifth evaluation will be conducted 120 days after the Oracle system has gone live. This evaluation will again examine the Implementation (Level 3) and Impact (Level 4) of knowledge from training, but these evaluations will also examine the Return on Investment the University will receive from training. The fourth evaluation will be sent to the training participants and the fifth evaluation will be sent to their supervisors.

8.2 Benchmarking

Using surveys as the bases, the University of Virginia will *benchmark* its training against other Universities and Corporations. First benchmarking will be conducted against the American Society for Training and Development's Benchmarking

Service.²⁹ This will provide the University with information on how it compares to 2000 different organizations on various levels of evaluation.

The University will also benchmark its training against NACUBO's benchmarks. While this information compares levels of service and budget allocations, it does provide information on how the University's training effort is doing compared to peer institutions.

8.3 Analysis

The University will conduct a limited workforce analysis to determine if employees applied the knowledge (Level 3), if the training impacted the workforce (Level 4), and if the training impacted the bottom line (Level 5). This analysis will be conducted by targeted post-training interviews. Additionally focus groups interviews, management discussions, and work analysis will be conducted.

9. Fools Gold of Training Evaluation

Everything has been relatively positive up to this point on the use of Training Evaluation and Training ROI, but what are the down sides with conducting upper level evaluations and performing ROI analysis. The downsides can be summed up as being the lack of *Desire* by training staff to conduct upper level evaluations, the *Resources* required to conduct them, and interpreting the evaluations *Results*.

Traditionally training organizations have conducted level 1 evaluations (customer satisfaction surveys). These customer satisfaction surveys, know as smile sheets in the trade, are the feedback method by which trainers learn how the participants liked their performance. Since many trainers are closet actors, these smile sheets are to trainers as TV rating are to actors. Trainers, because of their actor-like tendencies, prefer not to do things that will cause their rating to decrease. This is why trainers avoid tests (Level 2), because their ratings may decrease. This is also why trainers prefer not to conduct post workshop job analysis, because they may discover that there is no connection between their positive ratings (Level 1, Satisfaction) and the participant actually using the knowledge to increase profits or decrease costs for the Organization (Level 4, Benefit).

Lack of the desire is not the only reason why training return on investment studies are not conducted. Resources are the next major reason for why the studies are not conducted. At the University of Virginia, half a position was dedicated to evaluation analysis. This represented 3% of the training staffing. While a half time wage position to conduct training evaluation seems like a reasonable cost to document and communicate the positive results of training, the cost looks enormous from a University administrators stand point when the position could teach 200 half day workshops in the course of a year.

Finally the results themselves are a reason why training ROI analysis are not conducted. The results may be fools gold either because they provide no value or because they raise more questions than they answer. Possible issues that arise when using training ROI include:

²⁹ Laurie Bassi and Amanda Ahlstrand, *The 2000 ASTD Learning Outcomes Report*, June 2000, pp. 15-18.

Who gets credit (Training or Software)?

How was the measurements conducted?

What assumptions were made? (wages, people, productivity)

How reliable are the measurements?

What outside factor influenced the measurements?

Because of these issues, Training ROI information needs to be reviewed with a jaded eye. At the University of Virginia, for planning purposes, Training ROI was reviewed positively. But when the final analysis was conducted, training benefits were discounted due to 1) double counting (software vs. training), and 2) overly positive forecasts.

10. Communicating for Maximum Results

Measuring the effectiveness of training is only the first part of training evaluations; the second part is the communicating (marketing) of the benefits for maximum results. The communications of the benefit is a key to ensuring the success of IT training at the University of Virginia. As an example, in the past four years the IT training group of the University of Virginia has grown from a 2 person staff to a 14 person staff. Additionally, the training group has increased the amount of training by over 250%. Communicating the benefits of training assisted this growth. Who needs to hear the message of the benefits of training at the University? Everyone! How are they communicated to? E-mail, Newsletters, Promotions, and Ceremonies. When do you communicate? As often as possible.

11. Final Words

The process for implementing Oracle Applications at the University of Virginia has started. Satisfaction and Learning evaluations have already started for technical Oracle training. The Application, Results, and ROI evaluations for technical Oracle training will be completed by July 2000. End-User Training will start in January 2001 with the evaluation for all five levels completed by the fall of 2001. Benchmarking to ASTD will be conducted in the fall of 2000 and 2001. So, in May 2002 where will the evaluation of the Oracle Application training stand? Based on past performance of IT training activities at the University of Virginia the success of the Oracle Application Training will stand in one of three states.

Successful: The first is that we have successful evaluations and a positive return of investment. The ROI will not be as great as those experienced in the ASTD studies, but will be in the 1 to 1.5, or 1 to 2 range.

Marginally Successful: This level of success is that training is well received, impacts the workforce, but has a positive ROI less than 1 to 1.5. In this state training paid for itself and the intangibles, including improved employee/customer satisfaction, are the expected results.

Unsuccessful: This is the unthinkable and unlikely, but always a possibility. This is not a state I predict, because of the time, staffing, and funding that the University has allocated to ensure success.

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