

Everyday “ROI”

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More and more frequently, learning & development managers are being asked to provide evidence that training courses and programs are worthwhile. Business leaders are no longer content to assume the value of training. Ninety-six percent of CEOs report that they want to see data on the financial impacts of training (Phillips and Phillips, 2010), even though only 50% of trainers report having been asked for such data (Brotherton, 2011). But with drastic cuts in business spending, learning & development managers must find ways to prove that training isn't a cost center, but rather an investment.

Yet, learning & development professionals continue to lag in showing business leaders the impacts of training. Although there are sure to be courses and programs that do not demonstrate desired results, overall Berk (2009) asserts that a \$1 billion organization can see a \$2.8 million return from the training function and that's using conservative measurements. So, what's preventing L&D professionals from measuring training outcomes? According to Brotherton (2011) and Phillips & Phillips (2010), there are three primary reasons that training outcomes aren't being measured consistently:

- Lack of qualified staff
- Lack of time
- Lack of budget

Process Industry Challenges

Within the process industry, there are additional challenges in demonstrating the value of training. First, training coordinators are often promoted from field positions. Although they are expert operators or maintenance specialists, they usually receive little or no education in the systems and processes related to instructional technology, meaning they are even less able to measure training impact than trainers in other industries. An informal survey with operations training coordinators at a refinery of a major, multi-national company revealed that, while the average tenure in the training coordinator position was more than 5 years, the employees had received a single course in training methodologies. Only 2 employees in the department had ever heard of Kirkpatrick's levels of evaluation. Only 1 knew about Bloom's taxonomy.

Another challenge in training in the process industry is that most resources (budget, time, and staff) are dedicated to new hire training. Therefore, this is the training most likely to catch the attention of senior leaders. Advanced statistical techniques and controls are required to measure the ROI for new hire training. In order to isolate the effects of training from other factors, behavior is usually measured prior to training, and then compared to post-training behaviors of trained and untrained groups. However,

with new hires, there is no pre-training behavior! It is possible to produce a delta by building factors for knowledge and motivation and regressing them against production or maintenance metrics before and after the new employee arrives on the job. But, application of this technique can build in error that must be recognized and corrected statistically. University degree programs in instructional design rarely teach these experimental designs and statistical applications. Certainly trainers promoted from the field won't be able to do so successfully, much less explain the outcomes.

Finally, what little training is provided to experienced employees often focuses on complex cognition instead of simple activities. For example, typical "advanced" training offerings in a US refinery or chemical plant include troubleshooting and process optimization. The behavior changes resulting from these types of courses often vary by employee, are multi-layered and complex. In the petrochemical industry, few training managers are willing to spend the extra 3-5% (Phillips, 1996) beyond the cost of the program to measure return on investment.

Tips for Trainers

Despite obvious problems in measurement programs, few training professionals are offering measurement solutions that can be implemented with existing staff, and are quick and budget-friendly. Instead, they continue to advocate return on investment as the pinnacle of evaluation. The remainder of this paper is focused on practical approaches to measurement to help process industry trainers demonstrate the value of their work.

1. Analyze business leader information needs

Training professionals can't assume that we know what information business leaders need in order to be satisfied or report on proof of training value. So, the first thing that trainers should do is to analyze the business leader's need, in the same way that we analyze training requests.

- Who will be the audience for reports from learning & development?
- What questions does the audience have?
- How will that audience evaluate whether training was successful?

Via interviews, one training professional discovered that, despite requests for return on investment analysis, managers in her company defined training success in terms of whether the trainees (in this case, upper level managers attending a course on communication) were satisfied with the content of the new training program. It was a simple matter to add an item to the satisfaction survey given at the end of the

course, and report the results after each class. This training professional had been providing extensive information to management about numbers of employees trained, new classes developed per year, and training dollars spent per employee. Yet, none of this information was what management wanted or needed to make decisions.

Bottom line: Tell them what they want to know.

2. Collect estimates with satisfaction ratings

If budgets, time or corporate policy prohibit other types of measurement, training professionals can rely on estimates to determine changes in knowledge and intent to apply new skills on the job. On the ubiquitous satisfaction survey, trainers can insert questions such as:

- My knowledge about the course topics increased by _____%.
- I will be able to use the things I learned on my job (scale from strongly agree to strongly disagree)
- I will use the information and techniques learned in this class (scale from daily - yearly).

Structured correctly, responses can be converted to numbers allowing easy calculation of averages and percentages for reporting purposes.

Training professionals shouldn't overlook that the results of satisfaction surveys should also be used within the learning & development department to determine whether courses should be changed. A wealth of information used to perform such analysis can be gathered by simply adding "please explain your answer" after each query.

Bottom line: Estimates are better than nothing.

3. Measure increases in knowledge

The three factors that combine to produce performance are knowledge, motivation and resources. Training will only close gaps in knowledge. So, even if training professionals can't measure changes in behavior or performance when trainees return to the job, they should be measuring increases in knowledge.

Multiple choice, drawing or performance exams can be given before and after training, and the average change across trainees reported to management. But, this

type of comparison may not be enough to prove training value. Trainers can demonstrate the real impact of courses by having experienced employees take the same test and report their years of employment, and comparing trainee scores to those of experienced employees. Results can be reported as, "Employees had the same level of knowledge upon exiting this course as X year employees." This type of comparison requires no more expertise or effort than what many training professionals already have, yet clearly demonstrates value to management.

Bottom line: Show that knowledge is important to performance.

4. Survey instead of measuring application

One of the common issues that many trainers face when trying to measure the application of training is that they can't find or can't easily collect the data that would show behavior changes. An easy way to collect data is to send surveys to employees who attended training and their supervisors. Surveys don't need to be long or cumbersome. They can be as simple as:

Employee

1. How much has your behavior changed since training?
2. How much of that change was due to training?
3. How confident are you about your estimates?
4. What are the barriers to engaging in new behavior?

Supervisor

1. How much has your employee's behavior changed since training?
2. How much of that change was due to training?
3. How confident are you about your estimates?
4. What are the barriers to engaging in new behavior?

The first three questions on each survey should be answered in terms of percentages (0-100%). Change estimates can be adjusted by multiplying by confidence estimates. For more meaningful results, estimates can be compiled across employees, and employee and supervisor estimates can be compared and deltas averaged.

The final question provides insight into problems with motivation or lack of resources that cannot be solved by training interventions. Remember that the greatest training in the world won't change employee behavior if employees don't have what they need to do the job, or lack motivation. Issues can be reported to other managers or Human Resources so that they can be resolved.

Bottom line: Just ask them.

5. Measure time

If return on investment analysis is required by management, one way to simplify the calculations is to focus on the impact of new behaviors on time. For instance, in a popular troubleshooting class, operators learn a structured process of data collection and decision making that, if applied correctly, results in fewer process upsets and reduces the severity of upsets.

The complete return on investment for this type of class is extremely difficult to measure for several reasons. The mental process is impossible to see. Additionally, because it's common for multiple operators to be on shift, it's difficult to identify which operator made adjustments. Was it the one who attended training or not? Finally, the result of applying the troubleshooting process is that the operator makes adjustments. But, the adjustments made vary depending on the nature of the process upset. That means the behavior that results from the process cannot be defined in advance. All of these things can be overcome in a return on investment study, but doing so requires advanced statistical techniques and analysis.

But, another outcome of using the troubleshooting process is that operators are able to immediately determine the correct solution and implement it, instead of trying multiple solutions to correct the problem. So, instead of trying to measure specific behaviors, the training professional can measure time savings. This can be done by sending employees a survey and asking them to estimate the change ("Estimate how long it used to take you to return the unit to normal" and "How long does it take using the troubleshooting process").

Not only can time be measured, it can be easily converted to monetary values. Simple multiplication is all that's required for the rest of the evaluation. With the troubleshooting process example, say that operators report that they're able to correct unit upsets 10 minutes faster. The operations superintendents report that the plant makes 500 pounds of product per minute, and it costs \$1 per pound to reprocess or burn off-spec material. Then a 10 minute reduction in producing off spec material would mean a cost savings of \$5,000. If an operator uses the process 3 times a week, the company saves \$15,000 per week, and \$780,000 per year. If 15 operators were trained, that's a savings of \$11,700,000 per year!

Bottom line: Time is money

Bottom, Bottom Line: Evaluation doesn't have to be complex to be effective.

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