

Ensuring Business Impact from Learning

From Learning Objectives to Critical Mistake Analysis



White Paper

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Table of Contents

Abstract	3
A Method for Aligning Learning with Business Needs	4
A Typical Approach	5
The Critical Mistake Approach	7
The Qualitative Version	11
Continual Improvement Using the Critical Mistake Approach.....	12
References	14
Author Background	15
Dr. Chip Cleary	15
Dr. Gregg Collins	15
About NIIT (USA), Inc.	16

Abstract

This article presents a method, called **Critical Mistake Analysis**, to align training with business needs. This method focuses training on the few “**critical mistakes**” that have the **largest business impact**. In essence, it applies the **80/20 rule** to training. Instead of trying to identify all the content that trainees “should” know, Critical Mistake Analysis employs a more minimalist approach, focusing on the few pieces of content that matter most. To accomplish this, Critical Mistake Analysis goes beyond standard learning objectives, which identify what performers should know or do. Instead, Critical Mistake Analysis looks to identify what deviations **actually occur** in the field. By so doing, it enables organizations to focus training on eliminating the most important deviations.

Critical Mistake Analysis provides a framework that business sponsors and training managers can use to form a clear agreement on what impact to expect from a piece of training. This framework helps them agree on the goals for training, monitor its effectiveness, and continually improve training over time. We have applied Critical Mistake Analysis across types of training needs, including **soft skills (such as customer service)**, **hard skills (such as financial analysis)**, and **procedural skills (such as using a computer application)**.

A Method for Aligning Learning with Business Needs

John Wanamaker, a retailing legend, once said, ***“I know that half the money I spend on advertising is wasted. I just don’t know which half.”*** Many training managers feel the same way about their training courses. Companies invest in training to make improvements in their business. The largest cost for that training is generally in the time trainees spend taking it. So, when it comes to aligning training with business needs, the key question becomes ***“How can we maximize business impact while minimizing duration?”*** To get more for less, we need a way to specify what we want from a piece of training so that all of its content focuses tightly on what the business needs.

This article presents a method, called **Critical Mistake Analysis**, to align training with business needs. This method focuses training on the few “critical mistakes” that have the largest business impact. In essence, it applies **the 80/20 rule** to training. Instead of trying to identify all the content that trainees “should” know, Critical Mistake Analysis employs a more minimalist approach, focusing on the few pieces of content that matter most. To accomplish this, Critical Mistake Analysis goes beyond standard learning objectives, which identify what performers should know or do. Instead, Critical Mistake Analysis looks to identify what deviations **actually occur** in the field. By so doing, it enables organizations **to focus training on eliminating the most important deviations**, thereby delivering more for less.

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A Typical Approach

To better understand what Critical Mistake Analysis is, let's begin with a look at how training is typically scoped. Imagine that you are the product manager for an electronics retailer. You are responsible for digital cameras. The associates in your stores have 100% turnover and they often appear intimidated by the complexities of the cameras you offer. It seems likely training could improve sales.

When you talk to your training manager, she investigates. As is standard practice in the training industry, she comes back with a list of well-specified learning objectives for the training to cover (e.g., "Associates will be able to follow our 5-step consultative sales process" and "Associates will be able to identify 2 or more cameras that meet a customer's needs"). These objectives seem reasonable. If associates can do these things, they should be able to make more sales.

Then the training manager tells you that a one-hour web-based training course should be sufficient and lays out the cost to develop and deliver the training. You are willing to make the investment required. In fact, given the potential benefits, you might be willing to invest substantially more. But, before committing, you have a number of questions.

Will this amount of training be enough? What specific changes should you expect to see in field performance? What improvement in sales could you expect to see from those changes? Now, you understand that many factors affect digital camera sales. So it would be difficult to actually look at sales and see whether changes came from training vs. other changes happening in the business at the same time (e.g., new products, seasonal purchases, and promotional activities). **Is there a simple way you can hold the training manager accountable for the results of the training she suggests you invest in?**

As this vignette illustrates, the training industry generally uses learning objectives to define the scope of a piece of training. However, when considered from the perspective of helping Business Sponsors and Training Managers agree on an investment in training, learning objectives suffer several shortcomings:

1. **Learning objectives do not indicate how much training is required to achieve them.** Learning objectives specify an *end* state, identifying what a learner should know or be able to do after training (e.g., “be able to follow the five step sales process”). However, depending on the learner’s *start* state, the amount of change required to meet a learning objective could vary tremendously. For example, if the electronics chain staffs its stores with teenagers in their first job, they will need a lot more training than if the chain hires the best salespeople lured away from competitors. A more direct method of scoping training should capture the *change* training should create rather than simply capturing the end state itself.
2. **Learning objectives do not enable prioritization** It is always possible to add another learning objective to any list of learning objectives. Training departments typically generate learning objectives by asking experts what novices should know. The problem is, experts often do not really know. Experts often forget what it is like to be a novice. As a result, they are likely to give long laundry lists of objectives and assert that “newbies need to know all of this.” In fact, for beginners to act as “proficient novices,” they typically need to master much less than experts believe.¹ To achieve the largest impact for the least cost, what we require is a method for prioritizing training content. Again, the notion of *change* comes into play. Once we identify the specific changes a piece of training targets, we can then prioritize those according to the business impact they are likely to generate.
3. **Learning objectives can be difficult to assess.** In theory, learning objectives should be written so that they are easy to assess. They should have clear performance criteria and conditions. In practice, however, we have seen few learning objectives written this way. So, a fair amount of judgment is required to determine how to assess many learning objectives. For example, how can one assess if electronics associates can follow a five-step sales process? This objective, like many we see in practice, is high level, covering every aspect of the sales process. To assess such an objective, one must, in some way, break it

¹ By “proficient novice,” we mean someone who can competently handle most cases and who can recognize outliers and call for help.

down. Is it adequate if sales associates can name the steps? Identify what step to perform next when in a sales situation? Demonstrate the steps? Perform them in an actual sales situation? Handle exceptions that require one to backtrack in the process? In concept, one can break any high-level learning objective down into very specific sub-objectives. In practice, such detailed breakdowns are rarely created. Hence, it is difficult for business sponsors and training managers to develop a concrete and shared understanding of whether a piece of training met its objectives (Phillips, 1997).

In sum, learning objectives provide an effective method for stating a desired end state. However, they fall short as a way to scope training because they do not indicate the changes a piece of training should create, make it easy to prioritize which changes to include in training, or make it easy to concretely assess whether they have been achieved. In practice, training scoped using learning objectives often gets scoped too broadly, resulting in training which is “a mile wide but an inch deep.”

The Critical Mistake Approach

Changing behavior can be difficult. So, when scoping training, it is best to identify a few important and specific changes to address rather than attempt to cover content broadly. Based on this notion, **NIIT CognitiveArts** developed **Critical Mistake Analysis (CMA)**. **CMA** identifies specific **behavioral changes** for training to address and enables managers to assess which of these are significant enough to include in a piece of training.

CMA enables managers to work much like a homeowner when rehabbing a house on a limited budget. A homeowner may start by generating a long list of desired improvements to make. But instead of trying to implement many changes on the cheap, homeowners typically implement a few changes that will have the biggest impact and do those thoroughly. So perhaps the bathroom gets upgraded but the molding does not get stripped and the aluminum siding does not get upgraded to wood. Similarly, in CMA, managers **identify a number of specific behavioral “mistakes”** that occur in the field and so might be worth remediation. For example, when investigating digital camera sales, one might find that associates sometimes inadvertently confuse customers by

letting them handle non-functional “demo” cameras (which don’t react when the customers start pressing buttons).

Once a manager has identified a list of mistakes, CMA provides a method to **prioritize** them to determine which to address via training (or other learning solution). Table 1 illustrates the output from this process. This table is based on an actual client engagement. It shows how one can take a set of critical mistakes and identify the value of providing training on each. **The mistakes in red are those that the Business Sponsor and Training Manager have agreed to address.** The others, while real, are judged as too low-value to include in the training.

Critical Mistake	Value Drivers			Projected Value (\$K)
	Frequency	Impact	Addressability	
1 Provide incorrect answer to a question	2,955	\$67	30%	\$59
2 Criticize the merchandise	1,909	\$71	30%	\$41
3 Show a product before diagnosing need	3,000	\$37	30%	\$34
4 Interrupt one customer to handle another	2,136	\$50	30%	\$32
5 Fail to get answer to a question	3,000	\$65	15%	\$29
6 Not reserving an Out of Stock item	2,455	\$70	15%	\$26
7 Ignore one customer handling another	2,636	\$64	15%	\$25
8 Ignore a browsing customer	2,727	\$59	15%	\$24
9 Ignore a customer while doing other tasks	2,000	\$65	15%	\$19
10 Show only one product	2,545	\$22	30%	\$17
11 Bother a customer who wants to browse	1,227	\$38	30%	\$14
12 Greet with a closed question	2,682	\$14	30%	\$11
13 Let customer handle non-functional display property	3,227	\$9	30%	\$9
14 Leave the department for over 30 seconds	1,227	\$11	15%	\$2
Total	33,727			\$343

Table 1: Example Critical Mistake Charter (Retail Industry)

The leftmost column contains the mistakes themselves. The rightmost column contains an estimate of the **value of providing training** for each mistake. As you can see, the Critical Mistakes follow something akin to the 80/20 rule. **A few mistakes account for most of the value.** In the example Critical Mistake Charter shown, the value of training the highest impact mistake (the top line) is two orders of magnitude larger than the value of training the smallest impact mistake (the bottom line). This is not unusual. **The top few mistakes typically account for most of the impact.**

The middle columns show how we estimate the value of training each mistake. The estimate employs three “**value drivers**” for each mistake. The estimated value of training a mistake equals the product of:

1. The **frequency** of the mistake (how often it happens)
2. The **impact** (how much harm it creates), and
3. The **addressability** (how much we can reduce the frequency through training).

To get the first two value drivers, we conduct field research and review the results with Subject Matter Experts. These two value drivers quantify our understanding of the economics of the business. In essence, they enable the Training Manager to say ***“If we could entirely eliminate these errors, here is what your Subject Matter Experts believe it will be worth to you.”***

The third value driver is different. It captures our ability to create change through learning. As such, it is the province of the training department and we estimate it ourselves. Some mistakes are easy to eliminate; others are not. For instance, it is relatively easy to eliminate mistakes of judgment (e.g., giving a model camera to a customer), but quite difficult to eliminate mistakes that are caused by improper incentives (e.g., having store associates focus on customers when they are evaluated only on whether they keep the shelves stocked) (Mager, 1997). We estimate this value driver using our past with similar kinds of mistakes.

Once we create the **Critical Mistake Charter**, the Business Sponsor and Training Manager can use it to make concrete, cost-benefit tradeoffs in setting the size of the program. The Training Manager can use the charter to establish credibility with the Business Sponsor: ***“Here are the economics of how much training is worth for each of these mistakes. You’re people have validated it.”*** The Training Manager can then use the charter to establish scope: ***“You asked for a two-hour program. Here is how many Critical Mistakes we can cover in that time.”*** Finally, the Training Manager can use it to proactively recommend adjustments to scope in a way that is readily understandable by the Business Sponsor, ***“If you would like to include more Critical Mistakes, I can provide a larger training program. If you would like less, I can reduce the cost. Given the Critical Mistake Charter, I would recommend X.”*** For

example, the Training Manager and the Business Sponsor might make the agreement illustrated in Table 3 below. Here, the red line indicates that the Business Sponsor and Training Manager have agreed to set the cutoff for what mistakes to include at a value of \$20k per year per mistake. Given this, they have chosen to include in scope the seven mistakes that have a greater value (indicated by the red boxes).

Through such a conversation, the **Training Manager can come to a mutual agreement with the Business Sponsor**. The Business Sponsor agrees to the cost of poor performance and agrees to invest to reduce critical mistakes. In turn, the Training Manager promises to reduce critical mistakes by the amounts estimated.

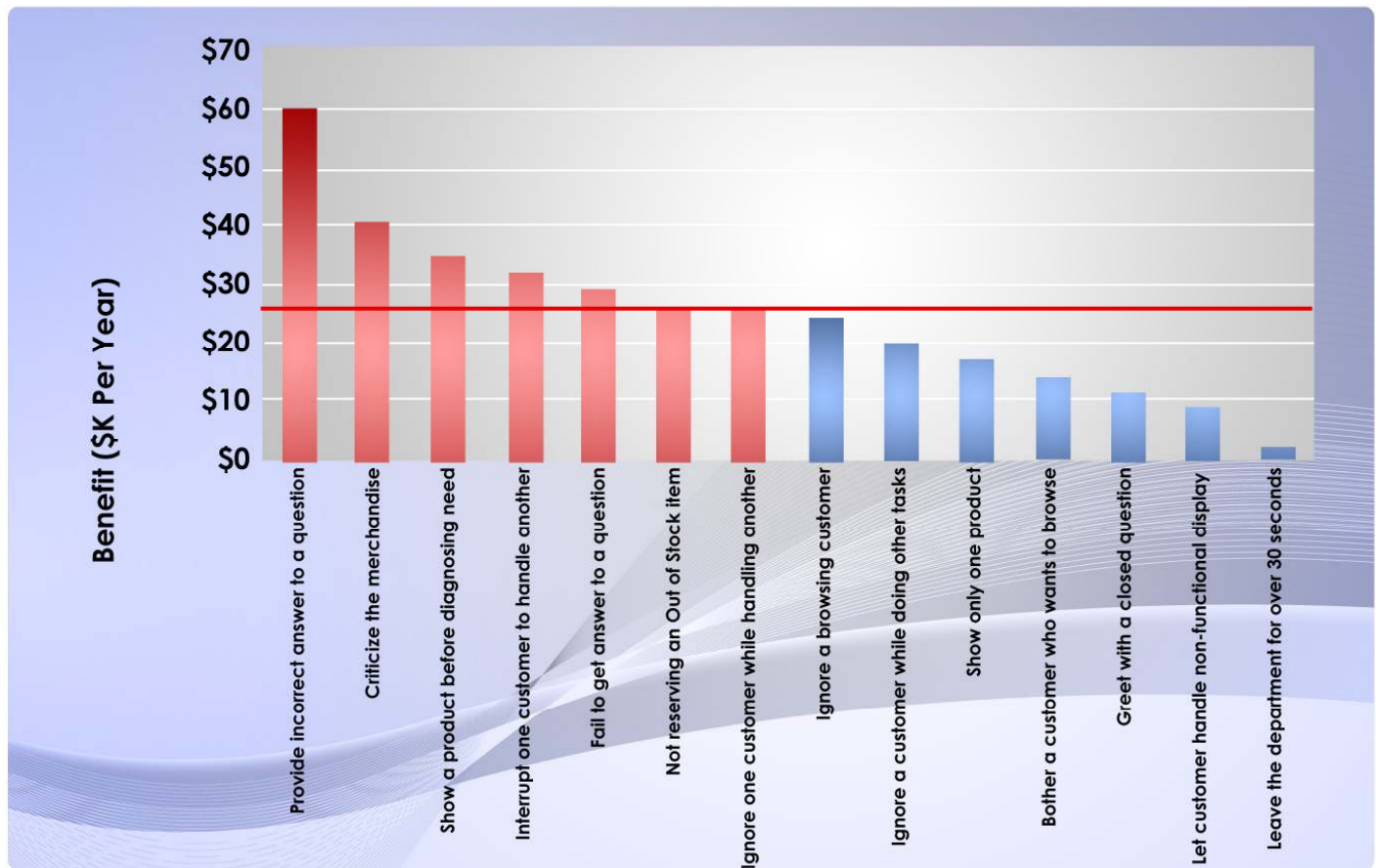


Table 2: Projected Benefit of Providing Training for Each Critical Mistake

The Critical Mistake Charter provides a type of service-level agreement between the two. To evaluate results, the Training Manager takes on a simple charge: did the frequency of mistakes actually go down by the amounts promised?

The Qualitative Version

In the example above, we have shown a Critical Mistake Charter that uses quantified estimates, resulting in a projection of the dollar value benefits of training. Frequently, instead of quantifying the value drivers, we use qualitative values. Given the wide gaps in value between the highest-impact and lowest-impact mistakes, if our goal is simply to identify which mistakes to include in training, the qualitative version performs well in enabling us to separate out the highest impact mistakes from the others. Table 2 contains an example taken from the insurance industry.

Critical Mistake	Value Drivers			Projected Value (\$K)
	Frequency	Impact	Addressability	
1 Not asking broker to pre-qualify	H+	H+	H	H+
2 Not responding first to high-priority brokers	H	H+	H	H+
3 Waiting for "free time" before returning calls	H+	H	H	H
4 Waiting for "need by" date ask follow-up questions	H+	H	H	H
5 Not investigating existing relationship with broker	M+	H	H	H-
6 Not considering competitors' uw practices	H	M	H	H-
7 Making excuses for service issues	M+	M	M	M+
8 Quoting when you feel you will not succeed	M+	M	H	M+
9 Not preparing to answer broker objections	M+	M	M	M
10 Not asking for background about broker's business	M	M	M	M
11 Sticking only to broker's current needs	M+	M	M	M
12 Using inappropriate terminology	M-	M	M	M-

Table 3: Example Critical Mistake Charter (Insurance Industry)

The qualitative version is particularly useful in domains where it is difficult to assign a value to impact. For example, in a management course such as coaching, it can be difficult to identify the impact of mistakes. If a manager fails to ask an open-ended question, what is the dollar value impact of that? Such questions are difficult to answer. The qualitative version of the Critical Mistake Charter allows us to apply the same style of 80/20 thinking in domains where hard numbers are difficult to generate.

Continual Improvement Using the Critical Mistake Approach

Many corporations maintain their training programs in much the same way they maintain the personal computers their staff uses. After setting up a new PC, businesses often do not really alter them much, maybe keeping the virus protection updated and not much else. They rarely update a PC to improve its performance. Rather, corporations simply wait for 3 years or so and then replace the PC with a next generation model. This is because PCs improve so quickly, the old ones are simply not worth trying to keep up to date. Similarly, after companies develop a core training program, many invest little in updating it. They may update the names of business leaders who shift roles, update policies as required for legal compliance, and so on. However, as with PCs, they rarely update training to improve its performance. Then, after a number of years, they discover that their training program is woefully out of date. This leads to the development of a whole new program, often built from the ground up.

We argue that business are better served when they treat core training programs more like they treat core IT applications. Core IT applications have lifespans of decades. Companies build significant business knowledge into these applications over time. They invest in them not only for low-level maintenance, but also to improve their functionality, adding business knowledge over time. Companies can make similar incremental improvements over time in core training programs. But to do this, managers need good methods to identify what improvements are worth making. We believe that the lack of such methods is a key reason why few companies do serious maintenance of training programs.

This is simply another instance of the need for an improved method for scoping. Accordingly, we are currently exploring using a modified version of Critical Mistake Analysis for this purpose. Each quarter we survey recent graduates of a training course to understand:

- How frequently do graduates make the mistakes already targeted by the training?
- What other mistakes are they making?
- What aspects of the training were least relevant to their actual job?

The answer to the first question is used to determine where the *effectiveness* of the training needs to be improved. For example, in the digital camera example, we might find that associates still answer many questions incorrectly even though we tried to train this mistake. In that case, the program needs to be redesigned to ensure it better prepares associates.

The answer to the second question is used to determine where the *scope* of the training may need to be extended. For example, in the digital camera example, we might find that many product-knowledge mistakes diminish over time as the product matures, but that salespeople will then begin to struggle as the boundaries between product types begin to blur and they become confused about when to recommend a standalone digital camera rather than a digital video camera or a cell phone with integrated camera.

The answer to the third question, which aspects of the training were least relevant, is used to determine where what has become excess training may be cut back.

The data is gathered using a simple online survey, which is inexpensive to administer. The data are summarized and reviewed during a quarterly meeting with Subject Matter Experts. This method enables the training group to ensure that the business impact of training remains high, with new requirements being addressed while extraneous content is eliminated. It moves from simple training maintenance to a philosophy of continual improvement. In essence, it treats training as a quality improvement initiative, with a long-term focus on finding the most pressing quality issues currently facing performers and eliminating them.

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NIIT, Inc.'s Enterprise Learning Solutions Company delivers innovative strategies that help clients accelerate business impact. Our clients count on our advisory and learning services, technology tools, and custom content to improve time to performance for employees, customers and partners.

We use cutting-edge instructional design and our Critical Mistake Analysis method to deliver award-winning solutions, technology and services. Together with our subsidiaries, Cognitive Arts and Element K, our Global Talent Development programs help clients achieve real-world skills to better compete in today's market.

Established in 1981, NIIT is known globally as the number one choice for strategic learning solutions. Our clients include the world's leading education, technology, publishing and Fortune 500 companies. NIIT has won over 37 awards, including 12 Brandon Hall awards.

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