Knowledge Factor

The Leader in Confidence-Based Learning

Take a Guess – How Much Misinformation Can you Afford?

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U.S. corporations are spending roughly $50 billion a year to train their employees. Most are paying very close attention to the return they are getting for that investment (ROI). As a result, many organizations spend as much as 2-3% of their overall training budgets just to track training metrics. As noted author Peter Drucker says, "*If you can't measure it, you can't manage it.*" So the question arises: What are your metrics telling you?

In a recent Bersin & Associates research study, when 6,000 survey participants were asked what metrics were tracked in their organizations, approximately 86% indicated that their metrics focused on: 1) what courses or training people were taking, 2) whether or not they had taken the training specified by the company, and 3) whether or not they had liked the training. Additionally, an increasing number of organizations are tracking cost savings associated with training investments.

However, only 11% of survey respondents actually tracked training to business impact and only 14% track training to job impact. Yet, according to *Learning & Training Innovations Newsletter*, the main purpose of e-learning is not to reduce the cost of training, but rather to drive business results.

The challenge is to create assessment metrics that

- actually measure whether the desired knowledge has been mastered;
- determine whether knowledge has been mastered in such a way that it can be applied appropriately in the chaotic environment of day-to-day decision-making; and
- determine whether the learner's confidence level in his or her mastery is sufficient to boost retention of the knowledge gained. This latter point is one of the key factors in training analytics, since numerous studies have shown that the more confident a learner is in the knowledge acquired, the more likely that knowledge is to be retained over long periods of time.

Unfortunately, according to the Department of Labor's recently released *Human Resource Guide*, most performance assessments currently being used fail to

measure individual ability or knowledge with any accuracy. The study points out that *invisible* errors that result when an individual guesses correctly on a true/false or multiple-choice test are both "especially common and potentially damaging."

This type of misinformation, often called *"confidently held misinformation,"* can easily lead to a misinformed decision, action or strategy that has disastrous results for a company. The report correctly points out that employee errors can have serious financial, health and/or safety consequences for their companies. Furthermore, if assessment procedures fail to meet existing legal and professional standards, employees may put organizations in legal jeopardy. Poor metrics are not only an organizational problem. *The bigger problem is at the individual level*.

What Metrics Should Measure

Organizations should use assessments to align training and education with strategic goals. Performance measurement, skills gap analysis, business improvement reviews, and return on investment charts can all help determine how an individual is doing within the organization's objectives and how closely the organization is aligning with its strategic goals. The outcomes from assessments should help organizations make decisions on employee responsibilities and should validate whether their skills and information are complete and up-to-date. They should provide an overall sense of how the individual is doing in comparison with targeted business results.

In addition, metrics should tell the organization about the individual learning results from a given training event. This information falls into three categories:

- Have I correctly understood and learned the information?
- Do I understand the information well enough to correctly apply it?
- How much confidence do I have in my knowledge?

This last point is critical. There is a substantial body of research documenting the positive link between knowledge and the confidence associated with which that knowledge when it comes to long-term knowledge retention. Essentially, the more confident someone is in his or her knowledge, the greater the likelihood that that person will perform productively in the organization.

One-Dimensional Assessments

Multiple-choice tests, which are one-dimensional tests, are commonly used to validate learning outcomes. However, this assessment method fails to measure the degree of confidence that individuals have in their knowledge or the amount of information they retain that can be applied in the performance of their duties. Although research confirms that confidence is one of the most significant predictors of performance, traditional testing methods have no way of addressing or measuring confidence. This means that companies may find themselves in critical situations where outcomes depend on individuals who guessed their way through a test – or learned just enough to answer the questions but not enough to retain the information.

In current right/wrong assessments, a correct answer is interpreted to mean that someone knows the subject matter and a wrong answer is interpreted to simply mean that a person is uninformed about the material and does not have the correct information. However, in addition to individuals who just happened to make a lucky guess (and knew they didn't really know the answer), there are also individuals who may be wrong about an answer but who strongly believe that the wrong answer is correct.

As stated earlier, this high level of confidence in incorrect information is commonly referred to as "*confidently held misinformation."* Such misinformation not only leads to poor – sometimes even dangerous – decisions and errors in performance, but can also become counterproductive to learning new material effectively.

Using traditional one-dimensional tests, such as true-or-false or multiple-choice, the distinction between being uninformed and being misinformed remains hidden. When "misinformed" individuals are assigned to a task, assessment results do not alert managers to the possibility that specific misinformation can, and very likely will, produce performance errors that may lead to costly mistakes with potentially devastating legal or financial liabilities.

From One Dimension to Two

The unreliability of one-dimensional tests has been addressed by Dr. James Bruno of UCLA, who examined this problem and realized that there had to be a way to measure both confidence and correctness (knowledge) simultaneously. Dr. Bruno also recognized that with one-dimensional assessments, the metrics were especially ambiguous and misleading for individuals scoring between 50%-85%. Because of the "guessing" effect, it was common for the results to *register false negatives and false positives.*

The outcome of Dr. Bruno's research was a two-dimensional approach that allows learners to categorically state simultaneously both their confidence level and their knowledge understanding. This **confidence-based assessment** uses a three-answer format in which there is a correct answer and two answers that are common misconceptions that people often mistake for the correct answer. Learners are asked to choose among the statements "I am sure," "I am partially sure," and "I don't know," which allows them to state both the correctness of their answer and also their confidence in their answer, thus providing a "two-dimensional" statement about their knowledge.

In such an approach, guessing is no longer rewarded but works against the learner. Individuals receive a maximum reward for a correct answer and maximum penalty for an incorrect answer, thus discouraging them from guessing when answering a question.

Once reviewed, a confidence-based assessment can provide a *knowledge profile* that is generated and grouped according to *distinct information quality regions***.** These regions (or *knowledge quadrants*) include:

- *"misinformed"* – answered 50%-100% confident and incorrect, also known as "confidently held misinformation"
- *"uninformed"* – answered as 'I don't know'
- *"partially informed"* – answered 50% confident and correct
- *"fully informed"* – answered 100% confident and correct.

This assessment approach can link the knowledge profile to specific learning materials organized and prioritized based on the identified informational needs of the individual. The profile also provides *clear metrics on the knowledge* that an individual possesses. The learning materials can then be presented to the individual for review and/or reeducation, providing the individual with a

'teachable moment.' This ensures his or her acquisition of the true knowledge and accurate information in a cost-effective manner.

Confidently-Held Misinformation – A Disaster Waiting to Happen

Although the obvious and immediate benefit of a two-dimensional confidence-based assessment is substantially improved learning outcomes, an equally important benefit is the ability to identify and avoid the disasters that can result from invisible but damaging *confidently held misinformation.*

If assessments reveal only how many correct answers an individual selects, yet fail to reveal when employees are operating under wildly incorrect information, then employee errors can be expected regardless of the quality of the training – errors that can result in serious financial, health, and/or safety consequences both for the company and its customers.

One company sent a number of people to training and decided to use the confidence-based assessment as a *knowledge audit* to validate the knowledge people really acquired from the training. These people already had passed the post-training assessment with an average collective score of 80%. However, when taking the same material in a confidence-based assessment, there was a misinformation gap of almost 56%. In other words, people successfully answered the final test questions, but the confidence assessment pointed out they still had a gap in really understanding the material. These metrics gave the organization a different focus on what they needed to do to avoid risky mistakes in the future.

There are too many examples today of companies that have been damaged from class action suits, huge legal settlements, malpractice charges and even product recalls that have resulted from employees making gross errors in judgment in the execution of their jobs. Presumably, most of these employees have been trained – possibly even certified – for their positions. Yet lack of correct knowledge – or rather lack of awareness of *incorrect* knowledge – puts their organizations in legal and financial jeopardy that, in many cases, has resulted in millions of dollars to remedy. It can damage a company's reputation in the marketplace, and cause a loss of confidence in key financial markets.

Given the potential consequences in today's competitive marketplace – how much confidently held misinformation can you afford?