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White Paper

Training Needs Assessment:
*Process and Tools to Help you
Identify and Prioritize Training
Needs Quickly*

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Training needs assessment:
Process and tools to help you identify and prioritize training needs quickly

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Abstract: Proper front-end analysis can be tedious and time-consuming. As a result, managers tend to skip the analysis and make ill-informed decisions, which can negatively affect the rest of the instructional design process. A quick and dirty method for prioritizing training needs is needed in order for training managers to allocate resources appropriately and make sound upfront decisions regarding the scope, depth, and breadth of training. I offer a 3-step process and a set of tools that can help managers conduct a training needs assessment that will inform their decision-making without resorting to full-blown instructional analysis.

Introduction

Imagine that an organizational stakeholder comes to you and expresses a need for training. One response might be to initiate a needs assessment project (Rossett, 1999), in which current performance is compared against optimal performance, gaps are identified and quantified, root causes are identified, and interventions are explored. Based on this front-end analysis, training may or may not be identified as an intervention that will address the performance gap. More often than not, sound performance and root cause analysis reveals that organizational problems have multiple causes that are multi-faceted, inter-related, and systemic. Usually, performance problems result from a combination of environmental factors, such as poorly communicated expectations, inappropriate reward systems, resource shortages, lack of motivation, poor organizational alignment, and ineffective workflows (Gilbert, 1978; Harmon, 1984; House, 1971; Moller, Benscoter, & Rohrer-Murphy, 2000; Prester & Moller, 2001; Rockwell, Schauer, Fritz, & Marx, 1999; Rothwell, 1995; Rothwell, 1996; Rummier & Brache, 1990). When skill gaps do exist, formal training is one of many skill development alternatives, such as coaching,

mentoring, job rotation, and job shadowing. Even formal training can take many forms, ranging from traditional instructor-led courses to web-based asynchronous and synchronous virtual courses, to training delivered via wireless PDAs and cell phones. How do you decide what and how to train? This is when training professionals turn to another analytical tool, the training needs assessment. Unfortunately, while most managers see the benefits of data-driven decision making, they often lack the time, resources, and support for long and tedious analysis. Training managers need to be able to identify and prioritize training needs within a matter of days or weeks, not months... and they need to do it with minimal resources.

Rossett (1999) offers a solution that can help learning and performance professionals make use of front-end analysis without getting bogged down in analysis paralysis. Rather than employing large full-scale needs assessments, she proposes reducing “the daunting size of the effort by carving the planning process into more manageable and iterative bite size pieces....” (p. 4). Rossett goes on to describe a process and a set of tools for executing the performance analysis quickly and effectively. What Rossett has done for performance analysis, I hope to do for training needs assessments (TNAs). In this paper, I offer a process and tools for executing a TNA.

The goal of the TNA is primarily to identify and prioritize what skills need to be developed in training and to determine what specifications and resources will make the training successful. As shown in Figure 1, the TNA can itself consist of several bite size pieces of analysis, i.e., task analysis, learner analysis, and context analysis (Zemke & Kramlinger, 1982). Unfortunately, each bite can be rather laborious and time-consuming. Too often, managers skip the analysis and make ill-informed decisions, which can

negatively affect the rest of the instructional design process. A quick and dirty method for prioritizing training needs is critical if training managers are to allocate resources appropriately and make sound upfront decisions regarding the scope, depth, and breadth of training. It should be possible to inform these initial decisions without resorting to full-blown instructional analysis projects.

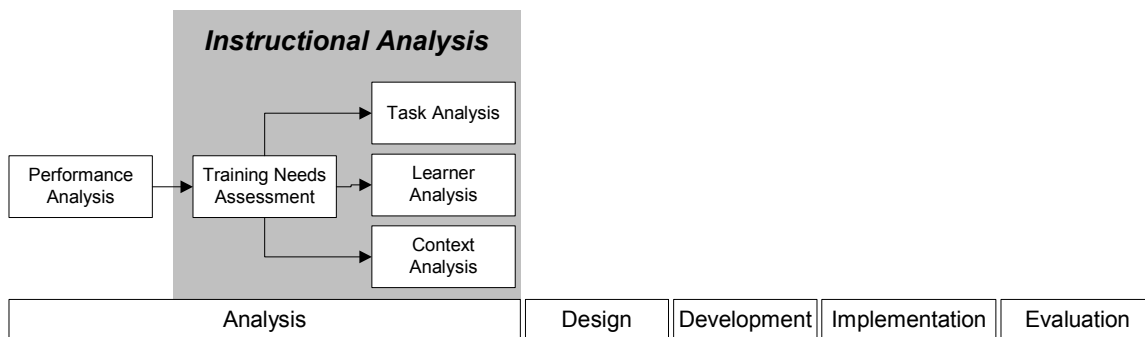


Figure 1. Process flow for front-end analysis within the broader instructional systems design (ISD) model, ADDIE

Case Example

Recently, I had an opportunity to implement a 3-step model with a client who was developing a curriculum to train a group of team leaders to become project managers. While team leaders were responsible for managing a highly-specialized team, the project managers chaired a multi-disciplinary team consisting of team leaders from various functional areas. Initially, the client used the job description to identify what skills the training program should address. While this intuitively made sense, most job descriptions fail to capture all of the essential tasks that make up any job. Instead, we

interviewed current project managers and spoke to others who had already (as part of a separate project) conducted observational research. We formed a panel of stakeholders, fleshed out the task list, then discussed and agreed upon a list of skills. The panel assigned difficulty and impact values. I worked with the client to classify the various skills. Next, we took the top 40 items from our worksheet (the IRC Worksheet) and placed them into a survey (the TNA Survey Tool). We emailed the survey to the team leaders. Unfortunately, we did not survey other stakeholder groups, which limited the usefulness of the data. Within a few days, we received most of the completed surveys back (response rate = 75%) and in a matter of minutes were able to generate the results.

The entire TNA took a little over 2 weeks. The results indicated that workers only perceived an immediate training need for half of the skills on the list. Based on this quick analysis, the number of topics in the proposed curriculum was cut by 60% from the original list of topics generated from the job descriptions. Job aids were created for some of the low-priority items. More classroom time was allotted to high-IRC/high-need skills to allow more time for practice, discussion, assessment, and feedback. The overall training time needed was cut from 78 hours (13 days) of seat time to 48 hours (8 days). This resulted in a significant cost savings to the training group as well as higher quality and more relevant training for the team leaders. Most importantly, more time and effort was expended on the skills that mattered most and less on those that mattered least.

A 3-Step Process

A TNA should first and foremost identify and prioritize the skills that need to be developed through the training. While a detailed knowledge of every task and sub-task is useful (Jonassen, Tessmer, & Hannum, 1999) and a thorough knowledge of the learning styles, cognitive ability, and other learner characteristics can inform the design of training (Jonassen & Grabowski, 1993), the training manager should be more immediately concerned with deciding what skills should be developed and what resource commitment is needed to make that training a reality. The 3-Step TNA Process (see Figure 2) answers these questions quickly and effectively.

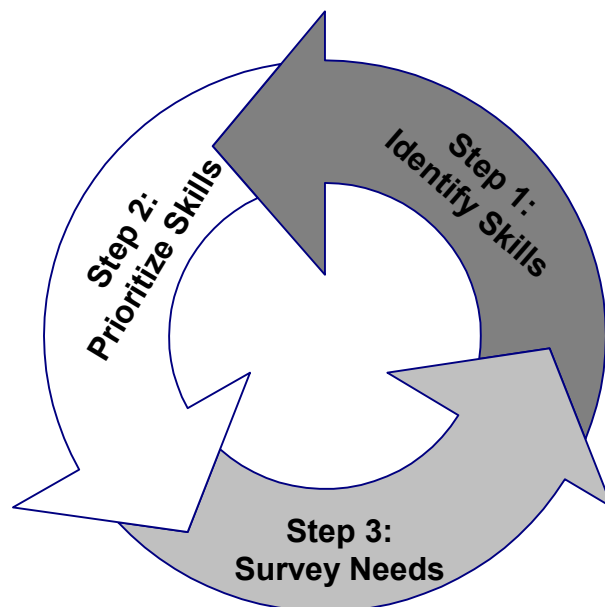


Figure 2. The 3-Step TNA Process for conducting training needs assessments

Step 1: Identify skills

In this first step, the manager identifies the critical skills needed in order to perform the tasks associated with a particular job, then for each task determines what skills are needed. While this seems simple, it is probably the most critical step in the entire instructional design process and is too often performed incorrectly if at all. Training is not development, it is not education, and it is not merely communication. Corporate training, unlike other educational endeavors, exists for the sole purpose of developing immediately-applicable job skills. If the skills being trained are not relevant, not job-specific, not immediately-applicable, or simply not critical, then training resources are simply wasted. Therefore, it is absolutely key that we develop training only for skills that are relevant, needed, and that contribute substantively to organizational performance.

The Observe and Chat Approach. The most effective task analysis practice is simple observation combined with informal interviews. Spend a day or two observing workers in their natural work environment and, whenever possible, talk to them about their work. In no time, the tasks become apparent. If you would like to formalize this process, Zemke and Kramlinger (1982) provide a great set of tools for documenting and mapping workflows. At this stage, however, it is sufficient simply to identify the tasks that you observe and absorb the action. You can learn more about the tasks through secondary sources, such as job descriptions, performance evaluations, organizational metrics, industry standards, and benchmarks, but these are not substitutes for observing actual work. Certainly, this step can involve a full-blown tasks analysis (Jonassen et al., 1999; Zemke & Kramlinger, 1982) and there are many tools available, but a full-blown

analysis is not necessary simply to identify the major tasks and sub-tasks. Detailed behavioral algorithms, step-by-step task descriptions, and stimulus-response (S-R) chains are overkill at this point. Once the scope of the training has been narrowed, then more detailed analysis of tasks can be helpful. At this stage, however, it can be easy to get lost in the details. Simply observe performers performing and when possible talk to them about what they do. Important questions to ask include:

- Why is it important to do this?
- When is this task necessary (and not necessary)?
- Have you ever made a mistake?
- If so, what happened (what were the repercussions)?
- How did you learn to do this?

The point of these questions is to gain a qualitative understanding of the task and the skills necessary to complete them. Making decisions about skill-based training without observing performers and understanding the performance context is a disastrous move. Relying on second-hand accounts from subject matter experts (SMEs) or third-hand process documentation is only marginally less dangerous.

From Tasks to Skills. Going from tasks to skills is critical. Let us consider the example of a professional baseball player. A good baseball player hits the ball, catches the ball, and throws the ball effectively. These are broad categories of tasks. For each task, there are many sub-tasks that a player needs to perform well in order to be considered good at that task. For example, a good hitter maintains a proper batting stance, anticipates the type of pitch, makes good decisions about when to swing, makes contact with the ball when swinging, and so on. Observing several good, bad, and average hitters and speaking with managers, players, and baseball experts will quickly reveal what tasks are necessary to be a good hitter. In order to perform these tasks and sub-tasks, baseball players need to have certain skills. A skill is a capacity to perform a

task, e.g., hitting skills, catching skills, understanding of the rules, situational understanding of plays, and the ability to translate hand signals from batting coach. After you have listed each task and major sub-task, identify the skills associated with each of them. This is where collaboration with SMEs can be helpful.

The IRC Worksheet. To facilitate the process of identifying and prioritizing skills, I have developed a deceptively simple electronic tool called the Instructional Resource Commitment (IRC) Worksheet (available at www.effectperformance.com). After listing the major tasks and sub-tasks in the IRC Worksheet, the manager lists the various skills needed in order to perform those tasks. Doing this should involve consultation with SMEs and stakeholders. I recommend forming a panel of representatives from each stakeholder group (including the workers) and brainstorming the list of skills. Again, this should come after the tasks have been identified through observation and chatting.

Figure 3 shows some of the skills identified for the task *Hitting the Ball*.

Task	Skill	Difficulty of Implementation	Potential of Impact
Hitting a baseball	Remains positive even when down in the count	5 Very High	5 Very High
Hitting a baseball	Anticipating the pitch correctly	5 Very High	5 Very High
Hitting a baseball	Making solid contact with the ball	5 Very High	5 Very High
Hitting a baseball	Using appropriate hitting stance consistently	3 Moderate	4 High
Hitting a baseball	Beating the throw at first base	4 High	4 High
Hitting a baseball	Running fast	5 Very High	4 High
Hitting a baseball	Translating batting coach's hand signals	2 Low	3 Moderate
Hitting a baseball	Remember the pitch count (e.g., 2 strikes, 1 ball)	1 Very Low	2 Low

Figure 3. Excerpt from the IRC Worksheet with examples of skills

Step 2: Prioritize skills

Once the stakeholder panel has generated a list of skills, have them discuss and agree upon ratings for each skill's *Difficulty of Implementation* and *Potential of Impact*.

Difficulty of Implementation. Is the nature of the learner's task complex, ill-structured, counter-intuitive, or just plain difficult? Will learners encounter a great deal of resistance to this when they go to transfer what they have learned to real-life work settings? All of these factors can combine to make a seemingly simple task difficult to implement. Conversely, seemingly complex tasks may actually be easy to implement because workers receive a great deal of on-the-job practice, coaching, and feedback. Managers should direct their instructional resources to the skills that are most difficult to implement and avoid wasting resources on skills that workers can develop on-the-job through practice, coaching, etc. Instructional resources include the costs associated with direct instruction, practice, discussion, assessment, and feedback. As training managers know, these resources are expensive and time-consuming to develop and implement effectively.

Potential of Impact. Will the successful transfer of this skill to the workplace generate high returns? Will it reduce costs? Will it improve morale and other intangibles? Conversely, will failure to develop this skill have significant negative consequences in terms of costs, etc.? While all skills may be important, some have the potential to impact the workplace more than others. Managers should focus the bulk of their instructional resources on the most critical skills, the ones that have the highest return on investment for the organization.

Type of Skill. After the panel has assigned ratings to each skill, take some time on your own to classify each skill. A better understanding of the skill will yield a better estimate of the resources needed to develop that skill. Skills can be cognitive (purely mental), motor (purely physical), psychomotor (both cognitive *and* motor), or attitudinal (Zemke & Kramlinger, 1982).

- *Cognitive Skills* - Refer to purely mental tasks – such as remembering, understanding, analyzing, synthesizing, applying ideas in different contexts, and making mental calculations – which are common skills for knowledge workers.
- *Motor Skills* - Are purely physical skills such as walking, moving, grasping objects, and running. Classroom training, as we typically think of it, has little impact on motor skills... practice, practice, practice with a healthy dosage of coaching is what improves motor skills. Motor skills do not require any knowledge or conscious thought, which is rare in the workplace (even flipping burgers requires *some* thought).
- *Psychomotor Skills* - In the workplace, many skills involve a combination of mental and physical abilities. Most procedural tasks, for example, involve knowledge of the procedure as well as the physical ability to carry out the task.
- *Attitudinal Skills* - More often than not, training involves changing behavior. However, the success of this change in behavior is dependent upon a change in attitude as well. Changing someone's beliefs, norms, and preferences - their attitudes - is very difficult and demands a great deal of instructional resources.

The IRC Worksheet includes two additional columns in which the manager is asked to classify the *Type of Cognitive Process* and the *Type of Knowledge* involved. These two dimensions stem from a taxonomy (see Figure 4) developed recently by a pre-eminent group of researchers (Anderson et al., 2001; Krathwohl, 2002). Their model is based on Bloom's Taxonomy (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956), the oldest and most commonly used taxonomy of learning outcomes. For each cell in Figure 4, there are different learning strategies available. Moving from *Factual Knowledge* to *Metacognitive Knowledge* and from *Remember* to *Create*, the strategies generally become elaborate and more resource-intensive. For example, developing an individual's ability to evaluate a process (cell C5) might involve giving that individual multiple-cases in which they evaluate related processes, compare and discuss their evaluations with colleagues, instructors, and experts, and modify their evaluations based on feedback. This process may need to be repeated many times with many different processes in order for that individual to become a truly skilled evaluator of that type of process.

	<i>1. Remember</i>	<i>2. Understand</i>	<i>3. Apply</i>	<i>4. Analyze</i>	<i>5. Evaluate</i>	<i>6. Create</i>
<i>A. Factual Knowledge</i>						
<i>B. Conceptual Knowledge</i>						
<i>C. Procedural Knowledge</i>						
<i>D. Metacognitive Knowledge</i>						

Figure 4. A taxonomy of learning outcomes adapted from Krathwohl (2002: p. 216)

Type of Cognitive Process. Cognitive process refers to the internal mental process that the learner will need to engage in to accomplish the learning task you set forth (Krathwohl, 2002). There are different instructional strategies associated with different cognitive processes, and generally the higher level the cognitive process involved, the more instructional resources are needed.

- *Remember* - Simply retrieving knowledge from long-term memory, rote memorization.
- *Understand* - Simply determining the meaning of messages, such as when learning new terminology and concepts. Action verbs include interpret, exemplify, classify, summarize, infer, compare, and explain.
- *Apply* - Carrying out, implementing, or executing a task in a given situation, preferably a real-life work situation.
- *Analyze* - Breaking down material into its component parts and detecting how those parts relate to each other and the larger whole. Verbs here include differentiating, organizing, comparing, attributing, and dissecting.
- *Evaluate* - Making judgments based on criteria and standards. Testing hypotheses, inquiring, checking, and critiquing are all appropriate action verbs.
- *Create* - Putting elements together to form a novel, coherent whole or building something original.

Type of Knowledge. Different types of knowledge can range from granular and concrete to complex and abstract, requiring different strategies. The higher the level of knowledge, generally the more instructional resources are required to develop it.

- *Facts* (Factual Knowledge) - Basic facts that learners must commit to memory. This can include knowledge of terminology, specific details and elements.
- *Concepts* (Conceptual Knowledge) - Interrelationships of different facts within a broader context, the big picture. This can include knowledge of classifications, categories, principles, generalizations, theories, models, and structures.
- *Procedures* (Procedural Knowledge) – *How-to* knowledge, processes, methods, techniques, and the criteria for when, where, how, and why to use them.
- *Metacognitive Strategies* (Metacognitive Knowledge) - Know thy self... knowledge of cognition and awareness of one's own learning process. This can include strategic knowledge and awareness of one's own personal characteristics.

IRC Rating. So how does classifying the skills help managers prioritize training needs? When categorizing skills in the IRC Worksheet, the manager assigns numeric values to each dimension. The IRC Rating is an average of four items: the *Difficulty of Implementation*, *Potential of Impact*, *Type of Cognitive Process*, and the *Type of Knowledge*. The higher the IRC Rating, the more instructional resources are called for by that skill. The manager has simply to sort the worksheet in descending order by the IRC Rating. The more critical, more demanding skills will rise to the top of the list, while the less critical, less demanding skills will fall to the bottom. Low IRC items are generally good candidates for job aids, coaching, and other low-cost interventions. The high IRC items are the ones that should receive the most attention and resources going forward. They represent the most critical, most demanding skills for the job. Improving these skills will yield the highest returns for the organization.

Difficulty of Implementation	Potential of Impact	Type of Skill	Type of Cognitive Process	Type of Knowledge	IRC Rating
5 Very High	5 Very High	4 Attitudinal	7 Alter Attitude	5 Attitude	5.50
5 Very High	5 Very High	1 Cognitive	3 Apply	3 Procedures	4.00
5 Very High	5 Very High	3 Psychomotor	2 Understand	3 Procedures	3.75
3 Moderate	4 High	3 Psychomotor	3 Apply	3 Procedures	3.25
4 High	4 High	3 Psychomotor	2 Understand	3 Procedures	3.25
5 Very High	4 High	2 Motor	0 Motor Skill	0 No Knowledge	2.25
2 Low	3 Moderate	1 Cognitive	2 Understand	1 Facts	2.00
1 Very Low	2 Low	1 Cognitive	1 Remember	1 Facts	1.25

Figure 5. Excerpt from IRC Worksheet depicting the IRC Rating criteria

Step 3: Survey needs

While the IRC rating provides valuable insight, it does not answer the question of what training workers actually need. Step 3 involves taking the highest IRC-rated skills and surveying workers, managers, and other stakeholders to find out where perceived training gaps exist. To help with this, I have developed the TNA Survey Tool (see Figure 6). The tool makes it possible to survey a wide range of respondents via email. In addition, the tool automates the analysis, making this a relatively easy step in the process. Directions for using the TNA Survey Tool are embedded in the file itself.

The following is a list of tasks. Rate to what degree you feel you need training in these areas. For each task, check a response by typing an "X" in the appropriate cell.

Training Needs		Unsure 0	Need this Training right away to <u>transition</u> to my new role! 5	Need Training but the need is <u>not urgent</u> 4	No training needed but written instructions <u>and</u> coaching would be helpful 3	No training needed but <u>written</u> instructions would be helpful 2	No training or learning support is needed 1
		1	Enter Task or Topic Here				
2	Enter Task or Topic Here						
3	Enter Task or Topic Here						
4	Enter Task or Topic Here						

Figure 6. Excerpt of the TNA Survey Tool

I recommend that managers survey at least three groups of stakeholders: workers, their supervisors, and their clients (internal or external). Each group will provide different insights into the training needs of the workers. In addition to these three groups, managers might also survey SMEs, higher-level managers, and subordinates of the workers in question. Having multiple respondent groups enables the manager to

triangulate results and thereby validate findings, as well as gain more stakeholder buy-in. Results should also be compared against more “objective” standards, if available, such as actual performance metrics (often collected during the initial performance analysis).

In situations where workers have job-relevant experience, their input will be the most important and should carry the most weight. If the majority of workers rate a particular skill as not requiring training, giving them the training anyway can create resentment, unless you can make a convincing argument. This is where it will help to have supporting data from other respondent groups. Without corroboration from other respondent groups, however, it is risky to overrule workers. In fact, it is better not to include that skill on the survey if you know that that skill will be included in training regardless of worker responses (e.g., it is mandated by upper management). In situations where workers are new to the job, their input would understandably carry less weight, and so you are more reliant on the input of other stakeholders.

Summary

The 3-step TNA process involves identifying tasks and their associated skills, prioritizing those skills with the help of the IRC Worksheet, and surveying multiple stakeholder groups using the TNA Survey Tool. Step 1 ensures that your training is anchored in real-life job performance. Step 2 ensures that you focus your future analysis efforts and the bulk of your instructional resources on the skills that have the greatest impact on the organization, that are most difficult to implement, and that involve the most resource-intensive strategies. The IRC Worksheet helps you narrow the list of skills to a manageable number that represents key success factors. Step 3 ensures that you only provide formalized training, an expensive undertaking, to address skill gaps that are recognized by the key stakeholders. All in all, this process helps managers quickly prioritize training needs before making additional investments in analysis, design, and development and focuses those efforts on the skills that matter the most.

References

- Anderson, L. W., Krathwohl, D. R., Airasian, P. W., Cruikshank, K. A., Mayer, R. E., Pintrich, P. R., Raths, J., & Wittrock, M. C. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's Taxonomy of Educational Objectives (Complete Edition)*. New York: Longman.
- Bloom, B. S., Engelhart, M. D., Furst, E. J., Hill, W. H., & Krathwohl, D. R. (1956). *Taxonomy of educational objectives: The classification of educational goals. Handbook 1: Cognitive Domain*. White Plains, NY: Longman.
- Gilbert, T. F. (1978). *Human Performance Engineering: Worthy Performance*. New York: McGraw-Hill.
- Harmon, P. (1984). A hierarchy of performance variables. *Performance and Instruction*, 23(10), 27-28.
- House, R. J. (1971). A path-goal theory of leadership effectiveness. *Administrative Science Quarterly*, 321-339.
- Jonassen, D. H., & Grabowski, B. L. (1993). *Handbook of Individual Differences: Learning & Instruction*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Jonassen, D. H., Tessmer, M., & Hannum, W. H. (1999). *Task Analysis Methods for Instructional Design*. Mahwah, NJ: Erlbaum.
- Krathwohl, D. R. (2002). A revision of Bloom's Taxonomy: An overview. *Theory into Practice*, 41(4), 212-218.
- Moller, L., Bencoter, B., & Rohrer-Murphy, L. (2000). Utilizing performance technology to improve evaluative practices of instructional designers. *Performance Improvement Quarterly*, 13(1), 84-95.
- Prester, G. E., & Moller, L. (2001). Organizational alignment supporting distance education in post-secondary institutions. *The Online Journal of Distance Learning Administration*, 4(4).
- Rockwell, S. K., Schauer, J., Fritz, S. M., & Marx, D. B. (1999). Incentives and obstacles influencing higher education faculty and administrators to teach via distance. *Online Journal of Distance Learning Administration*, 2(4).
- Rossett, A. (1999). *First things fast: A handbook for performance analysis*. San Francisco, CA: Jossey-Bass.
- Rothwell, W. J. (1995). Identifying and solving human performance problems: A survey (unpublished survey results). *Pennsylvania State University*.
- Rothwell, W. J. (1996). *Beyond training and development: State-of-the-art strategies for enhancing human performance*. New York: AMACOM, a division of the American Management Association.
- Rummler, G., & Brache, A. P. (1990). *Improving performance: How to manage the white space on the institution chart*. San Francisco, CA: Jossey-Bass.
- Zemke, R., & Kramlinger, T. (1982). *Figuring Things Out: A Trainer's Guide to Needs and Task Analysis*. Reading, MA: Addison-Wesley.