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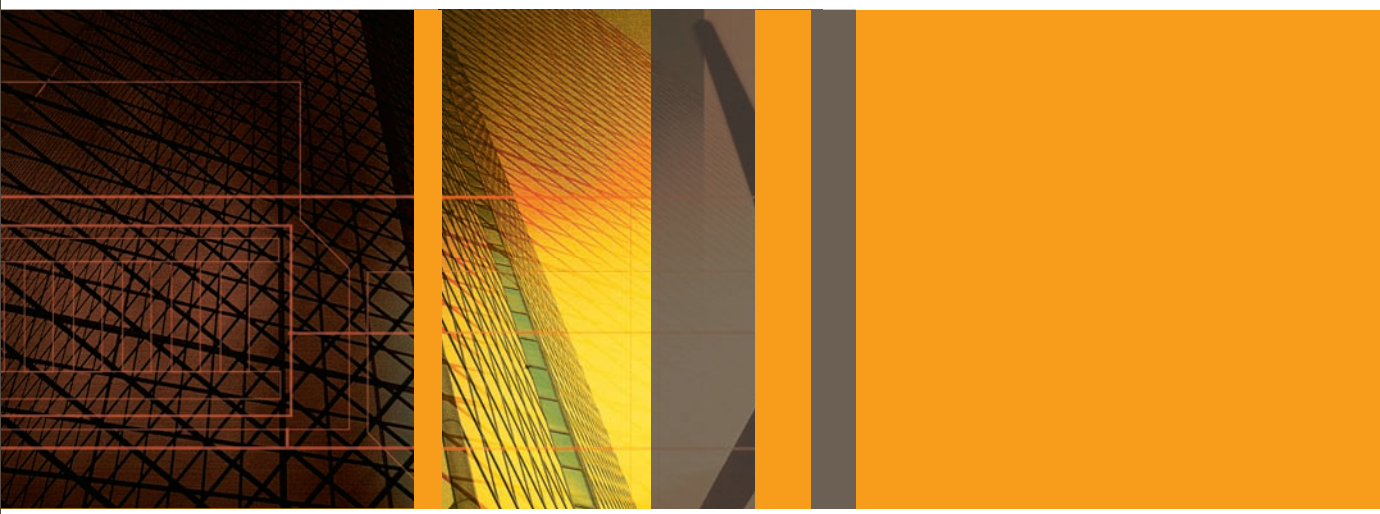
Essential resources for training and HR professionals

WENDY L. COMBS *and* BETTINA M. DAVIS

DEMYSTIFYING TECHNICAL TRAINING



PARTNERSHIP, STRATEGY, *and* EXECUTION

About This Book

Why is this topic important?

This book represents one of very few resources for examining technical training from both a strategic and a tactical perspective. There are a few books available on how to develop technical training courses, but none on how to lead and manage the technical training function and develop and deploy complete technical training solutions. Technical training is very different from soft-skills training and management development. For example, partnerships with technical experts are required due to two core competencies involved in technical training: technical and training competencies. Technical experts provide the technical skills, and training professionals provide the training knowledge. Because of this and many other key differentiators between technical and non-technical training, technical training must be managed differently to be successful and contribute to the bottom line. These differentiators, along with suggestions on how to address them and many other key concepts relevant to technical training are documented for the first time in this book, which will enable the reader to respond proactively to the complexities and intricacies of technical training.

What can you achieve with this book?

By applying the concepts and suggestions in this book, the reader can build and manage a technical training organization either within HR or the business that has

- Strong relationships and partnerships with the business it serves
- Vision, mission, strategic objectives, guiding principles, business and operating models, roadmap, and portfolio
- A technical training strategy that directly aligns to business priorities
- The people, process, and technology capabilities to execute the training strategy
- Training professionals with training, business, technical and technical functional, project management, and relationship skills
- Collaboration and governance structures, including a steering committee and extensive technical expert and stakeholder involvement in training activities
- A budget for technical training that is supported and funded by stakeholders

- Training needs assessment, prioritization, design, development, and evaluation processes
- A proactive marketing plan for technical training
- High credibility and increased quality and relevancy of technical training solutions

How is this book organized?

This book is organized into ten chapters, sequentially organized by topic in the manner that would be used when building a technical training organization. The first three chapters focus on setting the stage and defining technical training, explaining the key differentiators associated with technical training, and clarifying the challenges and opportunities of technical training. The next three chapters cover key planning steps and provide the basis for effective stakeholder engagement, strategy development for technical training, and funding the technical training agenda. Successive chapters focus on execution and cover staffing; analysis, design, and development; marketing; and delivery and evaluation of technical training—all within the context of how these practices are different for technical training than other types of training and making an elusive concept approachable and manageable.

About Pfeiffer

Pfeiffer serves the professional development and hands-on resource needs of training and human resource practitioners and gives them products to do their jobs better. We deliver proven ideas and solutions from experts in HR development and HR management, and we offer effective and customizable tools to improve workplace performance. From novice to seasoned professional, Pfeiffer is the source you can trust to make yourself and your organization more successful.

Essential Knowledge Pfeiffer produces insightful, practical, and comprehensive materials on topics that matter the most to training and HR professionals. Our Essential Knowledge resources translate the expertise of seasoned professionals into practical, how-to guidance on critical workplace issues and problems. These resources are supported by case studies, worksheets, and job aids and are frequently supplemented with CD-ROMs, websites, and other means of making the content easier to read, understand, and use.

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Pfeiffer also recognizes the remarkable power of new technologies in expanding the reach and effectiveness of training. While e-hype has often created whizbang solutions in search of a problem, we are dedicated to bringing convenience and enhancements to proven training solutions. All our e-tools comply with rigorous functionality standards. The most appropriate technology wrapped around essential content yields the perfect solution for today's on-the-go trainers and human resource professionals.

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Essential resources for training and HR professionals

Demystifying Technical Training

Partnership, Strategy, and Execution

WENDY L. COMBS AND
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FOREWORD

THE TRAINING INDUSTRY is especially good at segmentation. In thirty years of 'practicing' in the field, working for companies like Cisco Systems, Oracle Corporation, NetApp, Sun Microsystems, and NeXT Corporation in executive and leadership positions, I knew training professionals in manufacturing, sales, sales engineering, professional services, call centers, customer service, products, IT, engineering, leadership, management, communications. . . . Well, you get the idea.

We have institutionalized specialization and segmentation by job title, by industry, by function, and by any other delimiter that we have been able to identify because in each instance "It's different here."

Perhaps the largest gap, the most universal and undisputed segmentation, has been between human resources (HR) training, often known as "soft skills," and technical training, the latter of which has so many nuances and characteristics that it does not have an "often-known-as" alternative. It's a single umbrella name, covering a vast—almost indefinable—list of training efforts.

These two camps are seldom related to each other within the enterprise. And even if they are, and happen to reside in the same organization, there is a multitude of challenges associated with that. They all too often operate completely independently, and to the detriment of the company they both are trying to serve.

Why is that? There are probably more answers to that question than anyone should want, and in the end, it does not really matter why. What does matter is that the segmentation results in communication breakdowns, duplication of systems, clumsy use of resources, and gaps in employee effectiveness. These are symptoms of the real impact of segmentation and specialization: impaired execution. The enterprise cannot easily overcome strategic or tactical execution problems that stem from institutional indifference or outright conflict in the training function(s). In this instance, it is not even easily diagnosed, so it is even more difficult to fix. It is assumed that HR and technical training are "vastly different" and not compatible; ask the experts and they will confirm it.

This book, *Demystifying Technical Training*, takes a bold and timely step toward debunking the myth that these two worlds must exist separately. In fact, success of the enterprise may hinge on the strategic partnership and collective execution of training in a more holistic way than our traditional approaches have been able to accomplish in the past.

A more unified approach to training employees and partners, a more holistic approach to the endless learning that individuals pursue to be successful in their jobs and careers, is not separate from the success of the company. It may seem so because of language differences or some other artificial barrier erected by one or both sides over the decades, but it just isn't so. It is, in fact, the opposite: individual successes are integral to organizational success.

People are at the core of the charter of both sides, and the success of the enterprise is the goal of both sides. So why is there such a chasm between the non-technical and technical training worlds?

I think it is part "tradition" and part ignorance.

I was very excited by the premise and the promise of this book: breaking down the barriers between non-technical and technical training. Traditional, institutional behavior can only be changed by informed and motivated people.

The authors have done extensive interviews, gathered case studies, and put definitions to many of the terms that make up the gelatinous mass of "training language." They force us to see the similarities and the overlaps between non-technical and technical training. They make obvious the real differences that exist so that a productive dialogue can take place between two factions that should be organizational allies, but have all too often been antagonists or passive-aggressive isolationists.

This book goes a long way toward informing us in the training field. It is up to us to generate that motivation and change the status quo, to bridge that chasm. We owe it to the companies we work for, the people who are our audiences, and to ourselves.

Tom Kelly
Training and Learning Industry Consultant

PREFACE

"**IT IS GREAT YOU ARE FULFILLING YOUR DREAM** of writing a book" was the response many gave when we mentioned our book-writing endeavor. Writing a book wasn't a dream for either of us—but we both were excited about seizing the opportunity to put all of our learnings and practices into a permanent resource for others to use. Now, many months and long hours of writing later, we are both grateful that we persevered in putting our words—and the thoughts, ideas, and suggestions of many others in the technical training world—down on paper. We are passionate about the importance of skills development and hope readers will find the "demystification of technical training" to be insightful.

This book is the culmination of over two decades of training and talent management practice at Intel Corporation, Tektronix, Cisco Systems, Nortel, and several consulting companies. Over the years, we led and oversaw the development and execution of:

- Global talent management and succession planning processes
- Strategic training planning

- Complete training portfolios, including personal effectiveness, business and technical training
- A robust online competency and career development system, including curriculums, self-assessment, training, and career paths
- A VI program of more than five hundred internal trainers and more than one hundred vendors
- Transition and change management plans
- Development programs such as mentoring, new hire integration, and certification
- Multiple performance management systems
- Many customized training processes, practices, and policies
- Global classroom, online, and blended training delivery to organizations ranging from few to more than eight thousand employees

At Intel, where we worked together, our training organization received numerous Intel divisional recognition and international training industry awards, including the Technology in Action Award: Exemplary Knowledge Management Practice (2007) from *Training* magazine, the Top 125 Training awards (2006, 2007) from *Training* magazine, and the Training Department of the Year Award from the United Kingdom Institute of IT Training (2006). We also benchmarked and shared our "best practices" with numerous external training organizations and companies, the American Society for Training and Development (ASTD), and other HR societies and publications.

Suffice it to say that we learned a tremendous amount by leading training at various companies, through all of our successes, failures, reorganizations, transitions, hiring, downsizing, and "right" sizing. Our ambition was to preserve our learning in a book that would be of value to other training and HR professionals. We knew what worked well for us in leading a training function; however, we also knew that we needed to hear from technical training stakeholders in other companies and industries.

To broaden the scope of the book to all technical training and technical functional training and incorporate diverse perspectives, we interviewed and

surveyed hundreds of contacts we acquired who were familiar with technical training. In total, we held fifty interviews, which were very interesting discussions, with business executives and managers, technical experts, training professionals, and other thought leaders in training and HR. We also sent an online survey to training and HR professionals in Fortune 1000 and select global companies, many of whom were affiliated with TrainingIndustry.com. One hundred and eighty-three training and HR professionals participated in the survey and shared their experiences, practices, challenges, and successes with technical training. Throughout the book, we have inserted the voices of interviewees and survey respondents.

We also reviewed the existing literature on technical training, where it existed, to ensure we were not missing the mark on topics or making suggestions on topics that were already well addressed in the training literature.

The entire book-writing process from start to finish was effort- and time-intensive. Now that the book is at the bookstores and available to everyone who is interested, we can assuredly say it was worth the effort. We hope you, too, will find value in the concepts presented in this book.

Wendy L. Combs
Bettina M. Davis
May 2010

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WE CONSULTED WITH HUNDREDS of friends, colleagues, and experts in the preparation of this book, and we greatly appreciated their interest, openness, and willingness to help us explore the topic of technical training. We are particularly grateful for the positive responses we received from many who did not know us but nonetheless shared their time and experiences with us.

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Several training experts allowed us to document their training practices and include them in the book as case studies and sidebars, greatly enhancing the practical value of the book. Thank you to Carol Zhu; Amy Geffen at the

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Many of our learnings that we summarized for the book came from our time in the Intel IT People Development and Training (PD&T) team. We say thank you to our former colleagues, who live in many different parts of the world, and Bill Cary, who taught us so much about training in a global corporate setting.

Finally, if it were not for Matthew Davis and Treasure Bailey, this book would not have become a reality. Thank you to both for suggesting that we put our work, learning, and experiences into a book and supporting our writing. Lindsay Morton was also a delight to work with and we wish to thank her for promptly answering our many questions about the writing process.

INTRODUCTION

THERE IS AN INFINITE NUMBER of training books on the market. The resources are countless if you want to read and learn about soft skills, management, sales, project management, or IT training. However, if you are trying to find any information on technical training, it will prove to be a time-consuming endeavor that will yield few results. There are hardly any books on the subject of "technical training." After more than a year of research, we are still not entirely sure why that is. However, the paucity of books on technical training created an opportunity for us to develop a unique and comprehensive resource. The primary purpose of this book is to demystify technical training and break a rather elusive concept down into its important components. The goal was to create a common language, strategy, and processes to maximize the potential of technical experts in any company and empower training and HR professionals to take on the challenge of technical training in any industry. Whether technical training is a standalone

function or is part of the HR function, this book will help to position the technical training organization as a strategic partner to the business.

Because of our background in the high-tech industry, we began this venture convinced that technical training meant training for people in the high-tech world. As we talked to more and more people, however, we realized that an expanded definition of technical training was necessary. It was difficult to come up with a definition because technical training means different things to different people. To achieve common ground and establish terminology for the book, we dedicated the first chapter, What Is Technical Training?, to exploring the different viewpoints about technical training and defining it.

We did not realize how limited the research and literature on technical training would be. In some ways, the lack of information made it easier for us because it allowed more freedom to shape the book. However, it also meant that there was very little information to leverage, so we thought it was important to interview and survey a number of experts about technical training. This led to the development of Chapter 2, Challenges and Opportunities for Technical Training.

Chapter 3, Differentiators of Technical Training, was not on the original table of contents but, after consulting hundreds of books and articles on training, it became apparent that there were clear differences between technical and non-technical training that no one had summarized. We felt the need to describe and explain these differences to enable training professionals to incorporate them into their training practice and avoid the "one size fits all" approach.

We included Chapter 4, Stakeholders of Technical Training, to examine who to engage and how to structure those engagements. Many of the stakeholder management practices we present are borrowed from project management methodology and are particularly helpful in building relationships with technical leaders and experts, among other stakeholders. Building these relationships is critical for exposure to the business strategy and key technical programs and initiatives.

Noticeably missing from the literature is a clear conception of training strategy at the organization level as opposed to the training solution level.

Indeed, few agree on what constitutes "strategy." In Chapter 5, Technical Training Strategy, a business approach to strategy is explored with practical advice on how to build the important components of a formal technical training strategy. Key capabilities for technical training are also discussed with emphasis on assessment of strengths and weaknesses to develop a plan of action to be in a position to execute the training strategy.

Once the strategy is developed, funding for technical training needs to be secured. In Chapter 6, Getting the Technical Training Agenda Funded, we explore different approaches to doing so. We show that requesting and obtaining funding is less a mathematical feat and more of a balancing act of people's perspectives, relationships, preparation, the economy, and current training systems.

Because there are predictable patterns in the placement of technical training in companies, we dedicated a section of Chapter 7, Staffing the Technical Training Organization, to organizational structures and reporting relationships. This chapter also covers important business and technical skills that training professionals need and gives advice on where to find technical training talent.

Chapter 8, Technical Training Analysis, Design, and Development, begins with a review of practical ways to gather stakeholders' training needs. Unlike soft-skills training or leadership development, technical training needs are typically diverse, representing strategic, operational, competency, and career development training needs. Methods for prioritizing training needs and gaining agreement on which are most important are highlighted. The development of courses, curriculums, and programs to increase technical knowledge and skills is also presented.

Chapter 9, Marketing of Technical Training, focuses on an activity that is often overlooked. The reason that marketing tends to be neglected is explored, along with solutions to overcome some of the issues. General marketing principles are presented to show how to develop a high-quality marketing plan for technical training.

Finally, predominant training delivery and evaluation methods are presented in Chapter 10, Technical Training Delivery and Evaluation. Hands-on technical training and blended training solutions that involve simulations

and application are the most effective types of training for technical skills development. The role of the training organization in enabling informal knowledge sharing among technical employees is also discussed, with recent trends on the use of online social communities for learning.

We used quotes from our interviews and survey to refine our thinking about concepts that we had developed and used in practice. We also included a real-world case study in each chapter to illustrate the practical application of our ideas and concepts. The case studies shed light on how technical training is done in different companies and industries.

This book is focused on training for technical experts and only tangentially touches on other forms of skills development. We realize that training has its limitations and is only one method, among many, for building and enhancing technical skills. "Only 10 percent of human performance problems stem from deficiencies in individual knowledge, skill, or attitude," as Rothwell and Benkowski point out (2003). This book focuses on ideas, approaches, and techniques for that 10 percent. We focused on technical training as the solution to human performance problems because:

- Companies in the top quarter in training expenditure per employee per year average 24 percent higher profit margins than companies that spend less per year. (Wells, 2001)
- "Surveys conducted by the Gallup Organization indicate that employer-sponsored training is a major attraction for employees entering the workforce or deciding whether to remain in their current positions." (Beck, 2004)
- "41 percent of employees at companies with inadequate training programs plan to leave within a year versus only 12 percent of employees at companies who provide excellent training and professional development programs." (Leaser, 2008, p. 2)
- The 2009 Business Intelligence Industry Report found that "heads of HR and corporate education and CLOs represent the largest group that believe the enterprise does not have enough staff to support learning initiatives." (Human Capital Media, 2009)

- As Thomas J. Watson, founder of IBM Corporation said, "There is no saturation point in education." (Binghampton University, 2009)

Our hope is that the book will inform the work of those who shape and guide technical training in companies and organizations in the future, including:

- HR and training executives who design and lead the learning strategy in companies
- Development professionals, including specialists, program managers, curriculum managers, and instructional designers who design and deliver technical training solutions
- Consultants who create, sell, and deliver technical training solutions to companies
- Technical experts who are interested in the field of technical training or want to influence the technical training strategies in their companies
- Business executives who feel that their training capability could be improved to better support business initiatives

1

What Is Technical Training?

TECHNOLOGY IS CHANGING EXPONENTIALLY, and we now see human capital is a company's biggest asset. But it is puzzling that those two facts refer to a topic that gets little attention in literature and at training industry events and is often forgotten in HR organizations globally: training and development of the technical workforce, also referred to as technical training! What is it? How is it different from other types of training? Is customer training or technology-based training considered technical training? How does technical training relate to product development or human resource development? Do only technical experts need it? There are no commonly accepted answers to these questions. This chapter defines what technical training is and what it is not. An inclusive definition includes training on content related to any technology and training on content specific to a discipline, function, or profession. It sets technical training apart from other

types of training, also considered non-technical training. Related activities that are often called technical training but aren't necessarily technical training are examined, and the differences between those activities and technical training are clarified.

The Complete Training Suite for Technical Experts

What is technical to one person is not technical to another. Many factors play into this and include, but are not limited to, different background, experience, and values. This is not only true for the general population but also for training experts, who are faced with decisions like the following when designing curricula and developing or deploying training:

- Should a course on "technical leadership" be part of a company's leadership curriculum or technical skills curriculum?
- Is training on the Sarbanes–Oxley Act, which informs employees about standards for public companies in the United States, ethics training or technical training?
- Is training on a project management tool considered general skills training or technical training?
- Should Cisco security training be considered technical training or IT training?
- Should maintenance management training be on a management or technical curriculum?
- Is training for Microsoft Word technical training or professional skills training?

Technical Training Defined

The Society for Human Resource Management (SHRM), the world's largest association devoted to human resource management, defines training (and development) as "the process to obtain or transfer knowledge, skills, and abilities needed to carry out a specific activity or task" (SHRM, 2009). If SHRM's definition of training is accepted as a baseline, then the question is: How is technical training different from this general definition of training? Would

medical training for registered nurses be considered technical training? Would training on legal statutes be considered technical training? For some it would, but for others it would not, similar to the examples mentioned earlier. Fifty interviews with Fortune 1000 business executives and managers, technical experts, training professionals, and other thought leaders in the field of HR and training yielded some interesting definitions of technical training, covering many different aspects, as the following definitions illustrate.

DEFINITIONS OF TECHNICAL TRAINING

- "Technical training is product support and development training, for example, training for the maintenance of vehicles. It is different than core/front office and non-core/back office training, for example, Microsoft training, time management training, program management training, and soft-skills training."
- "Technical training is everything that has to do with computers."
- "Since this is a product/software company and technical training is responsible for all product training, technical training is everything that is not management and leadership training."
- "Technical training is about people learning a technology, tool, process, or workflow; it is about understanding software and hardware."
- "Technical training is anything that builds the skills of the research and development community. For the IT community, it would be programming or debugging."
- "Technical training is every bit of training required to gain competence as an individual contributor, for example, as a scientist or engineer. It does not include soft skills or finance training."
- "Technical training is any training on the design, implementation, support, or operation of a technology."
- "Technical training is training for all products, and it is training that is not management and leadership training."

(*continued*)

- "Technical training is related to a function and how I do my job on a daily basis. The word 'technical' is based on function, not technology."
- "Technical training is everything that has to do with computers, it does not include finance training; that is called professional skills training. The context is important: for a training company, legal training for lawyers is technical training, and for a hospital training for nurses is technical training. In a technology company, it is not."
- "Technical training is technician training."
- "Technical training is related to a technology based subject, as opposed to sales training that is related to a process or HR training that is related to touchy feely stuff."
- "Technical training is broken into the following segments: desktop training, software development, engineering and design training, infrastructure/telecommunications training, and equipment/hardware training."
- "Technical training is always associated with hardware or software, no matter what device it applies to. You need one of these components to call it technical training."
- "Technical training is training related to a real technical topic like Six Sigma or math; it is the opposite of soft-skills training. The depth of the subject or knowledge of Six Sigma is what makes it technical. Six Sigma also has a quality aspect, but the complexity and the math/statistics that is part of it makes it technical."
- "Technical training is training that teaches applicable skills with some type of technology. Technical training needs to be specific to a technical area. It is anything hardware or software related or technical in terms of manufacturing. Technical training is anything that is not soft skills or common skills training."
- "Since I come from technology companies, technical training is training on technology. However, training in a marketing function is different because then technical training is training related to that particular function. So, if you look at technical training holistically, technical training is not just training on technology."

All of these definitions have merit in their own right and are correct to the people who gave them. They reflect a combination of background, experience, and values and, while they vary widely, the patterns are clear:

1. Most employees who do not have a technology background consider technical training to be training specific to a discipline, function, or profession or IT training.
2. Employees who work in, or have experience in, a technology company and/ or have technology related training and education, largely define technical training as training related to technology.
3. The majority of employees from the high-tech world have a narrower definition of technical training than employees from other technology companies. To them, technical training tends to be IT training only.
4. Technical training as a category is set apart from training for managers and executives, often called management and leadership training, and training that is built on social sciences, often referred to as soft-skills training.

Michael Littlejohn, vice president of the Stimulus Response Team for IBM Global Business Services, confirms these findings: "Because I work for IBM, I default to IT training when asked for a definition of technical training. If I put my management consultant hat on, it takes on a different meaning. Technical training then becomes training where the content is more objective, concrete, and explicit. Some people differentiate between soft and hard skills, but it is not that black and white. Technical training is training for a concrete discipline. Medical training is technical training. Training a phone technician on how to test fiber optic lines is technical training—it depends on the hat you wear."

If "technical" is defined as "related to a specific scientific, mechanical, or specialized discipline, function, or profession" and added to SHRM's definition of training, a very inclusive definition of technical training is the result: The process to obtain or transfer knowledge, skills, and abilities needed to carry out a specific activity or task, related to a specific

scientific, mechanical, or specialized discipline, function, or profession. It is similar to a definition of technical training Rothwell and Benkowski offer: "instruction intended to help people perform the unique aspects of a special kind of work and apply the special tools, equipment, and processes of that work, usually in an organizational setting" (2002, p. 7). As a baseline, they use job categories that are considered to be technical in nature, as defined by the Bureau of Labor Statistics (2009). While very general and all encompassing, it provides a starting point for technical training–related discussions.

In 1995, ASTD defined technical training as "the most common type of skill improvement instruction that seeks to increase the technological capabilities of workers" (Kelly, 1995, p. 586). This definition is very straightforward and only includes training focused on technology. For the purpose of this book, technical training will be split into two types of technical training. The first will be technical training where the focus is on technology and will be defined as "training on content related to any technology."

TECHNICAL TRAINING

Training on content related to any technology

Technical Functional Training

As the comments from the interviews and Rothwell and Benkowski's definition have shown, another set of development activities is often considered technical training. Instead of relating to technology, it is training related to a specific discipline, function, or profession. It is training that is necessary to understand and manage one's job and is sometimes called professional skills or functional training. In most companies, the functions are engineering, sales, manufacturing, HR, legal, finance, and IT. Training for these functions would be technical functional training, which in the case of engineering and manufacturing, is specifically technical training.

TECHNICAL FUNCTIONAL TRAINING

Training on content specific to a discipline, function, or profession

While in some cases there is a big difference between technical training and technical functional training and the book differentiates between the two where appropriate, the similarities are also significant. Hence, the focus of this book will be on both types of technical training unless otherwise indicated. For reasons of simplicity, "technical training" will relate to both definitions. The goal is to differentiate technical training and technical functional training from other types of training and highlight the intricacies of each. Characteristics that technical training shares with other types of training are not a focal point of the book.

While technical training is often defined as training for hardware and software, this type of training is only one aspect of technical training and is called information technology (IT) training. IT training is training on content involving the development, maintenance, and use of computer systems, software, and networks for the processing and distribution of data or, simply stated, computers.

IT TRAINING

Training on content involving the development, maintenance, and use of computer systems, software, and networks

IT training can mean two different things depending on the context. For IT professionals, IT training is technical functional training because it is the core of their profession; for all other disciplines, functions, or professions, it is technical training. With the use of computers in almost all disciplines and professions, companies are seeing a commoditization of some IT training, in particular desktop training. Twenty years ago, desktop training was without exception considered IT training; however, today it is often found on a general skills curriculum.

CHARACTERIZING TECHNICAL TRAINING AT AN INTERNATIONAL PHARMACEUTICAL COMPANY

An interview with the HR director based in Hong Kong.

How Does Your Company Define Technical Training?

Technical training relates to specific technology based training programs and activities for associates in different job families. It is targeted at all employees. Examples of courses include systems, tools, and applications training, like IT and information systems related training, new office system training, sales record tracking system training, and finance budgeting tool training.

How Does Your Company Define Technical Functional Training?

Functional training means training for associates in functional departments such as sales, HR, legal, clinical development, medical affairs, and so on. It provides employees in these functions with the required functional knowledge, concepts, and skills they need to perform their jobs. An example is product training for sales people.

How Is Technical Training Different From or the Same As (Technical) Functional Training?

In our company, non-mandatory training or non-managerial/leadership training is usually referred to as functional training or technical training. Sometimes there is overlap. For example, training on a financial budgeting tool is part of the functional curriculum for finance associates and is also part of the technical curriculum for all the budget owners in the company including commercial leaders, HR associates, and so on. Since almost all functions at our company use some type of technology, most functions require technical training. Some courses are applicable to several functions, but most courses on the functional curricula are specific to a particular function.

Do Technical or Functional Training Courses Ever Include Non-Technical Content? If So, Can You Give an Example?

The boundaries between technical/functional training and non-technical training are somewhat blurred. Even in some technical training courses, non-technical skills or knowledge are incorporated to improve overall knowledge and effectiveness. One common example is product training, which is considered functional training. In product training, not only product knowledge and disease knowledge (the technical aspect in functional training) are taught: questioning and inquiry skills, which are considered soft skills, are also addressed. Technical content can be dry, and some may consider it to be tedious to learn. To ensure engagement and learning, non-technical content is usually included in the application component of the technical and functional training to help employees learn and apply concepts to their daily work.

What Training, Aside from Technical and Functional Training, Is Available?

New hire training, compliance training, soft-skills training, company culture related training, management skills training, and leadership training are also provided to employees.

What Organizations Offer Technical Training, Functional Training, Soft-Skills or Management Training?

Training is delivered by external training companies and internal trainers, who teach locally, regionally, and globally. Our internal trainers, who teach technical and functional training, are the content experts in their respective functions. Management training is usually delivered by HR training professionals. External vendors play an important role for us but usually have limitations.

Are There Different Terms That HR, Employees, or Managers Use for All These Different Types of Training?

People use different names and terms for courses on the technical training curricula and the functional training curricula. For other training, such as soft-skills

(*continued*)

training, the terminology is quite clear and all parties seem to be able to use the same language.

Have You Observed Any Differences in the Area of Technical and Functional Training Between a Pharmaceutical Company and Other Companies You Have Worked at?

My experience is predominantly in high tech and the pharmaceutical industries and, generally speaking, I do not see any difference in how technical and functional training are defined or managed across the two industries.

Are There Any Differences Between Technical and Functional Training in the U.S. Versus Asia That You Have Noticed?

Functional and technical training courses in the U.S. seem to have a wider scope than those in Asia. It is also more common to find soft-skills aspects incorporated into technical or functional training in the U.S. Training in the U.S. tends to focus more on the application of the knowledge gained. An example is a sales product training course that is delivered both in Asia and the U.S. In the U.S., employees are expected to acquire knowledge prior to training, and instructors subsequently focus on practicing the skills through role play and applying them in the daily work context. In Asia, the same course contains more product information and less practical or real-life application.

How Would You Summarize the Value Technical and Functional Training Adds to Your Company?

There are three main benefits we see. Technical and functional training (1) enhances the skills and knowledge of the employees to perform their jobs, (2) increases employees' judgment, and (3) saves managers' time because less coaching is required. When employees from different functions participate in training together, they gain an increased understanding of operations and communication is enhanced.

Personal Effectiveness Training

Technical employees face a big challenge on a daily basis. Not only do they have to constantly learn new skills and live with the pressure of skill obsolescence, but they also have to focus on building additional, non-technical skills—a need that is becoming more and more apparent. In addition to understanding their jobs and respective technical skills, technical experts need to understand themselves. Many different categories have been defined for this type of training. The most common terms are soft-skills training and management and leadership training. Other common categories are basic, general, people, interpersonal, communication, HR, generic, employee development, management development, and executive skills training.

As the categories already suggest, examples of courses that help employees understand themselves include decision making, giving and receiving feedback, influencing, collaboration, problem solving, team building, and negotiation. The list is not exhaustive and never can be, as there are countless titles, combinations, and variations. For the purposes of this book, this category of skills and related training is termed "personal effectiveness" skills and training. It incorporates soft-skills training and management/leadership training, as both of these types of training aim to teach skills to understand and manage oneself.

PERSONAL EFFECTIVENESS TRAINING

Training on content that teaches skills to understand and manage oneself

It is important to note that personal effectiveness training has a cumulative, rather than an additive, effect on technical experts, enabling them to become well-rounded employees, managers, and people in general. As Tom Kelly, training and learning industry consultant, puts it, "Technical training is transitory to accomplish a job. Soft skills are more enduring: they have impact beyond just the job, we can integrate them into our personal lives." For example, if a recent college graduate took all the personal effectiveness

training available in the first year of employment, it would not have the same effect as taking those same courses over the span of a career. The reason that personal effectiveness training is cumulative is that people hear the messages in the training differently, depending on where they are in their lives and careers. Life experience and maturity increase the value of a personal effectiveness course.

It is not the intent of this book to define different curriculums for personal effectiveness training, as the resources for that are as unlimited as the courses themselves. What is important to highlight, however, are some additional points as they relate to personal effectiveness training for technical professionals. Differentiation of training by skill is more helpful for technical experts than differentiation by audience, which often is done for professional skills training. Curricula that are defined by audience (like curricula for new hires or managers) generally have a limited shelf life and are for the benefit of training administration primarily. Curriculum definitions based on skills that technical experts need, such as a technical curriculum or a personal effectiveness curriculum, are more useful for the technical experts if they are broken up by topic and show skill progression. Those curricula also tend to survive employee and organizational transitions.

Many people are quick to judge technical experts on their lack of personal effectiveness skills, and generalizations that people with strong technical talent do not have exceptional people skills are not uncommon. It is a reality for many technical experts (and this does not necessarily include technical functional experts) that their forte is technology and not interaction, communication, and so on. One must comprehend, though, the tall order true technical experts have been handed in terms of skills development. Technology changes make technical skills obsolete at a faster rate than other skills. Technical experts need to keep up with that. This is slightly different for technical functional experts: marketing principles for marketers, accounting standards for finance experts, or labor laws for HR professionals do not change as frequently and are not as intertwined with other standards and related disciplines. So not only are those functions more confined to their own areas, but their skills are longer lasting. There is only so much time in a day and only so much time allocated for training. Technical

experts realistically cannot be experts in their respective fields and in behavioral sciences and business concepts. Interestingly enough, the challenge is still fairly one-sided, although that is slowly changing. Marketers, finance experts, and HR professionals are not as often chastised for their lack of technical knowledge as technical experts are for their lack of business or personal effectiveness skills; they do get some criticism for their lack of business acumen but still not as much as technical experts do for their lack of personal effectiveness skills.

A common complaint is that technical professionals traditionally receive little training in the domain of non-technical skills. Lack of training may be one reason why many technical contributors find it difficult to move from a technical expert in their field to an effective people manager. Managers of technical experts need to be accountable for ensuring technical experts receive personal effectiveness training. Because managers of technical experts often have a similar background, and hence similar resistance and prejudice, a cycle is created that needs to be broken by allocating budget and time for such training.

Because technical experts gravitate more toward technical and technical functional training than toward personal effectiveness training, in some companies offering mental bridges can help. Not calling personal effectiveness training "soft skills" is a first step. This categorization tends to alienate technical experts and downplays the perceived need for such training. Calling a leadership course "technical leadership" or a communication course "communication for technical experts" can go a long way. Embedding personal effectiveness modules in technical courses is another option if attendance at personal effectiveness courses is an issue (Stone, 2006). "However, it is often difficult to squeeze soft-skills education into a course already jam-packed with technical skill requirements" (McLean, 2006). Highlighting the technical aspects of a personal effectiveness course may help. For example, emphasizing the use of a calendar program in a time management course or the use of intranets in corporate communications focuses on the technical aspects within the personal effectiveness course. Additionally, Edmonds Wickman (2008) believes because technical people tend to be more analytical "it's important to teach them soft skills in the same way you would teach technical skills."

CASE STUDY: MOTIVATING ENGINEERS TO TAKE NON-TECHNICAL COURSES WITH ASME

Dr. Amy Geffen, director of Volunteer Leadership Development at the American Society for Mechanical Engineers (ASME), explains how ASME influences their technical members to take non-technical or managerial courses. ASME is a non-profit professional association dedicated to creating excitement about engineering. Its mission is to serve diverse global communities by advancing, disseminating and applying engineering knowledge to improve quality of life. ASME provides education, publications, and advocacy. ASME's 127,000 members are students and entry-level, mid-career, and seasoned engineers and biologists. Although the association was founded in the United States, members are from 140 countries.

ASME uses a number of different methods to gather information about members' training needs, including:

- Biannual surveys
- Periodic focus groups at conferences
- Training evaluations
- Customized company assessments of engineers and engineering managers

In response to the needs identified through these various methods, ASME provides a wide variety of live and online courses and webinars to keep members and interested non-members abreast of developments in engineering and management. Training activities occur during the year at conferences, workshops, seminars, and webinars. ASME also works with engineering firms and consults on their skills development needs.

One longstanding issue has been the need for engineers to develop management and leadership skills to enhance job performance and serve as effective volunteer leaders within the Society. ASME constantly strives to close this gap by weaving non-technical offerings into the technical curricula and programs:

1. Global Management Conference—ASME hosts a major conference dedicated and focused solely on management issues and challenges.
2. Leadership Training Conference—This annual conference, which attracts roughly three hundred members who are active in different sections and committees of the society, includes interactive sessions on topics such as business and strategic planning and budgeting.

3. Specialized Conferences—Conferences in the nuclear, power, and pressure vessels engineering areas include non-technical training tracks.
4. Leadership Orientations—Orientations, which are led by senior staff and volunteers, focus on enterprise-wide issues such as strategic initiatives, financial responsibilities, or board legal responsibilities.
5. Professional Practice Curriculum—A curriculum with forty short online interactive modules on engineering principles, business practices, and professionalism for college students and early career engineers.
6. Special Workshops—Special workshops on management topics through outside consultant groups such as The Tom Peters Group are meant for emerging and senior leaders and are by invitation only.
7. Live Courses—More than one hundred courses, including seventeen management-related courses are offered live at eight major U.S. cities and three cities in Europe.
8. Online Courses—Instructor-led and self-study online courses, twenty of which are dedicated to non-technical topics, such as problem solving and project management.

Engineers want to know "What's in it for me?" when taking the time to develop managerial and leadership skills. ASME shows members how non-technical skills enable them to move up the career leadership ladder within the Society and on the job. The Society's promotional material and website explain the benefits of all of their offerings and conferences.

The Society also uses leadership opportunities within the organization to provide engineers an opportunity to practice their leadership skills. It has defined leadership competencies and knowledge areas required at each level of the volunteer structure—from sector (chapter) level, committee, division committee, board, vice president, senior vice president, and board of governors (director) levels. Examples of leadership skills include managing a sector meeting, writing a business plan, developing a strategic plan, and managing change. Volunteer opportunities include:

- Volunteer Orientation and Leadership Training (VOLT) Academy—The Society has a special department that serves as a resource center and provider of training, guidance, and materials for all ASME volunteer leaders.

- VOLT Resource Website—The website is a central repository of information and resources for volunteers. In the future it will be part of the learning management system that the Society uses to house online courses.
- ECLIPSE for Emerging Leaders—This program targets early-career engineers who are interested in moving up the volunteer career ladder. Engineers apply for the position and are assigned to a specific sector. They attend and participate in committee, council and board meetings based on their individual development plans.

Despite the challenge of getting engineers interested in non-technical training, the Society is able to leverage its unique position to overcome this obstacle. As a professional engineering society, the caliber of its members and instructors has contributed to its excellent reputation as a premier provider of training for engineers.

Business Training

To understand and work effectively within a company, a number of business skills are required. Examples include accounting and finance principles and general business operations, including strategic thinking, business acumen, ethics, and safety. Business training helps technical experts understand how the company works holistically. It gives them understanding, context, and language to use when presenting their work and showing the impact to the company

BUSINESS TRAINING

Training on concepts that teach skills to understand and work effectively within a company

While many technical experts would like to work uninterrupted in laboratories where they can talk technical with other experts and avoid meetings, this is no longer possible in today's fast-paced world. Business training is a way to connect them to other parts of the company and challenge them to

apply systems thinking to their work and take into account other functions and impacts in an integrated and systematic manner. A study by Lake Forrest Corporate Education concludes that most technical experts can no longer remain specialists but need to broaden their mind sets and skill sets to include business skills if they want their companies to remain competitive (Leck, Spilotro, & Wang, 2006, p. 3). The goal is to ensure an understanding of the business but also better communication between business people and technical experts.

The more senior technical employees become, the more apparent the need for training on business skills since technical experts often move into management positions. Business skills are also important to customers. More and more customers place a high value on the ability to translate technical concepts into common-sense business language and put the "business first." Speaking the business and customer's language demonstrates that technical experts understand their issues and increases others' confidence that they will be able to develop relevant solutions. Opinions vary widely in terms of what business training technical experts should take—in general, it depends on prior experience, feedback from others, company culture, and availability of offerings. As with personal effectiveness training, the intent is not to define business curriculums but to highlight the need.

Unfortunately, the need and value of business training, similar to personal effectiveness training, is often underestimated, creating a gap between technical experts and those on the business side. "In today's corporate world, it often seems like technical and business people speak completely different languages. So the end result is technical people who can't get their points across and business people who regard technical personnel as skilled technicians with little, or no, management potential" (Ortiz, 2006). The underlying reason for this dilemma is that people choose professions based on their natural aptitude and interest.

> "The qualities and skills that make great technologists, engineers, and scientists are not the qualities and skills that make great businesspeople. For example, think of a technical specialist and what picture appears? Often the mind conjures up the stereotypical image of the 'gear head' sitting in his or her respective cube tinkering with

> the latest gadget, the 'heads-down programmer' hovering over the computer writing code, or the 'man in the white coat' watching the contents in the glass beaker boil atop the Bunsen burner. These are, of course, stereotypes, but these images were born from somewhere. Traditionally, technical specialists pursue careers in their respective fields because that is where their interests and proficiencies lie. They're good at their jobs, and certainly, businesses cannot survive without experts such as these. Still, people who focus on data, who can follow an idea from start to finish in perfect order, who concentrate on a single project, are not generally the people who are seen confidently taking questions at a business meeting." (Leck, Spilotro, & Wang, 2006, p. 4)

The fact that technical experts often lack business (and personal effectiveness) skills cannot be blamed only on natural talents. Colleges and universities are under pressure to graduate well-rounded and prepared students who not only know their own disciplines but can also adjust and work effectively in a company environment because they have the personal effectiveness and business skills to do so. As Dr. Barry Farbrother, dean of the Tagliatela College of Engineering at the University of New Haven, points out, it was difficult to develop a broad skill set before the mid-1990s because engineering accreditation was somewhat prescriptive. Back then, disciplinary engineering programs had a great deal of similarity, rendering the course catalogs almost identical across institutions because educational content was set by the Accreditation Board for Engineering and Technology (ABET). When ABET revised its accreditation process, the guidelines for the engineering programs were relaxed, requiring universities to consult their stakeholders (including the companies that were hiring graduates from their schools), to determine what type of skills (technical, technical functional, personal effectiveness, and business skills) were needed, and they built the curriculum accordingly. Today colleges and universities approach this differently and students engage in college-level courses on everything from technical skills to people skills" (Gilmore, 2008).

Because technical experts do not tend to gravitate toward non-technical training, some technical training vendors have found a good way to help

employees overcome that resistance: offer business training as part of their portfolio. Because the vendor is respected in the technical community, and respect and trust go a long way, they are able to leverage their reputations and have instant credibility for other types of training.

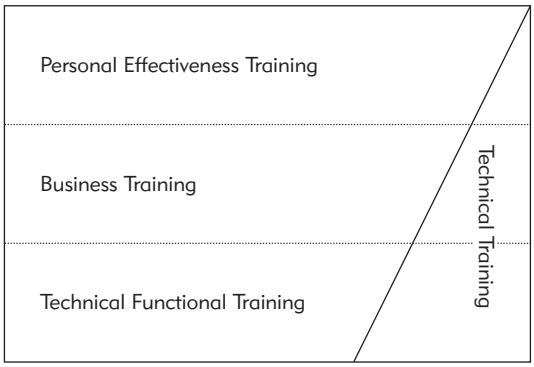
Training professionals, internal or external to a company, should recognize that technical experts process information and learn a certain way. They are most influenced by data and information, as Paraglider (1995) points out:

> "A 'typical' engineer decides to take up the flute. Two weeks later, he (the typical engineer is still male although this is slowly changing) will be able to expound on the relative merits of conical and cylindrical tubing and their effects on the harmonic structure in the top octave, but he will still play like any other rank beginner—all wind and no toot. This illustrates the engineer's ability and need to assimilate data and to intellectualize an activity. Unless the aim of a training event is to change this learning style, the trainer is well advised to cater to it and be prepared to provide all the necessary facts and arguments early in the proceedings. This is not as reactionary as it might at first appear. It is merely recognizing that, in engineering, the heart follows the head, and, if you would inspire your technical team to change their approach, you should first help them to the intellectual conviction that a change is a good idea."

Explaining how a certain technology is deeply engrained in business processes may help technical experts see the value of business training. Additionally, tying facts to a larger, logical framework, model or system like ISO 9000, the Capability Maturity Model (CMM), or a customer relationship system is helpful. Technical experts need tangible approaches, processes, and frameworks to recognize the significance of business training and apply it to their work.

In summary, a well-rounded employee needs to understand three key areas: his or her job (technical functional training), his or her self (personal effectiveness training), and his or her company (business training) to be effective. Technology touches all three categories to a varying degree.

Figure 1.1. Training Categories



Technical training can be considered a vertical tier that, depending on the type of skill or function, is more or less present. As an example, desktop training is becoming commoditized and is more frequently considered personal effectiveness training, albeit with a technical aspect. Another example of personal effectiveness training with a technical aspect is training on presentation delivery. Not all personal effectiveness training involves a technical aspect, but many do. Business training may also have a technical aspect. For example, resource allocation tools may be introduced in a resource management course or proper equipment usage may be the focus of safety training. While all training categories have a technical aspect, technical functional training tends to have a higher technical aspect or content than personal effectiveness or business training. (See Figure 1.1.)

Analogous Content Types

All four types of training—technical, technical functional, personal effectiveness, and business training—teach analogous, or similar, types of content: procedures, concepts, factual information, and processes. While process training and new hire training are often characterized as training categories, they are actually examples of content and audience types, respectively. Ruth Clark (2007) defines each of these content types as follows:

- Procedure—"a series of clearly defined steps that result in achievement of a job task" (p. 46)

- Concept—"a class of items that shares common features and is known by a common name" (p. 65)
- Factual information—"unique, specific concrete items, specific data, or one-of-a-kind associations among concepts" (p. 95)
- Processes—"descriptions of how things work" (p. 121)

Each of these content types is found in all four types of training, as shown in Table 1.1.

Table 1.1. Training Categories by Content Types

	Training Categories			
Content Types	*Technical*	*Technical Functional*	*Personal Effectiveness*	*Business*
Procedure	Performing maintenance on a car	Applying for health insurance	Providing performance feedback	Entering budget numbers
Concept	Emission	Insurance plans	Integrity	Zero-based budgeting
Factual Information	The average passenger car emits 11,450 lbs of carbon dioxide	The monthly rate for individual health insurance is $193	1 out of 4 managers gives regular feedback	The increase over the previous year's budget is 4 percent
Processes	Material replacement in a manufacturing plant	Processing a health insurance claim	Providing step by step feedback to a low performer	Integration of new hires into a finance organization

Incorporating the four examples from the beginning of this chapter into the four training categories yields the following answers:

- The technical leadership course would be part of the personal effectiveness curriculum.
- The Sarbanes–Oxley training would be part of the business curriculum.

- The project management training would be part of the technical functional curriculum despite the use of an application or tool.
- The Cisco security training would be part of technical functional curriculum for IT professionals, but technical training for any other audience.
- The maintenance manager training should be on the technical curriculum.
- Whether the Microsoft Word training is put on the technical training or professional skills curriculum depends to a large degree on the maturity of IT skills in a company.

In ASTD's Benchmarking Forum (BMF) the training content areas that companies gave the most attention to were profession and industry specific (21 percent) and IT and systems (19 percent). Processes, procedures, and business practices (12 percent), managerial and supervisory (8 percent), and "other" (quality, product knowledge) (8 percent) were the next highest-used content areas (ASTD, 2009). If the four categories of training defined here are overlaid to ASTD's BMF content areas, an interesting picture is painted. From the order of spending, companies consider technical and technical functional training priorities, thereby confirming the prevalence and importance of technical training (ASTD, 2009):

- Sixty percent of training in the BMF analysis was related to technical training (including IT training) or technical functional training [BMF groupings: profession and industry specific: 21 percent, IT and systems: 19 percent, other: 8 percent, sales: 6 percent, and customer service: 6 percent].
- Twenty-three percent of training was related to personal effectiveness training [BMF groupings: managerial and supervisory: 8 percent, executive development: 4 percent, new employee orientation: 2 percent, basic skills: 4 percent, interpersonal skills: 5 percent].
- Seventeen percent of training was related to business training [BMF groupings: processes, procedures, and business practices: 12 percent, mandatory and compliance: 5 percent].

Technical Training and Related Acitivities

As if the differentiation and categorization of different types of training were not confusing enough, there are some distant cousins of technical training that are either called technical training but are not, or are not called technical training but are.

Product Development

As new products and services are designed and developed, there is a fine line between engineers sharing new conceptual ideas and producing so-called training materials. What starts out as a PowerPoint presentation to executives or management is often turned into material for training hundreds, if not thousands, of employees. The only thing missing may be the formal student enrollment, fancy course materials, and evaluation sheets as peers will be invited through e-mail, will hear a presentation, and will skip the evaluation. Adult learning theory and instructional design concepts are ignored, and slides become teaching aides—at times to the annoyance of the training organization. In some companies, mostly creative or start-up companies, this approach is encouraged; in many other companies, especially where following formal roles and responsibilities is encouraged, it causes conflict. The questions in both types of environments are: Where and when does sharing new technology, processes, or products turn into technical training? When should the training organization become involved? And when should the ownership for skills development for a particular technology, process, or product be transferred from the technical experts to the training professionals? As is often the case with technical content, it is not always clear when technical expert information and content should be formalized into technical training, and the perspective varies by company.

As a rule of thumb, the technical experts should own all aspects of the product life cycle (which typically includes the following four phases: exploration, planning, development, and deployment), but involve the training experts early on. It is critical that training professionals be brought along in the process to build the delivery process for technical knowledge and make key training-related decisions around prioritization, funding, vendor engagement, delivery methods, and so forth. By participating in conversations with and building

the technical knowledge of training experts, technical experts feel their training partners understand what they are trying to accomplish and are more willing to partner on the content and hand over training development and deployment.

While early inclusion and partnership are ideal, the reality sometimes looks different. For example, if a product is brand new and there is a very short window to get it to market, technical experts document details and features as best they can and use this information as training and presentation aids, since no other materials exist and no time can be wasted. The newer the product, for the company or the market, the higher the stakes and the less likely technical experts are to let go of training. Once a product or service has been around for a while and the risk is lower, content development tends to be moved to less experienced employees, and technical experts may be relieved when the training organization steps in. While many training experts do not appreciate this approach, it is a reality in many companies.

Customer Training

Building the technical skills of customers and partners, in addition to internal employees, is an important consideration and can be a form of technical training. To include customers and partners as stakeholders in the training process can be strategically important for demand creation, marketing efforts, relationship building, and cost control. This type of training is often referred to as end-user training, customer training, partner training, or product training. When training covers the entire supply chain, it is referred to as training the extended enterprise. "Organizations are increasingly focusing on the development of talent not just within their own organizations, but across the wider supply chains. Training the organizations' key employees remains vital in our highly competitive environment, but impacted by the credit crunch, organizations are increasingly investing some of their training dollars in individuals who really impact the bottom line across their broader value chain. Extending the function of a learning department to encompass training for customers and partners helps to maximize the impact of the learning spend and makes good economic sense" (Neale, 2008). For mature products, customer content can even be used for internal training. If the technical training organization owns all aspects of technical training (from employees

to customers and partners), then the overarching term "technical training" is accurate; if that is not the case, the different types of training are best referred to by their respective terms.

To ensure success and avoid the assumption that one size fits all, a careful needs analysis needs to be conducted. Things like company culture, attitudes toward technical training, geographical distribution, and availability of technology may be drastically different in customer or partner organizations and may need to be assessed. What works in a manufacturing organization may not work in a retail organization. However, the analysis may reveal that training content and delivery can be similar across constituents and may make the most sense, cost wise, especially if customers are charged for training, which offsets the development and delivery costs. According to Nick Howe, vice president of Hitachi Data Systems (HDS) Academy, using identical processes for technical, non-technical, employee, and customer training in terms of requirements gathering, delivery, and "go to market" is a cost-efficient way for HDS to get economies of scale.

While some companies use the same content and materials for all stakeholders, it is not uncommon to see higher-quality training material used for customers. Training for customers directly impacts the bottom line and is targeted to increase revenue, customer loyalty, and/or productivity, causing training organizations to spend more time and money on the design. Additionally, training that is delivered outside the walls of the company reflects on the quality of the company and, of course, everyone wants that to be a positive impression. While technical training for employees is less likely to be cut than non-technical training during a downturn, technical training for customers and partners, as opposed to technical training for internal employees, is even more bullet proof.

Technology and Computer-Based Training

When one of the authors tried to gather information on technical training at a major industry conference for training, she was consistently referred to vendors of computer-based training (CBT), technology-based training (TBT), and learning management systems (LMSs) and solutions. Not one conference attendee or exhibitor thought of technical training from a content perspective.

Distinguishing TBT from CBT and from LMS is clearly an exercise in semantics. The definitions used in this book are as follows:

- *Computer-Based Training (CBT)*—A form of training delivery involving use of a computer.
- *Technology-Based Training (TBT)*—A form of training delivery involving use of technology. It includes both computer-based training (CBT) and web-based training (WBT) as well as other technology such as Internet, satellite broadcast, audio or videotape, or interactive television.
- *Learning Management Systems (LMS)*—Software or web-based technology for training administration, content management, training delivery, evaluation, and/ or other learning functions.

As is evident from the definitions, technical training content can be housed in any of the three. While CBT is clearly related to content housed in a software program on a computer, TBT is related to content housed in technology in a broader sense. While LMSs used to be primarily training enrollment and tracking tools—carrying out administrative functions—they are now designed to be complete training systems, including content development. Therefore, training content, including technical training content, can be housed in an LMS also.

The word "technology" in the title of TBT further adds to the confusion. What TBT really refers to is technology and web-based training. The difference between technical training and TBT is that the technical part in TBT lays in the delivery, whereas the technical part in technical training is in the content. The content of a TBT course can be technical or non-technical, depending on the subject matter covered.

Human Resource Generalist Work

Weatherly (2004), in a SHRM article, states that the role of the HRD function is to "ensure that the current and future knowledge, skills, abilities, and performance needs of the workforce are understood and can be achieved within the timeframe required by the organization. This is accomplished through processes and programs designed to address employee training,

change and performance management initiatives, and other development needs that may be unique to specific employee groups within the organization." Most companies apply the definition of HRD as defined by Weatherly. However, as Swanson and Holton point out, "As with any applied field that exists in a large number and variety of organizations, HRD can take on a variety of names and roles. This can be confusing to those outside the profession and sometimes confusing to those within the profession" (p. 12). One example is that some companies use HRD and related job titles, such as human resource development representative (HRDR), to describe the work of HR generalists who are not actually involved in training and development activities. Other companies use the term HRD more broadly to describe any development—development of employees through training as well as development of organizations, referred to as organization development (OD). Training tends to focus on individuals or groups of employees, whereas organization development focuses on the company or organizational unit as a collective and can often be found as a separate HR function.

Summary: The Power of a Common Language

One of the principles we advocate in this book is the need to create a common definition for technical training and other types of training that facilitates a common language between training and its stakeholders. This would ensure a common understanding of what the business is trying to achieve, relative priorities, the role of technical training, and so forth. The power of a common language has been recognized by many and is summarized well by Robert Bogue (2006):

> "The foundation for creating less rework is in developing a common language that you can use to communicate as clearly as possible. It will never be perfect, but having the same understanding of a word will radically improve your chances of fully understanding what someone else is communicating."

Once definitions for technical training and other types of training are available, the training organization can use those to create a training taxonomy, a hierarchy of categories used to classify training data, course materials,

and other information. Using the definitions offered in this book would yield the following training categories or taxonomies: technical training, technical functional training, business training, and personal effectiveness training. The categories enable scope definition, stakeholder assignments, target audience classification, competency definitions, curricula design, and deployment approaches. They are core building blocks for building a first-class, systemic, and proactive (rather than reactive) technical training organization.

A training taxonomy, like any other taxonomy within an enterprise, needs to be flexible and practical. "A classical taxonomy assumes that each element can only belong to one branch of the hierarchical tree. However, in a corporate environment, such formal ordering is neither feasible nor desirable" (Woods, 2004). For example, a course in lean manufacturing—while not ideal—could be listed on the technical training curriculum for engineers and operators, not just on one or the other, since the topic is likely of interest to both groups.

As important as defining technical training and supporting training taxonomies are, so is the need to differentiate technical training from related activities. The term "technical training" should only be used for activities that truly are technical training. It is the training professionals' charter to clarify:

- What technical training is and what it is not.
- Where product development ends and technical training begins.
- That technology enables technical training, but by itself is not technical training.
- That the term human resource development should be reserved for training activities, not general HR activities.
- That product and customer training can be part of a technical training organization's scope.

Now that a definition of technical training has been offered and there is an understanding of what technical training is, the challenges and opportunities associated with technical training can be explored next.

2

Challenges and Opportunities for Technical Training

IN TECHNICAL TRAINING, as is the case with any other function, challenges and opportunities are plentiful. However, there are challenges and opportunities that are very unique to technical training.

Challenges arise from stakeholder demands and resource constraints, but also from environmental, organizational, and capability issues. We refer to environmental issues as things going on in the broader training industry that affect technical training within companies. Additionally, organizational issues come into play based on the company's unique internal culture, people, and so forth. Within the company, there are also capability factors that pertain to technical skills development, career progression, and talent management.

If technical training organizations seek to understand the root and/or history of these challenges, unanticipated opportunities may arise.

CHALLENGES FROM TRAINING PROFESSIONALS' PERSPECTIVES

In our online technical training survey, training and HR professionals shared their challenges with technical training.

Aligning Technical Training to the Business

- Understanding the technology roadmap and where the company is going
- Keeping technical training aligned to business objectives
- Integrating training systems with company systems
- Identifying and prioritizing technical training
- Keeping current given the pace of technical developments
- Staying agile during organizational and technology changes
- Defining a proper business model for training

Management and Stakeholder Support

- Making the business case for technical training with upper management
- Managing different stakeholder needs and interests
- Defining the right set of required technical training
- Collaborating with business functions
- Earning trust with technical experts
- Finding talent in the way of trainers

Training Design Challenges

- Developing technical training just in time
- Managing scope creep in training design

- Ensuring good content and high quality
- Incorporating new training trends
- Making training applicable but not too generic
- Managing changing content during the design phase

Training Delivery Challenges

- Deciding what delivery form and format are right for technical training
- Delivering content under time pressure
- Facilitating self-paced learning in a hands-on environment
- Accessing technical training from remote sites
- Utilizing expensive tools and equipment for training

Funding and Prioritizing Technical Training

- Recovering from budget cuts
- Making budget tradeoffs
- Getting resources—people and money
- Ensuring people do not leave the company after receiving expensive technical training
- Understanding the impact of informal learning in a technical environment
- Incorporating the cost of hands-on labs and equipment

Ignoring challenges or failing to leverage the opportunities that emerge from the challenges will weaken the value of technical training and give rise to unproductive myths about technical training.

DISPELLING MYTHS OF TECHNICAL TRAINING

Training Is the First Thing to Be Cut in Tough Times!

- False: For technical training this is not always the case, although it is often true for non-technical training.

Technical Training Is Difficult to Do!

- False: Once you understand what it is about and how it is different from other types of training, it is not difficult.

Training Developers Can Create Quality Training Content from Technical Documentation Alone!

- False: Training developers need to collaborate with technical experts to develop quality technical training.

***Managers Don't Support* VIs!**

- False: They often see it as furthering the experts' knowledge and demonstrating leadership.

Having Technical Experts Spend Their Time Teaching Is Expensive!

- False: It is often cheaper than sending employees offsite to vendor training.

Highly Skilled Technical Experts Do Not Want to Get Involved in Training!

- False: The best technical experts want to be involved when technical training aligns to technical priorities and sharing knowledge is part of the culture.

Environmental Factors

Several trends in the broader external environment impact technical training across companies, regardless of industry. These trends include a lack of a common understanding of technical training, historical changes in technical

training, perceptions of technical training, and the fact that, compared to other disciplines, technical training does not have a strong, unified lobby. There are challenges and opportunities associated with each of these environmental factors.

Lack of a Common Understanding

"Technical training" is an interesting term. It is not black and white, and it does not mean the same thing to everyone. While people may think they are talking about the same thing, they often are not. What is technical to one person may not be technical to another, and hence people use the terms "technical" and "technical training" in different ways and to describe different things. To some, connecting or troubleshooting a new DVD player or uploading music to a portable music device is technical; to others, these are simple tasks. The same is the case for technical training. Taking a course at a community college on web page development might be considered a technical course by some; however, an administrative assistant who designs web pages as part of her daily routine would not consider it technical training.

The way people look at and define technical training depends on a number of things: background, experience, and values. The term "technical training" is as relative as the statement that "driving seventy-five miles an hour is too fast." What does "too fast" mean? It depends, for example, on a person's background, which also can be considered the context from which a person operates. For people in the United States, driving seventy-five miles an hour usually means a person is exceeding the speed limit; however, for a driver on the German Autobahn, where there is no speed limit, driving seventy-five miles an hour is barely acceptable. Background similarly plays into people's perception of what is technical and hence what is considered technical training. A teacher may find troubleshooting a DVD player to be challenging and technical, whereas a hardware engineer who enjoys tinkering with equipment is more likely to view it as a simple task.

Experience is another important factor that plays into how people define technical training. For someone who was critically injured in a car accident, any speed may seem too fast. In contrast, a person who has not experienced a serious accident may perceive driving fast to be a fun

and normal thing to do. Experience influences how people see and define the world around them and impacts how they define technical training. Employees of the same company have different backgrounds but similar reference points as to what technical training is in the context of the company. This is beneficial when defining technical training in terms of target audience, scope, and so forth.

An environmentally friendly person may be against fast driving because of the negative environmental impact of exhaust fumes. Someone who does not care about diminishing natural resources may not even think about it. Values shape our realities, including our perceptions and definitions of technical training. A passionate engineer who has spent years thinking about technology will likely offer a more sophisticated definition of technical training than someone who has always strongly disliked technical things. Certainly a CEO who has a passion for training and sees the value of it is more likely to fund technical training than one who feels that training is an unnecessary activity.

The technical training organization has a prime opportunity to educate stakeholders on how background, experience, and values play into technical training and to take the lead in defining what technical training means in the company. When a common reference point is lacking, misunderstandings occur, things fall through the cracks, people jockey for position, and energy is spent on gaining clarity and agreement, rather than on getting things done. Creating a common language will go a long way in educating and aligning stakeholders and, ultimately, getting to the task at hand of building employees' technical skills.

Evolution of Technical Training

Twenty years ago, technical training was almost exclusively focused on skill acquisition for laborers, engineers, and scientists. Computers were not omnipresent and hence IT training was rare. Many disciplines and professions had no technical or technological aspect to their work. However, times have changed and now the average employee uses technology daily. Typing and making copies were the most technical things people did in the office in the early 1980s. Today, employees fix network printers when they stop

working, download software upgrades when they become available, and use PowerPoint and software to present ideas and information.

These days, each profession and function has its associated tools and technology—a big change compared to thirty years ago. "Almost every job in the organization requires a mixture of both process skills and technology" (Masie, 1999). The change is most apparent in IT and engineering disciplines, where the subject itself is technology. As Michele Jordan, training consultant at Standard Insurance Company, confirms: "Technology is ever-changing. Customers want new services, automation, and features now. In order to respond, it's especially important for IT organizations to invest in their most precious resource—their employees, by ensuring their technical skills are up-to-date." However, functions such as finance use technology, too, to manage annual and quarterly budget cycles, assess inventory, and comply with accounting standards. Nobody "escapes" the need for technical skills or technical training today. Even HR professionals are exposed to technology regularly and have a need for technical training. Staffing professionals need to be able to evaluate and use online job application systems, HR business partners are asked to run termination and diversity reports using queries and pivot tables, and training experts manage scheduling and course attendance through learning management systems.

The rapid changes in technology pose both challenges and opportunities for the technical training organization. Not only is technical training constantly changing, but personal effectiveness courses are gaining technical aspects. For example, time management courses include training on the use of calendar programs, and management courses address the use of intranets for corporate communication.

Not only has the content of technical training changed over the last twenty years, but the technical training function as a whole has changed. In aligning technical training to the business agenda, Bill Wiggenhorn, president of Motorola University, explained: "In the early 80s, we'd ask for business plans from our divisions but we couldn't get them. By the mid-80s, we could have them if we wanted. Today [1995], however, we're told to read them" (Kelly, 1995, p. 579). Three decades later, technical training experts are not only expected to read business plans but they are expected

to build training programs that impact the bottom line. Technical training has grown up as a function, just like IT, which in the early 1990s was "just" a support function and now commonly is a full strategic partner with a C-level representative.

The movement toward becoming a more strategic training function has been a challenge for some, and not everyone has realized or accepted the changes. Technical training professionals often still complain about not being included in important company decisions, and technical training functions are often buried deep in HR or a business function, with limited access to the leadership team or executives. These process and structural gaps are lagging indicators resulting from the changes in technology over the past few decades and to some degree are inevitable remnants of growing pains. However, while some training organizations have seized the opportunity to become more strategic, others have failed to do so.

The opportunity, on the other hand, is for technical training professionals to embrace this trend and increased expectations by learning additional business skills, acquiring technical knowledge, and making contributions not only on a tactical skills level but also at a strategic level. This means active stakeholder engagement with C-level executives—or at least with their managers—and the formation of governance bodies to steer technical training. It involves being part of the company's strategic planning cycle and budgetary process in the same manner that all other business functions contribute and participate.

Perception Versus Reality of Technical Training

Our interviewees agreed that technical training is more valued than other types of training and is less likely to be cut when organizations attempt to reduce costs. Doug Harward, founder and CEO of Training Industry, Inc., believes technical training has a "perceived higher value" than other forms of training because it is easier to quantify. That is good news for technical training. However, while there is agreement that technical training is higher on executives' radar screens, there is also a perception that not enough attention is paid to technical training in companies, academia, or the training industry.

Countless research studies are available for training in general and for personal effectiveness training; with the trend toward talent management, the number of studies on this topic is rich. However, an exclusive focus on technical training is rare in the training literature. A literature search on management and leadership training using a large online bookseller produced hundreds of pages of search results, whereas the same search for technical training yielded very limited results, most of them focused on instructional design or training development. The results of this quick search confirmed the paucity of information on technical training:

Building Effective Technical Training: How to Develop Hard Skills Within Organizations by William Rothwell and Joseph Benkowski (2002). The authors explore the topic of technical training quite thoroughly and evaluate many angles, which make it a comprehensive resource for tactical questions, but it does not address technical training from a higher-level perspective.

Developing Training Courses: A Technical Writer's Guide to Instructional Design and Development by Rives Hassell-Corbiell (2001). As the title suggests, the focus is on training design, a topic explored thoroughly by many authors.

Developing Technical Training by Ruth Clark (2007). While a good book, the focus is on instructional design and not on the strategic aspects of technical training.

"Instructional Design for Technical Training" by Wendy Combs and Stephanie Peacocke (2006). While also focused on instructional design, this *Info-line* covers some key aspects of managing technical training.

The ASTD Technical and Skills Training Handbook by Leslie Kelly (1995). This comprehensive guide includes all aspects of technical training, with exceptional research from a variety of authors in various fields and disciplines. However, the book was no longer produced after 1995.

Examining company spending on technical training may shed more light on its importance and prevalence. ASTD estimated that U.S. companies

spent $134 billion on employee training in 2008 (2009). This includes all training-related expenses, with $83 billion spent on internal training and $51 billion spent on vendor training. The question is: How much of that $134 billion was spent on technical training? While there is very little information available on the investment into technical training, given the lack of agreement on a definition of technical training, the percentage of training content dedicated to "technical training areas" gives an indication of its prevalence. ASTD classifies training into the following content areas:

- IT and system
- Profession and industry specific
- Sales
- Customer service
- Managerial and supervisory
- Executive development
- New employee orientation
- Basic skills
- Interpersonal skills
- Processes, procedures, and business practices
- Mandatory or compliance
- Other: quality, product knowledge

Using these content categories, ASTD's Benchmarking Forum (BMF) found that companies gave the most attention to profession- and industry-specific (21 percent) and IT and systems (19 percent) training content areas. The next-most-prevalent training content areas were processes, procedures, and business practices (12 percent), managerial and supervisory (8 percent), and "other" (8 percent) (ASTD, 2009). Even if a narrow definition of technical training is applied and only IT and systems training are considered to be technical training, then technical training was the second-most-common type of training in 2008. If the inclusive definition of technical training offered in Chapter 1 is used and technical and technical

functional training are included, then 60 percent of all training conducted by ASTD BMF companies in 2008 can be considered technical training:

- Profession and industry specific (21 percent)
- IT and systems (19 percent)
- Other: quality, product knowledge (8 percent)
- Sales (6 percent)
- Customer service (6 percent)

While our interviewees felt that not enough attention was devoted to technical training and the literature search confirmed a lack of literature on technical training, technical training is actually the most prevalent type of training in use today, according to ASTD. More money is spent on all aspects of technical training, yet it is underdeveloped in the training literature, compared to other types of training. This poses an opportunity for training professionals to educate stakeholders on the definition of technical training and explain the actual high volume of technical training across companies. Becoming more aware of how training is classified enables training professionals to influence stakeholders' perceptions of how technical training stacks up against non-technical training.

The Need for a Strong Lobby

While many vendors and smaller organizations focus on technical training, there is not a strong, organized community. Nearly twenty years ago, ASTD stopped focusing on technical training. It discontinued the publication of *The Technical and Skills Training Handbook* and the *Technical Skills Training* magazine. It also dropped technical training as a subject area and eliminated the annual technical training conference. The rationale was that the magazine and conference were originally designed to serve technical training professionals in manufacturing, construction, and other non-computer-related technical disciplines. As that audience was shrinking, since a lot of manufacturing was moving offshore, there was less and less interest in the magazine and the conference, according to ASTD. At the same time, more jobs took on technical components and ASTD did not see the need to keep a separate focus on technical training.

The ASTD Competency Model is organized around generic roles, such as designing learning or delivering training, rather than specific jobs, such as sales trainer or technical trainer. Some experts in the training industry believe that the demise of technical training as a field began at the time of these events. Since then, it has been difficult to find recent strategic or management level information on technical training.

More recently, we see a trend whereby technical training is being marketed as an LMS capability (meaning the LMS has design and deployment capabilities built in). Technical training now also comes bundled with expensive technology from companies like IBM, SAP, or Cisco. At technology conferences, there is some mention of technical training. However, overall, it receives little mention at conferences. "Technical training is a huge field, but it is an underserved market. While the training market is made up of several organizations, there isn't anyone serving it holistically," as Rick Gregory, owner of Bluestone Media, confirms.

The lack of a unified lobby that understands what makes technical training unique, interprets trends, solves associated challenges, and provides overall guidance on how it should be approached from a systemic and strategic point of view results in a big gap for the owners and recipients of technical training. Rather than lamenting the lack of a strong lobby, we issue a call to action for technical training professionals to unite and find a voice in the big world of training.

There is an opportunity to differentiate technical training from non-technical training and leverage the commonalities of technical training initiatives. Although training IT support employees is very different from training people to use drilling machines, which is very different from training marketing professionals to do competitive analysis, the similarities are rich. As we will highlight in Chapter 3, these differences are so significant that special attention paid to technical training would ensure higher quality and better impact.

The Impact of a Declining Economy

Training, like any other corporate activity, is not immune to economic downturns and upswings, so it is difficult to predict the long-term impact

of the 2008–2009 recession. Indicators do not conclusively paint a negative picture. While training budgets may not be growing as much as they were in the past, the cuts may not be as deep as feared. ASTD's State of the Industry survey in 2008 found that 77 percent of companies had experienced "none to a moderate" amount of adjustment to their training budgets due to the turbulent economy. Only 23 percent had experienced a "high to a very high" budget adjustment (Llorens, 2009). Anderson (2008) predicted that 42 percent of companies would see spending increases in 2009, and only 15 percent would see decreases in spending. A 2009 Corporate Issues Survey by Ken Blanchard Companies confirmed this direction: "While organizations aren't painting a sunny picture for the economy in 2009, it doesn't appear that they are slashing training budgets either. Only 17 percent planned to spend significantly less money on training and development in 2009 compared to 2008, and almost half (49 percent) planned to spend the same or more on training in 2009" (Ken Blanchard Companies, 2009, p. 2). A vice president of education services and productivity at a high-tech company confirmed this: his business stakeholders, who fund technical training, will give him more money in 2009 despite the economic outlook.

The fact that technical training is difficult to break out from aggregate training statistics makes an accurate prediction for the total investment and decline in technical training difficult. This, combined with the fact that the impact of the economy on training is difficult to predict, means the full impact will not be known for some time. While there is a belief that technical training has a higher "staying power" than non-technical training, it will likely not escape unscathed.

This adds a new challenge for technical training organizations. Less money means that the money that is available needs to be stretched and used creatively. Tighter vendor negotiations, creative scheduling options, back billing fees, and larger class sizes are all options that should be evaluated. Additionally, a declining economy can change students' motivation to attend technical training. No matter how significant the impact of the economy is on technical training, Edmonds Wickman (2009) recommends that "trainers should recognize the effects of the recession in the classroom as the profile of their students has changed." Technical experts

may be signing up for training because they fear losing their jobs and want to up-skill or because they have expanded job responsibilities due to co-workers being laid off. They may be stretched intellectually, emotionally, time-wise, and even financially if the company has implemented pay cuts or layoffs. It is important for training professionals to understand these stressors and the impact on technical training. Flexible training scheduling and more breaks, additional explanations, and encouragement in the classroom will likely be appreciated by employees, according to Edmonds Wickman (2009).

Organizational Considerations

Several organizational factors pertaining to technical training are common across industries, although they play out differently in different companies. New technology implementations and continuous improvement initiatives are two common organization-wide activities that often necessitate technical training. The technical training organization's legitimacy in the company is one of the factors that influences how business units view the training organization and whether they involve them early in organization-wide initiatives.

Ownership of Technology and Enabling Activities

The responsibility for the success of a new product, process, or technology resides with the business undertaking the new initiative. However, technical training organizations often are blamed when such initiatives are not successful. They may view the lack of success as a skill issue that training apparently did not resolve when there may be another root cause. Also, because training occurs near the end of the project, just before implementation or launch, problems that have occurred throughout the life cycle may have accumulated and subsequently be attributed to training. It is easy to blame the training organization for delays in training delivery when, in fact, the problems occurred earlier. Unfortunately, the ownership for success of such initiatives often incorrectly shifts to the training organization.

The preponderance of people in training who want to help whenever asked may make things worse, especially when it is to rescue a sinking ship.

In his article "What HPLOs Know," Sussman (2005) quotes Rob Campbell, vice president of learning at Cerner, a vendor of IT for health care: "I think there's a tendency for learning organizations to be order takers. It's an easy thing to fall into in your effort to please or serve your constituents" (p. 36). There is nothing wrong with trying to be helpful and solve a business problem or work as a team when problems arise. But to accept ownership and responsibility for a failing process or technology implementation by throwing last-minute training solutions at it is not the right approach.

Technical training professionals should recognize that not all problems can be solved by training. Nobody can be everything to everyone—in fact, anyone who tries usually loses credibility. Technical training is not a band aid. Ideally, it solves the root cause. Skilled training experts can discern whether training is the right solution and what to own and when to push back. Ideally, they help executives see where ownership should reside.

Legitimacy of Technical Training

Training often resides in HR, and yet it is distinctly different from transactional HR activities. HR has seven main functions in most companies: employee relations/business partnering (often referred to as HR generalist work), compensation, benefits, staffing/recruiting, information systems, organization effectiveness/development, and training. A survey conducted by the Corporate Leadership Council (2004) showed that 60 percent of surveyed organizations have training reporting into an HR executive (p. 3). Most people outside of HR are unaware of these various HR functions, how different they are, and how the work is done in each. Israelite (2006) describes one such difference and challenge for training: "Unlike HR's transaction-heavy activities, the majority of training's value chain activities are strategic, not transactional, and unlike payroll, benefits, and other HR services, training activities are largely discretionary. Therefore, if cost reduction is the key driver, you can just reduce the amount of training you offer or stop it completely" (p. 116). This is not as easily possible with other HR functions.

Another challenge is the legitimacy, or credibility, of technical training. Organizations without legitimacy have to continually justify their existence. An indication of whether an organization has legitimacy is whether its

members are invited to join key meetings, forums, and project teams and how the organization is involved in important decisions.

Legitimacy is high, often automatic, for some HR functions like employee relations and business partnering. Most agree that, when important organizational or employee decisions are made, "HR needs to be in the room." This is even more so the case now that HR business partnering has been "up-leveled" and has moved away from the more tactical work of answering employee inquiries. Today, HR business partners increasingly "consult with top executives regarding strategic planning. They have moved from behind-the-scenes staff work to leading the company in suggesting and changing policies" (Bureau of Labor Statistics, 2009). While information systems and staffing are also HR functions, these functions do not have the same level of legitimacy and are not automatically invited to be part of critical discussions. Generally speaking, HR business partnering and employee relations functions have high legitimacy. HR compensation, benefits, and staffing functions tend to have medium legitimacy: everyone agrees the work is needed, although these functions are not safe from outsourcing and downsizing. HR functions such as technical training and organization development have low legitimacy and are continually asked to justify their existence. Stakeholder management, in particular, the expectation for it and the skills required to do it, also varies by HR function.

STAKEHOLDER

Anyone who has a stake in technical training, is affected by technical training or the problem it will address, or can assist with technical training

Stakeholder management and the need for it are inversely related to legitimacy. If legitimacy is high, expectations for stakeholder management tend to be lower. The process of stakeholder management does not need to be managed as diligently in functions with high legitimacy; it is more organic and happens through informal relationships that are available because of automatic legitimacy. Because legitimacy is high, presence in key

meetings and projects is guaranteed and relationship building can occur at those times rather than as a separate, organized effort. Unfortunately, this often means that stakeholder management skills for professionals in high-legitimacy functions is lower than those for low-legitimacy functions. While HR business partners and employee relations specialists can explain conceptually what stakeholder management is, employees in training, compensation, benefits, and staffing will generally outperform them when it comes to disciplined stakeholder management.

Because technical training has relatively low legitimacy compared to some HR functions (but higher legitimacy than non-technical training), it is important that technical training professionals be aware of the high expectations it creates for stakeholder engagement and management. Because of lower legitimacy, the survival and success of a technical training organization is dependent on effective stakeholder management. Technical training professionals should seize the opportunity and focus on stakeholder management techniques that will increase the legitimacy of technical training. Because the topic of stakeholder management is a key competency for technical training professionals, it is explored in greater detail in Chapter 4.

Involvement in Technology Implementations

When technical training comes as part of a million-dollar contractual agreement associated with the purchase of technology it can be buried and overlooked among the many terms and conditions to be negotiated. Because these agreements are most often made by managers in operational functions without the involvement of technical training experts, the training aspect is minimized or altogether forgotten. "Too often, managers want to call trainers for help after the managers have already decided what to do. Training is considered, for instance, only after a work process is changed or the new equipment is selected" (Rothwell & Benkowski, 2002, p. 82). The saying "what you see depends on where you sit" certainly rings true, as technical experts see technology first and training experts see training first—and each may forget the other. Clark (1999) explains that "ineffective training is costing business and industry not only the surface investment made in the training events, but the hidden cost of lost opportunity. Employees who are never trained

to effectively or fully utilize the technologies of their work or provide effective customer service add up to a tremendous productivity loss" (p. 5). Unfortunately, this can lead to a lot of money spent on expensive technology with only a fraction of its capabilities actually used.

The technical experts, whose passion is technology, will focus on the use of the technology and not on the skills employees will need to use it. Initial excitement, the desire of technical experts to "figure it out," and the need to produce a return on investment quickly can preclude the initiation of a healthy partnership with the technical training organization.

For the technical training organization, this challenge presents an opportunity. Building a good partnership with the organization procuring the technology will ensure technical training is part of the process. Training experts will then have sufficient knowledge to take the appropriate actions, enough time to prepare a thorough training roadmap (including time for training design and deployment), and time to involve the right technical experts. In an article about Nextel, Davenport (2005) quotes the vice president of HRD, Jim Caprara, as saying that "embedding HRD early in the decision-making chain ensures that the learning solution is developed in tandem with the initial project approval, as opposed to an afterthought" (p. 30). It can be a rewarding partnership if both sides—technical training and the business group—understand the need for the cooperation and appreciate the expertise each brings.

The Role in Continuous Improvement Initiatives

Most companies launch a process improvement effort at some point. The type of continuous improvement methodology selected depends on the problem the company is trying to solve, the industry, and the process improvement methodology that is popular at the time. Total Quality Management (TQM), ISO 9000 (International Organization for Standardization), Six Sigma, Lean Manufacturing, Control Objectives for Information and Related Technology (COBIT), and Capability Maturity Model Integration (CMMI) are just a few examples. The reasons why companies choose to implement process improvement initiatives are as wide-ranging as the type of methodology they employ. Whatever the standard, framework, principle, reference model,

or concept, the goal is to identify, analyze, and revise existing business processes to improve the quality of certain organizational aspects.

All too often, multiple methodologies are implemented at the same time, compromising each effort and confusing employees and stakeholders. Siviy, Penn, and Harper (2005) point out that "all improvement initiatives selected by an organization should be implemented in an integrated fashion, not as layered or stove-piped efforts" (p. 1). Unfortunately, even with formal improvement programs, many organizations do not take that to heart. They do not recover the investment in their continuous improvement efforts because of a lack of knowledge about what improvements would really benefit the organization, systems for measuring the success of improvements, clear goals of what should be accomplished, leadership to drive the effort despite resistance, and/or incentives to implement the initiative in the first place.

Unfortunately, technical training is often not involved in continuous improvement efforts—either because the technical training manager misses the opportunity from a timing perspective or because the business organization in charge of the effort does not comprehend the role technical training can and should play. However, the technical training organization has an undiscovered opportunity here. Not only can it assist the business organization in charge of the effort to define, design, and deliver process improvement training and hence support the implementation, but many of the frameworks like CMMI and COBIT, with well-defined training processes, can be useful to the technical training organization. Kim Hefty, program manager at Intel, describes her experience when the training organization she worked in received a Level 3 CMMI rating: "For a training organization to receive a formal recognition from an outside institution was like a stamp of approval that we were delivering first-class technical and other type of training. Sometimes it takes recognition from someone outside of your organization to be truly appreciated." Clearly, technical training is only a supporting factor to make these implementations successful. Continuous improvement efforts are large scale and often involve many different organizations in a company. They tend to be like a puzzle with many pieces, with technical training being one of the pieces—and they cannot be successful without involvement of all the pieces.

Capability Aspects

There are also challenges and opportunities for technical training related to "people" capabilities. One challenge is to ensure the technical capability is available to the technical training organization in the form of technical experts to help with technical training. There are also opportunities in most companies to improve the talent management processes and formalized career paths to emphasize both technical skills and general and management skills.

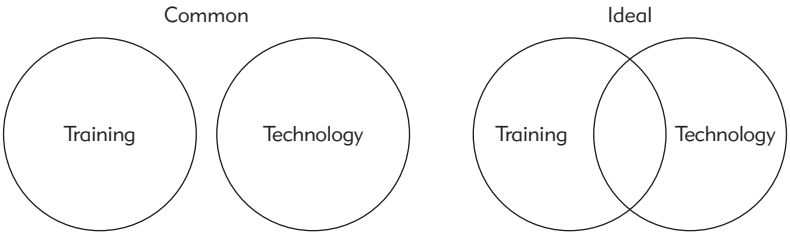
The Tension Between Two Core Competencies

The majority of professionals in HR do not have a background or interest in technology or technical concepts. Many feel more comfortable interacting with people and tend to shy away from technology. A study on "Managing Your HR Career" by the Society for Human Resource Management (2008) found that only 2 percent of HR professionals had a background in a technical area like computer science, IT, or engineering. Furthermore, over the course of their careers, many have come to dislike and sometimes even fear anything that requires the use of technology or technical knowledge. As a result, HR professionals may be hesitant to take on work that has to do with technology.

Companies are typically organized along process or functional lines, each with a specific set of competencies. Two competencies are involved in technical training: technology and training. These two competencies are not usually found in the same organizational function. While the training organization possesses the training competency, it does not possess the technology competency. This typically resides in research and development, engineering, or manufacturing functions.

Because the two core competencies required for technical training are split across functions, a convergence must occur in the form of technical training. Not uncommonly, tension arises because the training organization is more dependent on the technology organization to perform its job than vice versa. For the training organization to be successful, it needs access to the technology competency—namely, access to technical experts—to produce technical training and develop a technical training roadmap. As skills development for technical experts becomes a priority, technical experts expect the training

Figure 2.1. Two Required Core Competencies



organization to provide the training expertise and solutions. With each looking to the other function, both can go without answers or solutions.

A good partnership from both sides will prevent this from happening. In high-performing organizations, both organizations collaborate and leverage the core competencies each brings to the table. They define what collaboration looks like in terms of ownership, roles, project management, budgeting, and key processes. Technical training is most effective when each competency is honored and each function is allowed to perform what it knows best. In this case, the training organization owns and manages the portion of technical training that requires training competencies, and the technical experts are responsible for the part of technical training that requires their expertise—neither one pretending or being expected to do the other's job. This means that technical training organizations do not develop technical courses without involving the technical experts and technical experts do not drive training-like activities without leveraging existing training processes, structures, and guidelines. (See Figure 2.1.) Chapter 4 defines several collaboration opportunities for the technical training organization.

Integration of Technical Training into Talent Management

Talent management has emerged as a focus area for almost every HR function, including staffing, organization development, compensation, business partnering, and training. Everyone is trying to define his or her role and relationship to talent management. However, there is a lack of clarity on what talent management constitutes and who should own it. Some definitions are narrow and focus only on the identification and development of a company's

top talent and succession planning. Others view it as a comprehensive process pertaining to the entire workforce. SHRM (2009) broadly defines talent management as "the implementation of an integrated strategy or system designed to increase workplace productivity by developing improved processes for attracting, developing, retaining and utilizing employees with the required skills and aptitude to meet current and future business needs."

Given that talent management is a relatively new concept and there is lack of agreement as to what it involves, it is not surprising that technical training is not included in discussions of talent management. Even a mature concept like "training" needs to find its way into this concept, and technical training along with it. If talent management is dissected into its four basic processes—recruiting and hiring, performance management, training, and succession planning—the processes can be explained as follows.

In the *recruiting and hiring process*, candidates' education, certifications, and work experience are meticulously screened for technical skills. Similarly, employees' technical contributions are evaluated along with other contributions during the *performance management process*. While these two processes of talent management address technical skills, the remaining two are not as robust.

McNamara (2008) explains that *training*, in general, as well as technical training, is not yet fully built into the talent management system at most companies: "Some of the necessary changes I see are integrating training and development more fully with the other elements of talent management" (p. 77). Currently, training in the context of talent management often only includes leadership and management training and other personal effectiveness skills training. Technical training and technical competence, are rarely part of talent management offerings today, despite the fact that many employees list on their development plans. The fact that technical training can be very specialized for different skill sets, resulting in the need for very specialized offerings, is likely a reason technical training is not incorporated. Increased specialization directly impacts the volume of the training delivered. Technical training is more granular or specific, and hence any associated efforts would only apply to a small group of employees. As volume decreases and courses are applicable to smaller audiences, funding, geography, and other practical

considerations come into play. These factors generally prohibit the regular delivery of many specialized and unique courses at multiple sites due to the cost. Sometimes e-learning is used to overcome those challenges, although it poses additional challenges in itself. Training, as part of talent management, is kept on a higher, more general level that applies to individuals across the company. Another reason why technical training in some companies is not fully integrated in talent management is that talent management is owned by HR. If training, including technical training, is not part of the HR organization, it may be forgotten in the design and execution of the talent management system or HR shies away from it.

The *succession planning process*, the fourth step in the talent management process, is not unlike training in that it is often focused on leadership and management positions, rather than on technical positions or technical skills. While some organizations do succession planning on multiple levels, most organizations start at the top or C-level positions, with a focus on broad leadership skills required to lead a business unit, and do not go any deeper. Most individuals with deep technical or functional expertise do not have the breadth of experience required for such a role. Nonetheless, succession planning is critical within technical and functional areas to ensure technical employees are being prepared to move up vertically. These employees must have both the technical knowledge and leadership capabilities. This is where the technical training organization can help. If succession planning is focused primarily on upcoming managers and future leaders, technical experts and leaders will feel forced into managerial career paths to remain successful at the company.

The newness of the concept and the lack of clarity around ownership and content present a tremendous opportunity for technical training. Training organizations, and the learning profession as a whole, need to insert themselves into the talent management process to ensure that a proper focus is placed on building and maintaining employees' skills and advancing technical experts, and not just on identifying skills for hiring and promotion. As Ringo, Schweyer, DeMarco, Jones, and Lesser (2008) point out, training plays an important role in the success of talent management though the value of talent management as a whole is not always clear and a rethinking of the role that employee development should play is needed.

Table 2.1. The Current and Future State of Technical Training and Talent Management

	Current State		*Future State*	
Talent Management Process	*Personal Effectiveness and Business KSAs*	*Technical or Technical Functional KSAs*	*Personal Effectiveness and Business KSAs*	*Technical or Technical Functional KSAs*
Recruiting and Hiring	X	X	X	X
Training	X		X	X
Succession Planning	X		X	X
Performance Management	X	X	X	X

If companies want to develop comprehensive talent management systems, they need to actively consider all different types of professionals, including technical experts. Technical knowledge, skills, and abilities must be considered as key aspects of a comprehensive talent management system as shown in Table 2.1.

As companies define ownership for talent management and what talent management constitutes in their companies, the technical training manager should be involved in the discussion and help guide the company to the future, desired state.

Availability of Career Paths for Technical Employees

Career paths are a key element of the HR and training offerings. They are not only valuable attraction and retention tools, but ideally they provide useful information for employees to guide their future career and job choices within the company. For example, career paths often show the competencies required for future jobs, how jobs relate to one another, and common progression within a job family. Technical employees typically have fewer career path options and, at some point in their careers, are confronted with the decision

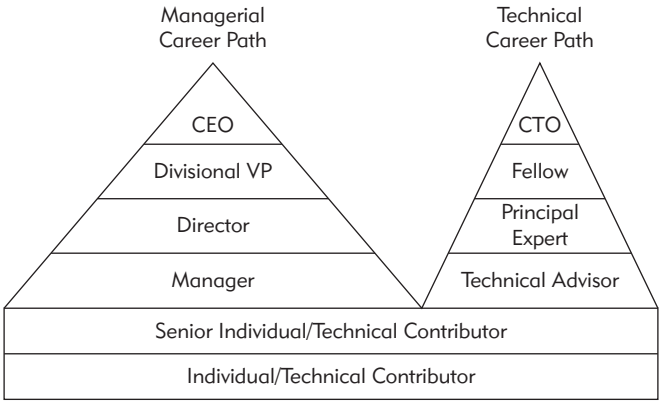
of whether to become more specialized or to pursue a management position. "At some point in your career you're going to have to choose between developing your technical and your managerial skills. The two paths diverge from a common point of a desire for advancement" (Sarrel, 2006). This is just one of many challenges technical experts face.

Technical career paths are still rare in companies, despite the fact that there are usually more technical and technical functional employees in a company than other types of employees. Leck, Spilotro, and Wang (2006) confirm that "there are more technical specialists available today than management professionals, yet few organizations offer a solid path to career growth in the technical arena" (p. 8). The good news is that, due to the competition for talent, many companies have begun implementing them. Promoting two types of career paths, including a technical career path, is certainly the right approach. They explain that "one path allows the technical or scientific expert to dive more deeply into technical areas. The other challenges the technical specialist to broaden his or her managerial skills. But to truly take advantage of the talent in your organization, those career paths must be available and well-defined" (Leck, Spilotro, & Wang, 2006, p. 6).

An additional issue with technical career paths is the reality that there is not necessarily a natural pyramid, as there is for managers. The higher up one goes in a company, there are fewer senior technical expert positions available compared to management positions, creating a narrower pyramid with fewer opportunities for technical employees, as shown in Figure 2.2.

Managers who make promotion decisions may also have blind spots when they lack a technical background; they may not see the need for an equally wide pyramid for technical experts as for managers. A pyramid for technical leaders creates opportunities for the company as a whole and can positively influence perceptions of the importance of technical expertise, reward structures, and so forth. Executives need to think carefully about who they select for a managerial career path. Many technical experts do not enjoy management but feel it is their only option in order to remain successful and continue to advance. As Sarrel (2006) confirms: "Many times there is only so far that you can go as a technologist, only so high that you can rise within an organization on technical skills alone. In order to break through to a

Figure 2.2. Managerial Versus Technical Career Path Pyramids



position of leadership you'll need to cultivate managerial skills." Management positions typically include responsibilities associated with strategy development, meeting attendance, operational activities, and performance management. Most technical employees perceive these responsibilities as uninteresting and non-value-add. Over the course of a few years, solid technical employees may find themselves on a completely different career track than they originally set out on. Unfortunately, this can lead to valued technical experts becoming dissatisfied and leaving the company after being tasked with things they do not like to do, do not know anything about, and possibly have never received any training for.

Career paths create a wide variety of opportunities for the technical training organization. If there is not a technical career path, the technical training manager should initiate a conversation with HR and executives to point out the gap and the benefits that dual career paths can have. Because the technical training professionals are the experts, they should be involved in the design of the technical career path along with technical experts.

Many companies that offer two types of career paths make the mistake of not offering any associated development for technical employees, leaving employees to their own devices and contributing to their misgivings about a managerial career path. The mere fact of having the two career paths is not sufficient. Often, the belief that the managerial career path is more valued than the technical career path is deep-seated. Communicating the fact

that a technical career path is available—and is valued as much as the managerial track—is critical. Explaining that developing key "technical contributors is vital to improving employee productivity, retention, and company competitiveness in the market" may help overcome lingering perceptions (Corporate Leadership Council, 2003, p. 1). Promotional processes and compensation schemes must, of course, be aligned to the career path. The Corporate Leadership Council (2002) confirms that "providing an alternate career path for technical professionals not interested in management, while maintaining a more equitable non-management compensation structure" (p. 1) is important. Perks like titles, rewards, projects, labs, parking, office space, and conference attendance also should be equally available to high-performing employees on both career paths. Unless all real and perceived perks are aligned, the technical career path will never be seen as equal by the technical expert community.

Skills Mastery Over the Course of a Career

Over the course of an employee's career, the way he or she acquires knowledge and skills changes. Initially, after people graduate from college and join a company, the need for technical training and technical skills development is high. Recent college graduates and those starting their careers are not only eager to learn but also need additional skills to be successful and to compete with more experienced peers in the workplace. Therefore, they tend to take lots of formal classroom training at the company as well as offsite training offered through vendors. The volume of technical training they take is relatively high, the content is broad, and the training delivery tends to be more formal.

As employees move up the career ladder, several things happen. The technical training content they need becomes more specialized, so technical experts turn to other sources to acquire this knowledge. They engage in technical conversations, topical seminars, job rotations, conferences, and self-study to acquire or enhance their specialized technical skills, all of which are less formal means of skills development. In general, their willingness to attend formal training decreases because they will have spent many hours in classrooms earlier in their careers. Additionally, as employees become more experienced and tenured, demands for their time become higher. Executives

may also feel that senior employees should already know everything, since they are already leading the organization, and therefore do not need technical training. Attending a course with lower-level employees may also cause more senior professionals to "lose face."

Instead of attending formal training, teaching can be a way for executives to keep skills current. Teaching is often considered the best and possibly only way to share and role model company values while conveying sophisticated technical information. If teaching is part of an organization's culture, senior employees will not only teach technical courses but also managerial courses. What tends to be forgotten, however, is that teachers should go through a rigorous program to learn the skills to teach. Just because someone has been with a company for a number of years or has acquired technical expertise does not mean he or she is qualified to teach. And just because someone can put together first-class presentations does not mean he or she is a good instructor.

From an opportunity perspective, the training organization should conduct analyses to determine the best methods—formal or informal—for meeting the technical skill needs of employees at various career stages. Technical conferences, technical mentoring opportunities, or technical communities may be the more appropriate learning opportunities for those who are more advanced in their careers. For senior employees interested in or involved in teaching, a defined "leaders teaching leaders" approach will not only ensure they have the necessary knowledge and skills to teach, but it will also give them a developmental opportunity appropriate for their level. Like a "volunteer instructor" program—the term is used for experts teaching other employees, "leaders teaching leaders" is the industry term used for executives who teach other leaders. For it to be really effective, it has to go beyond "volunteer" to being part of the company culture—with expectations and recognition for "teaching" being part of executives' jobs.

Summary: The Value Proposition for Technical Training

While most people agree that skills development is important, O'Toole and Lawler (2006) explain why training and development in general is

becoming more and more critical: "Particularly in the last decade, an observable convergence of trends has heightened the need for more, and better, job training: the increasing speed of technology change, the increasing sophistication of foreign competitors, the export of manufacturing jobs, downsizing due to pressures to increase productivity, shortcomings in the quality of formal education (particularly at the high school level), and the aging of the workforce. All told, those trends amount to an almost perfect storm, creating an ever-increasing need for workers to update their skills regularly and, often, to develop entirely new ones" (p. 127).

There is little disagreement about the general need for training. However, there are mixed signals about technical training and its importance. On the one hand, there is very little strategic or high-level information and material available on technical training in books or articles on training. Other types of training seem to garner more attention in the publication arena. However, executives, managers, technical experts, vendors, and academics, agree that there is a need for more analysis on the topic of technical training. In addition to the need for training in general, technical training is particularly important because:

1. Experts saw the convergence of technical training with other types of training coming, but it took over a decade for training experts and employees to embrace that trend and really understand the impact. Now there is no denying it, making it critical to understand the intricacies of technical and technical functional training.
2. With 60 percent of all content areas dedicated to technical and technical functional training, it is paramount that literature and industry organizations pay more attention to best-known practices and acknowledge that differences between technical training and other types of training are significant. Pretending the same approach works for all types of training results in miscommunication, misunderstandings, delays, and other issues.
3. The majority of workers do not feel they receive sufficient technical training. A study by Nancherla (2008) found that 74 percent of employees felt they were asked to do things on the job for which they were not properly trained. Basic skills training was not lacking,

but technical and management training were. Companies cannot afford for such an important aspect of performance to fall through the cracks. A strong lobby is needed for technical training.

4. While the cost of technical training is higher than other types of training, the ROI for technical training is also significantly higher. In an investigation of the usage and effectiveness of corporate-wide training, Morrow, Jarrett, and Rupinski (1997) found that the mean ROI for sales and technical training was 418 percent, while the mean ROI for management training was just 45 percent. Clearly, achieving the highest possible ROI is desirable, especially during tough economic times when resources are limited.

We wrote this book as an attempt to help bridge the gap of inadequate information on technical training and to bring many of the intricacies of technical training to the forefront so that technical training can be an asset in any company, as it is in TriQuint Semiconductor. Comments from our interviewees, notably "It is a great idea to do this research as there is not a lot out there" and "I applaud you for doing this research," confirm the need to thoroughly examine the topic of technical training.

CASE STUDY: MAKING TECHNICAL TRAINING A PRIORITY AT TRIQUINT SEMICONDUCTOR

TriQuint, founded in 1985, is a leader in high-performance radio frequency (RF) components for wireless communication. Headquartered in Hillsboro, Oregon, the company currently employs approximately 2,400 people worldwide. Ross Bolf, training specialist at TriQuint Semiconductor, explains how technical training came to be and why it is a focus for the company.

The training function reports directly to the vice president of human resources, who reports to the CEO of the company. Training did not become a subcomponent of the human resources department until late in 2007, when a need arose to "standardize" training among the different sites. The focus and goal for 2008 was to create and deliver radio frequency (RF) training to employees. RF training is vital to TriQuint's competitive advantage, as it directly supports the business agenda. Providing such

training also shows investment in employees, helps to retain critical talent, and creates an opportunity for technical employees to continue to grow their skills.

In order to determine the components of the technical curriculum, a thorough and detailed needs assessment was conducted. It had two components—interviews of seven vice presidents and a follow-up survey with more than two hundred employees (mainly design and product engineers). From this data gathering, a list of twenty topics was finalized and prioritized. Based on the topics that were requested, it was apparent that TriQuint would need to find an external expert resource. Although the company had many qualified internal resources, it became clear that the lack of time during the work week would become a roadblock for internal technical experts to teach. While researching several options, the company turned to an associate professor at a local university, also a former TriQuint employee and renowned expert in the radio frequency world, who was very interested in designing and delivering these courses.

Because this was a new initiative, no standard had been set for how this training would be funded. Some companies have a single "training budget" from which all cost centers charge for training, sometimes under a general funding categories and sometimes under HR. Others charge the individual cost centers for each student who attends a certain course. The TriQuint solution was a hybrid of both models. The VP of HR agreed to fund the design phase of each of these courses, while the cost of the delivery of the courses (including any required travel and lodging by the instructor) was allocated to the individual cost centers of students who attended the courses.

The first courses, "Introduction to Microwave Engineering" and "Introduction to Microwave Circuit Design," were piloted at the Hillsboro facility in October and November of 2008. Minor changes were required, and despite the need for improvements, the feedback and response to the pilot were very positive and soon courses were scheduled in other U.S. cities. The per student cost of these TriQuint technical courses was less than one-third of the cost of some national vendors, who provide non-customized "off the shelf" classes on a similar topics. In 2009, three additional technical courses were designed and delivered: "High Efficiency RF Amplifier Design," "High Linearity Power Amplifier Design," and "Introduction to Antenna and Radar."

Because the company is dispersed, having one training organization anchored in the HR department worked well for TriQuint. Technical training, like much of the training at TriQuint, crosses functions and business units. For the organization and deployment

of technical training to be owned in a manufacturing or quality organization could lead to duplication. Having central coordination within HR:

- Ensures streamlined funding requests
- Enables easy access to the instructor
- Ensures sites are kept informed
- Allows for delivery of highly customized curriculum
- Facilitates clean and simple budget management

To date, four courses have been designed and delivered. The class fill rate is 100 percent, with twenty-four students per class. Because of the instructor's vast knowledge of RF technology, his reputation and relationships with the employees, and his ability to align his course content to the specific needs of each individual site, the session evaluation scores are exceptional and some of the highest of any courses taught at TriQuint. On a scale from 1 to 5, with 1 being low and 5 being high, scores around materials, delivery, and student interaction were consistently scored in the 4 and 5 ranges. The technical courses have also created an awareness and interest even outside of the technical community. As an example, TriQuint's product marketing group is working on mini-sessions on the basics of RF design and vocabulary to give employees an advantage in conversations with vendors and customers. Many employees in support functions, including finance and HR, have shown interest in learning more about RF technical concepts.

The complete deployment of the technical curriculum is planned by the end of 2011. The following factors have been and will continue to be critical for the success of RF training:

- Addressing employee survey results
- Conducting needs assessment of the desired topics
- Aligning technical training to the business agenda
- Keeping costs down
- Making content applicable
- Ensuring senior staff support in the process

Despite the recent economic downturn, funding for technical training such as this has not wavered at TriQuint.

3

Differentiators of Technical Training

WHILE THERE ARE MANY SIMILARITIES between technical and non-technical training, research, interviews, and surveys completed for this book yielded twenty-four distinct differences. The premise is that knowledge drives action. Understanding these differences enables training professionals to develop and deliver the right product and service to the right people at the right time. In this chapter, we look at these differences between technical training and other types of training in depth and analyze them alongside the ADDIE model of instructional design. Training actions that should be considered for each differentiating factor are offered.

What Are Differentiators?

"Technical training is king. If you train on technical things, it is easier to make the business case because it is more critical. It takes a dramatic trigger

like retirement of the workforce or failing projects for an organization to pay attention to soft-skills training," said Robert Blondin, vice president of learning strategy and assessment for ACS Learning Services, pointing out one of the key differences between technical and non-technical training. While many things set technical training apart from non-technical training, unfortunately, there is very little research on these "differentiators." The differentiators presented in this chapter were validated and confirmed with our interviewees and members of several online training communities.

DIFFERENTIATORS
Factors that distinguish technical training from non-technical training

Instructional design is a systematic approach to planning, designing, developing, and evaluating training. The ADDIE model is one of the more common models for instructional design. It originated in the U.S. military as a way to systematically train large numbers of employees in highly technical tasks. ADDIE is the acronym for the phases of analysis, design, development, implementation, and evaluation. The model provides a framework for organizing the differentiators, as shown in Table 3.1. The use of the model for developing technical training is discussed in Chapter 8.

Table 3.1. ADDIE Phases and Differentiators

ADDIE Phase	*Differentiators*
Analysis	The focus for technical training is different.
	Technical training has a different trigger.
	The planning horizon for technical training is shorter.
	A mix of formal and informal learning is more prevalent in technical training.
	e-Learning is viewed as more appropriate for technical training.

(*continued*)

ADDIE Phase	*Differentiators*
Design	Limited content is available for the development of new technical training.
	Granularity of content and audience size are directly related to each other in technical training.
	The need for contextualization is higher in technical training.
	Coopetition needs to be comprehended in technical training.
	SME involvement is more common in technical training.
Development	Technical training is revolutionary.
	Refresh cycles for technical training are shorter.
	Standardization and certification for technical training is more likely.
Implementation	Learning and Unlearning of technical concepts is easier.
	The release timing of technical training is different.
	VIs are more common as teachers of technical training.
	Waterfall deployment is rare in technical training.
Evaluation	Causality of outcomes is more direct in technical training.
	Technical training is easier to measure and less likely to be cut.
	Errors in technical training have more serious consequences.
	Escalations are quick and go high up in technical training.
Overarching Differentiators	Technical training is more expensive.
	Not everyone believes he or she can do technical training.
	Trust is the foundation of technical training.

SYSTEMATIC LIFE CYCLE METHODOLOGIES

The ADDIE model represents the instructional design process and its various phases: analysis, design, development, implementation, and evaluation. There are detailed processes for each. The ADDIE model is training-focused, but it is similar to other systematic processes and phases. Examples from other industries include:

- Quality (Plan–Do–Check–Act)
- Project Management (Initiate–Plan–Execute–Control–Close)
- Software Development (Analyze–Design–Build—Test–Implement)
- Manufacturing (Pre-Design–Design–Fabrication–Pre-Operation–Operation–End of Life)

As disciplines mature over time, approaches become more standardized and systematized to make the work more efficient and effective. Using a systematic approach increases quality, consistency, and even credibility, among other things. Because technical experts tend to use linear approaches to problem solving, they are familiar with systematic methodologies and usually embrace them.

Speaking a language that technical experts are familiar with helps break down barriers. Referencing project management phases and/or other systematic life cycle methodologies may help to bridge the gap between training and technical experts. This is not to say that instructional designers should dispense with the ADDIE model, but that they should leverage the commonalities between it and similar life cycle methodologies used for technical disciplines. Many organizations use both the ADDIE model and formal project management phases for training programs. The various methodologies can be mapped together to show the phases and timing common to each in a visual display. This provides assurance for technical experts because it allows them to see how the instructional design process fits into the model they are familiar with.

Analysis

Analysis is the first phase of the ADDIE model. It involves analyzing the business problem or opportunity and the work environment to determine

whether training is needed. Factors considered include job performance requirements, current levels of knowledge and skill, work processes, and learning constraints. Differentiators related to analysis include the focus of technical training, what triggers the need for it, the planning horizon, the use of formal and informal learning methods, and the use of e-learning.

Focus

The focus of technical training is different than for other types of training. For example, personal effectiveness training is focused on interpersonal information and processes like teamwork, management techniques, or communication. Business training is focused on "organizational" information and processes such as strategic planning, disaster recovery, or project management. In contrast, technical training focuses on turning new ideas into "objects" or "things" of a tangible or intangible nature. Different training approaches are required for these different focus areas. Technical training lends itself to checklists, templates, structured approaches, whereas non-technical training and the "person/person" focus require much more room for personal styles and interpretation because of the obvious differences among people.

Trigger

The HR organization typically determines the need for personal effectiveness and business training. Employee turnover, negative organizational health survey results, or massive hiring often lead to the realization that training is needed. In contrast, the need for technical training is initiated by the product development, engineering, or other business teams and is triggered by a technology change or a product launch. If training experts reside in HR, they are dependent on the business for input and direction on technical training. They have to work very closely with the business to understand the triggers for technical training. While a close partnership with the business is recommended for any type of training, HR can still deploy non-technical training without such a partnership. As a result, personal effectiveness and business training are often "supply driven" or, more negatively put, "pushed by HR." Conversely, technical training is more "demand-driven," that is, deployed when needed by a subset of the organization.

Planning Horizon

The planning horizon for technical training is shorter and the content more tactical than for non-technical training. Shorter cycle times and the need for constant refreshers of technical training limit the time available for thorough analysis and planning. While a needs analysis at the beginning of the year may reveal the need for specific training, conditions are likely to change midway through the year, given the speed at which technology changes in most industries.

A problem that technical trainers often encounter is that leaders want training to be available prior to launching a new system, but the engineers and testers want to continue developing and testing until the last possible minute. Training takes weeks to build, but the expectation is that it should be delivered shortly before or very soon after the product launch. These expectations cause constant tension. Most personal effectiveness training, on the other hand, is predictable and can be put on the calendar at the beginning of the year. If a change occurs later in the year, it is rarely due to content or material changes but to changing business priorities.

Formal and Informal Learning

A mix of formal and informal learning is more prevalent in technical training than in other types of training. While most disciplines and industries are still exploring the application of collaboration, knowledge management, and social networking tools, technical experts were among the first to embrace these methods. Often, the technical experts introduce the informal learning tools in a company, forcing the training organization to adapt. Informal learning structures often emerge when formal learning opportunities are not available. For example, when there is a lag in time before product training and/or documentation becomes available, employees will use informal opportunities to gain knowledge and information they need. It behooves the technical training organization to become aware of, and support, the informal learning structures and technology that emerge. Ideally, companies should offer a combination of structured, formal learning as well as unstructured, informal learning. The technical training organization can assist by researching employees' preferences for informal methods and by providing supporting resources, tools, and technology.

e-Learning

e-Learning, or online training, is often viewed as more appropriate for technical training than for non-technical training. Pete Weaver, CLO and senior vice president, leadership solutions, for Development Dimensions International, agrees. The "preponderance of e-learning in the business world comprises technical training, professional compliance training, new product orientation, and/or customer and user online manuals—not people skills. e-Learning is marvelously scalable and can be extended instantly to all reaches of our global enterprise. So, why can't it work better for people skills and improving leadership behaviors? Certainly, conceptual knowledge can be conveyed efficiently with online text and graphics. But all research and practical wisdom tell us that behavior change rarely comes from cognitive understanding alone" (Weaver, 2008). Todd Beck, senior product manager for AchieveGlobal, an international provider of skills training and consulting services in customer service, sales, performance, and leadership, agrees: "Although e-learning can provide systematic product-related training, it has distinct limitations in the systemic, soft-skills training area because staff participate in training in 'silo' situations, with no opportunities for integration." One training executive was even more pointed: "I would hate to have someone negotiate with a terrorist if that person only learned negotiation through online simulation."

The majority of experts agree that technical training lends itself to delivery methods other than classroom training more than other forms of training do. Technical training is more explicit, objective, and easy to codify. There are, however, limitations, such as in manufacturing, where hands-on experience is essential to learning. Despite what others said, Rothwell and Benkowski (2002) caution that "no research conclusively demonstrates that any one delivery method is better than others" (p. 194). Factors that may limit the use of e-learning for technical training include learning styles, employee preferences, company culture, and the age of the workforce. A company with a seasoned workforce, for example, may not be as ready to be trained on technical concepts via online tools as a start-up company with mostly recent college graduates who are computer-savvy. So, although

e-learning may be viewed as more appropriate for technical training, non-technical training experts should still evaluate its appropriateness for their target audience.

Design

The design phase of the ADDIE model involves establishing the training objectives and designing the training to meet the need. The differentiators that need to be considered for this phase include: the amount of content available, the relationship between granularity of content and audience size, the need for contextualization, the concept of coopetition, and the value of subject-matter expert involvement.

Availability of Content

Limited content is available for new technical training, compared with other types of training. As a result of frequent technology changes, the only people who know how things really work are the technical experts who invented or designed them. Consequently, there is not a lot of information available to build training especially if the technology is not only new to the company, but also new to the industry. Few vendors have off-the-shelf technical training for rapidly changing technologies. Because there is not much available in terms of material or technical documentation, some companies opt to take the shorter route. Rather than spending time on the development of comprehensive training materials and job aids, they put together a PowerPoint presentation and schedule a room to quickly inform the initial set of employees who need to be trained. Getting the knowledge to employees quickly usually is a competitive advantage.

Training experts must partner with technical experts early to be able to influence technical training design. Rather than criticizing the PowerPoint approach, they can prepare templates and fill-in-the-blank presentations that the experts can use to improve their presentations. This can help in two ways: first, better materials will be available for the initial training, and second, the experts will be more likely to come to the training experts earlier next time. Additionally, training experts need to maintain good

relationships with vendors who can be engaged at a moment's notice. In time, as the content stabilizes, robust training content and/or e-learning can be developed. As the knowledge level across the organization rises, the need for training decreases and more and more experts emerge, writing white papers and giving "tech talks" on the subject. At some point, the new technology becomes dated and only a few employees, such as new hires, need to learn it. As a consequence, courses are no longer offered, talks are no longer given, and employees search for old presentations to find information. The technical training organization can help the situation by maintaining and/or archiving training content for future access.

Granularity of Content and Audience Size

The granularity of training content and size of the target audience are directly related to each other in technical training. Whereas the size of the audience for non-technical training is often very large, the size of the audience for technical training can be very small.

Technical training professionals perform analyses to understand what technical expert groups already know so that training can be tailored to their specific knowledge gaps. It is a balancing act for the technical training organization and SMEs to make content specific enough to be useful for technical experts but still applicable to a large enough audience to warrant its development. Very specialized content may have such a small target audience that it is not cost-effective to develop formal training. This is less of a problem in larger companies in which a critical mass is easier to achieve. Given a benchmark of technical training development at $30k to $40k per course, a cost/benefit analysis should be conducted, whether the course is internal or from a vendor.

Contextualization

Contextualization refers to the need to explain the business or technical context for the training in order to increase learners' understanding and application of the material. The need for contextualization is higher in technical training than for other types of training. Putting technical training content in the context of an organization means changing generic content

and adding specific company or technology information. Contextualization helps learners use specific knowledge and skills and apply them in the proper context. As Irada Sadykhova, engineering excellence director at Microsoft, put it: "If you do not contextualize technical training, it is artificial." Personal effectiveness and business skills are more transferrable across companies, making contextualization less essential.

Contextualization is best done by technical experts who have knowledge of company history, practices, and products. Generally, contextualization is very difficult for vendors and significantly increases the price of vendor training. "Organizations either hire a consultant who knows the subject but is not a trainer or they work with industry groups who provide training. However, that often doesn't 'cut the mustard,' as it is too disconnected and doesn't match the need. It is important to contextualize the training to increase its usefulness," says Karen Mathre, principal learning and development specialist at Medtronic, Inc., a medical technology company. Contextualization takes time and money, and training experts should carefully evaluate which courses to contextualize and choose the ones with the highest impact.

Coopetition

Coopetition is a business term for "cooperative competition" in which competitors share costs and work together on parts of their businesses in which they do not compete. Coopetition is not as relevant to personal effectiveness training as to technical training. Technical training may be jointly developed by companies and vendors either for subjects where there is no competition or for generic processes, for example, in HR or IT. It is not used by companies who do not choose to share product information, even with value chain partners.

For coopetition to work, companies need to clearly define what they are working on jointly and where they are competing. The technical training organization has to understand this relationship to avoid accidentally sharing confidential information. While coopetition is an intriguing and potentially cost-effective approach to designing training, it requires a mature technical training organization with robust communication and information storage practices to ensure competitive information remains confidential.

Subject-Matter Expert (SME) Involvement

SME involvement is more common in technical training than in other types of training, particularly when technology is new or very complex. When building training for proprietary systems or tools, the content may be new to vendors as well, and involving internal SMEs may be the only way to develop content. Denise Doctor, manager for upstream technical recruiting and development at ConocoPhillips, confirms: "The more complex the technical training, the less you are likely to outsource it and the more you need technical experts to build it and evaluate it. The majority of SMEs enjoy being tapped for course development and view building the technical skills of the organization as an essential part of their motivation. Their passion comes from being an expert in their technical field and wanting to impart that knowledge."

The involvement of SMEs is less common in other types of training for which there is a qualified external market. Products and services that are relatively stable and are in use across a variety of industries are less likely to require internal SME involvement. Often well-established vendors with credibility in the industry are given responsibility for delivering this type of off-the-shelf training after they have been vetted by the company. This allows the training organization to engage them quickly without the need for SMEs, unless they are engaged to do a "sanity check" on the vendors' content to make sure it fits the company's needs. Checking the market for existing personal effectiveness courses is preferable to creating new courses, given the plethora of offerings available. When personal effectiveness courses are built internally, it is often because a thorough market analysis was not completed or the company has a "not-invented-here" syndrome, that is, nothing is good enough unless it originated within the company. This is a very inefficient way of conducting personal effectiveness training and should be avoided from a cost and time perspective.

One of the challenges technical experts face with course development is that, while they are very familiar with the technical concepts, they forget that the audience will not have the same level of familiarity. Technical experts may set a standard so high that others cannot reach it, and therefore

the training is ineffective. Training experts must help SMEs recognize the learners' background to ensure the course content is appropriate for their level of understanding. A solid instructional design process and partnership between the technical expert and training expert should result in a better overall training product.

Development

The development phase of the ADDIE model involves development of the instructional materials. Differentiators that impact the development phase include the revolutionary nature of technical training, the challenge of shorter refresh cycles, and the opportunity to leverage standardization of training content and certification for different purposes.

Evolutionary Versus Revolutionary

The development of technical training is more revolutionary than the development of other types of training. It is rare that radically new coaching principles or communication techniques are discovered that trigger the need for a complete redesign of such courses. What may be considered "revolutionary" in the personal effectiveness space are not the concepts themselves but the application of them within a company. For example, if a traditional command-and-control organization implements self-directed work teams, the needed communication and facilitation skills could be considered revolutionary compared to what the organization had before.

However, in the technical realm "breakthrough" innovations from a content perspective occur regularly and are a source of competitive advantage. In fact, technology innovations are often designed to be disruptive or revolutionary in that they improve a product or market in a way that is unexpected and subsequently displaces other products. For example, the invention of digital photography displaced chemically processed photography. Digital photography was so different from previous methods that users had to acquire new knowledge and skills to use the technology. Such advancements in a technology make prior technical documentation and

training obsolete. There is a small window of competitive advantage for any revolutionary product. Competitors will either build a competing product or upgrade an existing one to match the capability/price point. The dilemma for technical training revolves around how complete to make the training. If training professionals wait until the product is completely ready to distribute before building the training content, their companies may lose sales. If the company launches without training, it likely either cannot sell as effectively or cannot service the product.

Refresh Cycles

There is overwhelming agreement that refresh cycles for technical training are shorter than for other types of training because technology and product mixes change constantly. Thus, the shelf life for technical training is shorter and content needs to be updated more frequently than content for other types of training. According to George Selix, senior director of employee and partner training at Sun Microsystems, "Leadership curricula can be successful for five to ten years but technical content needs to be updated at least annually, but usually much more often than that. Vendors will change the content of other types of training, such as management training, for the purpose of reselling it. Internal training organizations might choose a new management training product or customize training if a new leader prefers a different approach. When it takes time to select a new vendor or customize material, no major harm is done; however, with technical training, changes to the content need to be integrated immediately."

Standardization and Certification

It is easier to establish uniform or standard methods, processes, and practices and easier to evaluate proficiency in technical training than in other types of training. A progression or specialization of skills is also expected in technical training. An example from the fleet management industry shows how and why a sequenced approach to technical training is often needed. "Technicians must progress from the basic, universally-applicable electrical knowledge to more advanced critical thinking and troubleshooting skills, followed by the necessary product-specific technical training" (Howe, 2009).

Foundational courses serve as prerequisites for more advanced courses in a series. Technical training organizations sometimes label courses in a series similar to university course numbering schemes: 100 series foundational courses, 200 series intermediate courses, 300 series advanced courses, and so on. Technical training vendors also typically organize training content in packages because, by combining prerequisites with terminal content, they obtain higher levels of end-user competence and receive a longer revenue stream. For companies, organizing curriculums in this manner is an effective way to show and track employee skill progression. Technical experts like a progressive series of technical courses because it adds to their resumes and increases their marketability.

When a robust evaluation component is added to the course series, employees' mastery of skills can be measured and certifications can be awarded. Certifications are very common in technical training courses. Quite a few of the new breed of talent management systems include provisions for technical skill competency management and certification. Offering a combination of internally developed certifications and industry-recognized certifications is a good way to develop internal technical expertise.

Implementation

The implementation phase of the ADDIE model involves delivering the training or launching e-learning courses. The fact that unlearning technical concepts is easier than unlearning behavioral habits is beneficial in this phase. The timing of release of technical courses is aligned to product and technology release or implementation dates, which is different from non-technical training. The technical training organization also relies on technical experts to deliver or implement training.

Learning and Unlearning

In general, unlearning old habits is harder than learning new ones. A certain amount of unlearning is necessary for any skill to be replaced by a new skill. The unlearning of technical concepts is easier than the unlearning of personal effectiveness skills that employees have learned and developed over

the course of their careers. As Dennis Coates, CEO of Performance Support Systems, Inc., explains:

> "People come to organizations with interpersonal behavior patterns already thoroughly ingrained, and they weren't learned in a classroom. Instead, individuals learn how to deal with relationships and other life challenges 'on the street' at a very early age. They observe how the people around them do things, they experiment, and they stick with what works for them. So everyone ends up with a unique portfolio of people skills; some behaviors may be effective, but others cause problems. By the time employees get to a training room, they've already worked hard for decades to reinforce the way they deal with people." (Coates, 2006)

Generally it is easier for employees to accept technical offerings because nothing too personal is at stake. Technical training is not as "near and dear" to employees as personal effectiveness characteristics; technical training does not usually arouse deep-seated personal values, attitudes, and behaviors that employees have formed over time.

Release Timing

The release timing of technical training is different than for other types of training. The deployment of personal effectiveness training tends to be aligned to the annual HR calendar, including standing activities such as annual performance reviews, salary increases, bonus payouts, benefit enrollment, and so forth that occur at the same time each year. While the deployment of personal effectiveness training tends to be more flexible and predictable, it is somewhat randomly scheduled. Most business training is aligned to the company calendar along with quarterly or annual activities such as budgeting, strategic planning, year-end close activities, and so on. Required or mandatory training, whether personal effectiveness or business, is usually tied to completion in a certain time period. In contrast, the release and deployment of technical training is aligned with planned technology and product cycles or other initiatives. Ideally, there are logical links between non-technical training and technical training. For example, when

a large-scale business process improvement initiative is underway, there may be a need to train employees on personal effectiveness and/or business skills in addition to technical skills. Unfortunately, this is not always done. The non-technical training organizations may not be as responsive to aligning training delivery precisely to project implementation dates. Technical training organizations directly support such projects and are therefore more accustomed to scheduling training on demand within tight windows of opportunity and accommodating rescheduling if the project implementation date slips.

To avoid conflicts between the various technical and non-technical training agendas, recurring training should be accommodated. A master training calendar that shows all relevant and potentially competing activities is useful for conversations with stakeholders and to avoid unpleasant surprises. Even when the different types of training are owned by different organizations, it is recommended that everyone collaborate on the development of a master calendar. While training dates may change, the master calendar gives everyone a view of training activities planned for the year ahead.

Volunteer Instructors (VIs)

"As job skills become increasingly technical, there is a growing and appropriate trend toward using technical experts as trainers" (Clark, 1999, p. 7). VIs dedicate a portion of their time to teaching in their areas of expertise. They can come from various parts of the organization, but typically they are recruited to be VIs because they are the best-qualified for the task due to their technical expertise. It is not uncommon for mid-level employees to teach technical courses. Managers and executives tend to teach management and leadership courses on the personal effectiveness curriculum rather than technical courses.

Technical training organizations are dependent on VIs for a number of reasons. Not many vendors are available for training on a new technology or product. And if the training needs to be contextualized, internal employees are best suited for the job because they were the ones who customized the course. A well-designed VI program may require prerequisites for

teaching, such as presentation skills, knowledge of adult learning concepts and instructional techniques, and experience teaching. Such programs are important to provide technical experts the skills and confidence to teach. They also screen out technical experts who have the desire to teach but not the ability. As one training executive commented, "While you can make a good teacher win with bad content, you cannot make a bad teacher win with good content." A less obvious benefit of engaging technical experts in teaching is to build a community of experts who share their knowledge and collaborate, thereby increasing creativity and loyalty and, ultimately, resulting in technology advancements. VIs themselves benefit from the exposure and reputation their teaching engagements build and the positive acknowledgments in their performance records.

Waterfall Deployment

Waterfall training deployment describes a system whereby training begins at the top of the organization and cascades from executives to managers and then employees. It is less prevalent in technical training but more commonly used for personal effectiveness and business training. While technical training may be delivered sequentially to specific audiences, there is rarely a need for executives and managers to be exposed to the content before employees are. As Todd Beck, senior product manager for AchieveGlobal, an international provider of skills training and consulting services in customer service, sales, performance, and leadership, points out: "It is particularly important for soft-skills training to 'cascade' from level to level to create lasting behavioral change and keep staff engaged." Even if the executives do not take the "full" course, a modified waterfall approach can be very effective. Executives can explicitly require that new skills be used at an event (for example, the new presentation course content is used during the next quarterly business unit reviews). The waterfall approach and associated leadership and management support for training can be effective in setting a new standard. However, a waterfall deployment takes longer to implement due to the sequencing of training to specific audiences and is more logistically complex.

Evaluation

The evaluation phase of the ADDIE model involves determining the effectiveness of the training, whether the objectives were met, whether performance increased or improved, and whether the business problem was adequately addressed. Technical training has a clear advantage in this phase in that the differentiators of causality and measurability make the evaluation of technical training easier than the evaluation of other forms of training. Two significant differentiators seen in earlier phases become apparent during the evaluation phase. Errors here can lead to such serious consequences as fatal accidents. Escalations to senior management, which can occur in earlier phases, most likely happen during the evaluation phase after the course has taken place.

Causality

The impact of technical training is more easily linked to performance than other forms of training are. For example, it is easier to see the effects of technical training on a technician's ability to repair equipment than it is to see the effects of management training on a manager's ability to manage employees. While many types of training are intended to enhance training transfer to the job, it becomes apparent in the evaluation phase or thereafter whether the training achieved its purpose. "Technical training is perhaps the easiest form of training to justify since it is tied directly to the work people do" (Rothwell & Benkowski, 2002, p. 21). Documentation of the impact of technical training on performance helps to reinforce the business case for it, is beneficial to increase fill rates, helps to rationalize funding, and secures other types of support.

Measurability

Technical training is also easier to quantify and measure than other types of training. Because of that, calculating the impact of return on investment (ROI) of technical training yields more useful information. This type of measurement is more difficult, if possible at all, for what Doug Harward, founder and CEO of Training Industry, Inc., calls "faith-based training" or personal effectiveness training. He explains that "Some types of training organizations tend to be 'activity' based rather than 'achievement' based. Activity is the delivery of a course, whereas achievement is the skill one acquires as

a result of taking the training. In technical training, it is easier to go from activity to achievement, meaning the transfer of the training is more immediate, which results in more recognition and support by executives."

However, just because something is possible does not mean it is easy. Even for technical training, measuring the impact can be tedious and time-consuming. If the methods and measurements to demonstrate impact are agreed on by stakeholders, half the battle is won. If there is a lack of agreement on measurement procedures, assumptions, and quantification techniques, it is difficult to convince stakeholders of the impact or ROI of training. Whenever possible, training experts should attempt to show the effectiveness and impact of technical training on the organization as a whole. Being able to demonstrate training impact or ROI can be a compelling factor when cost-cutting decisions need to be made. Training is less often the "first to go" when it is specifically targeted as improving production, customer satisfaction, or service delivery (Rothwell & Benkowski, 2002).

Consequence of Errors

Errors in technical training have a more serious consequence than errors in other types of training. Missing the mark with technical training may lead to machines not working and product not going out the door—and hence have a more direct impact on the bottom line. In the worst-case scenario, incomplete or inaccurate technical training may result in the death of an employee. While flawed or low-quality management training can also have an impact on the workforce, it is usually not as significant or immediate. It is more difficult to make the connection between a safety incident and poor communication training than between a safety incident and poor machine training.

Escalations

Because of some of the differentiators mentioned earlier, escalations from issues associated with technical training happen quickly and often go high up in the organizational chain. Employees escalate issues they perceive as serious in order to get more immediate resolution. As with any resolution process, the problem should be initially addressed with the person responsible for it. However, when the stakes are high, bad news travels fast. If there is a concern

with a technical training course, a flurry of e-mails is sent around as people look for someone to own and fix the problem fast. In a tightly knit community of technical experts, relationships span several levels of management and leadership, and before much time has elapsed, everyone from the junior analyst to the chief technology officer will have heard about the issue and become involved in it.

To avoid such issues, the training organization can develop a practice of "pre-presenting" to executives the "expected" complaints that may come from new training content. Telling the executives the top ten complaints they are likely to hear and how they are being addressed helps the executives to prepare and deal with the issues productively. A formal escalation process with key contacts for specific training-related issues is also recommended. An old marketing adage goes, people tell seven others about a bad experience but only one about a good experience.

Overarching Differentiators

Overarching differentiators are those that either do not fit into one particular phase of the ADDIE model or apply to multiple phases. Therefore, they are discussed in this section. These include the cost of technical training, the expertise to develop and deploy it, and the role trust plays.

Cost

Technical training is more expensive than other types of training. The higher costs are related to some of the differentiators presented earlier. Higher costs are also associated with the need to maintain dedicated labs. Equipment must be purchased, set up and regularly inspected, maintained, and upgraded. Technical training courses also need to be refreshed on rapid cycles—making their shelf life relatively short. If employees are globally dispersed but technical training requires face-to-face presence in a classroom or lab, there is cost associated with employee travel. Hiring technical training vendors or consultants is also more expensive than hiring non-technical training vendors, which increases the cost of implementing or delivering technical training. Vendors have to deal with the same cost components as

internal training organizations. The more specialized the technical training content, the fewer experts who have the skills and expertise to develop or teach the material, allowing them to charge a premium. The speed at which technology changes also prohibits a thorough analysis for vendor training, forcing managers to choose quickly from a scarce selection without much opportunity for price negotiation.

Expertise

Many people believe that anyone can do training—not necessarily teach, but work in a company's training organization. Everyone has learned something from trainers, and many employees have "trained." They tend to forget that training development and deployment require knowledge of adult learning principles, instructional design methodology, training transfer, evaluation techniques, and so on. In the worst case, the training organization becomes a place to "park" employees who have not been successful in other areas. It is interesting that the reverse scenario is rarely the case. If a training or HR expert wants to enter a technical function, he or she could not do so without extensive training and sponsorship, even with stellar performance. He or she certainly would not be "parked" there if unsuccessful in another area. As competition intensifies and training is recognized as a valued function, this is less the case.

Technical training is unique in that it is commonly acknowledged that expertise is required to develop and deliver it. From a staffing and capability perspective, this is good news for technical training organizations. Training managers must screen VIs and other volunteers to ensure that their availability is not because of poor performance elsewhere and that they have expertise and genuine interest in technical training.

Trust

Trust is crucial in technical training. Trust in vendors, trust in the technical training organization, trust in the VIs—trust is tied to almost every aspect of technical training. As Tom Clancy, VP of education services and productivity at EMC, observes "Technical people need to have trust in the training organization before getting engaged. If they do not trust the training organization, the relationship cannot be built to the required levels

of success." There is no research that explains why this is the case, but an educated guess is that technical experts tend to be more linear and "black and white" in their thinking than people from other professions or functions. They tend to be detail oriented and have high expectations for themselves, which they may project onto others. They also have a reputation for being more critical about quality, accuracy, and correctness. Merriam-Webster (2009) defines trust as "assured reliance on the character, ability, strength, or truth of someone or something." Because of their personality traits, technical experts seem to focus on "ability" rather than "character." With their extensive networks of experts, it is easy for technical experts to check with their peers to find out whether the training expert or training organization can be "trusted," that is, whether the individuals or organization has the ability to deliver something of value. Whatever can be done to show value and build trust should be done. This can take on many forms, as explored in detail in Chapter 4, but a general rule of thumb is that technical experts tend to find factual information the most compelling. For example, detailed information on the course, the biography of the instructor, testimonies by technical experts, industry references in the course, and statistics all show expertise and build credibility and trust.

CASE STUDY: DRIVING TECHNICAL EXCELLENCE AT ELECTRONIC ARTS

Bert Sandie, director of technical excellence at Electronic Arts, Inc. (EA), explains how EA drives technical excellence (both the "art" and "science" of software engineering) and learning and development through a blended approach to training delivery.

Over the past few years at EA, the adoption of a new hardware platform has been a major undertaking requiring significant investment. Training to enable employees to successfully adopt the new hardware platform across the enterprise was one of those investments. One of the first steps was a deep analysis of the training requirements that would be needed in the future. L&D considered the following questions in their analysis:

- How will employees gain the knowledge they need to be successful in adopting and successfully using the new platform?

- How many employees need to be trained, and who is the priority?
- When does this training need to occur?
- How can we accelerate the learning across hundreds to thousands of employees?
- Who are the experts at EA who can drive a deeper understanding, and how do we enable them?
- What information can we access from our partners or third-parties as part of the learning process?
- What materials are needed, and in what priority order?
- What does success look like?
- How do we know when we are done with the learning initiative?
- What are the learning experiences we need to deliver, and what is the sequence?

The L&D organization started asking these questions six to twelve months before delivering the first actual learning experience. They solicited feedback from a wide variety of stakeholders in the process, from management, executives, SMEs, and partners, to develop a 360-degree view of what would be needed to create a comprehensive delivery plan.

After collecting feedback, they analyzed the data to create a delivery plan with the content to be created and delivery dates and events. SMEs were essential to the delivery plan, and the L&D organization worked with a third-party partner to gather and disseminate as much information as possible about the new platform from both a hardware and software perspective. SMEs reviewed this information and did some hands-on experimenting to gain a deeper understanding of the new platform.

A face-to-face workshop was held with forth EA SMEs to achieve a number of purposes:

- Share best practices—techniques, tools, and processes
- Solve immediate roadblocks through brainstorming and collaborative work sessions

- Identify key problems to solve—what, why, owner, deadline, and how to collaborate on these
- Create the start of a community and social network from this group
- Identify the classifications of expertise of each SME to understand how to leverage them in future learning experiences

Upon completion of the workshop, it was imperative that momentum be sustained to create the community and drive the initiatives that were started. Key steps undertaken included:

- Creating an online group/community where information can be shared in a meaningful manner and growing the community as required
- Connecting SMEs using a facilitator to organize meetings, work sessions, and status updates
- Publishing and sharing the materials being produced by the SMEs, including white papers, articles, best practice/checklists, video tutorials, etc.
- Driving the SMEs to establish local communities at their physical locations to disseminate key information, advance knowledge, solve problems, and make decisions

EA found that one of the key success factors in this large undertaking was having full-time training professionals drive the learning initiatives and facilitate the establishment of the SME community.

During the execution of the plan, employees who required direct knowledge of the new platform (software engineers) or indirect knowledge (artists) were provided with training sessions/lectures, onsite consulting, information through a knowledge portal, and discussion forums through an online community site.

Looking at the "differentiators" from this chapter, the ones that the EA L&D organization experienced first-hand were

- Analysis: The trigger for the training was the installation of the new platform.
- Design: SME involvement was essential and all of the learning content had to be contextualized.

- Development: The refresh cycles for the training content were short, necessitating continued SME involvement.
- Overarching Differentiators: The cost of technical training for the large-scale platform implementation was high.

In the training design stage, SME involvement and contextualization were consciously planned to ensure that the most relevant content was identified, collected, collated, and made available for others to learn from. Making the content available to employees was achieved through the use of e-learning; it was critical in delivering critical content (articles, videos, presentations, etc.) to all of the EA locations around the world in a fast and efficient manner.

More than three years later, the learning experiences continue for this new hardware platform community. The SME community is now self-sustaining through a rich online community, forums/mailing lists, a knowledge portal, and a social network of connections across physical locations. Some of the indicators of the success of the community are as follows:

- 1,500+ employees across fifteen major geographical locations are members of the community.
- More than thirty presentations are available online in video format and have been viewed by hundreds of employees.
- Co-development of a wide variety of tools, code, and techniques used in the majority of EA games was produced for this hardware platform.

EA continues to evolve their Web 2.0 structures and mechanisms for collaboration, including integrated social networks, knowledge management, and dynamic search solutions.

Summary: The Potential of Differentiators

As shown in this chapter and the case study above, differentiators associated with technical training play an important role in every phase of the ADDIE model. In the *analysis* phase, technical training is often triggered by business, product, or technology changes and the planning horizon for technical

training is relatively short. While most companies experiment with e-learning, it is more commonly used in technical training.

The *design* phase presents some definite challenges for technical training. Limited content and technical documentation are available for new technical courses. The content of technical training must also be more detailed and contextualized. There is also an opportunity for companies that might otherwise be competitors to partner on technical training. Such relationships can produce results that could not otherwise be achieved. However, they do require careful planning and execution.

Because technical training changes more often than non-technical training does and new technical training is often revolutionary, refresh cycles are shorter and material has to be updated more frequently, which impacts the *development* phase. This phase also represents an opportunity for standards and certification for technical training to be created.

When *implementing* a technical course the fact that unlearning of technical concepts is easier than unlearning behavioral preferences helps in the reception of the content. The differences of release timing for technical training compared to other types of training needs to be considered as much as the difference of the rollout methodology—sequential versus parallel. It is during this phase that solid relationships with stakeholders come to bear again, as VIs are needed as teachers.

While there are definite challenges in the design and deployment of technical training, it has some advantages. These are most obvious in the *evaluation* phase because the impact and results of technical training are more easily shown. The results from technical training are easier to measure and so it is less likely to be cut from the budget. However, errors by instructors have a more serious consequence and escalations are quick and go high up.

As clearly shown by the fact that there are twenty-four differentiators, technical training and non-technical training cannot be treated the same. One approach does not work for all types of training. Being aware of the differences and taking the appropriate actions, shown in Table 3.2, enables training experts to design and deliver high-quality technical training that is tightly aligned to business priorities.

Table 3.2. Differentiators and Primary Training Actions

ADDIE Phase	*Differentiators*	*Primary Training Actions*
Analysis	Focus	Clarify the object focus of technical training.
	Trigger	Get direction from operations teams.
	Planning Horizon	Prepare a contingency plan.
	Formal and Informal Learning	Make technology available.
	e-Learning	Evaluate deliverymechanisms.
Design	Availability of Content	Build relationships with technical experts and vendors.
	Granularity of Content	Consider the cost-effectiveness of training small audiences.
	Contextualization	Contextualize courses with high impact or wide dissemination.
	Coopetition	Define formal communication and confidentiality practices.
	SME Involvement	Ensure SME involvement in content development.
Development	Evolutionary Versus Revolutionary	Budget for changes and plan immediate deployment.
	Refresh Cycles	Update content and look for acceptable alternatives.
	Standardization and Certification	Offer internally developed and industry-recognized certifications.
Implementation	Learning and Unlearning	Explain WIIFM incommunications.
	Release Timing	Develop a master training calendar.
	Volunteer Instructors	Utilize a VI program.
	Waterfall Deployment	Plan parallel deployment.

(*continued*)

Table 3.2 (Continued)

ADDIE Phase	*Differentiators*	*Primary Training Actions*
Evaluation	Causality	Document the impact of technical training on performance.
	Measurability	Show the effectiveness of technical training.
	Consequence of Errors	Ensure training quality and accuracy are double-checked.
	Escalations	Define a formal escalation process.
Overarching Differentiators	Cost	Allocate funding for technical training based on prioritization.
	Expertise	Evaluate training expertise and monitor VI quality.
	Trust	Use factual information to build trust.

4

Stakeholders of Technical Training

IN THIS CHAPTER WE REVIEW the stakeholders of technical training and how each is ideally involved in technical training activities. While all training organizations need to engage stakeholders, technical training is unique in that it requires the active involvement of stakeholders with technical expertise. Arguably, there are more types of stakeholders involved in technical training than in other types of training and their involvement spans the training life cycle, from strategizing, funding, prioritization, and content development to training delivery. To formalize stakeholders' roles in technical training and establish working and decision-making bodies, several collaboration and governance structures are presented. Common stakeholder analysis and engagement practices are also offered to engage stakeholder groups and deliver the technical training they need.

Technical Training Stakeholder Needs

Anyone who is affected by technical training or the problem it will address—or who can assist with technical training—is a stakeholder. Stakeholder groups are involved in technical training in different ways, bringing different perspectives, expectations, and preferences to the table. The primary drivers for each stakeholder group also differ. For example, executives expect technical training to directly support business priorities and produce tangible results. Technical leaders expect the technical training organization to support the technology and/or process areas they are responsible for. Managers expect the technical training organization to train their people to ensure they acquire the appropriate technical skills. Technical experts want to be involved in technical training in meaningful ways that allow them to incorporate their knowledge into quality training material. They may also seek exposure and recognition for their efforts in supporting technical training. Employees expect technical training to be high quality, relevant to their needs, and delivered in a manner they prefer.

The technical training organization should engage stakeholders to build long-term relationships and understand their training needs. The benefits to be gained from building these relationships are many, including:

- Increased focus on business problems and priorities
- Assistance to obtain funding and resources, including technical expertise
- Better access to new information and ideas
- Increased collaboration and innovation
- Enhanced decision making
- Increased quality and relevance of technical training solutions
- Reduction in roadblocks to implementation

A number of stakeholder groups are discussed in this chapter: executives, managers, technical leaders, technical experts, VIs and employees. While these stakeholder groupings are not inclusive of all technical training stakeholders, they represent the majority of stakeholders for internal

technical training and are critical to the success of technical training. For organizations that deliver technical training to the extended value chain, including suppliers and external customers, there are a host of additional stakeholders.

Executives Expect Tangible Outcomes

Executives in top-level positions, possibly even C-level, provide direction and have decision-making authority over a company or a line of business. They establish the business strategy and approve budgets. The technical training organization needs the financial support of executives to build and maintain technical training programs. Executives are involved in technical training in several ways, as shown in Table 4.1.

Executives play a role in the funding of technical training programs, and they want to see technical training indicators. In addition to funding, they show their support for training by ensuring the technical training organization is situated high in the organizational hierarchy to directly support strategic business priorities.

In organizations in which training and learning are highly valued, executives are also involved in teaching. ASTD reported in their 2008 State of the Industry Report that organizations who won ASTD BEST Awards "have the visible support of senior executives and involve leaders as teachers," resulting in a positive influence on the organization's learning culture (p. 18).

Executives are very busy, so it is up to the technical training organization to initiate the relationship. When executives are not engaged, the training organization will become buried deeper and deeper in the organization, and funding and support will become more and more limited. This is often a gradual process that occurs because the organization does not see the value in what the training organization is providing.

Managers Want Skill Gaps Addressed

The technical training organization needs the support of managers in numerous ways. Managers in the organization oversee the work of technical experts and other employees and, as a result, are close to the work being performed.

Table 4.1. Forms of Stakeholder Involvement

	Stakeholders							
Forms of Involvement	*Executives*	*Managers*	*Technical Leaders*	*Technical Experts*	*Volunteer Instructors*	*Employees*	*Other Training Resources*	*HR*
Funding: Who plays a role to approve funding?	X	X	X					X
Resources: Who provides human resources and expertise?		X						
Strategy: Who defines the strategy?	X		X					
Sponsorship: Who champions training?			X					
Requirements: Who gives input?		X	X	X				
Prioritization: Who decides?			X	X				

Services: Who defines scope?			X				X	X
Development: Who develops the content?				X	X		X	
Delivery: Who delivers the course?					X		X	
Attendance: Who attends the course?			X	X	X	X		
Evaluation: Who provides feedback?			X	X	X	X		
Transfer: Who supports the transfer of training?		X			X		X	
Metrics/indicators: Who reviews outcomes?	X	X	X		X			

They have insight into technical skill gaps and can give input on training needs. Due to the oversight of work activities, managers must approve employee training in some companies. Managers also play a pivotal role in supporting training transfer to the work environment. When managers are not involved or they do not support training activities, technical experts are less likely to be involved in training themselves. Managers have a dramatic effect on employees' motivation for training (Corporate Leadership Council, 2004). If training is not viewed as a valued activity or is seen as a liability instead of an asset, competing priorities will get in the way and technical experts will focus on those activities that managers recognize and value.

Technical Leaders Need Support for Technology

The technical training organization needs exposure to the technical strategy, goals, and programs, and therefore building relationships with technical leaders is very important. A technical leader has extensive knowledge and skills in a technical discipline and is in a leadership position within the organization or company. In addition to knowing where the technology is headed, technical leaders can anticipate the skills that will be needed in the future to support new products and technology. Technical leaders can provide the training organization with a long-term view of technological enhancements as well as industry trends, and they can help to prioritize and "size" training efforts. Technical leaders are also reliant on the training organization to support new products and technology.

The technical leader may have achieved a formal leadership position such as director, principal engineer, or scientist or may be an informal leader with the ability to influence and lead others without a formal title. Even when technical leaders do not own a budget, they can influence executives who do. Executives consult technical leaders on major technology purchases and are interested in their opinions. If a technical leader says that training is required, it quickly becomes a priority and the funding follows. If technical leaders are not engaged and involved in training activities, training will be disconnected from product and technological priorities and the training organization will lack credibility in delivering technical training.

Tom Clancy, vice president of education services and productivity at EMC, explains that "engaging the right technical leaders and experts to guide the training agenda is critical to success."

Technical Experts Want Accurate Content

A technical expert who achieves expert status often becomes known as the "go to" person for technical issues, given his or her expertise and problem-solving skills. In a manufacturing environment, production technicians and process control specialists may become technical experts. In a pharmaceutical company, clinical lab technicians and product formulators may become technical experts. Technical experts expect training content to be high quality, accurate, and complete. They can easily spot errors and omissions and know how to contextualize information to make it applicable to the job.

Training professionals refer to experts who support training activities as subject-matter experts (SMEs).

SUBJECT-MATTER EXPERT (SME)

An expert in a particular area or subject matter, technical or non-technical, who assists with training content development

The terms SME and technical expert are used interchangeably throughout this book. Having SMEs involved in technical training not only provides additional resources but also lends credibility and validity to training activities. Training professionals need to keep in mind that training is an "extracurricular activity" for an SME; in other words, it is not his or her day job. If technical experts volunteer their time to teach, it should be an easy process. Doing what it takes in terms of flexibility is especially important when attempting to build relationships with SMEs.

Technical experts represent a huge asset to the company, and their time is split among many competing activities, including making significant contributions in their areas of expertise, conducting research, proposing innovations, advising project teams, coaching and mentoring individuals, and teaching.

Unlike other training organizations, the technical training organization is highly dependent on SMEs to produce quality technical training.

VIs Need Recognition

Technical experts who volunteer to teach are often the most qualified to deliver technical training because of their expertise and working knowledge of how the content applies to the job.

VOLUNTEER INSTRUCTOR (VI)

A technical expert or subject-matter expert who volunteers to serve as an instructor to train peers

Technical experts who are willing to become VIs benefit from the support of the technical training organization. Exposure to adult learning principles, instructional methods, train-the-trainer events, and performance feedback can greatly enhance their ability to convey information to learners in an impactful way. In a culture in which teaching is highly valued, VIs also gain exposure to, and recognition from, executives and managers for sharing their knowledge and teaching others.

Classes tend to fill up quickly when reputable technical experts teach them. Mark Humphrey, operations director at Tektronix, believes that "technical training should be taught by experts. People must have done, understand, and value the work. They should have several years of experience before teaching." In addition to their expertise, VIs need to be passionate and enjoy or appreciate the intrinsic rewards for teaching." Bashar Elkhatib, a technical program manager, explains why he likes to teach: "Being a trainer is part of my continuous development. I increase my own technical knowledge when I teach. I always learn from the installations, analysis, and troubleshooting of each program, application or process I am teaching." Ian Dees, software engineer, says that it is "a cool technical challenge [to teach] because you have to understand something well enough to put it into words and teach it to others."

If training peers and sharing knowledge is not the norm within the company, the onus may be on the technical training organization to make the business

case for a VI program, sell the idea to executives, and build up the VI base. Creating a teaching and learning culture may take several years. A good way to evaluate whether such a culture is already present is to observe executives and their teaching behaviors. If executives are not involved in training, teaching others may not be a predominant company value.

Employees Want Training Options

Employees are the recipients or audience for technical training. They are in a discipline, function, or profession that requires technical or technical functional knowledge and skills. In addition to acquiring skills for their current jobs, employees are interested in technical training to upgrade their skills for future jobs and for networking. Employees' preferences vary on how training is delivered, although all employees want easy access to training. Some prefer onsite local courses or e-learning, whereas others prefer to travel to get away from job demands when training. Location, length, delivery method, "hands on" components, and instructor all play into employees' decisions to enroll in technical training. When employees' needs and preferences are not taken into account in designing technical training, they may not complete the training, retain understanding of the concepts, or apply any learning to the job.

CASE STUDY: GETTING STAKEHOLDERS TO EMBRACE TECHNICAL TRAINING IN THE RAIL INDUSTRY

Bob Rohr, an educational professional in the rail industry, explains how he engages stakeholders to embrace technical training. The modern rail car is far different than it was ten years ago. Today, it is a rolling computer network. Rohr's students work in shops and are surrounded by constantly moving heavy objects, high voltage, and compressed air. While many have only a high school education and perhaps some college, "They have an amazing knowledge to grasp how things work." Rohr's students "are tough men and women and they will tell you if they think you are using 'techno babble' to mask a lack of knowledge."

Rohr is working on a new contract and is taking a different approach to stakeholder management. Rohr works with public agencies that are federally regulated, and the training must meet tight safety standards from the Federal Railroad Administration and American Public Transportation Association. He works within a matrix organization structure with management and unionized labor. While the general scope and deliverables of training is written into contracts, the details are agreed to by stakeholders.

Rohr explains that the challenges most training professionals have with stakeholders is dealing with them as people with their divergent interests and needs. Training is all about people. While the topic may be technology, training is still about people. In the back of their mind is the question, "What's in it for me?" (WIIFM). To gain the support and 'buy-in' you will need, you need to convey the WIIFM for each stakeholder group.

The WIIFM question is not confined to management; it is in the forefront of all stakeholders' minds. For management, money is a prime driver: "Is training an investment or an expense? What tangible return will we get?" The project managers on both the customer and supplier sides want to see the training delivered within the spirit of the contract, with no additional costs or time investment. Training managers want support from craft supervisors for their training plans and efforts in training the workforce. And craft supervisors want to have input into scheduling their people and flexibility in working with the union. A training plan that does not take these various interests into account is unlikely to be successful. Once you approach training with an understanding of the WIIFM, there are no losers.

Rohr participates in working meetings with training managers, project managers, and craft supervisors to confirm the training plan and details. Each stakeholder has a chance to discuss his or her concerns and challenges and the group comes to a workable solution in partnership. The resultant training plan is often a mix of train-the-trainer sessions and just-in-time training. The collaboration would not be nearly as effective without an understanding of each stakeholder's perspective and interest.

Technical training organizations are wise to develop an understanding of the WIIFM for each stakeholder group to engage them and explain why the training is important. Stakeholders do not automatically appreciate training because of the many competing demands for their time. Assuming they will automatically value the training and make all efforts to attend is a flawed assumption. Stakeholders need to believe it is in their best interest to support training, and the value proposition needs to be made clear for them.

The WIIFM can be defined as part of the early training requirements gathering process. It does require some effort to articulate the WIIFM for each stakeholder group in a way that is valid and credible and appeals to their interests, but it is worth the effort in engaging and motivating stakeholders to understand why it is in their best interest to support training.

Collaboration and Governance Structures

The involvement of technical experts in technical training differentiates it from other types of training. Active collaboration with business and technical organizations is also more common in technical training. The collaboration structures that are most important to the technical training organization are sponsorship roles, advisory teams, relationships with other training organizations, and partnerships with HR. In addition, executive and technical leader involvement in the oversight of technical training activities is important to ensure alignment of training activities to business objectives. A technical training steering committee, made up of executives, sponsors, and technical leaders, provides this governance.

Sponsors Champion Technical Training

A sponsor is an executive, technical leader, or senior manager outside of the training organization who agrees to champion a technical training solution, project, or program that serves an organization, division, or line of business. The sponsor should be well positioned within the organization and, most importantly, should be able to influence stakeholders. Sponsors provide direction, make strategic and high-level decisions, and help address barriers. Sponsors should be selected carefully because they can make or break the program. A passive sponsor can be worse than no sponsor at all. Guidelines should be developed to provide clarity and to ensure sponsors are solicited primarily for strategic, complex, and/or large-scale technical training programs.

Stephanie Peacocke, group manager at Avanade, a business technology services provider with connections to Accenture and Microsoft, explains that "an effective project sponsor can make the project manager's life immeasurably easier and improve the odds of success." She explains that a good sponsor is

committed, clear about the project, and visibly connected to it. The sponsor stays involved through the life of the program and wants to see progress tracked against the schedule and key deliverables. The sponsor is a spokesperson for the project at the leadership level of the organization, including helping to persuade and negotiate with stakeholders, especially if there is resistance to a change the training program is requiring.

Depending on the size of the technical training organization and scope of services, there may be a need for several sponsors to cover the portfolio. Each sponsor champions a specific technical training program. In addition to their roles in sponsoring a program, sponsors may participate on a technical training steering committee that oversees and aligns all technical training activities. The steering committee as a governance structure for technical training is discussed later in this chapter.

Advisory Teams Develop Content

Technical experts, training professionals, and project managers form advisory teams to develop technical training. The advisory team approach brings together experts with a combination of knowledge and skills to identify, build, market, deliver, and evaluate technical training solutions and programs. Under the leadership of a project manager, advisory teams are working teams that focus on technical training solutions at a tactical level. Well-designed advisory teams have a number of members, selected based on their technical expertise, organizational affiliation, and interest in training. The best advisory team members are those who want to be involved in technical training, are passionate about learning, and have the support of their management to participate.

A team charter, which defines the purpose and expectations of the advisory team, typically includes:

- *Team objectives:* The objectives the team will focus on
- *Business impact:* The anticipated positive impact of the team effort on business objectives
- *Scope:* The boundaries of the team's efforts as well as work that is out-of-scope, or not part of, the team's effort

- *Decision-making model:* The team decision-making model to be used; for example, consensus, consultative, or majority vote
- *Roles:* The agreed roles and responsibilities of team members, based on the expertise each person brings to the team
- *Team norms and expectations:* Agreements on how the team plans to operate, including communication, work processes, and general expectations of behavior
- *Meeting procedures:* Meeting dates, times, frequency, and procedures for capturing and disseminating minutes and other documentation, assigning action items, and reviewing deliverables
- *Indicators:* The indicators and outcomes that will determine the success of the effort

Ideally, the advisory team presents its plans to the steering committee, which is a great opportunity for positive exposure to executives and technical leaders and project validation.

SAMPLE TEAM CHARTER FOR CURRICULUM MAINTENANCE

Description of Project

The purpose of this project is to establish a process for maintaining the list of courses within a curriculum and associated course materials to ensure that course contracts and stored materials are accurate, up-to-date, and archived when appropriate. In addition to establishing new processes, this project is intended to archive and delete all course materials that are outdated.

Business Case for the Project

There is no systematic process or trigger in place today to ensure courses are reviewed and updated on a regular cycle. There is also no process to determine when it is appropriate to delete a course and remove it from the various training systems and websites. Without curriculum maintenance processes, curriculums, courses, and training systems will not be maintained. Most of the stored courses

(continued)

are large files, taking up considerable storage space. The impact to students of not having established maintenance and archival processes is that they may attempt to access outdated course material and may encounter erroneous information, dead links, and/or outdated content.

Project Objectives

The objectives of this project are to:

- Develop a process to maintain training curriculums (when, how, and why to update or "end-of-life" courses)
- Develop a consistent way to store, update, and archive/delete course material
- Establish clear roles involved in maintaining curriculums
- Identify methods for monitoring courses and curriculums

Scope of the Project

- Seven existing technical curriculums, including 567 courses
- All existing course storage areas, including e-learning training systems
- Review of existing training content archival processes

Deliverables

- Process flows and role definitions
- Criteria for determining when it is appropriate to archive/delete courses and course material
- Standard cycles/timelines for course maintenance
- Job aids for executing new processes

Boundary Conditions

- Ensure concerns from stakeholders are surfaced and resolved
- Use project management tools and templates to facilitate project planning and execution

Approval and Ratification

Process to be ratified by the technical training manager

Timeline

Team will define the project timeline based on the schedule of activities

Team Member Roles and Responsibilities

Team Role	*Reason for Selection*	*Duties*
Project Manager	Assigned	Facilitate the team Take minutes and track actions Communicate progress to management
Team Member	Has knowledge of existing training storage areas/systems Help develop processes and job aids	Contribute to team deliverables Volunteer to own specific actions Attend project team meetings
Team Member	Has knowledge of existing curriculum management processes	
Team Member	Serves in the role of curriculum manager	

Training Organizations Collaborate

A common oversight of technical training organizations is to focus on stakeholders within the organization and to overlook indirect stakeholders. Other training organizations, whether technically or non-technically focused, are also stakeholders. In large companies, many training organizations co-exist, each supporting a different area. The corporate learning organization may be

responsible for delivering personal effectiveness training, and other business units or divisions may have training organizations focused on technical training or technical functional training for their areas. When training charters overlap, it is wise to develop a good working relationship with the other training organizations. Establishing a relationship can result in free sharing of information, efficiency in training design and delivery that benefits both organizations, and an overall stronger voice for training in the company. Processes, resources, and "best practices" may be shared in areas such as training administration, training technology, content management tools, and so forth. Training needs that are non-technical in nature can be redirected to the right training organization, with a soft handoff to the other training organization. Training experts may even move from one training organization to the other over the course of their careers.

It may also be mutually beneficial to enter into formal partnerships with other training organizations to produce or leverage training solutions or resources. Such a partnership should include "rules of engagement," such as partnership objectives, clearly defined processes, roles and responsibilities for everyone involved, and issues management and escalation processes (Kaplan & Hurd, 2002). Partnerships should begin with a limited scope to gauge the initial success of the relationship as well as the resource and time commitment required to "partner." Partnerships can be very time-intensive, particularly when the culture and skill set of one organization is different from that of the other.

Human Resources Partners with Training

Human resources typically owns talent management processes such as recruiting and hiring, performance management, training, and succession planning. Unfortunately, training activities associated with talent management are often limited to leadership and management training and personal effectiveness skills training, as explained in Chapter 2. There is clear benefit to employees when technical training is integrated into talent management processes. That can happen with an effective partnership between technical training and HR.

The technical training organization has important information and processes to share with HR regarding technical skills development and technical employees. For example, information on technical job descriptions and career

paths, as well as access to SMEs, are valuable to HR if the company recognizes the need to integrate technical development and talent management. The technical training organization can also benefit from a partnership with HR by leveraging personal effectiveness training from HR for technical contributors. Ideally, representatives of the technical training organization and of HR would become involved in the programs of the other. For example, an HR representative might participate on a technical training advisory team and a training expert might participate in an HR effort to develop career paths within the company.

It is better for employees when the technical training organization and HR work collaboratively and talent management is managed as an integrated process. If there is no linkage or partnership between the two organizations, the training of technical employees will not be aligned to the company's formal talent management policies. Talent management practices would be performed independently to the detriment of technical employees. When job descriptions, competencies, training and certification requirements, career paths, salary, and rewards are all aligned in a comprehensive system, there is more structure and incentive for employees to complete training—including technical training—because it will benefit them in many ways. In sum, there is a lot to be gained from treating the development needs of technical employees in a holistic manner through some form of partnership with HR.

Steering Committees Align and Govern Training

Establishing a steering committee with leaders from the business to direct and oversee technical training activities is essential to the success of the technical training organization. The steering committee should be comprised of senior stakeholders: executives, technical leaders, senior managers, and sponsors. When sponsors are part of the steering committee, there is an ideal flow of information and decision making across all technical training projects and programs. The steering committee provides oversight of technical training initiatives, makes high-level priority and tradeoff decisions, reviews and approves funding allocations, and endorses key technical training policies. To be effective as a true "steering" committee, the body should operate at the strategic level and ensure the technical training strategy directly aligns to the business strategy.

The steering committee creates the opportunity for formal dialogue and exchange of ideas about technical training, resulting in higher commitment and buy-in to technical training at the leadership and management levels of the organization. With a comprehensive view of all technical training activities, it may become clear that the training organization is not supporting a key business objective, thereby leading to constructive debate over priorities and new explorations. Vince Eugenio and Gary Jusela (2009) point out that the steering committee also serves as a control gate, giving the training organization the backing to decline training requests that are not strategically relevant. Research by the Corporate Learning Council (2004) indicates that "best in class" companies are increasingly using one or more councils, or steering committees, on a regular basis to align training with business objectives.

The most senior executive on the steering committee, preferably someone at the vice-president level, should serve as the committee chair. This helps to legitimize the steering committee as a priority and ensures participants attend regularly and are actively involved. Also, to ensure training activities are aligned to emerging business priorities, the chair should always come from the business. The technical training organization may assume responsibility for establishing the steering committee charter, soliciting members and the chair, preparing information for the committee's review, educating the committee, and promptly following up on and/or implementing committee decisions.

Stakeholder Support and Buy-In

Stakeholders support technical training when they are actively engaged and they see that their driving needs are being met. If training professionals communicate with stakeholders early and often, stakeholders are more likely to understand and support technical training programs and initiatives. However, stakeholder management requires more than good communication. Effective stakeholder management involves knowing how to manage relationships between people to achieve their support. The key is to find people who will support the technical training organization and contribute to its positive reputation. The goal should be to have contacts throughout the organization at every level. The more people who become involved in

technical training, the more "pull" for technical training is created. The more people in the company engaged in technical training, the more they will talk about it, making the stakeholders of technical training inherent marketers of technical training.

Identification and Classification of Stakeholders

Even when employees think they actively seek out contacts outside of their networks, research by Cross, Thomas, and Light (2009) indicates that individuals rely too heavily on people they are familiar with, resulting in a bias of "who you know." Individuals tend to solicit input and feedback from the same colleagues: those they respect, those who have helped them in the past, or those who have not "rocked the boat" with challenges. Collaborating with more people does not appear to be the answer to this challenge. Rather, it is a matter of selecting the "right" people to engage, not just the ones who are known and conveniently available. Getting to the right stakeholders means ensuring that stakeholder engagement occurs across functional, organizational, and geographical hierarchies.

Organization charts show the formal leaders of the organization and the various levels of management. They are useful to see where stakeholders fit into the organization and how they are connected to each other. For example, seeing how the research and development, engineering, and manufacturing divisions are related to one another provides an indication of the relative position of each in the company. Informal leaders will not be designated as such on organization charts so brainstorming is also necessary to identify all stakeholders.

Once stakeholders have been identified, interviews are often held to learn more about their needs, interests, attitudes, and potential impact on technical training. The interviews and subsequent analysis will influence the strategies the training organization employs to build their support and commitment. Because the data includes sensitive information, it should be treated as confidential and not distributed beyond the team conducting the analysis. From the interviews, the goal is to deduce:

- Who has an interest in technical training?
- Who has a positive or favorable impression? Negative or unfavorable impression?

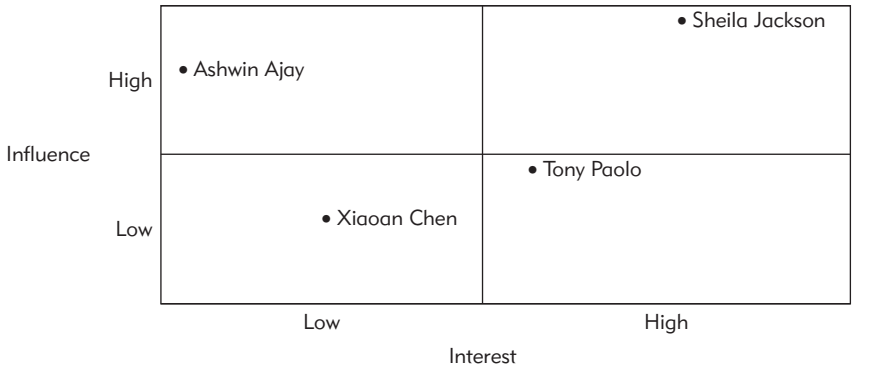
- What is important to stakeholders? What is not?
- Who are the influential stakeholders?
- Who will support and promote technical training?
- Who has been involved in the past? Who has not been involved but should be?

While there are many ways to categorize and characterize stakeholders to develop influencing strategies, the Influence-Interest Grid (Straker, 2009) is a relatively simple method. It involves two dimensions: level of stakeholder influence and level of stakeholder interest in technical training activities. Based on answers to the questions above, stakeholders are placed in one of four quadrants on the grid. A numbering schema can be used to place each stakeholder on the grid or approximations can be made based on the interviewer's impressions. An example of a completed Influence-Interest Grid is shown in Figure 4.1.

By plotting each stakeholder on the grid, a general engagement and communication approach can be determined. The recommended approach for each quadrant of the grid is as follows:

- High influence, low interest—Stakeholders in this quadrant are generally satisfied and should be kept apprised of technical training efforts; the impact of training on their organization should be regularly communicated.

Figure 4.1. The Influence-Interest Grid



- High influence, high interest—Stakeholders in this quadrant should be closely monitored, ensuring their needs are met.
- Low influence, low interest—Focus less time on stakeholders in this quadrant, although monitor changes in their level of interest in training.
- Low influence, high interest—Find out how stakeholders in this quadrant would like to be involved in training.

The stakeholders with high influence have important connections, formal or informal authority, influence over financial decisions, and the potential to impact the image of the technical training organization. Therefore, it is wise to consider the best approach to winning them over.

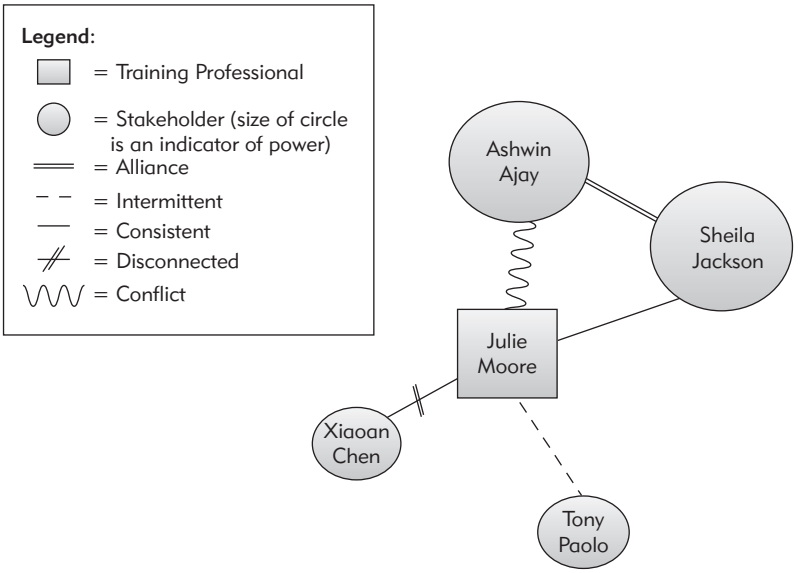
As shown in Figure 4.1, Sheila Jackson is very interested in technical training and has a high level of influence in her organization among other leaders. In contrast, Ashwin Ajay also has a high level of influence but is not particularly interested in training. Tony Paulo's level of influence may be low, but he is interested in training and could contribute in some way. Based on the figure, efforts should be made to keep Ashwin satisfied with the services he is receiving and to actively engage Sheila and Tony. Xiaoan Chen does not need to be engaged at the moment, given both his low level of influence and low interest. While the Influence-Interest Grid works well in relation to technical training, some substitute power and commitment in place of influence and interest (Babou, 2008).

Another method of analyzing the nature of relationships with stakeholders is through a technique referred to as "stakeholder mapping." Whereas the Influence-Interest Grid characterizes stakeholders based on their influence and interest, stakeholder mapping characterizes people based on the relationships that a training professional has cultivated with stakeholders, and hence each stakeholder map is unique to the training professional. Constructing a stakeholder map is a further way to analyze stakeholder relationships to increase awareness of relationships and plan actions to strengthen them. Stakeholder relationships are illustrated as shown in Figure 4.2.

Stakeholders are represented in the figure as circles. The legend shows lines representing varying relationships and communication; for example,

Figure 4.2. Stakeholder Mapping Technique

Modified from Svendon and Laberge, 2005.



consistent communications and relationship are shown as a straight line, whereas intermittent communication and relationship are shown as a dashed line. Symbols are used to depict alliances, disconnected relationships, and conflict among stakeholders and the training professional. In analyzing a stakeholder map, the following are considered:

- Relationships that need to be established or strengthened
- The quality of relationships
- How stakeholders are linked (who influences whom)
- Issues that are resulting in inconsistency, disconnection, and conflict
- How relationships and alliances can be tapped into to indirectly influence stakeholders

As shown in the figure, Julie Moore, a technical training professional, has assessed her relationships with the four stakeholders. The mapping shows that Julie has a consistent relationship with Sheila Jackson, intermittent

communication with Tony Paolo, no connection with Xiaoan Chen, and conflict in her relationship with Ashwin Ajay. The mapping also shows that both Ashwin and Sheila have more power than Xiaoan or Tony. Since Julie acknowledges the conflict between herself and Ashwin, there are indirect influencing methods she can use to engage Ashwin, beyond approaching him directly. Julie may be able to enlist Sheila, who has an alliance with Ashwin, to help influence his behavior and actions toward the technical training organization. Additionally, Julie should attempt to engage Tony directly to develop a more consistent relationship with him, given his interest and desire to contribute to training activities. It may be appropriate to engage Xiaoan at a later time, even though the relationship is disconnected.

Many other methods and techniques exist to analyze stakeholders. The entire training team should be involved in stakeholder analysis and engagement activities. The team should also reassess stakeholders' interests and perceptions over time to maintain relationships and identify opportunities to strengthen them.

A Team Approach to Stakeholder Engagement

A team approach to stakeholder engagement is helpful when the organization spans functional, organizational, and geographic boundaries. An organized effort to identify stakeholders, analyze their driving needs and interests, and build and maintain relationships over time is recommended. Team members can be assigned "ownership" of specific relationships based on past positive relationships or roles within the training organization. The training executive and training manager typically manage the highest-level relationships, with other stakeholders divided among the training team along product, division, functional, regional, or country lines. Different names are given to this role, depending on the support model (product line managers, organizational training representatives, and country training representatives, among others). If there is not a clear customer support model or only limited training resources, generic terms such as account manager or customer relationship manager may be appropriate. In a large training organization, several individuals serve in this role to engage stakeholders and provide

training consultation, in order to establish and strengthen relationships between stakeholders and the training organization. This means serving as a single point of contact for the stakeholder for technical training. The key responsibilities of the role include:

- Meeting with stakeholders on an ongoing basis
- Building trust and open, proactive communication
- Gathering training needs and priorities
- Providing training consultation on technical training services and offerings
- Solving training-related issues and challenges
- Identifying feedback and improvement opportunities
- Continuously expanding the stakeholder network

Generally, it is better to meet individually with a stakeholder the first time. Face-to-face is preferred over a phone meeting, although a phone call can still be productive. Making the personal, face-to-face contact at least once in a while with each stakeholder goes a long way in building relationships. In global companies, it is worth the cost of travel to visit remote sites to meet face-to-face with stakeholders at least once a year.

Stakeholders often request training indicators related to their organizations. The information prepared for them should be customized to meet their specific needs and requests. For example, executives are interested in technical training activities that directly support the business strategy, technical training costs, and training results. Therefore, an overview of strategic technical training programs, spending, projected future costs, and training outcomes may be useful for executives. In contrast, a manager is likely to be more interested in the training roadmap for a specific product line, technical area, or function and will want to know who from his or her area is supporting training activities. Technical experts are interested in training that is directly related to their jobs, functions, or technical areas. In sum, requests for information for stakeholders should be accommodated as much as possible. Providing stakeholders with reports on the status of

training within their organizations enables them to better understand training volume and usage and encourage participation.

Stakeholder Management Techniques

Personality and interaction styles come into play when attempting to build relationships with stakeholders, requiring training team members to adjust their approaches. For example, some stakeholders may be open to collaboration, while others may be more demanding. Some will need to see the big picture before making any decisions or giving input. Others may need to ask questions to get to know an issue or may engage in digressions to fully consider an issue. While certain stakeholder groups—such as technical experts—may share general characteristics due to their chosen profession, there will always be differences to take into account. A number of personality and temperament tools are available to understand individuals' interaction styles; examples include the popular Myers-Briggs Type Indicator®, the DiSC® Profile, and the Emotional Intelligence Skills Assessment (Berens, 2002; Goleman, 2006; Stein, Mann, Papadogiannis, & Gordon, 2009; Straw, 2002). These tools provide suggestions on how to approach stakeholders with certain interaction styles to obtain information, provide explanations, request feedback or influence them to take action. It takes a significant investment of time to understand one's own communication style, identify others' styles, and adjust your approach accordingly, but it is worth the effort in order to build successful relationships.

When working with a broad range of stakeholders, it is inevitable that a difficult stakeholder will be encountered, someone who fails to deliver as promised, avoids accountability, places blame on others, or sabotages training efforts. Such a person may have a hidden motive or may be threatened by others' success. While all training organizations are likely to encounter difficult stakeholders at some time, technical training stakeholders may be facing the following challenges:

- They may be under pressure to develop and stabilize technical solutions rapidly.
- They may have a short planning horizon and limited time for training development.

- They may have a short window of opportunity to train various audiences.
- They may feel they do not have time to waste with training professionals who do not understand the technology or business.

These challenges can turn an otherwise "normal" stakeholder into one who is easily frustrated. The best advice we can give for dealing with a difficult stakeholder is to examine your own behavior first to avoid inadvertently making matters worse. Often the tactics of a difficult person cause a reaction in those around him or her, thereby obscuring where the difficulty lies. Brinkman and Kirschner (2006) explain that "no one cooperates with anyone who seems to be against him or her." If a repeated pattern of behavior is obvious, a number of approaches can be used to clarify the issue and address the difficult stakeholder, including:

- Listening to the stakeholder
- Attempting to establish a common ground
- Being open to criticism (avoiding defensiveness, explanations, and justification)
- Using techniques for specific types of difficult people, for example, not bursting the "know-it-all's" bubble or being patient with the pessimist
- Seeking the advice of a trusted manager or mentor to obtain an objective perspective
- Brainstorming ways to approach the stakeholder with probable outcomes
- Approaching the stakeholder directly about the behavior, focusing on the experience of the situation

If these approaches do not work over time, it may be necessary to escalate the situation up the management chain. Doing so carries risks if the difficult stakeholder has power and influence, which many do. Therefore the escalation should be done carefully, with management support.

Summary: The Requirements for Collaboration

Technical training is unique in that one of the keys to its success is the active involvement of technical leaders and experts. Executives, managers, and employees are important stakeholders as well, as with most training endeavors. If stakeholders are overlooked or involved haphazardly, the technical training organization may not receive the support it needs to be successful. To fully utilize the expertise and direction of stakeholders, a number of tried-and-true collaboration and governance structures were proposed. Stakeholder identification, analysis, and engagement practices, borrowed from project management methodology, enable training professionals to build and maintain relationships with their stakeholders. With the training organization's dependence on technical experts for assistance, it is critical that stakeholders have a positive experience working with the technical training team. Exceptional customer service is paramount to making training engagements easy for stakeholders. Avoid bureaucracy. Regardless of the role stakeholders play in technical training activities, it should be simple, easy, and rewarding to interact with the technical training organization.

5

Technical Training Strategy

IN THIS CHAPTER WE EXAMINE the components that make up a strategic technical training organization. Building on the relationships established with stakeholders described in the previous chapter, we explain the importance of establishing a strategy and revising it over time to guide the direction of the technical training organization. As Mark Morgan, author of *Executing Your Strategy: How to Break It Down and Get It Done*, confirms "Training organizations often aspire to being a strategic partner in the organization without a firm understanding of how to execute toward that aspiration." This chapter provides keen insight on how to develop a technical training strategy. Later chapters build on the strategy and focus on its execution.

Primer on Strategy

The notion of strategy is an unclear concept. It was originally coined to reflect strategy in military operations and is widely used in business today. Strategy in the context of technical training is defined below. The importance of aligning the technical training strategy to the overall business strategy is crucial, and several methods for doing so are discussed. The strategic planning process is also described in the context of annual business planning.

Definition of Strategy

It is essential to develop a strategy to guide an organization's efforts in order to align with company priorities, communicate a direction, reduce uncertainty, and focus growth and expansion (Kalman, 2007). However, what it means to be strategic and to have a strategy is open to interpretation. Kaplan and Norton (2004) found that no two organizations think about strategy in the same way. As they compiled definitions of strategy from board members, industry leaders and business executives, Beaman and Stambaugh (2005) found an interesting diversity of opinions on what constitutes strategy:

- "Strategy is a process and an outcome (with) an articulated agreed upon, desired state that also includes a route, or course of action, to achieve that desired state." (p. 12)
- "Strategy, to me, tells the story of where you're going and how you're going to get there. Not tactically, nor even operationally (although there might be some at that level), but at a directional level." (p. 12)
- "Strategy is the ongoing assessment and formation determining who you are, where you are, where you want to go, and then how to get there." (p. 11)

Our review of books on the topic of training management also failed to clearly define what is meant by strategy. Many training authors tout the importance of a mission statement, but few directly address the notion of training strategy. Those who write about training strategy do so at a micro level: they discuss training strategy in the context of specific courses or training solutions. Notably, Shandler (1996), in *Reengineering the Training*

Function, writes the most about strategy for training organizations. While he clearly discusses strategy, he does not specifically describe the components of strategy for a training organization. Further, we found very little current writing on the development of a technical training organization strategy, although strategy is crucial to technical training. It is no wonder that training leaders themselves are unclear as to what strategy should entail or how to build a strategy and align it to organizational priorities. For the purposes of this book, strategy is defined as a pattern of decisions and actions evident in an organization over time (McGee, 2005). This means that "strategy" need not be overt—or written—although much more mindshare is achieved by developing a planned technical training strategy.

STRATEGY

A pattern of decisions and actions evident in an organization over time

Without a well-thought-out and informed strategy, decisions and actions related to the technical training organization may be inconsistent and fail to support the business strategy. By developing a formal training strategy, the pattern of decisions made and actions taken are more likely to directly support the business strategy. The components of a formal training strategy are defined in a later section of this chapter.

Alignment to Business Objectives

The technical training strategy should be an integral part of the business strategy. New business direction and changes to strategy—such as entering new markets and releasing new products—frequently requires employees to acquire new technical knowledge and skills to execute the strategy. If the current technical skills of the workforce are sufficient, technical training may not be necessary. However, if employees' technical skills are inadequate or only a few employees possess them, training should be an integral part of the overall business strategy (Cartwright, 2003). Aligning the technical training strategy to the business strategy is critical, yet often difficult due to the dynamic nature of business strategy (Chartered Institute of Personnel and Development, 2007).

Achieving alignment is a matter of integrating training activities with strategic business activities. Cindy Turner, director of client training and consulting at LexisNexis, "analyzes the short- and long-term business strategy and priorities carefully to determine which projects her team should take on." Because formal business strategy documents are often high-level, more conversation and research is required to uncover priority business programs and initiatives. Priority business programs and initiatives may be new operational activities, process improvement efforts, technology implementations, or other systemic changes. The following activities are important to ensuring the training strategy remains aligned to the business strategy:

- Reviewing the business strategy and identifying areas where technical skills development is required to achieve the business strategy
- Obtaining confirmation and clarification from technical leaders on technical skills development priorities
- Focusing on priority areas and reviewing the associated program documentation
- Meeting with managers who are responsible for the priority programs to understand the details
- Verifying that the technical training plans align to the business strategy when seeking approval
- Monitoring priority program activities and decisions for changes in direction

To formulate the technical training strategy in support of these initiatives, proactive outreach to the managers of strategic programs is critical. To ensure ongoing coordination and integration, team structures, communication, and status reporting mechanisms need to be established.

INTEGRATION

A set of project management processes for controlling information, requirements, and change control to enable a large multifunctional team to stay in sync with program decisions and changing business conditions

Achieving alignment to the business strategy is not a one-time or annual event, it requires ongoing integration. New priorities will arise and constant communication and integration enables the training organization to respond to new direction (Fogg, 1999).

In summary, alignment ensures the work of the technical training organization is in direct, measurable and obvious support of the business strategy (Fogg, 1999). Organizations that skip the step of initial alignment to the business strategy risk suboptimizing their contribution to the company's success (Vance, 2008).

Strategic Planning Process

Most large companies use an annual strategic planning process to prepare budgets and resources for the year. Although the rigor of the process differs by company, strategic planning typically involves scanning the environment and examining relevant data and information to develop a comprehensive long-term business strategy. Scanning the environment may involve monitoring trends, issues, problems, or events that impact the company and its products and services. From a training perspective, new skills and technical competencies may be identified as critical to achieving the business strategy in the future (Fogg, 1999).

Rothwell and Benkowski (2002), one of the few training authors who advocate for involving technical training in the strategic planning process, provide advice on how to get involved. They discuss the importance of building stakeholder partnerships, soliciting champions for technical training programs, and establishing steering committees to guide training activities. These stakeholder relationships and governance roles, as described in Chapter 4, help to set the groundwork for involvement in strategic planning. Stakeholders participate in strategic planning themselves and will expect the same for technical training.

Technical training also can play a proactive role in strategic planning. The technical training organization must consider whether it has the resources and capability to execute training strategies in support of the business strategy. If not, or if the training organization believes the assumptions that went into the business strategy were wrong, the training manager has an obligation to

raise its concern. For example, if the organization wants to shift product mix and assumes that a certain skill set either exists or can be easily developed by the production workforce, the training organization needs to clarify the required training investment for leaders.

Components of Strategy

The components of a formal training strategy that the authors have applied in their practice include vision and mission statements, strategic objectives, guiding principles, business and operating models, portfolios, and roadmaps. These are described below using examples of what they look like in practice.

Vision and Mission Statements

Establishing a vision helps to create a shared understanding of the future and unite people toward that future. A vision statement presents an aspiring view of the future. It is concise, motivating, memorable, and achievable. Many training organizations have vision statements; since the technical training organization directly supports technical products, its vision must be closely tied to the business vision with a direct linkage to the department, business unit, and overall company visions. In other words, the technical training vision should directly enable the departmental vision, which should directly enable the business unit vision, and so on. While the vision of a non-technical training organization indirectly supports the business by developing employees' personal effectiveness skills or business skills, which makes them more effective workers, it is not as closely tied to the company's vision.

Ready and Conger (2008) recommend that leaders frame the vision of an organization by reviewing the various levels of organizational vision statements, engaging stakeholders, and "connecting the dots" (2008). For the technical training organization, this means reviewing the vision of the company and relevant business groups, holding conversations with stakeholders,

and nesting the technical training organization's vision within the vision of the broader organization.

In contrast, a mission statement describes the organization's purpose or reason for being. It clarifies what the organization does and why. An organization's mission forms the foundation for planning and decision making. It may have underlying values that are important to the organization. The mission statement, and particularly the process of developing it, helps employees understand how they fit into the organization's purpose. Stakeholders also gain a greater understanding of the purpose of the organization through the mission statement. Like the vision, the mission statement should be short, simple, and memorable.

VISION STATEMENT

A statement about an organization that presents an aspiring view of the future and asserts what the organization is best at or seeks to achieve

MISSION STATEMENT

A statement that describes an organization's purpose or reason for existence

Technical training organizations may develop both their vision and mission through brainstorming with staff. Developing the statements as a team ensures employees understand and can relate to them. The value is in the process itself: the thinking, discussion, evaluation, modification, and reflection (Morrisey, 1992). Misconceptions among team members about services and how their vision and mission fit into the corporate vision and mission may be uncovered and can be addressed. Some questions to be asked are shown in Table 5.1.

Once agreed on, vision and mission statements can be shared with stakeholders to gain their support for technical training.

Table 5.1. Vision and Mission Development

Vision	*Mission*
• How can we support the company direction? • What value can we deliver in support of the company direction? • What organization must we become to support the company direction?	• What is our basic purpose? • What is the most important thing that we do? • What are our unique strengths? • Who are we serving?

Strategic Objectives

Strategic objectives (SOs) are established to focus the technical training organization's activities for the year. Each SO defines a result or outcome that is expected from a technical training program or solution, that is, the SOs should be results-oriented rather than activity-oriented. That means that they do not specify how the result or outcome will be achieved or why the SO is being undertaken.

SOs must be measurable so there is a way to determine whether training programs were successful. The technical training organization should limit the number of SOs that it takes on for the year. If there are too many SOs or the technical training organization lacks the capabilities to execute on the objectives, there is risk to trying to achieve them. The authors have found in their practice that five to seven SOs a year is plenty. To accomplish the SOs, the training organization will need the support of everyone in the training team, sponsors, technical leaders, technical experts, and other stakeholders. Therefore, it is a good idea to balance the SOs to ensure employees and stakeholders can see how their work supports the objectives. Consideration should also be given to whether all of the objectives can reasonably be accomplished at the same time. The SOs should be challenging, but also attainable.

Once SOs are defined, they are communicated to the technical training team and to stakeholders so that they can understand their roles. Throughout

the year, the SOs are periodically reviewed and evaluated in management meetings to determine whether the programs achieved the desired results in the expected timeframe (Vance, 2008). If the expected results are not achieved, an explanation is warranted. Business conditions may have changed or other issues may have delayed the completion of training programs. To maximize the attainment of SOs, the training manager should ensure the appropriate resources are in place and status meetings are held to monitor the status of training programs.

Guiding Principles

It is helpful to establish guiding principles for the training organization. These serve as a reminder of the agreements the training organization will follow. While the guiding principles can be developed through brainstorming, they should be validated to ensure they support business objectives. They should reflect only those that the training organization intends to follow when difficult tradeoffs need to be made (Bradt, 2008). Examples of guiding principles for a technical training organization include:

- Our technical training efforts are competency based, that is, we use a systematic approach to training development that aligns to job and performance expectations.
- We only deliver technical training, that is, if stakeholders desire other types of training, we provide a soft handoff to the appropriate organization that can serve those needs.
- We directly support business objectives while devoting some training resources to content maintenance, that is, we balance strategic training needs with maintenance activities to ensure the longevity and usefulness of training content.

While guiding principles provide direction to the technical training organization, they are not training policies but formal rules associated with training. Examples of training policies include:

- Employees must secure manager approval to attend training.
- The threshold for the minimum number of students in a class will vary based on the cost of the training.

- Managers will be held accountable for training spending they authorize that is outside the bounds of the technical training organization.

Processes and procedures that enable the fulfillment of guiding principles will need to be established. The reason for and importance of the guiding principles should be discussed within the training organization to ensure shared understanding (Palmer, Foley, Parsons, 2004). These principles also need to be revisited and reinforced with the training team to guide behavior and keep them in the forefront of people's minds. Using the principles to guide decisions will help team members remember why they are important to the organization and why subsequent processes and procedures were developed.

Business and Operating Models

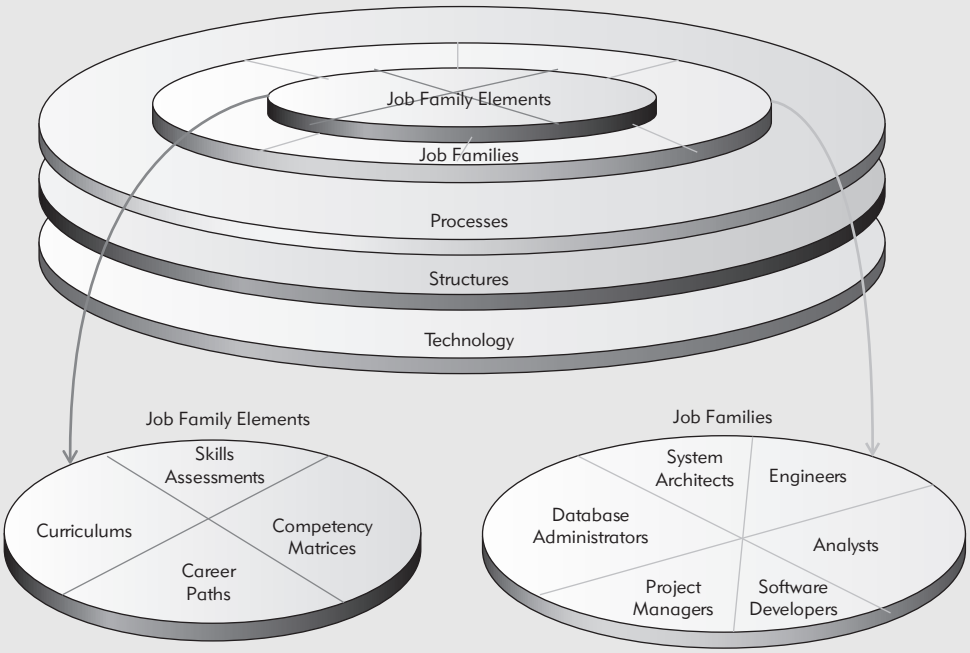
A business model is a visual representation of how an organization serves its customers and stakeholders. It helps to communicate the value training provides, the stakeholders the training organization serves, distribution channels, and partners (Osterwalder, 2005). An example of a business model for a technical training organization is shown below.

TECHNICAL TRAINING BUSINESS MODEL EXAMPLE

A business model can show customers, products and services for each customer segment, supporting training processes, structures, and technology, among other things.

The innermost circle of the business model in Figure 5.1 shows the training products and services the training organization provides to stakeholders: (1) skills assessments, (2) competency matrices, (3) career paths, and (4) curriculums. Skills assessments enable employees, peers, and managers to assess and rate an individual's job skills for the purposes of planning training. The skills assessments are based on competency matrices associated with job descriptions. Each skills matrix explains the level of skill mastery that is expected for each grade level of the job. The career paths show a progression of jobs that an individual might take over time in the course of his or her career. Curriculums include technical training courses and e-learning.

Figure 5.1. Training Business Model



The next outer ring of the model shows the customers. The customers in this model are from various job families, including system architects, engineers, analysts, software developers, project managers, and database administrators. A job family is a grouping or categorization of jobs, typically defined by HR. For example, the analyst job family is a grouping such as business analysts, system analysts, and data analysts. While the functional area of analysis is common to these jobs, the business analyst analyzes business processes, the system analyst analyzes software applications, and the data analyst analyzes data flows. Each of the training services—skills assessments, competency matrices, career paths, and curriculums—is customized to each of the job families.

Additionally, processes, structures, and technology are shown in the model as successive outer rings, reflecting the important training-related processes, collaboration and governance structures, and enabling technology that facilitates technical training. This business model conveys useful, organizing information to stakeholders.

Ideally, the business model is scalable or has scalable components. Scalability refers to the potential for variability and expandability in order to respond to changing business conditions. To the extent that training can be scaled to a larger audience with minimal resources, it is a clear cost advantage. Being able to scale back, or reduce investment, while maintaining the business model is also an advantage. While scalability is often referred to in the context of information systems, the following can be designed to be scalable in the context of technical training with some foresight:

- VI pools
- Training content authoring tools
- Learning management systems
- Competency models
- e-Learning
- Online testing
- Deployment infrastructure

When only a handful of people can deliver training, there are limitations on how broadly the training can be delivered. Programs to encourage VIs should be designed to enhance training scalability, given the huge cost savings associated with an internal instructor pool. That may mean strategically selecting employees to become VIs based on their expertise, location, and/or organizational affiliation.

There may be limits to scalability, however. For example, e-learning access may be limited by latency, usually a function of the user's distance from the server. A solution to latency may be to host multiple servers. Scalability is important when making decisions on training strategy and prioritization. To the extent that technical training can be scaled, there is potential for cost reduction, increased efficiency, and flexibility. With scale, technical training services can be expanded or retracted as needed, based on organizational priorities and funding. Training organizations should do some modeling and

scenario planning to understand the limits to the model's scalability before encountering those limits.

When a training organization is successful, other organizations will try to duplicate that success. They may adopt the business model, with or without permission. Copying of business models happens quietly over time; suddenly, the same model may be used by multiple training organizations. Business models also do not last forever, and hence changes in the model are critical to its long-term success (Chesbrough, 2007).

The operating model is just as important. It depicts the important relationships between the technical training organization and the organizations it serves. It also shows important processes such as where training needs come from, where decisions are made, how stakeholders are involved, and how teams are organized. The operating model is not an organization chart or a process flow diagram (Langlinais, Peterson, & Peters, 2008).

BUSINESS MODEL

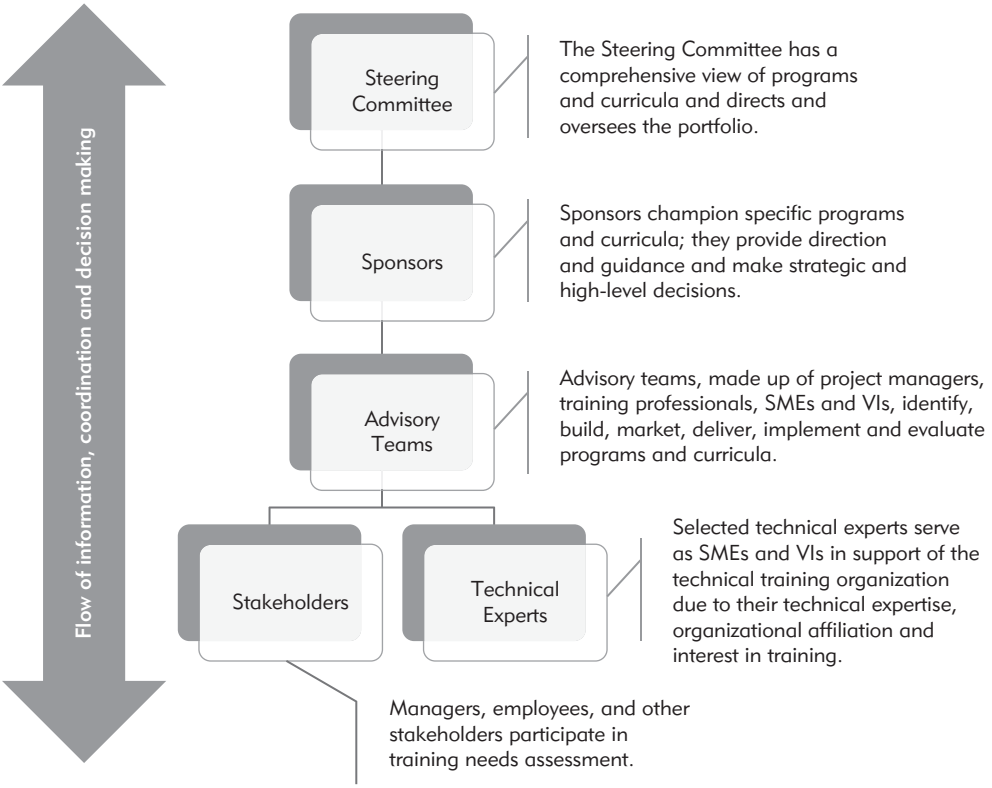
A high-level visual representation of how an organization serves, or intends to serve, its customers

OPERATING MODEL

A high-level visual representation of important relationships and repeatable processes the technical training organization uses to operate

The purpose of the operating model is to show how the technical training organization operates. The visual depiction may include graphics and symbols to show information flow to and from stakeholders, decision bodies, and teams. An example of a technical training operating model used by the authors is shown in Figure 5.2.

Figure 5.2. Training Operating Model



This figure shows how stakeholders are involved in the training organization. Subject-matter experts and VIs participate on advisory teams, along with training experts from the training organization. Advisory teams are responsible for building training solutions. Advisory teams may have sponsors who participate on the steering committee. The arrow indicates that training needs come into the technical training organization at all levels: from customers directly, from individual SMEs and VIs, from advisory teams, from sponsors, and from the steering committee. They are solicited from the various levels through established strategic planning, forecasting, and needs assessment processes.

The conceptualization and communication of the operating model enabled the authors to explain the various roles, processes, and decisions

required to effectively operate the training organization. With an operating model, stakeholders can easily understand how the technical training organization operates, how stakeholders are involved, and how decisions are made. Communicating the model reinforces the consistent application of important training processes and operations.

Portfolio of Products and Services

The technical training products and services will depend on a number of factors, including the training strategy, organizational capabilities, and budget. The focus should be on those services that contribute maximum business value and that are justifiable from the business perspective. It is better to focus on a limited few products and services that are critical to the business than to be comprehensive. The organization will also experience a greater level of success by focusing resources around services that no one else offers and that differentiate the technical training organization—provided of course, that they address strategic business objectives.

This means the current mix of training products and services may not be the right ones to maintain in the future. "We have always done it that way" may not be a good reason to continue a training program. Hale (1998) suggests examining the original business driver for each service, whether the need continues to exist, and what the consequences would be of no longer offering the service. While the portfolio will naturally change over time, it is important to select the right mix of training offerings to support business priorities. This might mean delivering technical training for new employees, courses on new technology, and existing high-volume technical courses. It is important to understand the capabilities required to deliver a specific service and ensure the training organization has the capabilities and resources in place. A number of other factors to consider in determining the portfolio include:

- Stakeholder priorities
- Strategic needs that are not immediate but nonetheless important in the long run
- The potential volume expected related to each product/service
- The scalability of the product/service

- Process and system investments and maintenance
- The availability of other organizations to provide specific services

Decision making and resource planning related to training needs is described in Chapter 8.

TECHNICAL TRAINING PORTFOLIO

The technical training organization may focus on any one or more of the following technical training products and services:

- Job task analysis
- Technical training needs analysis
- Competency-based technical modeling
- Technical training design and development
- e-Learning training design and development
- Technical training consulting
- Performance support
- Training vendor analyis
- Technical material, guides, documentation and job aids
- Certification programs
- New product training
- Laboratory environments and system emulations
- Online collaboration tools
- Knowledge management
- Peer-to-peer networking
- Technical seminars and conferences
- Curriculum development and management
- VI management
- Indicator management
- Course maintenance

CASE STUDY: TECHNICAL TRAINING AT TOYOTA MOTOR SALES

Toyota Motor Sales USA, Inc., provides technical training for dealership technicians, field technical associates, product engineers, and collision repair and refinish technicians through the University of Toyota. This training supports the dealership's goal of delivering "fixed right the first time, every time" vehicle service for Toyota, Lexus, and Scion customers through well-trained and highly skilled service professionals. The program is certified by the National Institute for Automotive Service Excellence (ASE).

Bill Bergen, national dealer education manager for technical training and Toyota Motor Sales customer service, shares the various technical training and training-related products and services that are designed to meet this important goal.

- **Technical Training Centers**—Toyota Motor Sales delivers instructor-based training in thirty-one specially equipped technical training centers across the United States. Each Toyota and Lexus training center is designed to emulate the dealership environment, with four service stalls per classroom for "hands-on" training with live vehicles. Class size is eight technicians.
- **Training Design and Development**—A well-documented course development process is followed with curriculum developers and field technical trainers organized in teams. Courses are based on technical information and repair processes developed by Toyota Motor Corporation. Courses include specific student performance objectives with worksheets to verify competencies. A full complement of instructor-based and online courses cover vehicle systems and new model introductions.
- **Technician Course of Study**—The curriculum for technicians is organized by engine, electrical, chassis, drive train, and hybrid vehicle system areas. Within each area there is a systematic process of online training with active simulations and a sequence of "hands-on" instructor-based courses.
- **Technical Handbooks and Techstream**—Each course has a handbook with in-depth technical content and hands-on exercises. Technicians also use a PC-based vehicle diagnostic tool called "Techstream" that allows "just in time" access to all repair information and online training resources while in training or on the job.

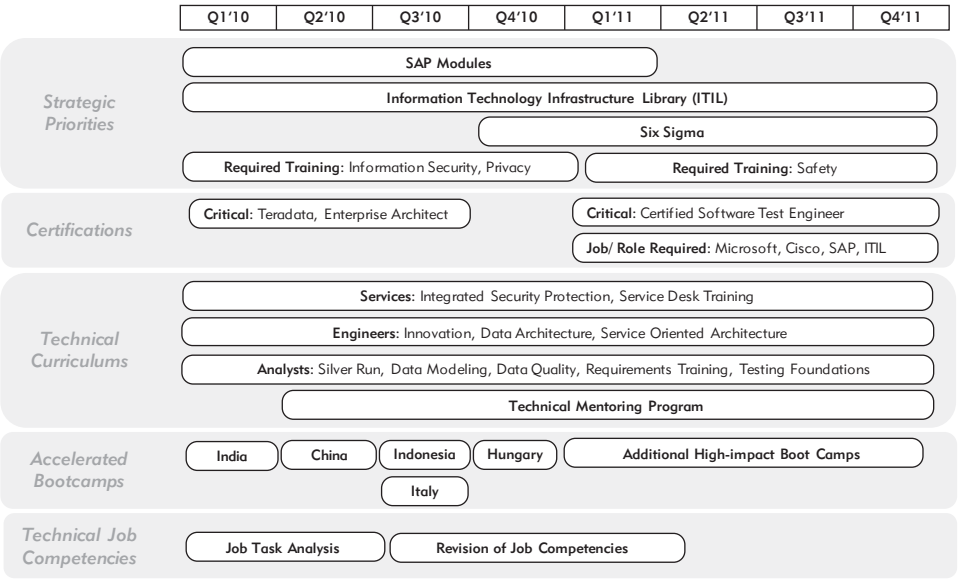
- **Testing and Certification**—Technician certification is earned through tenure, training, and testing. Technicians can certify in one vehicle system area or cover them all. There are four levels of certification. These include "certified," "expert," "master," and "master diagnostic" technician. ASE certification is required for the top three levels.
- **Dealership Skill Level Guidelines**—To provide for a sufficient quantity of trained, skilled technicians on hand at each dealership, Toyota and Lexus have established dealership training standards.
- ***Toyota Tech* magazine**—A monthly magazine dedicated to the Toyota technician is produced online to keep technicians updated on the latest technology, technician events, and service tips.

Technical Training Roadmap

The technical training roadmap provides a high-level view of all planned technical training programs. It is considered a "build" roadmap because it shows those programs that are funded and committed to be developed. The roadmap is not a curriculum, a learning path, a portfolio, a project plan, or a Gantt chart, although these tools are useful in their own right. The roadmap is a roll-up of the development and deployment schedules of the various technical training programs. Because it is a high-level view, courses are not usually included—unless they are significant enough to be called out specifically. Efforts that are internal to the technical training organization, such as training content archival processes, are typically not shown.

The roadmap covers a specific time period, often with quarterly intervals. The time period may be one year or up to three years. The roadmap shown in Figure 5.3 covers a two-year period. It includes the following technical training programs in rounded boxes: strategic priorities, certifications, technical curriculums, accelerated boot camps, and technical job competencies. The quarters across the top of the roadmap show when each program will be initiated, completed, and launched. The boxes depicting the programs may be color-coded, with a legend to indicate specific audiences, training methodologies, or life cycle phases. The roadmap may also have symbols to reference events that are important for planning purposes.

Figure 5.3. Technical Training Roadmap



The roadmap allows for better planning and recognition of project dependencies, overlaps, and potential collisions. Once the roadmap is developed, it may become apparent that adjustments to programs are necessary to deliver on commitments. As the roadmap is updated, the next quarter is added and the oldest quarter is removed. Completed or past activities that are removed from the roadmap can be used as a record of what was planned versus what was actually delivered to stakeholders. Used in this manner, it provides a check and balance for the training organization to evaluate how well it performed against its plan.

The roadmap has an important secondary purpose: to communicate to stakeholders all of the training development activities that are underway. It allows stakeholders to see the big picture and how resources are allocated to programs. Stakeholders are often only aware of their own programs and fail to recognize other efforts that may have an impact on them or their target audience.

Capabilities to Execute the Strategy

The capabilities of the technical training organization are a critical success factor for executing the technical training strategy (Kalman, 2007). Capabilities are those qualities, abilities, or features associated with the organization that have the potential to be used or developed to achieve strategic objectives. The capabilities that are discussed in the next few sections are related to:

- The skills and expertise of the training organization (the people-related capabilities)
- Process-related capabilities
- Technology-related capabilities

It is critical for the technical training manager to review past successes and failures to gain an understanding of the training organization's current capabilities. Acknowledging capability gaps and devising plans to addressing them can mean the difference between success and failure. With a plan, the manager can promote, build, outsource, or discontinue certain practices to be in a position to successfully execute the training strategy. Of course, it takes time to develop the necessary capabilities, whether people, process, or technology.

Skill Capabilities

Based on past hiring practices and organizational decisions, the current technical training organization will be comprised of training experts with a variety of experience, skills, and roles. These people-related skill capabilities are, in large part, a function of how the organization was staffed in the past. For example, if training vendors were primarily used to deliver training, the training organization may not have needed instructional designers and, instead, built a staff of project managers and training administrators to manage training schedules and administration. Or, if the organization supported an operational supply chain in the past, there may be an abundance of documentation specialists and e-learning developers familiar with enterprise systems.

Chapter 7 reviews the skills that are important to a technical training organization, including training, business, technical, and technical

functional, project management, and relationship skills. Taking stock of the training team's skill sets serves to identify current people-related capabilities. The training manager should focus on skills rather than job titles. Once the team's current skills are informally assessed, the desired future skills are identified. A number of staffing and development methods can be employed to acquire the desired skills over time, including:

- Defining new jobs and roles in support of strategic objectives and shifting team members' duties and responsibilities
- Developing training team members' skills based on their aptitudes and interests
- Hiring employees with the desired skills
- Contracting with temporary external training professionals
- Using training vendors to provide training delivery or outsourcing to procure training services

Depending on the extent of change that is needed to reach the desired skill level, the training manager may work behind the scenes to shift and procure resources. If significant change is required, a change management plan should be developed that includes proactive communication with the training team and options for team members to develop new skills.

The development of a VI pool of technical experts who agree to deliver training represents a huge capability for the training organization. Without these instructors, the technical training organization might be significantly limited in their ability to deliver training. If the VIs are dispersed across many global sites, their proximity to employees who need training may be a further advantage that results in significant cost savings. Successful past partnerships with HR, other internal training organizations, or with training vendors further extends the training organization's capabilities.

Process Capabilities

Processes are an important part of an organization's capability, particularly so for technical training. Reviewing the usage of existing training processes and asking stakeholders for their feedback on training processes will shed

light on their effectiveness and the overall process focus within the training organization. Processes that touch stakeholders and are the most important to review are those related to:

- Requirements gathering
- Prioritization
- Training content review
- Governance, roles, and expectations
- Training content archival and accessibility

While all processes used by stakeholders should be "customer friendly," making processes simple and easy to use directly affects the level of cooperation and continued involvement of stakeholders. If processes do not exist or if they are not followed, it will also be difficult for the training organization to achieve consistency, quality, and efficiency in training operations.

If the technical training organization needs to define training processes, they should be developed and tested with broad stakeholder involvement. The next sidebar provides an overview of important components of training processes.

Organizations that have mature processes, whether training-related or not, follow a number of standards to ensure the quality and accuracy of those processes. These standards ensure the consistent and repeatable application of processes and reduce any duplication of effort and rework. Helpful standards to apply to training processes include:

- Clear ownership for creating, maintaining, and updating processes
- Linkage to related or supporting processes and forms required to carry out the process
- Storage of processes in an organized, central location for easy access
- Consistent versioning of documentation
- Periodic stakeholder feedback on the effectiveness of processes

As processes are defined, an owner should be assigned to maintain and update training processes. The owner is responsible for ensuring that supporting material is accurate and up-to-date. Processes should be stored and organized in a document repository. Stakeholders' feedback on processes should be solicited periodically for improvement.

As processes are used in practice, it is easy to notice what is working and what is not or is too cumbersome. If the training team and stakeholders do not follow established training processes, it gives others implicit permission to not follow them. It can become a balancing act to get stakeholders to use training processes if they are not used to such an approach and if they repeatedly circumvent processes. If there are consequences for not following processes, the training organization runs the risk of becoming bureaucratic. If processes do not work for stakeholders, it is important to recognize this and revise them accordingly. Active involvement by stakeholders in developing training processes creates more buy-in.

IMPORTANT BUSINESS PROCESS COMPONENTS

The following components are needed when defining a new process:

- Recognizable name for the process
- Definition of the process
- Explanation of the process
- Users and owners of the process
- Trigger that initiates the process
- Steps in the process
- Job aids, forms, and other tools needed
- Outcome or desired result of the process
- Indicators that will demonstrate the process is working as planned

Technology Capabilities

Technology represents a capability for the technical training organization because it can extend the reach of the training organization. Technology used in the context of technical training can positively impact teaching and learning, increase efficiency, and decrease overall costs. Training technology appeals to technical employees and increases learning options for all employees. In many cases, technology increases interaction and collaboration among instructors, employees, and peers, both during and after training. Technology that is used for training content development increases the standardization and quality of training materials, and learning management systems increase the efficiency of training administration tasks. However, the benefits of technology are not immediate because of the learning curve associated with implementing a new technology.

If the training organization does not use these technologies today, they do not reflect a *current* capability. Even if there are plans to procure specific technology in the future, this represents a *future* capability, as the benefits will only be realized after successful adoption and integration of the technology. Considerations in procuring technology for technical training include choosing the right technology for the best long-term solution, integrating the technology with existing systems, and fostering adoption and usage. Our purpose here is not to explore the various technologies that can be used to support and enhance technical training operations, but to point out that existing technologies may represent a key capability for the training organization. Conversely, a technical training organization may lack technological capability and, therefore, may need to plan the procurement of specific technology. The technology that is most useful will vary based on a number of factors, including the nature of the technical or technical functional training that is needed and the industry.

Some examples of technology that are generally valuable for technical training across industries include:

- *Hardware and Infrastructure:* The technical and specialized equipment and machinery that employees are expected to master
- *Content Authoring/Management Systems:* Technology used to develop and manage training content through prompts, navigation, help files, and alerts
- *Learning Management Systems:* Software or web-based technology for training administration, content management, training delivery, evaluation, and/or other learning functions
- *Three-Dimensional Graphics Technology:* Technology that provides an extra dimension to the learning process, along with animation, manipulation, rotation, and zoom effects
- *Simulation Technology:* Technology that re-creates experiences to enable users to learn the steps of an actual situation
- *Performance Support Systems:* Technology that integrates advice, information, training, and tools, and provides on-demand access (Bezonson 2002)
- *Web Conferencing and Collaborative/Groupware Technology:* Technology that allows users to carry on meetings and demonstrations from remote locations through an Internet connection

An example of the benefits that can be achieved through the use of training technologies is shown in Table 5.2. The older methods of developing training content are shown in contrast to newer methods involving content-authoring technology. The benefits of the technology include greater consistency, efficiency, quality, and accessibility of training content. This is but one example of how training technologies can transform the training and learning process.

Table 5.2. Content Development Enabled by Technology

Characteristics of Training Content	*Older Training Content Development Practices*	*Training Content Development enabled by Content Authoring Technology*
Author	Training developers and technical experts build training material based on their personal experiences, skills, and preferences.	Potential authors are trained on the use of authoring tools and receive support and assistance from the technical training organization. Different levels of authoring are available (novice, expert).
Format	The format varies based on authors' knowledge and experience; the majority of content is authored in Microsoft Word or PowerPoint.	Content is developed on content-authoring tools. Multiple file formats (video, audio) are supported.
Location	Content is stored in different locations and, in many cases, on individuals' hard drives. Finding content is a matter of knowing who authored it and whether it is still available.	Content files are stored in an organized document repository with version control. Content is always accessible and easy to locate.
Consistency	Standards may or may not exist. If standards exist, they are commonly applied after the content is developed as part of an editing function.	Content is organized in a consistent manner with common components. Templates are available that make content authoring easy and intuitive. The authoring tool is widely used.

Summary: Setting the Stage for Execution

This chapter was focused on development of a technical training strategy that directly supports the organization it serves. The components of strategy were defined from a business—rather than a traditional training—perspective.

The training strategy enables the training organization to utilize the same planning methods and processes that other organizations in the company are using, including the same strategic planning process. While most training organizations define a mission and objectives, very little is written about the importance of business and operating models. There are many approaches to auditing the strengths or capabilities of a training organization. Once current capabilities are understood, plans can be devised to develop new capabilities. The capabilities that are most important to the technical training organization are people, processes, and technology. The technical training strategy components and capabilities set the stage for properly executing technical training programs. As David Blankinship, senior staff engineer for Lockheed Martin, puts it, "Lack of planning for training is like running a program without a program plan or schedule, or addressing a software bug without a design—proper planning is critical to effectively addressing the technical training needs of the organization."

6

Getting the Technical Training Agenda Funded

IN THIS CHAPTER WE OUTLINE considerations that are important for paving the way for budgeting conversations and obtaining funding for technical training. Understanding the costs of technical training and how to develop a compelling training budget proposal are critical to the funding process. Resources and templates for calculating training costs and preparing budgets are abundant and therefore the focus of this chapter is on the uniqueness of funding technical training, as opposed to other types of training, and the more subtle factors that play into the technical training funding process. Although much of the training budget literature shows elaborate formulas and templates, requesting and obtaining funding for technical training is less of a mathematical feat than a balancing act of people's perspectives, relationships, preparation, the economy, and current training systems. Therefore, emphasis is placed on those aspects. After obtaining funding, operations

are evaluated and adjusted to increase the likelihood of obtaining funding in the next cycle.

Considerations in Advance of Funding

Before exploring the topic of budgeting and funding of technical training, a clarification of terms is needed. The words "funding" and "budgeting" are often used interchangeably, although they do not mean the same thing. Using the right language increases the training manager's credibility.

BUDGETING

Forecasting future expenditures and revenues

FUNDING

Allocating resources to line items on a budget

Because stakeholders often perceive training to be an expense rather than an investment, the training manager needs to do some pre-work prior to the budget cycle. Several suggestions are presented to make the case for funding technical training, including identifying the business reasons, understanding what executives are looking for, defining accountability and ownership, and leveraging policies and procedures. These considerations should not be ignored because they significantly increase the likelihood of obtaining funding for technical training. They are ongoing and do not occur on a quarterly or annual cycle, as budgeting does.

Identifying Business Reasons for Funding Technical Training

"Employees must be trained" is often used as the sole argument for funding technical training. While there is merit in the statement, a better and more reliable process maps technical training activities to the business agenda. This ensures that key executives understand the business value of technical training. Bill Cary, former HR director at a multinational high-tech corporation, advises that "the most important thing for any training professional to do to

gain executive support and funding for staff development is to demonstrate a clear and compelling connection between the training initiative and a desired bottom-line business result. Businesses make tradeoffs in investment decisions all the time—if a costly problem can be solved or a market opportunity more easily seized through a targeted training intervention, the support will be there." Nan Gesche Larsen (2002) agrees and encourages training executives to "be able to tie every expense back to an organizational goal or objective."

According to Tom Kelly (2009), there are three compelling reasons for companies to have a training function (and with that, a reason to approve a training budget):

- To increase enterprise revenues
- To improve employee productivity
- To increase customer satisfaction and loyalty

Aligning technical training programs to strategic goals that support one of these drivers is the ideal way to justify funding requests. As a differentiator, technical training activities can be tied more directly to high-level business drivers. For example, a course for mechanics on "suspension, steering, and handling" for a new hybrid car more directly supports a car manufacturer's release goal than a course on conflict resolution. Technical training managers should show the cause-and-effect linkage between technical training and business objectives.

Training metrics typically associated with non-technical training, such as the number of delivered courses or the number of students who complete training, are not relevant for productivity, revenue, or customer satisfaction. If training projects cannot be tied directly to a strategic line item on the annual or quarterly business roadmap, then training managers need to "connect the dots" by using intermediate metrics or goals to show the positive association or correlation between training and business outcomes. Take, for example, a course on "routine equipment care" where new employees are taught routine equipment checks, visual controls, and equipment restoration activities. These activities may not be easily tied to high-level strategic goals; however, the training manager should connect improvements in the ramp-up time with reduction of machine downtime and safety-related accidents, thereby contributing to the bottom line.

The necessity of showing a close alignment between training and business goals increases in a down economy. Anderson (2009) reports that

in an economic crisis "95 percent of learning executives expect that training will be more closely aligned with company business objectives." Sadly, it should not take a crisis for this to happen. It should be the responsibility of the technical training organization to align training to business objectives, no matter what the economic situation. In order to position technical training as a strategic effort rather than a reaction to economic changes, the revised training roadmap should be presented as an important step toward turning things around (Bordonaro, 2003).

Furthermore, linking technical training to future and emerging trends within the company and industry shows stakeholders that training supports a long-term investment. Dave Templeton, Intel IT employee training and career solutions manager, confirms that "Managing a technical training budget has challenges in not only finding the right balance and prioritization for the employee base, but in convincing management to spend their limited funds on technical training. I have found that establishing a multi-year roadmap with core emerging skills helps articulate where to invest and provides the right focus for the organization." With the rate of technological change, some feel it is impossible to forecast the technical skills the company will need in the future. Indeed, the business direction and strategy for the next three to five years might not be known yet. However, an educated guess is better than no planning and consideration of future needs at all.

Understanding What Executives Are Looking For

Finance typically defines and often drives the budget planning process, templates to be used, and information to be provided. In the end, all of the information from different organizations in the company needs to be summarized, and not everything rises to the top. A natural selection or filtering process takes place at executive budget reviews, since there is too much data to review in the time available. Therefore, it is not uncommon for executives to ask their finance representatives for recommendations on what should be approved and what should be cut. Executives are highly influenced by the finance representatives who support them. If finance representatives have been supporting training for a while, they may have acquired

sufficient knowledge to make informed recommendations; that is not often the case for financial analysts assigned to smaller support organizations such as a technical training organization. They typically do not have the knowledge needed to decide whether technical training courses and programs, for example, a course on chiller performance, gas dynamics, or piping fabrication, should be funded.

Finance representatives, not unlike many managers and executives, consider horizontal functions like training and legal to be necessary expenses. The argument that training is an investment yielding long-term outcomes such as improved employee morale, reduced turnover, and increased employee capability will likely not be heard when talking to finance representatives because these benefits are too intangible according to standard accounting practices. Gus Prestera (2008), president of Effect Performance, Inc., advises making funding requests realistic and objective because "accountants have their rules, and by their very nature they take a conservative approach to this stuff." Training managers need to take the time to build relationships with finance representatives and help them understand what technical training is all about. Because technical training is not as self-explanatory as non-technical training, finance representatives may not understand what the training is for, who needs it, and why, and therefore may be less inclined to approve it. Explain how technical training impacts the business drivers discussed above and show that it is not "just another HR activity," but a critical investment for the company. That argument appeals to finance representatives and increases the chances of technical training being approved. Dunk confirms that "Accountants are not qualified to assign a value to L&D [learning and development], so this is where you (the training manager) come in—but you need to talk in the accountants' language, and in the context of what is important to them" (2007, p. 43).

Ultimately, the most senior executive approves the budget. This person has knowledge of all aspects of the company and can weigh priorities against each other, if the budget has survived the intermediate rounds of random scrutiny. Executives, like other employees, have their own priorities. Ideally, their priorities are the same as the company's. A capable executive will not compromise business priorities for personal preferences, but many leaders

have "pet" projects and will drive to get them funded. This creates a delicate balancing act for the training manager since the decision-maker's preferences come into play. Remember that benchmarking data, industry information, technology trends, and competitive information are the best tools to influence funding decisions.

Funding for technical training is a result of people being convinced that the organization has to have training—for whatever reason. In the end, the decision about whether to do training or not is often based more on beliefs, relationships, history, and precedent than on hard data, even though the final decision-makers may be engineers or scientists. If the decision-makers do not appreciate the technical training organization or the technical training manager and do not believe in their capability, the technical training agenda will not be adequately funded.

Defining Accountability and Ownership

In the context of budgeting, the role of the technical training organization should be clarified prior to the budgeting cycle so activities can be planned and appropriate funds can be requested. Training professionals must understand the complexities outlined above and be clear about ownership, accountability, the timing of their own involvement and the role training plays in solving business problems. Rothwell and Benkowski (2002) agree that training should be considered "at the outset of the decision-making process so that the training is completed when the new work process is ready to go online or the new equipment has already been installed" (p. 82).

There are differing opinions about whether funding should be centralized or decentralized and whether the technical training organization, if in HR, should own the budget or the business organization should. All the different models have merit, and the design depends on how the technical training organization is structured (as we will discuss in Chapter 7). Susan Pilgrim, Ph.D., former head of global L&D for NVIDIA Corporation, believes that "When the responsibility for setting the budget is shared—funding via the business unit and management via the training organization—training is perceived as an integral part of doing business. The training

organization should provide estimated costs of the planned training to the business unit leader so he or she can include it in the budget plan. Actual costs for technical training should be borne by the business unit requiring the training. This business partnership is integral to the execution of a training program."

Leveraging Policies and Processes

Training policies should be leveraged in support of budget preparation; they provide direction on identifying training needs and allocating funding to those needs. Established training policies and processes can be powerful tools for setting the stage to obtain and distribute limited funds for technical training in a fair and impartial manner. These policies and processes need to be available at decision-making time.

A wide range of policies and processes are related to training. In the context of budgeting, the following are critical:

- *Participation in the corporate budgeting process:* The training organization needs to participate in the budgeting process. It needs to hold itself to the same standards as any other business organization. Even if it has only a small budget, going through the cycle is a sign that technical training is a business partner. Participation and visibility in corporate-wide processes leads to recognition and consideration when resources are allocated.
- *Clarification of decision making:* Research by Training Industry, Inc., revealed that "75 percent or more of spending decisions for IT training are made by IT managers. While much of this training activity is coordinated through training organizations, a significant amount is not" (Gregory, 2008). While this number pertains to IT training, the message is relevant to all technical training: Whether there is a central budget for technical training or not, the majority of technical managers still have the authority to approve technical training expenses. Even when managers do not have official authority, it is not uncommon for technical managers or employees to circumvent established processes and put training-related expenses on their credit cards and get reimbursed for unauthorized training

through the corporate expense reimbursement process. Who can authorize training needs to be clarified prior to the budget cycle. Training policies should stipulate who can make what decisions in regard to training funding and what the consequences are if policies are not followed. This will avoid duplication, miscommunication, and ill will.

- *Details of course management:* Training policies may address class size, no-show consequences, billing procedures, reimbursement, travel cost guidelines, and so forth. Those policies should be accessible to employees and managers and included in communications so everyone is aware and understands them. This is particularly important for technical training courses, for which late cancellation or no-show fees may be costly. If employees and managers are not aware of these policies, back billing and cancellation fees will come as a surprise and will be escalated up the management chain. The training organization should communicate any policy changes so they don't negatively impact budgets. Policies can also be publicized to raise awareness of the overall investment the company makes in technical skills development. Many people will not realize where the money for technical training comes from, especially if training is managed through a central budget and technical training costs are "out of sight, out of mind."
- *Use of a steering committee:* In Chapter 4, the value of steering committees was presented. The role of the steering committee in regard to training funding should be documented. It is important to have the steering committee involved early. Regularly scheduled discussions and a budget review with the steering committee help to surface stakeholders' thinking. Steering committee members will be very busy during the budgeting cycle because they will be preparing their organizations' budgets too; therefore, early scheduling of budget steering committee meetings is critical.

Revisions and addendums can be made to training policies and processes on an exception basis during the budgeting cycle, but policies and

processes themselves and any changes should be transparent and predictable. An exception would be if a reorganization occurs during the budgeting process and updates to the collaboration and governance structures or changes in the structure of the training organization need to be made to ensure budgeting is done in accordance with the new business model.

Setting Up the Budget

Putting together a budget proposal may seem like a daunting task. It is, but not because of the mechanics of it. Budget proposals tend to be simple, require limited financial or mathematical skills, and are guided by a company's finance organization. Forecasting is challenging because of the need to define items, clarify scope, and estimate costs. Therefore the focus of this chapter is on budgeting challenges that are more subtle and not on the mechanics of the budgeting process per se. It often takes years for training managers to discover these challenges on their own.

Complexities of Training Costs

Determining the true cost of technical training in an organization can be challenging, and many executives—both training and business—are unable to do so (Israelite, 2006, p. 104). The challenge lies in determining which costs to include. Kearsley (2006) agrees that the first step is to decide what costs to include; after that, the valuing of those costs is relatively simple. Issues that often come up include determining the fit of "soft" costs—tuition reimbursement for an engineering degree, attendance at a medical industry conference, a subscription to a specialized magazine for technicians, memberships to professional associations, and/or informal training opportunities. Questions about how to include these costs are very common.

Adding to the complexity is the fact that some training costs may be included in other budgets due to training being bundled with other activities or purchases. A good example is the cost of a company-wide engineering conference, which is likely to be covered by operations and will not show up in the technical training budget. And training on manufacturing

equipment or large software applications provided by a manufacturer or vendor will be embedded in the total equipment or purchase cost and will not hit the training budget or show up as a training-related expense. If that is the case, these expenses and connections should be explained in the comments function of the budgeting software.

Unmanaged costs that never surface further complicate the process. These costs are often not visible or cannot be easily identified. Even though there may be an agreement as to what costs to include, not all costs are tracked, making the total cost of technical training almost impossible to determine. This is even more of an issue when technical training is decentralized because expenses hit multiple budgets and training costs cannot be easily aggregated. As Trolley (2006) confirms: "Unmanaged spending on training is pervasive in many organizations, much of it occurring in business units, not in the corporate training function" (p. 104). Policies about what constitutes appropriate training expenditures may be vague or missing. When budgets are tight, people tend to "reclassify" training costs into categories that they believe will have a higher chance of approval. Since there is a strong belief that training is the first thing to be cut, it is not uncommon for training-related expenses to be reclassified or disguised. As a result, these training-related costs do not show up as such. Another cost "shift" that is common is the cost of VIs. The cost of instructors traveling to deliver training is clearly a training cost. However, the travel costs associated with teaching may be classified as business trip expenses. Unmanaged and reclassified costs may be the result of many things, including personal agendas. Control of resources represents power and, unfortunately, it is not uncommon for managers, training or other, to want to retain control over certain training-related investments. Because technical training budgets tend to be higher than non-technical training budgets, these cost shifts are more consequential in this realm.

Knowing how much training costs is getting harder as training managers try to value the cost of "informal learning." Informal learning is not a new concept. Because some technical skills "age" quickly as new technology becomes available, informal learning may be the fastest way for employees to keep their knowledge up-to-date, which can represent a large cost factor.

Ringo, Schweyer, DeMarco, Jones, and Lesser (2008) confirm that. They believe that because many of today's skills are becoming irrelevant quickly, a combination of blended learning, the use of electronic tools, and informal learning is becoming the preferred approach to skills development (p. 15). Nobody really knows how much informal learning costs, and therefore it is difficult to budget for it other than the direct costs of procuring collaborative technology. Kelly (2009) points out: "While we knew for decades that people learned from each other at the water cooler, on the phone, and inside meetings, technology has made the discussion of informal learning a whole new conversation."

Another challenge to determining the total cost of technical training concerns the timing of expenditures. A lag in time between training service delivery and payment for those services is typical. This impacts cost calculations because prior expenses are often used as a baseline for estimating future costs and allocating funds. For example, if a vendor course cost $30K in the fourth quarter but has not hit the technical training budget, the fourth quarter budget actuals will be misleading. The lag is a result of procurement policies. A lag of three months is not uncommon from the time the invoice is received from the vendor and the expense is paid. Because technical training courses can be very expensive, these expenses can easily add up to a significant amount. Delayed costs show up as an "under-spend" in the quarter in which funds were budgeted and as an "over-spend" in the subsequent quarter. Budgets that are under-spent are perceived to be over-budgeted, and funds are often cut in subsequent quarters, thereby compounding the problem. Training managers must be aware of company and vendor policies, which vary, and monitor when expenses will impact the budget. Accrual is a good solution. With this accounting method, money that is not spent in a certain period is moved to the next period. Often minimum amounts of $50K or more are required to justify the administrative effort. It is necessary to explain under- and over-spends at management and executive reviews so that decision-makers do not assume the funds are no longer needed and cut the budget.

Unfortunately, executives and managers may not always want to know the true costs of technical training, as we found in our interviews. An industry

training expert shared that a CEO once told him that he did not know how much was spent on training and did not really want to know—as the only answer would be to cut back. Hopefully, these types of executives are far and few between. Training managers also face a dilemma because, on the one hand, they need and want to make the cost of technical training apparent; on the other hand, transparency also makes the budget a target for cost-cutting.

The Cost of Technical Training

Much of what can be said about funding the technical training agenda can be said about funding any other type of training. One of the key differentiators, however, is that technical training requires capital equipment. And capital expenditures further complicate the budgeting process. In addition to purchasing costs, the budget has to account for depreciation schedules and maintenance expenses. The cost for capital equipment tends to be high, increasing a training manager's budget request significantly. That is also why training managers often shy away from owning technical training or acquiring capital equipment. They are intimidated by the thought of managing a multi-million-dollar budget, which is not uncommon in technical training. In many companies, the capital budgeting process is separate from the operating budgeting process because it requires different accounting procedures (Waagen, 2000). For the technical training manager, this means participating in two separate budgeting processes with separate forms and procedures. Whereas the operating budget tends to have base budget amounts for labor and expenses (with labor typically being the biggest cost factor) that are carried over from year to year, the capital budget process is more likely to require (re)justification every year. If capital is included, it tends to be the second highest cost factor, behind labor costs. If there are indeed two separate operational and capital budgets, training managers must be sure that all costs are covered in some way and linked together. It makes no sense to have approval to buy equipment but no authorization or resources to maintain it.

Despite the complexities that in some form or another exist in any company, actual formal training costs are easily broken down into direct

or indirect costs. Direct costs in technical training include the following operational and capital expenses:

- Participant salaries (operational)
- Instructor salaries including those of VIs (operational)
- Contractors and employees who design the programs (operational)
- Course materials and supplies (operational)
- Communication and marketing (operational)
- Travel and meal expenses (operational)
- Equipment purchases (capital)
- Facilities, labs, machine rentals, and maintenance (operational)

Indirect costs in technical training often include:

- General office and administrative support expenses not directly related to the design, development, or delivery of the training program (operational)
- Training manager(s) and staff salaries (operational)
- Administrative support salaries (operational)

OPPORTUNITY COST

The value of the next-best alternative that is foregone as the result of making a decision

While most direct and indirect costs are usually considered, some costs are not. For example, few companies calculate the cost of internal VIs. Lost opportunity cost is also rarely considered, although some include it in labor costs. Opportunity cost analysis is an important part of an organization's decision-making process, but is not treated as an actual cost in any financial statement. Given that, it is acceptable for training managers not to account for opportunity cost, even though it is a good metric. If training professionals can shorten a training course without effecting student knowledge or post-training performance, they can quantify how many dollars of

opportunity cost they have saved the company. Companies also rarely or never calculate:

- Costs associated with an employee's learning curve such as the cost of mistakes
- Costs related to company culture and expectations such as costs associated with promotions and increased rewards after completion of training (Hoffman, 2000)
- The cost of shorter employee tenure because of lack of training (Leaser, 2008)
- The cost of poor, useless, and low-quality training, which "can have more negative results than no training at all" (Howe, 2008)

The benefits of technical training should, of course, outweigh the costs. The most obvious benefits are the impact of training on enterprise revenues, employee productivity, and customer satisfaction and loyalty. Kraus (2006) gives an example from the service repair business and confirms that "Continuous education of your technicians will make your shop more marketable and perhaps give your shop a competitive advantage. More importantly, if you can't get the repair done, there is a good chance you won't see that customer again." Some related benefits that warrant mention because they are unique to technical training include:

- Savings in labor costs if fewer employees are needed to operate machines because of efficiencies gained from training
- Reduced downtime if employees have knowledge about how to fix equipment they learned in training
- Increased safety and less liability exposure if injury rates are reduced as a result of training
- Lower return rates if products or services are delivered correctly the first time

While these benefits are often not calculated, they can help create a strong argument for funding technical training. If an experiment can show that operators who have taken a course in operation, maintenance and repair

TRAINING PROGRAMS AND EMPLOYEE RETENTION

By Stephen Howe

In 2007, I researched and wrote an article for *Fleet Maintenance* magazine that explored the relationship between a company's training programs and their resulting employee retention. I had just started working at United Rentals at the time, and the article caught the attention of my supervisor. (He had to approve all my articles before they were sent to the publisher.)

In the article, I noted that—after "money" and "relationship with boss"—one of the biggest reasons employees cite for leaving a job is "no clear career path." This certainly sparked my interest. Over my twenty-plus years in automotive and heavy truck dealer technician training, I had often heard the following or something similar: "If I train my guys, they'll just use it to get another job down the street." As a training professional, this bothered me. What if those fears were baseless?

The problem of technician turnover at car dealers and body shops is certainly no secret in the industry. But after continued research, I had become convinced that the right training programs could actually help organizations retain their good, motivated employees by showing them a visible career path through training.

The study began in the fall of 2008, as an offshoot of something I was already doing. I had kept meticulous training records dating back to January 1, 2007. Every one of some 2,700 heavy equipment service technicians was laid out, by region, in a massive spreadsheet. Their training in various categories was populated on the sheet. As a favor to our region maintenance managers, I highlighted those employees who had not received any hands-on training since January 1, 2007.

In trying to update the records for 2008 turnover, I discovered something: the employees who had left the company over the twenty-plus months of these training records seemed to very often be the same ones who had not received any training. Thus began the project of actually counting those who had departed and sorting them into "trained" and "not trained" groups. I cut off the study at November 30, 2008, so overall there were twenty-three months of training opportunity.

(*continued*)

The results shocked even me. The 2008 termination rate for those employees who had received no training in the twenty-three-month span was 3.5 times higher than for those who had gone to a technical training class.

To provide further evidence, I looked at voluntary turnover only. This sorted out involuntary turnover (primarily due to layoffs). I also didn't count retirements and relocations for the voluntary group. Essentially, this left only those who left the company of their own free will. In this group, those who never attended training were 3.8 times more likely to have quit than those who were trained.

This study was not scientific, as it didn't look at other factors in the various United Rentals branches where our technicians work. It is likely that the branches who make the effort and pay the expenses to develop and train their employees do other things to keep those employees around. But the percentages I saw certainly show a strong correlation between training and employee retention. With the cost of turnover estimated at one year of the departing employee's salary, this is certainly a training ROI factor that many companies may not have considered.

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of plant piping systems cause less downtime than operators who have not taken the course—because they know how to safely and cost-effectively operate, maintain, and troubleshoot piping systems—then the likelihood of funding increases.

Technical Versus Non-Technical Training Costs

There are clearly more considerations in determining the total cost of technical training versus non-technical training. For one thing, technical training is believed to be more expensive than non-technical training. A small sample of courses—e-learning and classroom, technical and non-technical—offered by various vendors gives an indication of overall training costs. The sample in Table 6.1 is not intended to be statistically significant.

Table 6.1. Training Vendor Cost Comparison

Type of Course	*Total Cost Per Participant*	*Length*	*Cost Per Day/ Participant*
Non-Technical Classroom			
Advanced Java	$1,300	2 days	$650
Architecture Essentials	$850	1 day	$850
Contact Center Express	$3,300	5 days	$660
How to Perform Elevator Inspections	$1,600	3 days	$533
Installing Premises Cabling Systems	$800	2 days	$400
Summary	$7,850	13 days	$618
Non-Technical e-Learning			
Network Manager Fundamentals	$2,400	32 hours	$600
Process Automation Engine Fundamentals	$3,250	40 hours	$650
Contact Manager Training	$400	8 hours	$400
Hazmat Annual Refresher	$95	8 hours	$95
Pharmacist Refresher Course	$550	48 hours	$92
Summary	$6,695	136 hours/ 17 days	$367
Non-Technical Classroom			
Business Skills for IT Professionals	$1,800	4 days	$450
Introduction to Project Management	$2,000	3 days	$667

(*continued*)

Table 6.1. (Continued)

Type of Course	*Total Cost Per Participant*	*Length*	*Cost Per Day/ Participant*
Critical Thinking, Problem Solving, and Decision Making	$1,395	4 days	$349
Creating and Delivering Convincing Presentations	$1,400	2 days	$700
Managing Under Pressure	$200	1 day	$200
Summary	$6,795	14 days	$473
Non-Technical e-Learning			
Persuasive Writing and Negotiation	$200	8 hours	$200
Developing Skills for Effective Leadership	$300	12 hours	$200
Effective Time Management	$650	8 hours	$650
Global Leadership for Engineers and Scientists	$595	48 hours	$99
Benchmarking Online	$70	4 hours	$140
Summary	$1,815	80 hours/ 10 days	$258

In general, classroom training is the most expensive method (Leaser, 2008). On average, the cost of technical training ($493/training day/person) is about 20 to 30 percent higher than the cost of non-technical training ($366/training day/person). See Table 6.2 for a summary.

The perception that technical training is more expensive than non-technical training also seems to hold true when companies bring vendor training onsite. According to several training and technical experts interviewed, a technical training course that is taught onsite is on average $450 to $500/day/person, whereas bringing a personal effectiveness course onsite is on average $300 to $350/day/person. Deciding whether a course should be

Table 6.2. The Average Cost of Training

Technical Classroom	$618	Non-Technical/Non-Technical Classroom	$473
Technical e-Learning	$367	Non-Technical/Non-Technical e-Learning	$258
Average	$493		$366

offered onsite or offsite partly depends on the breakeven point, the point at which it is more cost-effective to switch from sending employees to vendor training centers to delivering the same course onsite. Leaser (2007) points out that "for groups of six or more, customized onsite training is typically more cost-effective than public classroom delivery" (p. 7).

Technical training is more expensive—whether it is delivered onsite or at a vendor training facility offsite—for several reasons:

- Generally, a company has multiple product lines and a different process for each, necessitating different courses for potentially small numbers of employees. Sometimes vendors have more opportunity to increase course fill rates, driving down the cost per student for specialized technical training.
- Instructors for non-technical courses are less expensive because there are more instructors available to teach personal effectiveness skills. Cross-training is also possible and common in non-technical training. For technical training, lateral moves or transfer of instructors to teach other courses is limited by technical expertise, which drives up technical instructor salaries.
- When equipment, hands-on labs, or simulators are needed, capital costs increase the cost of training. When only a few individuals need the training, the cost is high per person when delivered internally because of the limited training audience.

There is no doubt that, for some technical training, the hands-on teaching aspect is critical, despite the time and cost involved. Mark Blount, a technical expert, agrees that equipment cost and the time it takes to create labs and

hands-on experiences contributes to a higher cost of training but that it is often well worth the effort. "Adding a hands-on component is very important for technical training. Once we built a trebouchet, a Turkish device capable of hurling, and we wanted to test it. It took us eight hours to get the lab set up and, half-way through the lab, someone broke the trebouchet. In sum, we spent thirty to forty hours on the lab, which creates a lot of overhead and cost, but the results were phenomenal."

Many companies look to e-learning as a way to save costs. According to the 2008 State of the Industry Report, "Although traditional classroom instruction still occupies a prominent space, learning professionals are turning to technology to help streamline operations and deliver learning at less cost and with greater reach" (ASTD, 2008, p. 6). As the cost comparison in the tables showed, e-learning is cheaper than classroom training, though e-learning costs for technical training are still higher than for non-technical training. Lovell (2008) estimates that internal training organizations can achieve a 9.5 percent net reduction by switching from classroom training to e-learning. The reduction is generated by reducing training delivery costs by 20 percent in return for a 25 percent increase in development costs for e-learning courses. Despite that fact, e-learning training fell for the first time in 2007, as companies turned to development opportunities that, at first sight, appear to be even cheaper than e-learning. The question is whether development activities such as coaching and on-the-job training are really cheaper than formal technical training. Most of the time, nobody will be able to tell because the cost of informal learning is hardly ever calculated, as mentioned earlier.

Understanding the differences in costs for technical versus non-technical training, onsite versus offsite delivery, and e-learning versus classroom will help training managers when they develop budget proposals. Ideally, a cost could be assigned to informal training, but that will continue to be difficult. Training managers must calculate whether the planned course costs more in money or time than the value or benefit one hopes to gain from it. This, of course, would defeat the purpose. One must use caution not to spend too much time in the analysis of costs and benefits. Having an awareness of the problem and making educated guesses may be the best one can do when putting together a budget proposal.

Budgeting Pointers

Learning how to budget for technical training takes time. Training managers who are new to the budgeting process often have to learn by experiencing a few budgeting cycles. It can be painful to miss funding opportunities due to inexperience. Several tips on budgeting for technical training are presented below. While most of these are not unique to technical training, they are critical to avoid missed opportunities:

- *Prepare a clear and complete cost picture:* Executives may only look at summary data, but all detailed cost information should be readily available if requested, including how technical training relates to other organizational priorities and costs for training that may not be in the scope of the training organization, as mentioned earlier. It may not be an explicit expectation to have information on training costs that are hidden in other organizations, but as the training leader, it is wise to have such data on hand.
- *Find out how executives and managers like to receive and see budget information:* Individual preferences, company culture, and other factors will dictate the best way to present a budget proposal. While creativity is good, the finance organization's templates and processes need to be followed.
- *Focus on the few critical items:* A budget proposal is not a holiday wish list. An infinite number of things could be undertaken; however, asking for money to do all of them is unrealistic. Focus on training activities that support the top three company goals such as enterprise revenues, employee productivity, and customer satisfaction and loyalty.
- *Present some "either/or" scenarios:* Budget cuts and tradeoff decisions are a normal part of the budgeting process. Hardly anyone's budget is approved without any changes or tradeoffs. Ensure the critical items on the budget are protected by preparing various scenarios so that options can be clearly articulated to stakeholders. Include tradeoffs between projects and various degrees of project implementation.
- *Take a guess if you have to:* Sometimes not all the necessary information is available at the time the budget must be submitted. Rather

than omitting a line item, it is good to take a guess about how much the project or initiative will cost. This may feel uncomfortable, especially for technical training activities that are expensive. Most companies allow for revisions throughout the budgeting process, which gives the training manager ample opportunity to fill in the exact information as it becomes available.

- *Overestimate the budget:* Even during good times, budgets seem to be cut. Increasing a request by 5 to 10 percent over what is needed will increase the likelihood of getting the amount that is really necessary to do the job. Training managers should not overestimate so significantly that it gives others cause to question their financial planning abilities. Another option is to include a risk factor, a value not associated with a single program but with the portfolio in general.
- *Manage emotions:* Two of the most emotional times in companies are during performance management/appraisal and budgeting periods. When money and success are at stake, people can be difficult. Do not burn bridges—and live to "fight" another day.

Managing the Budget

Managing a training budget involves tracking expenses, making monthly or quarterly adjustments, providing regular updates to the parent organization, and complying with any new budget directions from finance. A multitude of books can be found that go into great detail on the mechanics of budget management, and therefore standard budget management is not the focus of this chapter. In this section, we focus on budgeting considerations related to technical training that are critical to funding and executing the technical training agenda.

Understanding Return on Investment

Often, the first thing finance and executives ask for in response to funding requests is the return on investment (ROI) of training. ROI is calculated by analyzing the anticipated benefits related to the estimated costs of

a training program. ROI can be used both as a planning tool to determine whether the planned expense can be justified, as well as an evaluation tool to determine if the program achieved its objectives (Weatherly, 2004). Two methods are commonly used in the calculation of training benefits: the Kirkpatrick four-level evaluation model and Phillip's ROI methodology. According to Kirkpatrick, evaluation should begin with Level 1 (reaction to the training, instructor, technology, and classroom environment) and, as time and budget allow, move sequentially through Level 2 (learning), Level 3 (behavior or performance as a result of training), and Level 4 (the effects of performance on the business or environment). Kirkpatrick believes that information from each prior level serves as a baseline for the next evaluation. Phillips later added a fifth level, ROI, which involves comparing the Level 4 evaluation results with the overall cost of training (Phillips, Phillips, Stone, & Burkett, 2007). A more informal but powerful way of looking at it is to ask the following questions:

- Did they like it?
- Did they learn it?
- Can they do it?
- Does it make a difference?
- Was it worth it?

Despite Phillip's well-thought-out model for calculating ROI, training professionals still struggle with how to measure ROI, often seeing it as a roadblock in funding discussions. Determining ROI takes time and resources to define and gather the data that goes into the calculations. While each of Kirkpatrick's successive evaluation levels represents a different measure of the effectiveness of the training program, evaluation beyond Level 1 requires rigorous and time-consuming data gathering and analysis. Additionally, the calculations involved are often based on assumptions of causality that do not pass the scrutiny of finance.

However, when a training organization decides to calculate the ROI of technical training, there is an advantage over non-technical training because the measures that go into the calculation are more objective. The

relationship between technical training and organizational impact is more direct. For example, technical training is presumed to have a direct impact on skills, which impacts performance, which impacts productivity, and so forth. It is harder to make the direct linkage between personal effectiveness training and organizational results. Additionally, the ROI of technical training is perceived to be higher than the ROI of non-technical training, although there is limited research to confirm this. One study by Morrow, Jarret, and Rupinski (1997), "The Return on Investment of Technical Training," examined the financial impact of management and sales/technical training in pharmaceutical companies. The mean ROI for sales/technical training was 418 percent, while the mean ROI for management training was just 45 percent.

Aside from the administrative challenges noted above, there are several fundamental issues about ROI in general and ROI in the context of technical training to consider. One of these is that many training organizations tend to operate on a supply-based model the way that schools do. Curriculum designers and training experts define a curriculum and, based on the curriculum, employees receive a certain amount and type of training. Some companies expect employees to "own their own career and skills development," and so employees sign up for specific courses. This type of training is difficult to tie to a specific business result. If companies use a demand-based model whereby training is delivered in support of the top three business challenges, the ROI should yield a higher number because it relates more directly to specific business results.

A further complicating factor is that ROI may be questioned no matter what executives are looking for. Bingham and Jeary confirm that, while a CEO may ask for ROI, it could just be an inquiry unrelated to ROI, but framed as a question about ROI. It is important that the training professional probe to find out what information is really desired. Laff (2008) takes it a step further when he quotes Bill Pelster, leader of Deloitte's human capital training and development practice: "Where many training organizations are scrambling to demonstrate value in terms of skills acquired versus dollars spent, Pelster believes such calculations are a waste of time. The need to prove some kind of metric for training's value is a "red herring"—a clear

sign that the training department lacks confidence in its ability to illustrate how training aided the organization" (p. 47).

Because of these complicating factors, training managers should determine whether an ROI calculation is actually desired. There are staff and opportunity costs associated with spending time analyzing and calculating ROI. O'Driscoll, Sugure, and Vona (2005) believe that executives are not as concerned about ROI and isolating training's contribution to the bottom line as training managers may think. If it is decided that ROI should be calculated, ideally data collection begins after a budget cycle has closed and when a new financial year begins. This gives sufficient time to collect the necessary data. Because ROI is difficult to calculate, takes resources, and is often not what managers and executives were looking for in the first place, a test case or pilot project using a high-impact project is a good way to find out whether the organization wants to invest the time and resources in determining ROI.

Aligning Funding to Evaluation Outcomes

In a joint study, Expertus and Training Industry, Inc., found that metrics that are more difficult to gather are used less often as training budgets tighten. ROI and other impact metrics, often considered the most difficult to calculate, are used the least. ROI has given way to simpler metrics such as number of course completions and registrations (Kelly, 2009). Simple or not, Bingham and Jeary (2007) confirm that it is difficult to deliver "meaningful, compelling results" translated into metrics that are in line with organizational initiatives and presented in a way that senior managers can relate to (p. 7). Weatherly (2004) agrees and warns to avoid measuring everything and instead focus on measuring what really matters: "Measure data that can be directly tied to the business; and periodically query the company's business leadership to ensure they are getting the training outcome information they expect and need."

When a training manager is not asked the ROI question, it does not mean training costs and training impact should be overlooked. An effective way to show the impact of technical training and its alignment to the business is to incorporate existing training metrics on business metric report-outs and

scorecards rather than reporting them as standalone training metrics. Gesche Larsen (2002) believes that "a balanced scorecard approach to learning is just as important, if not more important, than ROI calculations" (p. 12).

Qualitative data can also be used to show the value of technical training when it is paired with other types of data. Anecdotal data like customer feedback, testimonies, and quotes from managers, employees, and other experts at different organizational levels can be used to show that stakeholders value technical training. Responsiveness to training offerings, the reputation of the training organization within the company, turnover of training professionals, and training professionals wanting to enter the organization are less quantifiable, more informal measures of the success of the technical training organization. These hidden value indicators should be collected throughout the year. They are helpful to show that training is highly valued and should be funded.

Everything can be tracked in some shape or form, but measurement can be perplexing. The best advice is that one size does not fit all. The types of measurements executives want that will positively influence budgeting decisions depends on the individuals involved, the economic situation, and the reputation of the training organization. What is universal across every company is that it takes at least one financial cycle to gather the data and extract meaning from it. Agreeing on the framework and assumptions to measure the cost and impact of learning is key so that, in the end, managers do not disagree with the assumptions the calculations are based on. If there is not agreement and the engineering team, for example, has a shorter development cycle than expected, it will be attributed to the new product mix, new people, alignment of the stars, anything but the training. And that would be unfortunate.

Applying Creativity to Funding

There are many ways for technical training organizations to be creative to reduce training costs and increase efficiencies while maintaining the same, if not higher, level of service to stakeholders. Many of the ideas presented in this section take time to plan and execute and, while the financial cost savings and impact may not be immediate, the longer-term payoff can be

tremendous, particularly when several innovations are implemented at the same time. Some of these ideas may be tried during economic downturns and then later abandoned during growth periods. However, it is wise for the technical training manager to continue to be vigilant on spending, no matter the state of the economy. When implementing these ideas, the cost and service impact should be measured to show the organization how the technical training organization is doing its part to save company resources.

One idea that represents a major shift in the way the technical training organization operates is to consider transforming from a cost center into a revenue center. Changing into a profit center is a good way to reduce discussions of cost, because expenses are recovered and, ideally, a profit is made. A 2004 survey of training executives by Accenture Learning (Sussman, 2005) identified high-performing training organizations as those who can "sell and deliver educational services to customers and third-parties, making learning a source of direct revenue" (p. 37). A training organization can make the transition by becoming an internal revenue center and charging internal customers for services or implementing bill-backs or by selling training solutions to distributors, wholesalers, and/or other channel partners. Waagen (2000) says that "training organizations usually have three products they can sell externally: training programs, training facilities, and training expertise" (p. 9). All three have potential for technical training. A company may have highly prized machines or equipment that other companies are eager to rent to train their employees. If a new cutting-edge technology or product is developed, early adopters may have training available that other companies are interested in. Often the technology is so new that off-the-shelf solutions from vendors are not available. In this case, there may be a great opportunity for an established internal training organization to provide such equipment and/or training for a fee. Prestera (2008) admits: "It's not a simple change to make, but thinking and acting like a revenue center can have profound effects on your training group, as well as on the way the organization perceives your training group." The case study of Lufthansa Technical Training illustrates such a success story.

CASE STUDY: A GLOBAL LEADER—LUFTHANSA TECHNICAL TRAINING

Bettina Miller, regional director of marketing and sales, describes how Lufthansa Technical Training (LTT) GmBH grew from a national, internal technical training organization to an internationally known training provider in the airline industry.

In 1955, Lufthansa founded a maintenance department to service the airline industry in Germany. Shortly thereafter, Lufthansa received authorization from the Federal Aviation Authorities to provide maintenance for several American airlines. Since only ten years had passed since World War II, this was a significant achievement. During the aviation crisis of the 1990s, Lufthansa created a holding company and outsourced major areas of the business, including catering, cargo, IT, and maintenance. As a result, Lufthansa Technik (LHT) was founded as a separate company. Today, LHT has 26,000 employees worldwide, and what once was an internal maintenance department is now a global maintenance, repair, and overhaul organization (MRO).

A similar transformation happened to LHT's internal training department. With access to a global market and a significant increase in air travel, the demand for technical personnel at LHT and in the industry grew, and with that, the demand for vocational and advanced training solutions. Initially, the training department focused only on LHT employees' skill development. In 1988, the training organization's scope increased to include training for employees of other airlines and other MRO companies. LTT, a 100 percent subsidiary of LHT, became its own company by January 1995.

LTT currently has about five hundred employees worldwide; most of them highly qualified instructors. In 1999, LTT was the world's first company to be certified under JAR-147, which today is referred to as EASA-Part-147, for basic and aircraft-type training; this certification authorizes LTT to provide training and examination for technicians in the aerospace industry. In less than a decade, LTT expanded its worldwide customer network considerably while maintaining a focus on developing its own employees.

LTT offers several programs to its primary audience, the employees of LHT, and employees of other airlines and MRO companies. LTT leveraged the dual apprenticeship system, which is a well-respected model in the German education system. The

system is "dual" because it combines vocational education at a vocational school with apprenticeships in the production departments of LHT. Upon joining LHT, apprentices receive three and a half years of subject-related theoretical instruction in the vocational school and practical training on state-of-the-art machinery and equipment in the company. The apprentice has to go through specified training and courses that support the competencies and skills stipulated in the job profile. After completion of the vocational training, apprentices are qualified to take jobs as aircraft mechanics and aircraft electronics technicians with very little ramp-up time. On average 250 apprentices finish this program at LTT every year.

The apprenticeship program is predominantly available in Germany, although other countries are beginning to follow this approach. Initially LTT was only focused on technical training, but due to its successful training framework and market demand, it later expanded its portfolio. LTT maintains an extensive course catalogue that is aligned to curricula for aviation-related fundamentals training, aircraft type training, maintenance management training, and general management training. In the general management training courses, LTT trains managers and executives on the growing, non-technical requirements of the industry; for example, management training covers new statutory regulations and stricter quality control. Course content for technical training is stringently regulated by governmental bodies. To increase its portfolio, LTT recently expanded its collaboration with educational institutions to offer degrees in aircraft maintenance. Among others, LTT is partnering with Embry-Riddle Aeronautical University, Berlin and Daytona Beach Campuses, the City University in London, England, ENAC, the French Civil Aviation University in Toulouse, France, and the British Columbia Institute of Technology (BCIT) in Vancouver, Canada.

LTT strives to achieve the right mix of training methods and uses the training methods of classical instruction, e-learning, practical training and on-the-job training—the difference between the latter two being that practical training involves explanation of theoretical concepts on equipment by an instructor, whereas on-the-job training is execution of learned concepts by the learner. To best implement these, courses are designed as blended training; in other words, training is an optimal mix of compatible, varying training methods. LTT strongly believes that hands-on practice is essential for learning the intricacies of an airplane. Because of that, LTT has training establishments that are very close to actual operations. Thanks to modern technical innovations now available, LTT has also invested heavily in electronic simulation systems such as the

maintenance training device (MTD) for its Airbus type training courses. Without any doubt, the investment in such equipment is high; however, the equipment and high-tech learning aids vastly improve the competence of students.

Running a business model that serves internal employees and external customers has advantages and disadvantages. A big advantage as compared to the competition is that LTT is a relatively small and flexible company but, at the same time, it has a unique product portfolio that is one-of-a-kind on the market. LTT can combine training programs and, from a multitude of training modules, create complex qualification programs for different target groups. LTT also has a very close connection to the aircraft manufacturers and is uniquely positioned to teach practical and theoretical concepts to its own employees as well as other MRO companies. It is not uncommon for students to visit the aircraft hangar during a class to view equipment firsthand. Through the close relationship with Lufthansa Passage and Lufthansa Technik, LTT has the opportunity to organize training that is "as close as it gets" to the conditions of real-world maintenance operations. Although recent security regulations have complicated this way of teaching, it is still the cornerstone of LTT's training philosophy.

The LTT business model unites more than fifty years of expert knowledge from the world's biggest airline maintenance operation with more than fifty years of training in technical aviation to ensure safety in the sky. Today, LTT is an internationally recognized training organization in the airline industry. It is the market leader in Germany and is expanding internationally with a presence in North America, South America, Asia, and the Middle East. Through its offices and cooperative arrangements, LTT is able to supply first-class technical and other training to more than two hundred corporate customers world wide, delivering more than 24,000 training days in continuing education and 155,000 participant days in vocational training. Although still a young company, LTT is an example of how an internal training organization can leverage its capabilities and transition from a cost center into a self-sustaining profit center.

Other ideas that can be implemented more easily are listed below. The period right after a budget cycle has closed is a prime time to implement

some of these suggestions. The start of a new budget period, whether annual or quarterly, tends to be a time of renewal with a new sense of commitment. Starting with a new budget period will also be "cleaner" in terms of measuring and reporting the cost and service impact. Of course, analysis and planning activities may need to begin well in advance of the new budget period.

- *Manage vendors:* Put out a bid to see who can offer necessary training for the best price and negotiate the best deal. Sometimes smaller vendors have more flexibility on pricing or are more dependent on obtaining a certain contract in light of the competition.
- *Publish an approved vendor list:* As mentioned, it is not uncommon for technical experts or managers to go outside the training organization for training. At a minimum, they should leverage the training organization's vendor list that has been screened for cost-effectiveness and quality.
- *Consolidate multiple vendor contracts:* Investigation may reveal that several organizations are unaware of receiving training services from the same vendor. The training organization can consolidate the engagements into a single contract with volume discounts.
- *Buy in bulk:* Training organizations that serve a large number of internal customers can make a commitment to a vendor for a certain number of courses over a certain time period, which may result in a better price. If it is certain that a technology will be around for a while or a large number of employees need to be trained, a contractual commitment to the vendor should be made up-front. "Using the leverage of the entire enterprise's purchasing power to achieve course discounts and other favorable terms" helped ManTech University to achieve significant cost savings (Bingham & Galagan, 2009, p. 42).
- *Leverage early payment options:* Using prepaid training cards or other discounts that vendors offer is a great way to save money. Often, these special agreements are limited to one year; however, vendors do

not want to lose good customers and may be willing to extend that timeframe.

- *Consolidate capital equipment:* Completing an inventory of equipment used for technical training across the company may show that it is more cost-efficient to combine certain equipment that is sub-optimized. Processes around usage or cost allocation policies may have to be defined because sharing equipment requires a new way of doing things. In general, this is a good way to reduce budget requests since capital is often the second-largest cost after labor.
- *Streamline administration:* Schedules are tight in the technical world, and advance notice of training is important. Giving enough lead time for a course and sending reminders will help reduce cancellations and empty courses, thereby saving money. Considering company holidays and key milestones seems obvious, but amazingly enough, both are sometimes overlooked, especially in global companies in which cultural knowledge may be limited.
- *Increase fill rates:* Many vendors and internal training organizations limit the number of employees who can attend a course. Often, those numbers were established a long time ago and never revisited. Money can be stretched and saved by allowing more employees to attend courses than was originally stipulated because costs can be allocated to more employees.
- *Question history and try something new:* Traditionally, many companies catered breakfast and lunch for training events. Everyone likes a "free lunch," but that is not why courses are offered. Cutting those extra costs throughout the year and resetting expectations will contribute to lowering training costs.
- *Explore creative funding sources:* Many states, government institutions, and educational institutions offer grants and special programs to reimburse corporate training organizations for training expenses. Researching options and writing the proposals takes time. Some grant

applications require company historical data to determine whether they qualify for funding. Often that data is based on annual training volume and indicators.

Table 6.3 lists some of the potential cost savings realized by a multinational company, and the sidebar lists some incentives for companies when considering vendors.

Table 6.3. Creative Cost Savings at a Multinational Corporation

Activity	*Cost Savings and Reductions*
Vendor Consolidation Reduced the number of vendors by 24 percent Redirected ten new vendor requests from operations to existing vendors	$90k
Discounts Achieved a 41 percent discount by utilizing third-party vendors instead of technology originators	$527k
Prepaid Vendor Training Credits Received a 15 percent average savings over corporate rates Achieved a 2 percent cost reduction by committing to early payment terms	$35k
Training Grants Obtained a refund from a state-operated economic development and job-training program for employee training	$320k
Internal instructors Eliminated three vendors by utilizing internal SMEs for delivery Achieved an 88 percent cost reduction over the prior year by converting vendor-led courses to internal courses	$672k
	$1,644k

VENDOR PRICE REDUCTION INCENTIVES

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Reward Yourself with Cool Stuff: Simply purchase a course online and receive an American Express® Rewards Card valued at $250. Use it to reward yourself however you like. Use it to fill your gas tank, buy the latest electronic gadget, or take your entire team out to lunch. It's your choice.

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Volume Discounts: Six courses for $14,595, a savings of up to 39 percent: The Six-Pack Super-Saver gives team leaders and managers the savings and flexibility to optimally manage a training budget.

Ten courses for $21,995, a savings of up to 45 percent: The Ten-Pack Super-Saver extends the savings and the team training even further. Train up to ten people with a single purchase.

Twenty-five courses for $49,995, a savings of up to 50 percent: The Twenty-Five-Pack Super-Saver is the most effective way for team leaders and supervisors to fulfill education initiatives and manage training budgets.

Customize Your Training and Your Discount: When you purchase a Freedom Super-Saver, your training advisor will tailor a program that suits your requirements. Enjoy a discount program built with you in mind!

Source: Global Knowledge, a worldwide leader in IT and business skills training.

Summary: The Art and Discipline of Budgeting

Without a foundational belief that training is important, funding for technical training will not happen. Much of the training manager's time is spent in the budgeting cycle and in budgeting discussions. In some companies, "the planning cycle," as it is often called, feels like it will never end, and what is intended to be an annual activity goes on all year long. Many training professionals fear the funding process altogether. Experience with technical training has demonstrated that the best way to tackle funding approval is to understand the financial terms, processes, and timelines of the company. Knowledge is the best way to overcome resistance. Budgeting is not just a numbers game—it takes a good understanding of operations and the company and plenty of planning and discussion with stakeholders. Keeping a balance between the data-driven activities like planning and budgeting—the discipline—and the stakeholder engagement—the art—is important. Certainly, knowledge and data are only half the battle; building alliances with key stakeholders and understanding factors that play into funding decisions and priorities are equally important for a favorable outcome.

7

Staffing the Technical Training Organization

THIS CHAPTER BEGINS with a discussion of reporting structures for technical training. Technical training may report into HR or into functional business units. Additionally, the training organization may be centralized or decentralized and partner with horizontal business functions. The training related skills needed by the technical training organization to manage, develop, and deliver technical training are also discussed. If the necessary skill capabilities do not exist, there are several options for acquiring them through hiring and staff development. Recruiting sources for technical training professionals are offered. The potential for remote management of training professionals at various company sites is also discussed. Finally, team development methods, not unlike those for non-technical training, are presented. The difference is

that training professionals must develop technical and technical functional skills to effectively collaborate with technical experts to develop technical training.

Structure of the Training Function

There are two common reporting structures for technical training: technical training reporting into HR and technical training reporting into a business function. The pros and cons of each are presented. The centralization versus decentralization of training resources is also explored. There are two facets to centralization: training organizations can be centralized or decentralized either geographically or organizationally. In addition, the advantages of horizontal business functions and the need for partnering with them are discussed within the context of technical training.

Organizational Reporting Models

The question as to where the technical training organization should be positioned in the company is an interesting one. In practice, technical training tends to swing back and forth like a pendulum between HR and functional business units. One reason for this is that there is no natural ownership for technical training. Because technical training is a people-oriented function as well as a technical function, it can logically fit into HR or into a business function. However, technical training will not be managed more strategically in one or the other. While strong leaders recognize the value of technical training, many HR and business executives do not understand technical training and, hence, cannot lobby for it or proactively lead it. As a consequence, technical training is often put in one organization until it doesn't work and then is moved to another.

Economic cycles have an influence on technical training. During hard economic times and when cost savings and efficiencies are crucial, training efforts—including technical training—tend to be consolidated and moved into HR in an effort to centralize resources and gain economies of scale. As funding and resources become more available, functional business units begin searching for technical training solutions that are not

available from HR. If these technical training needs are critical, small technical training initiatives are authorized in functional business units and grow into larger technical training organizations. Hence, the pendulum swings back.

From the companies interviewed, 60 percent have technical training anchored in the HR organization. HR is generally headed by a vice president whose background is in HR and typically not in a technical discipline. Most vice presidents of HR have experience in HR business partnering/generalist work, staffing, and/or organization development. Sometimes they have experience in the more analytical HR functions such as training and compensation, but rarely do they have technical experience. Hence, some stakeholders have strong opinions about technical training reporting to HR. One technical training executive in a Fortune 50 company shared her apprehension: "For HR, customers come second. We are careful about the HR agenda. HR uses different concepts and we could easily get swallowed by HR's language and programs. Half the time, they are not applicable—where they are relevant to the engineering team, we play." While housing technical training in HR can bring challenges, there are also advantages. It may result in higher visibility, as HR is typically anchored high in the organizational hierarchy. Technical training strategic objectives can be anchored in high-level HR company goals. On the other hand, the advantage of housing technical training in the business is that access to technical experts is easier and relationship building occurs naturally due to peer relationships and joint operating processes (staff meetings, strategic planning). In this case, technical training is not seen as an HR function and the legitimacy afforded by proximity to technical experts is higher. Technical training is easier to justify than other types of training because it is closely tied to the work people do. The technical training strategy and program proposals have a higher likelihood of being approved because they appear in the context of business objectives.

Regardless of where training is housed, the training function needs to be close to where business decisions are made and not too far down in the organizational hierarchy. The higher it is anchored, the more it can contribute to the company's strategic goals. The best place for technical training varies

by company and depends on several factors that apply equally to HR as well as to business functions. These are

- The maturity of the organization
- The reputation of the organization
- The people in the organization
- The organizational culture

There is no right or wrong answer to where technical training should reside. A good partnership with the business is the determining factor for success. Stakeholders of technical training do not care who owns it; all they care about is that it is done, is cost-efficient and effective, and builds the skills employees need to contribute to the company's bottom line.

Centralization Versus Decentralization

Technical training can be structured in a centralized, decentralized, or hybrid manner. In a centralized structure, technical training is driven from one point within the organization. This means budgeting, staffing, strategic decision making, and standard settings are all managed in one organization. The advantages of centralization include a consolidated view of training investments, lower per student costs, economies of scale, less duplication, and clear ownership of technical training. However, a centralized training structure is more likely to be bureaucratic. It is not uncommon for centralized organizations to have a reputation of being removed from the real work and not understanding the needs of remote sites. "Although there are many virtues of a centralized training function, one clear danger is that training runs the risk of becoming an ivory tower—detached and isolated from the true problems of the organization" (Oberstein & Alleman, 2003, p. 49). Strong business partnerships are required for a centralized training structure to work. As a disadvantage, a centralized technical training organization is an easy target for cost-cutting because the consolidated costs are visible.

In contrast, a decentralized training structure has many training efforts that are loosely connected by standard practices, technology, or shared

resources. Most of the decisions related to decentralized or dispersed training organizations are made independently. Training organizations in a decentralized environment also tend to report lower in the organizational hierarchy. The main advantage to decentralized training is a quicker response to training requests. The disadvantages are more numerous: loss of synergy and loss of controls on spending, resulting in higher costs and lack of consistency and standardization. For a decentralized training structure to work, the various training groups need a very mature culture.

Given the economic downturn that began in 2007, a move toward centralizing technical training and other HR functions is predictable. However, once the economy improves, the pendulum will swing back and the trend that Rothwell and Benkowski observed in 2002 is likely to continue: technical training will become more decentralized as it migrates back into business functions. "Instead of reporting to a corporate official, technical trainers end up reporting to the senior manager in charge of the group or location that they are meant to serve" (Rothwell & Benkowski, 2002, p. 117).

In the hybrid structure, internal tensions are common when training is split between a central organization and other, often smaller, decentralized training groups. The question arises as to who owns what training in the hybrid structure. Certain types of training lend themselves to centralization. For example, personal effectiveness training can be easily standardized across a company; faster progress can be made if the same courses and curriculums are leveraged. Technical training is often too specialized to standardize across the company, and therefore a decentralized structure may make more sense. Rothwell and Benkowski (2002) confirm that a decentralized training structure "works well in organizations that produce multiple goods and services using different processing methods or level of technology" (p. 36). Tom Kelly, training and learning industry consultant, suggests decentralizing content creation, as it maximizes new ways of information sharing but centralizing content deployment (2009).

Horizontal Business Functions

Employees in horizontal functions are responsible for people, processes, and systems across the company. Their customer base is the entire employee

population, and they perform the same work for each function. Horizontal functions are typically HR, finance (including purchasing), IT, and legal. Technical training may be a horizontal function if it is centralized. Because they work across functions, which may be silos, employees in horizontal functions can see what is going on across the company. With that comes a responsibility to bring up issues that impact all functions. In the spirit of competition, it is not uncommon for organizations to try to hide those issues to avoid looking worse than other organizations. Issues that may surface concern communication, leadership, and organization health issues, which are often best addressed by corporate-wide initiatives.

The technical training organization needs all the other horizontal functions to be successful. For example, a good partnership with IT is needed to produce training in support of enterprise resource planning (ERP) training. The training organization also collaborates with legal on compliance training, with HR on talent management processes, and with procurement on budgeting and spending related to training. "Ten years ago, the training organization made training funding decisions. In the last ten years, it has been about efficiency in the automotive industry. Because of that, it seems that purchasing organizations have a much bigger voice in training decisions today," says Mark Goodman, former director of training at Precision Dynamics International. Agatha Gilmore (2009) confirms that "as organizations cut costs and streamline processes, they increasingly put procurement organizations in charge of purchasing decisions across all organizational functions." The power of partnerships with horizontal functions is often underestimated; however, technical training cannot be successful without them. When partnering with horizontal functions, it is important to respect each other's discipline and competencies and establish a common language. Chapter 4 presented suggestions on formalizing partnerships with HR and other training organizations; these methods apply to partnering with horizontal business functions as well.

Technical Training Skills

Many people believe that anyone can do training but that not all people can do technical training. The key competencies needed for technical training

are training, business, technical and technical functional, project management, and relationship skills. No one individual needs to possess all of these competencies; however, the technical training organization as a whole should have a good representation of them.

Training Skills for Expertise

ASTD presents a comprehensive list of training-related competencies, which they term "areas of expertise" (ASTD, 2009). The areas of expertise pertaining to *designing* training include adult learning theories, instructional design theory and process, instructional methods, job and task analysis, competency modeling, assessment methods and formats, and learning technologies and support systems, among other areas. The areas of expertise they defined related to *delivering* training include training delivery options and media, presentation techniques and tools, individual learning styles, cultural differences, and emerging learning technologies, to name a few.

Each of these areas of expertise is broken down into subsets of training concepts. For example, knowledge of adult learning theories and concepts involves an understanding of andragogy, how people learn and retain information, how to facilitate learning versus how to teach, various modes of learning, and external and environmental influences. Knowledge of training delivery options involves an understanding of e-learning, electronic performance support systems, classroom training, blended training, electronic learning, and self-study. Instructional design, needs assessment, requirements gathering, measurement, and evaluation skills are all embedded in ASTD's areas of expertise.

Since the training skills that are needed for technical training are the same as for other types of training, they are not elaborated on further in this chapter.

Business Skills for Credibility

Technical training professionals need more than a basic understanding of the business they are supporting. They must learn about business functions (such as accounting and finance), business operations, processes, products, and services. They must speak the language of the business, understand

and analyze business issues, and work collaboratively with stakeholders to produce relevant technical training solutions. Activities to develop business skills include:

- Reading business vision and mission statements, goals, plans, and roadmaps
- Meeting with formal leaders on the organization chart to understand priorities
- Listening to CEO presentations for future business direction and strategic initiatives
- Attending company meetings, program reviews, and planning sessions
- Keeping up-to-date on organization announcements to understand the organization structure and direction
- Reading company news and announcements, annual reports, marketing and product information, and press releases
- Attending business training to develop a greater understanding of the company

Technical Skills for Accuracy

Technical training professionals also must possess or have the ability to learn technical information associated with company technology. The specific knowledge that is required is based on the industry, company, and training project. For example, a training professional in the IT industry needs to understand the language and concepts associated with software engineering and application development.

The underlying traits associated with the ability to learn technical skills are analytical and detail orientation, interest, and willingness to learn. Activities to build technical and technical functional skills include:

- Attending "tech talks" by technical experts
- Meeting with business and/or technical leaders to learn their perspectives and opinions about priorities

- Visiting sites and touring manufacturing and lab facilities
- Observing the call center
- Reviewing the technical training roadmap and plans and discussing them with technical experts
- Attending technical training or product training to develop specific technical or technical functional skills

Project Management Skills for Discipline

The discipline associated with formal project management is essential to the technical training organization. Any business planning methodology or life cycle approach to planning, organizing, and managing the work and resources of the technical training organization will be effective; however, the value of project management is that it is an established, systematic approach that many professionals have been trained on or pursue for certification. Because many training professionals have been exposed to project management, it provides a common language and approach. Moreover, business organizations highly value project management. Project management skills, whether informally or formally acquired, are helpful for developing the business case for specific technical training solutions, writing team charters, developing training solutions, and managing multiple schedules, to name a few. While a technical training organization is an operation and not a project per se, the learning solutions the organization designs and develops often include projects and programs.

Project management practices also address the management of stakeholders, budgets, and vendors, all of which are necessary skills for the technical training team. Anyone who will manage the costs of a program budget has to understand how to estimate costs, document spending, follow up on purchase orders and payments, and work effectively with the internal procurement organization.

Vendor management skills are important to the training organization when multiple training solutions or outsourcing is used. Effective vendor management involves soliciting, evaluating, and selecting vendors as well as negotiating with vendors and monitoring their performance. While the procurement organization is frequently involved when vendors are used, better

performance and potential cost savings can be achieved by active vendor management on the part of the technical training organization. Training professionals also need to have a good understanding of company procurement processes.

Good project management within the technical training organization also has implications for developing business processes, developing the technical training roadmap, procuring technology for training, and aligning to business planning life cycles. Not everyone in the technical training organization needs formal project management training. However, having one or more certified project managers on the team who can establish organizational processes and mentor others is highly advised. All training professionals who serve in a team lead role should be familiar with project management.

Relationship Skills for Stakeholder Engagement

The ability to build relationships and maintain them over time is important for training professionals. This involves good listening, sensitivity to others, tolerance of differences, negotiation skills, and the ability to productively work through conflict (Maizler, 2002). Good relationship skills enable technical training professionals to build trust with stakeholders, collaborate effectively on advisory teams, and partner as needed. Professionals must recognize when an issue has arisen and take the time to resolve it.

Technical Training Recruiting

The size of the technical training organization is based on the size of the audience base and on funding. Benchmarking studies of staffing ratios shed some light on the typical size of training organizations, although they do not distinguish between technical and non-technical training. Common jobs in the technical training organization are presented in this section, including training executives and managers, project managers, instructional designers, curriculum managers, trainers, and administrators. Recruiting sources for technical training professionals are also explored.

Staffing Ratios

Industry benchmarking reports are useful for making the business case for technical training headcount. The 2009 Business Intelligence Industry Report provided staffing ratios for L&D organizations in 2007 and 2008 (Human Capital Media, 2009). The ratio in 2007 was one learning professional to 178 employees, and the ratio in 2008 was one learning professional to 197 employees. These ratios are shown in the training staffing sizes shown in Table 7.1.

ASTD and the Corporate Leadership Board also regularly report on the size of training functions. Since the criteria for participating companies differ across studies, using the same information source for benchmarking data is recommended to avoid mixing apples and oranges. However, these studies are based on a broad definition of training, and hence do not focus exclusively on technical training. Furthermore, technical training organizations may be positioned within functional business areas, supporting a smaller employee base than traditional training and learning organizations. However, the research is not likely to be forthcoming given the lack of agreement on what constitutes technical training, as discussed in Chapter 1.

The size and location(s) of a given technical training organization will, of course, be dependent on the number of stakeholders served, but also on the number of locations or sites served, the amount of on-site training demand,

Table 7.1. Training Industry Staffing Ratios

Number of Employees Supported	*Number of Training Professionals*	
	2007	*2008*
500	3	3
1,000	6	5
2,000	11	10
5,000	28	25

the extent of required or mandatory training, the complexity of the technical training objectives, cultural training preferences, and training administration practices, among others. If the benchmarks from the Business Intelligence Industry Report are taken at face value, the technical training manager has a limited number of positions in the technical training organization. Indeed, the authors found that the majority (78 percent) of survey respondents had ten or fewer people in the technical training organization.

Common Technical Training Jobs

The term "training professionals" has been used throughout this book to refer to those who report directly into the technical training organization. At a more detailed level, there are a number of different training related positions required to produce technical training:

- Training Executive
- Technical Training Manager
- Project Managers
- Instructional Designers
- Curriculum Managers
- Technical Trainers
- Training Administrators

The individuals who serve in these jobs in the training organization should possess a combination of the critical skills discussed earlier. Few individuals will possess all of the skills to an advanced level, however the training executive and manager should attempt to develop a staff that includes a combination of these skills as a whole.

The training executive, or chief learning officer (CLO), leads by driving the training strategy and aligning it to the business and technical strategy and goals. The training executive should have demonstrated leadership skills, experience with strategic planning, knowledge of the learning and development process, and the ability to impact business performance. The training executive is expected to understand the company's business and products and to address organizational and performance issues through strategic programs

and training solutions. Ideally, the training executive is well connected to other executives and technical leaders in the company and recognizes the importance of stakeholder management and relationship building. Since all employees in the training organization should be building relationships with stakeholders, it helps to avoid overlap and redundancy when the training executive focuses on the most senior stakeholders, the training manager on the next level of stakeholders, and so forth.

The training manager manages people and overall operations. He or she makes the direction from the training executive operational. If there is no training executive, the training manager may assume some of the strategic responsibilities associated with the role. The training manager focuses on relationship building at the director and senior manager level.

Project managers, with or without a training background, are critical because they plan and organize projects and programs, involving other training professionals and experts as needed. Experience with training methodologies and instructional design certainly helps; however, such experience can be acquired over time. Project managers are skilled in leading teams of training professionals and SMEs to achieve project goals. Certification in project management through the Project Management Institute (PMI) is ideal.

Instructional designers are critical to the organization if training is developed in-house. They partner with SMEs to include SME knowledge in the content of technical training. Instructional designers build the actual technical training courses. They have the in-depth training background and experience to do so. They tend to specialize in specific learning technologies. Examples of learning technologies are included in the case study, "Technical Training Team Forms a Three-Legged Stool at Vangent." Consideration must be given to the type of technical training delivery the organization is going to use before hiring instructional designers. For example, an instructional designer who has predominantly developed in-person technical training using live demonstrations and practice in the classroom will have a steep learning curve and likely encounter technical challenges in designing the same training in an e-learning format. Some instructional designers are able to design within a variety of delivery methodologies, but that is not the norm.

The authors found that the most difficult technical training skill set to find and hire was the instructional designer.

Curriculum managers lead teams in the development and organization of curriculums and recommend and prioritize courses based on training needs. They work with SMEs from functional areas of the business to sequence courses, curriculums, career paths, certifications, and so forth. Because their work is at the curriculum level, they typically do not lead the development of specific courses but may participate in their development. They do, however, maintain the curriculum from a broader perspective and manage the updating and discontinuation of content when needed.

Technical experts are chosen to become VIs due to their technical expertise. Technical trainers do not necessarily need to be hired if there is an instructional designer on the team who can facilitate train-the-trainer sessions for VIs and/or if there are project managers on the team who can design curriculums to develop the training delivery skills of VIs. The development of an internal pool of VIs is discussed in more detail in Chapter 10.

Training administrators or specialists perform administrative training tasks and activities in support of the other team members. The availability of an LMS can reduce the number of training specialists and administrators needed. In general, it can make training administration more efficient and less time-consuming. However, it does require up-front training on how to use the LMS. Linda Sheldon (2004) confirms that a key competency area for training specialists today is IT and system skills to track and record training. A proactive approach to problem solving is critical for training specialists because they are often the first to be contacted about technical training logistical issues.

It is important to note that the customer relationship manager role that was presented in Chapter 4 has not been defined as a position here. It is considered a role that can be associated with different jobs in the technical training organization depending on the customer base, the skills within the technical training team, and the number of technical training resources available.

CASE STUDY: TECHNICAL TRAINING TEAM FORMS A THREE-LEGGED STOOL AT VANGENT

Gretchen Porkert, operations director for the Human Capital Division of Vangent, shares her staffing model for technical training projects. Vangent is a leading global provider of consulting, systems integration, human capital management, and business process outsourcing services. Ms. Porkert's staff is responsible for developing and implementing customized learning and training as part of an overall solution for clients. Vangent's staff of approximately eighty training professionals includes a large number of instructional designers as well as instructional technologists, media specialists, and project managers.

Vangent's technical learning solutions span a broad spectrum of content domains:

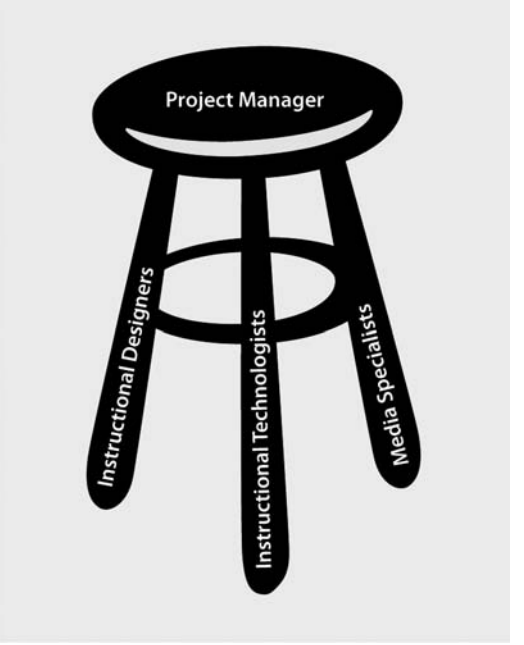
- Business process implementation
- New system launch
- New equipment installation
- New hire orientation
- Safety/compliance/operations
- New product launch
- Sales skills
- Leadership

Vangent's experience covers a broad range of subject matter and business issues, from helping financial institutions implement customer relationship management and other banking systems to imparting new systems engineering paradigms for heavy industry, and from enabling pharmaceutical sales representatives to effectively convey technical product information to physicians to facilitating the efficient operation and maintenance of sophisticated manufacturing equipment in processing industries.

The competencies that are most valuable in the aforementioned training roles are shown in the three-legged stool (Figure 7.1):

- **Instructional Designers**—Instructional designers analyze business and learning needs, design curricula and instructional strategies, and choose learning modalities to optimize training transfer. They are expected to have a minimum of a BS/BA degree in education, communication, psychology, or organization

Figure 7.1. Three-Legged Stool of Training Expertise



development and to have experience with instructional systems design fundamentals and methodologies as well as andragogy. In addition, they should have specialization in one or more of the following methodologies: needs analysis and assessment, job and task analysis, competency modeling, platform instruction and facilitation, web-based learning principles, and curriculum development.

- **Instructional Technologists**—Instructional technologists ensure technical functionality and quality and maximize performance in the client's environment. Candidates should have a BS/BA degree in engineering or IT, along with experience in web-based technologies, multimedia applications, content authoring, computer programming, data-driven models, and software engineering on multiple platforms. Additionally, they should specialize in one or more of the following areas: web technologies (ASP®, HTML, DHTML, XML, JavaScript™, JSP™, VBScript®, and JScript®), applications (C++, Visual Basic®, Java™, and Perl), databases (Access®, Oracle®, SQL Server®, Sybase®, and PostgreSQL),

LMS integration (Saba®, Docent™, LEAP, Plateau®, Pathlore™, Edcor®, THINQ™, Ingenium™, and Witness®) and e-learning standards (AICC, SCORM).

- **Media Specialists**—Media specialists devise look and feel and create visual and audio components to enhance learning and maximize engagement. They are expected to have a BS/BA degree or equivalent certification in mass media or a related area, with experience in computer interface design and illustration, 2D and 3D graphics, modeling, and animations and video and audio production and post-production. In terms of specialized skills, they should have expertise in one or more of the following areas: design applications (Illustrator®, Freehand®, Photoshop®, InDesign®, PageMaker®, CorelDraw®, Quark Xpress®) or web tools (Flash®, ActionScript®, Fireworks®, and Dreamweaver®) and animation (3D StudioMax®, After Effects®, Character Studio®, and LightWave 3D®).

- **Project Managers (PMs)**—PMs are responsible for training project oversight and the customer relationship, schedule, budget, and quality. PMs are expected to have a BS/BA degree or equivalent plus certification from PMI/ASTD or comparable experience. Project managers should have expertise in conflict resolution, team dynamics, and software such as Microsoft® Project. They should also be adept at customer relationship management and at managing projects to ensure budget, schedule, scope, and quality objectives are met.

In addition to these functional competencies, training professionals at Vangent have to have strong discovery and analytical skills. They should be able to collect data and information in a highly organized and efficient manner, complete their own research without depending too heavily on the client, and, in general, be able to come up-to-speed quickly on new content areas.

Vangent's instructional systems design model is based on ADDIE. They have a number of in-house methodologies, templates, and processes they have developed for production pathways. New training professionals are mentored or coached on their initial projects. They typically come to Vangent with a similar background on how to build a storyboard, write objectives, and flesh out visuals and audio with narration and, therefore, on-the-job training focuses on Vangent's unique methodology, processes, and tools. It takes time for instructional designers, in particular, to gain enough experience to consult with clients on training strategy. Ms. Porkert explains that the most valuable

instructional designers are those who are "hands-on in training design but also able to grasp and explain the bigger picture of learning" to clients.

Recruiting Sources for Technical Training Professionals

The best ways to find talented training professionals, including all those discussed in the previous section, is by spreading the word to colleagues and posting online job advertisements on professional association websites. Informal communication often reaches people who may not be actively looking for a new job as well as people who are referred by others. Of course, having a good reputation as a technical training organization goes a long way in attracting internal employees from other parts of the company. When specific expertise is needed, such as an instructional designer, e-learning expert, or certified project manager, it is helpful to advertise through technical professional associations. For example, dice.com is a career website for technology and engineering professionals, and training professionals within these disciplines can also be found. Social networking sites such as the various user groups on LinkedIn are also excellent for job advertisements. Diane Prange, an experienced instructional designer, suggests "posting a job on the site, specifying your requirements and the specifics of the job, and you will get plenty of responses."

Be aware that there are some differences when hiring training professionals from another country. Laws and HR practices associated with hiring, compensation, benefits, and termination vary considerably across countries so it is absolutely critical to have someone experienced in hiring within the country to assist with the process. It is not possible to review all of the differences here, but some examples follow:

- In some countries, it is not uncommon to receive a resume with photos of the applicant, personal health information, religion and family status.
- When unfamiliar with the education system of a given country, it can be confusing to ascertain how much education an applicant has because a degree from a non-accredited institution may not be recognizable. For example, in some countries, a bachelor's degree is not required before obtaining a "master's" degree because the standards are different.
- In some countries you cannot officially lay off an employee or there are lengthy advance notice requirements of six months or more.

Managing the Technical Training Team

Additional options for increasing training skills capabilities—beyond hiring internal employees—are discussed next. One of these options is the possibility of remote management of training professionals, which can increase the pool of talent available. Methods for developing the skills of the training team are also reviewed.

Remote Management

There is ample information available on the management of training teams on site. However, remote management is a popular option in technical training teams. Global companies have employees located in many countries. Training employees at multiple sites can be a challenge when training professionals reside in a central location because they don't have face-to-face access to stakeholders, SMEs, and VIs. When the company supports remote management, there may be options for training professionals to work locally with stakeholders and virtually with the training organization. For example, a technical training organization that serves stakeholders in Hungary, Russia, and Italy may find it very cost-effective for one or more training professionals to work locally in these countries. This may mean hiring training professionals in specific countries or offering expatriate assignments to high-performing employees who are interested in working in another country.

Some training jobs are better suited for remote workers. The culture of the company, the virtual abilities of the technical training team, the people management skills of the technical training manager, the role to be played at the site, the maturity of the individual, and the availability of site-based managers are some of the considerations in managing a technical training organization with a dispersed workforce. Local management relationships may need to be put in place for less-experienced employees, with clear roles and responsibilities for the direct manager and for the "host" or local manager. Table 7.2 provides an example of the different roles played by a direct manager compared with a host manager.

The direct manager provides direction to remote employees, whereas host managers mainly help with local activities, events, resources, and policies.

Table 7.2. Remote Management Roles

	Direct Manager	*Host Manager*
Direction	• Provides input and review of training plans and programs • Works with employee to set performance goals • Owns the performance management process	• Provides feedback on employee performance to direct manager
Communication	• Holds virtual staff meetings • Meets with the host manager regularly • Initiates meetings with the employee and host manager	• Ensures employee is included in local site activities • Ensures safety and security policies and practices are followed • Shares site training needs with the direct manager
Support	• Has signature authority unless there is a local requirement • Works with employee to find local coaches/mentors if needed (with input from the host manager) • Consults with the host manager on local site policies such as telecommuting, tuition reimbursement, labor law, and spending/reimbursement guidelines • Guides the employee on career development planning	• Is available to the employee as a coach on how to approach local stakeholders • Secures local resources such as office space • Signs expense reports

Team Development

Developing the capabilities of a technical training team is not unlike developing those for a non-technical organization. What is different, however, is the focus of skills development. Technical training professionals need to develop

technical and technical functional skills. Even though technical experts will support training professionals in course development, training professionals must acquire some familiarity with the technical and technical functional aspects of the company. The desired competencies cannot be built overnight. It generally takes a multi-pronged approach to developing individuals and the team as a whole, including:

- Individual development plans for each person on the team
- Team training and development efforts on skills that everyone needs for the effective functioning of the technical training team, including intact training sessions and group development plans
- Collaborative problem solving and solution development with the team as a whole
- Experiences in the form of job rotation, shadowing, and observing technical processes (such as manufacturing)
- Formal coaching and mentoring arrangements with agreements and expected outputs
- Career paths within the technical training organization that are designed to focus on skills development, retention, recognition, and promotion of training professionals

Specific activities to develop business and technical and technical functional skills were reviewed earlier in this chapter. Creating development plans for individuals based on an understanding of their strengths and development areas as well as the competencies needed in the training organization is important. Team training and development efforts, when paired with development plans, focus attention on the skills the entire team needs to develop or enhance. Team development efforts should be prioritized and addressed over time. For example, bringing in guest speakers on technical training or arranging intact training sessions for the team demonstrates commitment to the team and the value of continued learning and development.

The training team will develop and use a number of training-related processes. Collaboratively developing these processes and subsequently training the team and putting measures into place to evaluate the team's new skills

and use of the processes is an excellent way to build this important competency within the team. Senior team members might lead process and training design efforts and mentor less experienced team members. Having the entire team participate in some fashion serves to get everyone on the "same page" regarding expectations, skill levels, and usage of skills.

Brainstorming and solving internal issues within the team as a whole promotes feelings of inclusion. Coaching and mentoring programs, when formalized and structured, both recognize those with expertise who serve as mentors and enable employees to learn from experts. Finally, creating desirable career paths between jobs in the technical training organization or among training organizations in the company allows employees to envision a future career in training and see the direct benefit of acquiring the skills needed by the training organization.

Summary: Hiring and Development in a Nutshell

Training managers tend to staff their organizations with training professionals to the exclusion of staff with other primary skill sets. While instructional design is an essential competency, project management and relationship skills are also important. Few possess the full range of competencies needed to run a technical training organization, so the training organization should have a balance of competencies. William Vanderbilt, senior consultant from Avondale Search International, comments that "achieving a balance of training expertise and business professionals on the training team is a best practice." Using "word of mouth" and professional associations for advertising training jobs is highly recommended. It is not enough to hire people; an investment must be made in the ongoing development of the technical training team. Developing the team as an intact group, in addition to developing individual employees, has many advantages. Team members are exposed to the same concepts and they can build skills together and can support one another. Building training processes can also be done in collaboration. Including all members of the team creates buy-in and develops skills at the same time.

8

Technical Training Analysis, Design, and Development

THIS CHAPTER EXPLAINS the process of gathering and analyzing technical training needs. Methods for prioritization, including the establishment of prioritization criteria, help with the decision-making process. With funding and approval, the design and development of technical training courses, curriculums, and programs begins. Stakeholders participate in training activities by identifying needs, providing their expertise for course development, and volunteering as instructors in training delivery. The evaluation of technical training involves both formative and summative evaluation as well as consideration of technical training transfer.

Identifying Technical Training Needs

Various methods are used to identify and gather training needs from stakeholders. Executives and technical leaders provide "top-down" training

needs, and managers, technical experts, and employees provide "bottom-up" training needs. A diversity of training needs is typically identified and must be reconciled. They can be separated into strategic, operational, competency development, and career development categories.

Gathering Stakeholder Input

All stakeholder groups have opinions and expectations about technical training. They may need training to solve performance or organizational problems, to acquire technical knowledge and skills to do their jobs, to implement new processes or technology in the business, or a host of other reasons. Stakeholders' training needs span the gamut: some will have needs for training that does not yet exist, some will demand popular existing training courses, and others will anticipate future skill needs (Lee & Owens, 2000). Gathering stakeholders' input in regard to needed training is a first step. Stakeholders are typically polled, surveyed, or interviewed about their training needs, referred to as training needs assessment. Christie Mabry at Biogen Idec explains: "When designed well, training needs assessment can be a highly practical and systematic way to gain necessary information about stakeholders' training, skill, and performance needs and preferences."

TRAINING NEEDS ASSESSMENT

A method that training professionals use to gather stakeholders' training needs

Training Needs Analysis

There are several good reasons to analyze training needs that are identified by stakeholders. Stakeholders may not be as familiar with the full range of issues associated with the perceived training need and may assume that training is the only solution. However, another non-training related solution may solve the problem in a more cost-effective manner. Training may also give the outward impression that a problem is being addressed while other more complicated issues remain hidden. Or, stakeholders may opt for costly vendor

training without analysis of the cost and long-term implications. Training professionals refer to the process of analyzing and validating training needs as training needs analysis.

TRAINING NEEDS ANALYSIS

The process that training professionals use to analyze and validate training needs

Whereas training needs *assessment* is the process of gathering and consolidating training needs, training needs *analysis* is the process of analyzing and validating those needs. Numerous approaches to needs analysis can be found in the training literature. They vary in terms of where the analysis is focused; emphasis may be on the organization, the work environment, the process, the job, or the individual level (Gupta, 1999). While problems in organizations may appear to be training related, many other factors can come into play, such as system limitations, process deficiencies, lack of clear expectations, poor communication, and other organizational barriers (Brethower & Smalley, 1998).

While training needs analysis is valuable, not all training needs are analyzed or validated. Rossett (1999) confirms that needs analysis is honored more in theory than in practice. With a more practical approach, she suggests foregoing the broad analysis up-front and instead using a "more manageable and iterative" analysis over time (p. 4). The analysis can be more or less extensive, depending on the type of training request. For example, the following requests would involve a different approach: training to introduce new products, training in support of a technology implementation, and training to develop future skills in support of the company's long-term vision. The analysis regarding training for new products may focus on the various options for imparting new information to the sales force, including the use of job aids instead of formal training. In contrast, in preparation for the technology implementation, an extensive analysis may have to be performed to understand the changes that will be brought about

by the technology, including new roles, processes, training, communication, and change management.

In summary, it is often more practical to perform a training needs analysis after stakeholders' training needs have been gathered and prioritized. Beth Feild, president of Theories in Practice, explains that this allows the training organization to focus on training needs that "rise to the top and become priorities."

Categories of Training Needs

Predominantly, technical training needs fall into one of these categories:

- Strategic training
- Operational training
- Competency development
- Career development

These categories are not mutually exclusive and, therefore, a particular training need may serve multiple purposes and benefit the organization and employees in various ways. Some training to fill these needs is requested by stakeholders, and others must be defined by the training staff. For example, stakeholders may not recognize that technical training can be employed to solve a need, so they do not ask for it. The training organization must establish partnerships with other parts of the organization to be sure that the training they offer fits the needs of stakeholders. The case study below from Hitachi Data Systems explains how Hitachi gathers training requirements from stakeholders.

CASE STUDY: TRAINING REQUIREMENTS GATHERING AT HITACHI DATA SYSTEMS

Peter Manijak, an Hitachi Data Systems (HDS) academy director, explains how his group aligns the product training roadmap to the company's product development strategy through a systematic requirements gathering process. Peter's organization provides technical product training to internal technical experts and sales staff, customers, and external certified partners.

HDS uses the same requirements gathering process to serve internal employees as it uses for external customers to achieve economies of scale. Training activities occur in a systematic manner.

Within the HDS product deployment cycle, presales and sales staff are given high-level product and marketing training first, prior to the technical training cycle.

Technical Training Cycle

- Product installers are trained first on the hardware installation and configuration.
- Service personnel are trained second on the integration of the product into the customer environment based on service packages.
- Finally, customers are trained on technical product features and usage.

The evolving nature of technology poses challenges for training. All of the training is expected to be developed prior to the product launch date, but product changes can occur right up until the product launch date, which impacts the timing of training development.

To stay abreast of HDS product developments, the product training organization maintains a "rolling build plan." This provides a six-month view of product development and allows the training organization to forecast and "size" the training needs associated with upcoming product launches. Quarterly business reviews are held with product managers in each business unit to identify new products and enhancements and plan training accordingly. Enterprise product launches, which occur roughly every eighteen months, have a major impact on resources and must be planned well in advance. The number of licenses associated with the product provides an indication of the size of the training effort that will be required. With the six-month forecast, resource and budget requirements can be anticipated to meet the training demand.

At a more detailed level, the product training group uses a "preliminary learning brief" to analyze detailed training requirements associated with products. The preliminary learning brief includes analysis of:

- The business need for the training, often in terms of revenue projection associated with the product

- The impact if no training were to occur
- The various audiences who require training
- Any language translations or localization that is needed
- Equipment requirements for training labs
- Training goals, expected outcomes, and metrics
- Detailed funding and resource estimates
- The critical path timeline associated with the product launch date
- The course release process steps

The preliminary learning brief is just that—preliminary. It must be signed off by business stakeholders. Once this occurs, a project manager is assigned and course development can begin.

Both the rolling build plan and the preliminary learning brief reflect standardized and systematic means for capturing both high-level, projected training needs and more immediate detailed requirements. These two processes are tied together and ensure the product training group has visibility across the organization and is consulted about future training needs and can plan accordingly.

> Strategic technical training needs are those related to the business strategy, including needs identified through strategic long-range planning. During strategic planning, business strategies and priorities are defined for the next one to three years. When technical training priorities are defined at the same time, there is better alignment between the technical training organization and the business. Generally, it is easier to align technical training to the business than to other types of training because the results directly support business objectives. Stakeholders also implicitly understand the connection between technical training and business outcomes, which is less likely for non-technical training. In addition to establishing business priorities, the strategic planning process may lead to the identification of future training and skill needs. With a view into the future, the training organization can build programs today to meet the training needs of tomorrow (Bowman & Wilson, 2008).

Operational training needs are those related to business operations and transactions, including production and manufacturing processes. Technical training is also often needed to support technology implementations and process improvement initiatives. While organizational change efforts are planned events and may or may not rise to the level of strategic priorities, they still may require the support of the training organization. Because of their nature, many operational problems occur without notice, so the training organization should be in a position to respond. Since managers and technical experts in operational functions typically lead the teams who analyze and solve operational problems, it is important for training professionals to build relationships with operational managers and attend operational review meetings. If this doesn't happen, operational training needs may not come to the attention of the training organization.

Competency based training needs are related to the need to increase and standardize job competencies. This type of training need may focus on a specific technical job or technical competency. Competency development needs may also be associated with changes in the workforce, such as periods of increased hiring or downsizing. Because employees often take on expanded job responsibilities when downsizing occurs, they may need to acquire additional skills. Other workforce changes such as the mass retirement of leaders may necessitate the need for succession planning and competency based training (Brown, 2002). To use a competency based approach to technical skills development, the competencies must already exist or have been defined through job task analysis, behavioral interviewing of exemplary performers, or other systematic methods. A mechanism to measure competency level, such as a skills assessment, is also needed to determine who needs the competency based training. When there are a large number of competencies to focus on, they may need to be prioritized in the same manner that training solutions are prioritized. The major benefit of a competency based approach to technical training is that it can be aligned to HR processes: recruiting, hiring, promotion, performance management, career planning, succession planning, and workforce reductions.

Career development needs are those related to employees' career development. Employees desire to develop and enhance their technical skills for

a variety of reasons: to learn new and emerging technologies, to remain competitive when others are increasing their technical skill sets and certifications, to prepare for a future job or promotion, or to re-skill or assume a leadership position. Employees may want to learn different skills than are prescribed by the organization and may have a customized learning plan and career path in mind. As a result, employees may request different technical training courses than are planned for strategic or operational purposes. Such courses may only be funded for strong performers.

The majority of training requests from employees are based on training they know to exist—training that peers and managers have taken and recommended. Employees tend to request existing courses because they assume they are the only training available. Requests for existing training can be estimated through forecasting methods.

Regardless of the type and diversity of training needs, they must be consolidated and prioritized. In a later section of this chapter, we explain the prioritization process. The training needs that can be addressed from the list depends on the availability of funding and resources, among other factors.

Opportunities for Data Gathering

Technical training organizations have a number of opportunities throughout the year to gather training needs. If input from executives and technical leaders is solicited during the company's annual strategic planning process, it allows planning on business priorities to feed directly into training planning. Operational review meetings, which are typically held on a regular cycle, provide visibility into operational and technical areas that may have training needs. Forecasting of training needs may be conducted on a quarterly basis to align with budget reconciliation. Employee performance appraisal and career development planning occurs annually, which gives an opportunity for the training organization to determine more training needs. Other opportunities for data gathering on training needs occur throughout the year. For example, safety incidents are not predictable but may necessitate the need for training or re-training. Taking advantage of these naturally occurring opportunities to gather training needs leads to more robust data gathering. A summary of methods used to gather the four types of training needs is shown in Table 8.1.

Table 8.1. Technical Training Need Categories

	Strategic	*Operational*	*Competency Development*	*Career Development*
Definition	Training needs related to the business strategy, including those identified through strategic long-range planning	Training needs related to business operations and transactions, including production and manufacturing processes	Training needs related to the need to increase and standardize job competencies	Training needs related to employees' individual career development
Stakeholders	Executives, Technical Leaders	Technical Leaders, Technical Experts, Managers	Technical Leaders, Technical Experts, Managers, HR	Technical Experts, Managers, Employees, HR
Methods	Formal meetings (strategic planning), informal meetings and interviews	Formal meetings (operational review meetings), project and team meetings, focus groups, interviews	Formal meetings (HR planning meetings following performance appraisal), project and team meetings, focus groups, skills assessments	Skills assessments, forecasting based on development plans and surveys
Timing	Annually and quarterly	Continuously	Annually and quarterly	Annually and quarterly

In leaner times, the training organization may limit data gathering efforts to avoid setting unrealistic expectations.

A number of considerations related to needs assessment are worth mentioning. Sean Colfer, learning strategist, cautions training professionals to avoid setting "false expectations that training needs will all be addressed." Many of these are shown in Table 8.2, with suggestions on how to address them.

Table 8.2. Needs Assessment Considerations

Considerations	*Suggestions*
The act of gathering training needs creates expectations.	Communicating about the process that training uses to gather needs and prioritize them, expected outcomes, and the decision-making process helps to set realistic expectations. Following up with those who submitted training needs is important to explain what happened to their training requests.
Stakeholders' perception of the need for training is not always accurate.	If there is a more cost-effective solution than training or a solution that will better address the need, it is important to explain the options and provide a "warm handoff" of the stakeholder to the person or department that can address the need (if such a person is available).
Some stakeholders will have predetermined training solutions in mind.	If analysis reveals the need for a training solution that is different in format, length, or delivery type than the stakeholder has in mind, it is important to "bring the stakeholder along" and help him or her to understand the concepts behind the recommended design.
Heavy focus on career development will likely not produce tangible business impacts, although it is beneficial for individuals.	Devoting a percentage of the budget to career development serves to establish boundaries for this type of training. Training policies should also be written to clarify expectations for career development training.
Stakeholders do not respond to deadlines.	Expectations on due dates and reminders of upcoming deadlines help keep stakeholders on track. Policies for late submissions can also be developed to deter tardiness.

For example, the process of requesting training needs from stakeholders can create expectations in and of itself. Explaining the process and expected outcomes up-front helps to establish more realistic expectations. The suggestions, while representing ideal conditions, can help to minimize misunderstandings.

Prioritizing Technical Training

Training needs are often divergent and must be reconciled and analyzed, then prioritized using specific criteria. A steering committee and the technical training organization typically make the decisions about which training to fund. The outcome of the needs assessment process, including what was and was not funded, should be communicated to stakeholders to ensure they know their needs were considered and can see how decisions were made.

Prioritization and Decision Making

There are numerous criteria to consider in prioritizing training. Several are shown in Table 8.3; the authors use a spreadsheet similar to the table to prioritize technical training. The points assigned in this example help to rank training needs. This is a tool to prioritize training needs in an objective and repeatable manner.

Decisions over which training needs to fund and develop are made by governance bodies or the training organization. An advantage to having a steering committee is that it serves as a gate-keeping function and is perceived to be separate from the training organization. It is easier for the training organization when the steering committee rejects a training request than when the training organization rejects it. Steering committee members also bring business, operational and technical expertise, and credibility to the decision-making process. Their involvement increases their buy-in to technical training activities, which is important too.

The major advantage of the technical training organization itself making decisions about priorities is that control is retained within the organization performing the work. The training organization understands the time, effort, costs, and skills required to build and deliver specific training. There are

Table 8.3. Training Prioritization Factors

Prioritization Factor	*Description*	*Points*
Business Drivers	Strategic in nature	□ 2 points
	Approved by the steering committee	□ 2 points
	Supports critical skills development initiative	□ 1 point
	Supports a continuous improvement initiative	□ 1 point
	Supports process/system/tool stabilization	□ 1 point
	Required for safety or regulation	□ 1 point
Stakeholder Readiness	Technical experts are committed and available	□ 1 point
	Organization is providing funding	□ 5 points
	More than four weeks' advance notice provided	□ 2 points
Target Audience	1 to 100 employees	□ 1 point
	101 to 300 employees	□ 2 points
	>301 employees	□ 3 points
Training Organization	Training resources and skills are available	□ 1 point
	Contingent training resources are available	□ 1 point
	Vendor solution is available	□ 1 point
		Total Points:

advantages to maintaining control of the system. The training organization is more likely to recognize the continued investment, maintenance requirements, and flexibility the system it has built affords. The training organization will also be more tolerant in processing the volume of incoming training needs, particularly the more tactical "one off" training requests that impact only a few people.

The best approach to prioritizing training needs and making decisions appears to be a joint approach, with both the steering committee and technical training organization involved. The steering committee might make decisions related to the prioritization of costly training initiatives, conceptual

program structures, and compliance training. The training organization might make decisions related to budget and resource allocation and prioritization of course development. At the program and curriculum level, training professionals typically own decisions related to program components, scheduling, and so forth. Decision boundaries and roles should be clearly defined.

Closed-Loop Communication

As we have emphasized throughout this book, it is imperative to have clear communication with stakeholders. Explaining the needs assessment process, roles in the process, and how decisions will be made helps stakeholders have realistic expectations. Just the data gathering process itself creates expectations, and stakeholders can feel ignored if they do not hear what is happening (Bowman & Wilson, 2008). Stakeholders may view information they provide as going into a "black hole," which can create distrust in the process; it also reduces the likelihood of stakeholders participating in the future.

A transparent, closed-loop communication process means that stakeholders receive ample information about the process, are informed along the way, and hear the outcome of the needs assessment. They will want to know whether their training need is going to be addressed and, if not, what is being developed in its place, if anything. This communication can be accomplished by:

- Using stakeholder management engagement practices, effective communication, and follow through
- Providing stakeholders with reminders of upcoming due dates and milestones
- Inviting stakeholders to presentations and reports on the outcome of the needs assessment and what was funded and why
- Distributing monthly status updates and plans
- Publishing the process, information, and contacts on the training website

In general, if stakeholders feel their needs were considered and they have some insight into the rationale for training decisions, they are more likely to trust the training organization and buy into the needs assessment process.

Designing the Technical Training Portfolio

The technical training portfolio of products and service offerings typically includes programs, curriculums, and courses, among other services such as training consultation. The methodologies associated with project management, curriculum development, and instructional design are discussed next in the context of creating customized technical training solutions.

Developing Technical Training Programs

Technical training projects and programs are often part of the training portfolio. Projects are initiated for efforts that are broader than course or curriculum development. Projects are temporary in nature, and once the project has achieved its original objectives, the project team disperses. Examples of training-led programs are technical mentoring, certifications, technical knowledge management initiatives, and technical leadership development programs. Each of these is likely to have both a course component and a structural component that allows for consistency and standardization. For example, a certification project may have multiple levels of certifications, multiple training, and non-training-related requirements to achieve certification and hundreds of courses as part of certification paths. The project approach is useful because the methodology enables the setup and organization of the overall certification program.

In addition, the technical training organization may undertake projects to build internal capability. Examples include technical vendor consolidation, development or redesign of the training website, or implementation of a new LMS or content management system. Project management differs from operational work, which tends to be repeatable and sustaining, in that projects are time limited and are undertaken for a very specific purpose. There is nearly always maintenance work following the closure of a training project, which is typically transitioned to a training administrator who will manage the maintenance work in the future.

Programs serve as the umbrella for related projects. Examples of training-led projects are technical mentoring, certifications, technical knowledge management initiatives, and technical leadership development. In these instances, training professionals participate on teams led by program managers in

business functions. Training professionals are responsible for developing technical training solutions in support of the larger program.

Using project/program management (PM) methodology to define technical training solutions is useful for a number of reasons. It is a well-established and proven methodology that works and tends to be well accepted by stakeholders. It allows for the development of customized technical training solutions. The PM methodology works well with technical training practices because both methodologies emphasize:

- The importance of sponsorship for high-level direction on training
- The use of team charters to clarify objectives, scope, assumptions, boundary conditions, and so forth
- A collaborative team approach with technical experts
- Content validation by experts, revisions, and version control
- Piloting and testing to improve solution design and outcomes
- Monitoring and communication to keep stakeholders informed of progress

The PM methodology also integrates well with the instructional design process and business programs.

Building Technical Training Courses

Technical training courses can be developed in-house with the assistance of SMEs or procured externally from vendors. Some of the factors to consider when making the "build versus buy" decision include the technical expertise that is necessary to develop the course, the time that is available, the desired course format (hands-on components and labs), and audience size (Rothwell & Benkowski, 2002). If the technology is new and/or technical experts within the company lack the required knowledge and experience, it may be necessary to procure the technical training through a vendor that has the expertise. If there is not sufficient time to go through the instructional design life cycle, an option may be to purchase an off-the-shelf solution and customize it—provided the copyright allows. Or if complex equipment, technology, lab environments, e-learning, or a combination of these is necessary for effective

training and these capabilities are not available in-house, a vendor solution may be necessary.

When building courses internally, it is a good idea to select an instructional design methodology for all course development. Training professionals will be familiar with many different approaches and models, and without a designated methodology, they will each approach course development differently. Although most instructional design models have similar features, selecting and using a specific approach leads to more consistency and predictability. As shown in Table 8.4, program managers, instructional

Table 8.4. Coordination Across ADDIE Phases

	Analyze	*Design*	*Develop*	*Implement*	*Evaluate*
Project/Program Managers					
Stakeholder management					
Needs assessment					
Project/program design					
Project/program execution					
Instructional Designers					
Course design					
Course development					
Course pilot and train-the-trainer					
Course revision					
Curriculum Managers					
Needs analysis					
Course description					
Course materials management					
Course maintenance					
Course instructor base					

designers, and curriculum managers work together across the phases of the instructional design life cycle.

Even if they are not directly involved in a specific training solution, stakeholders should be familiar with the activities of the technical training organization. This requires them to have a good understanding of how programs, courses, and curriculums fit together.

Sharing information with stakeholders about the course development process helps them understand it. Information is best conveyed using business as opposed to training language. Information that is helpful to explain to SMEs and VIs in particular includes:

- An overview of the technical training portfolio and how the course being developed fits into the portfolio
- The roles and responsibilities of training professionals, SMEs, and reviewers
- The course development schedule
- Communication methods to keep everyone informed
- Issue management practices that will be used

The development of technical training is unique from the development of other types of training. These differences, presented in Chapter 3, mean that technical training must be handled in a different way from other types of training. It is helpful for stakeholders to recognize these differences. The more stakeholders know about technical training and how it is different, the more likely they are to collaborate with the technical training organization.

Some of the issues we have encountered during course development are shown in Table 8.5. Some of these pertain to SMEs and others to the challenge and pressure of working in a technological environment.

Categorizing Courses into Curriculums

Technical training curriculums are often organized by technical job, certification, or function. As an example, a safety curriculum for construction engineers would include courses on OSHA standards, safety inspections, hazard identification, fire protection and prevention, rigging, scaffolds, trenching,

Table 8.5. Course Development Considerations

Considerations	*Suggestions*
Work processes and technology are in a state of flux and not yet finalized during course development, resulting in schedule slippage for course development.	A fast-track training solution, with tradeoffs, may be necessary in the short term.
Content changes and revisions are received in multiple formats and are sometimes conflicting.	Use a change request form to record course content changes and revisions. Disposition of major items on the change request log in a team meeting to resolve conflicts.
SMEs have divergent views and do not agree with each other on issues related to course development.	If both perspectives are valid, revisit the course design assumptions to see whether they help. If not, clearly summarize the issue for team decision making.
New SMEs come on board in the middle of course development, which slows the process.	Explain the history, assumptions, and decisions that have already been made in a separate meeting with the new SME to bring him or her up-to-speed.
SMEs are not available during course development.	Enlist the support of managers to help address SME work priorities and offload or postpone non-critical work.
Pilots and train-the-trainer sessions are not treated as separate events.	Hold these two important activities separately to field test the training and enable VIs to learn the final training material and practice their delivery.

and welding. Curriculums show the sequencing among courses and any necessary prerequisites. Technical curriculums are more complex than non-technical curriculums due to the technology involved. Depending on the complexity of the technology, there may be multiple hierarchies of courses within the curriculum. Courses on technology also expire quickly due to the changing nature of technology and are quickly replaced with newer versions.

The categorization of courses into curriculums is important because the resultant categorization will form the structure of the technical training content in training systems such as the LMS, content management systems, and websites. Reorganizing curriculums is often necessary to support the evolution of technical courses. Including technical leaders and experts in the design and validation of the curriculum is critical because they understand the technical complexities and interrelationships among the courses. Particularly in the technical world, where rapid change is the norm, the ideal curriculum will be a moving target because it must adapt to the ever-changing business environment (Vinaja, 2006).

Summary: Stakeholders Participate Throughout the Training Life Cycle

Training needs are identified throughout the year through a number of existing business venues as well as data gathering efforts initiated by the technical training organization. The annual strategic planning process and operational meetings can shed light on important technical training needs. The training organization may also forecast training demand with the help of stakeholders and may survey stakeholders or hold focus groups to gather training needs and preferences. The outcome of training needs assessment should be communicated back to stakeholders so that they know what happened to their training requests. The steering committee and technical training organization are the main decision-makers on what training will be funded. Technical training needs tend to fall into four categories: strategic, operational, competency development, and career development. Typically, the steering committee makes high-level decisions, and the training organization determines the tactical funding components. Once training priorities are approved, technical training projects and programs and course development efforts kick off. The resulting technical courses are organized within curriculums.

9

Marketing of Technical Training

IN THIS CHAPTER WE EXPLAIN the importance of marketing technical training. We highlight several "hurdles" the technical training organization may have to overcome before marketing activities can be successful. Once these are overcome, marketing principles that are of particular importance to technical training are presented, including describing the value proposition, defining the market, differentiating products and services, and branding technical training. In addition, common sense marketing practices apply equally well to all types of training. These involve using emotional drivers to market training and making engagement with the training organization easy.

Why Market Technical Training?

A study by Expertus, Inc., and Training Industry, Inc., was conducted in 2008 to determine how training organizations use marketing to generate

participation and support for internal training programs. The survey showed that only 15 percent of respondents had a formal marketing plan and only 38 percent had a budget for marketing. Training organizations were aware that they should be doing more in this area, but, as one training executive admitted: "Marketing and communication is something we are lousy at." While the expectation that every training organization should have a marketing plan and allocate a budget for marketing is unrealistic, training organizations can clearly do a better job of marketing training.

Training professionals often complain that training does not have a "seat at the table" and is undervalued. However, people do not value the things they are unaware of and do not fully understand. Therefore, it is up to the training organization to produce training activities that have a business impact and to communicate and market those activities to stakeholders effectively. Executives, managers, technical leaders, technical experts, and employees need the opportunity to learn about technical training and its potential impact.

Marketing is important for any training but even more so for technical training due to many of the differentiators discussed in Chapter 3:

- *Subject-matter expert involvement is more common in technical training and VIs are more common as teachers of technical training*. Because the technical training organization relies on both to develop and deliver technical training, continuous efforts should be made to increase the SME and VI pools. Marketing efforts directly increase the awareness and interest of technical experts in becoming SMEs and VIs.
- *Refresh cycles for technical training are shorter*. Due to rapid changes in technology, shorter refresh cycles mean that employees must be trained more frequently. Therefore, it is paramount that technical training be advertised effectively so that employees do not miss the opportunity to attend the training.
- *Technical training is revolutionary*. To enable a culture of innovation and creativity that supports breakthrough engineering and science, technical experts need access to the latest and greatest information.

Advertising the availability of training on such topics increases employees' exposure to new, cutting-edge ideas and technology.

- *The release timing of technical training is different*. Training activities that occur every year at the same time are predictable. The target audience knows that, for example, right before the performance management cycle for the year, managers receive training on writing performance reviews. If a company has mandatory training requirements, they are usually communicated on regular cycles and employees know to watch for them. Technical training, however, is not scheduled at the same predictable time each year; hence marketing is required to notify employees of its availability.
- *Waterfall deployment is rare in technical training*. Because technical training is rarely deployed throughout the management chain, managers may not be aware that it is happening. Because managers are less likely to be aware of it and pass the information to employees, the technical training organization needs to market technical training directly to stakeholders, in addition to management.
- *Escalations are quick and go high up in technical training*. When technical training is clearly communicated through broad marketing channels, everyone has the opportunity to learn about its importance; executives and managers are informed, as well as the target audience. This reduces miscommunication and the escalation of problems.
- *Technical training is more expensive*. Many technical training courses are so expensive that only a limited number of courses can be budgeted. Given their cost and limited nature, they need to be well attended, which can only happen if they are well marketed.
- *Errors in technical training have more serious consequences*. Because of the seriousness of some technical training content, it is an absolute necessity that it be marketed correctly and not missed by those who need the training. Many marketing channels need to be used, management should be involved, and the training organization needs to track responses and follow up.

Technical training is going through the same growth cycle as the field of IT has over the last twenty years. Although technical training appears to be a few years behind, IT has faced a number of the same challenges. For example, stakeholders once did not recognize IT's value and so IT was often the first organization cut during downsizing. Fortunately, IT has overcome many of those obstacles and has become a true partner to the business in many companies. This change occurred when CIOs started running IT like a business. By marketing IT products and services throughout the company, IT improved its customer loyalty and staff productivity according to *CIO's* survey, "How to Run IT Like a Business" (Dragoon, 2004). Many technical training organizations think they are running training like a business. However, until marketing becomes an integral part of the technical training organization, stakeholders will not realize its value and impact.

Hurdles to Marketing Technical Training

Marketing technical training does not mean merely applying generally accepted marketing principles to technical training. Rather, it means understanding the intricacies of technical training and overcoming barriers or hurdles to marketing it effectively. Pretending those obstacles are not there will overshadow the technical training effort from the beginning and reduce its likelihood for success tremendously. While some obstacles apply to all training universally, a few are unique to technical training.

Building Marketing Competency

Just like technology and training, marketing and training are two different competencies altogether. Recognizing the value that marketing expertise can bring to the organization is important. Training professionals often lack a background in marketing principles and communication that would make marketing much easier. "At its most basic definition, the principal function of marketing is to promote and facilitate exchange. In the training and performance business, this means promoting and facilitating the exchange of training and workplace learning. There is nothing complicated about this. Unfortunately, problems arise when trainers and workplace

learning practitioners are asked to become marketers instead of trainers" (Davenport, 2005). The skills involved in becoming a training expert, as evidenced by ASTD's certification requirements for certification in learning and performance, include designing learning, measuring and evaluating, and managing the learning function (Mitchell, 2006). Proficiency in marketing, except for communications skills, networking, and influencing, are notably absent. Because marketing is a specialized field in its own right, it is unrealistic to expect training professionals to have a broad marketing background. "The objective to simply 'become an excellent marketer' is far too broad" (Aufreiter, Carlotti, Court, & Lawver, 1998, p. 5). These authors recommend that organizations set performance goals on what they would like to achieve and then make a plan to acquire the related marketing skills. Examples of marketing areas of specialization are shown in the list below.

Marketing Areas of Specialization

- Customer knowledge
- Pricing
- Channel management
- Relationship management
- Product development
- Advertising
- Sales force excellence
- Customer service
- Branding
- Promotions

Because the technical training organization needs to possess many competencies beyond marketing, a selective, rather than all-inclusive, approach is best. There are at least three means by which to address the marketing specialization in the technical training organization. Utilizing any of these approaches or a combination is perfectly acceptable:

- *Build marketing competency internally by developing existing employees' marketing skills*. "Learning executives must embody a broad set of competencies to succeed. Those include business acumen, strategic planning, and the ability to market and communicate the function's benefits" (Sussman, 2005, p. 35). Enlist the expertise of marketing experts within the company to teach marketing techniques to training experts (Losey, Meisinger, & Ulrich, 2005).

- *Bring marketing expertise into the organization by hiring individuals with the expertise*. Only larger training organizations can likely afford a full-time marketing professional. Smaller organizations have the option to share a marketing person with another organization or hire a marketing professional who wants to enter the training field and spend a percentage of time on training as well as marketing.
- *Partner closely with the corporate marketing organization and follow their guidance*. A training/marketing partnership can position the technical training function as an important company asset. "As much as any other functional area within your organization, the training organization is in a unique position to redefine and extend its mission to more directly and visibly support the company's business objectives. One way to achieve this goal is to create a strategic link between the training and marketing functions of the organization" (Murphy, 1996, p. 10).

Suffice it to say that marketing expertise, however acquired, is very important to the technical training organization for putting important messages out to stakeholders.

Underlying Motivation for Marketing

A big difference between internal training organizations marketing technical training to internal employees and external training vendors marketing training to customers is motivation. An employee in the marketing department of a training vendor is solely focused on marketing, which is a prerequisite to selling. Since selling training products is the ultimate goal, the employee in the vendor's marketing department is very motivated. The link between the marketing effort and revenue is direct and traceable and creates increased ownership and responsibility for the employee who owns marketing. That link is often missing for employees responsible for marketing in internal training organizations. Additionally, marketing tends to be more of a passive thing and it is "nice to have," rather than a must-have. The result is smaller marketing budgets, less manpower, less brain share, and slower reaction time.

Internal training organizations should take note of vendors' dedication to and sophistication of marketing. Clearly, the same investment or level of quality may not be needed internally but a middle ground is possible between no marketing activities at all and the first-class marketing employed by many training vendors.

Understanding the Product

Elliott Masie, founder of The MASIE Center, conducted a survey on technology-related competencies for training leaders. More than 930 people from companies around the globe responded, resulting in the identification of the following eight competencies. The percentages equate to the number of respondents who endorsed each competency.

1. "Integrates learning, talent, and IT strategies with business strategy (87 percent)
2. Leads key decisions about learning and technology for the enterprise (85 percent)
3. Assesses organizational readiness and need for talent/learning software (73 percent)
4. Collaborates with the chief information officer (CIO) effectively (68 percent)
5. Effectively scouts for new and emerging technology trends and discerns hype from business value (61 percent)
6. Leverages collaborative technology to increase organizational capability (59 percent)
7. Displays fluency in techniques/models of technical process and change (46 percent)
8. Applies understanding of quality improvement and business process (41 percent)"

(Masie, 2008)

Masie's survey shows the technology-related competencies that are important for training leaders to possess for an understanding of

the company's technology, as well as training technology. However, not only technical training leaders, but all training professionals need to develop technical competencies to design, develop, and market technical training effectively. While they do not need to know all the intricacies of a technology or product to drive the training effort, they need to understand what it is, who needs it, what it can do, and how it enables the business. Many training professionals, especially in HR, shy away from technology and product information. The fear of "all things technical" is real, but the obstacle to learning about technology is not as big as it may appear. A former training leader without any prior technical experience describes her efforts to incorporate technical training into her learning function: "I was determined to have technical training in my area, as the business was paying absorbent amounts for it. When I first joined, if somebody said there was a class in basket weaving and it was $20K, others would say, 'sure let's do that.' In addition to paying more for it than was needed, it was not managed and we tried to reel in 'cowboy' technical training. I am not a subject-matter expert, but I saw the need. As a consequence I created the strategy and vision to add technical training to our existing portfolio of training." Facing and overcoming the fear and embracing the opportunity technical training presents for the training organization is a critical step that seems more difficult and mysterious than it is.

Dispelling Misconceptions

As with most things people know little about, assumptions and misconceptions build. The technical training organization needs to know what those misconceptions are and actively dispel them. Otherwise, no matter how much effort is put into marketing technical training and how good the offerings are, employees will not take advantage of them.

The first misconception is that technical training is free. Technical training may appear to be free when it is funded from a central budget. In this case, the cost of the training does not show up on the employee's organization cost center; it is essentially "out of sight, out of mind." Although someone is paying for it, there are no direct consequences for canceling attendance at the last minute or not showing up for the course.

The cost of technical training must always be made transparent so that employees and managers recognize the cost to the organization and can make decisions accordingly. Marketing and communication messages should include the costs of training so that employees understand the investment being made and that a cost will be incurred in another part of the organization.

Another misconception is that technical training is too expensive. Undoubtedly, technical training is more expensive than non-technical training. However, the cost of technical training can be contained. For example, vendors of technical training often offer creative solutions to save the company money on volume. When the courses are delivered internally, taught by a vendor or a VI, there are simple ways to reduce the cost per student. The class fill rate can be increased, the duration of the course can be shortened, or e-learning modules can be designed for large and dispersed audiences. If there is concern that employees who do not really need the training will attend and drive up costs, increased scrutiny can be applied to limit who can attend. This might involve adding the requirement of specific prework, prerequisites, or manager approval. Additionally, attendance can be restricted to those who are initially impacted by the technology or product. For example, if the product will not be launched for three months, hold off on training the masses until closer to the launch date for less up-front cost and better learner retention. Some executives are hesitant to let employees attend technical training because they believe employees are building up their resumes and will leave the company after doing so. If this is a valid concern, a "payback" policy can be established to deter employees from taking training and immediately leaving the company. Obviously, establishing and maintaining policies such as these is time-consuming and should only be done if the situation warrants. Making restrictions transparent in communications is highly advised.

In many companies, there is a perception that managers limit employees' training. If managers routinely deny training requests from employees, the technical training leader may need to address the issue within the management chain, beginning with the top level. If manager opposition to training is not a reality but merely a perception, set the record straight. Otherwise, no

matter how good and relevant the technical training is, employees will act in accordance with their misconceptions.

A final misconception is that HR cannot offer high-quality technical training. The belief often runs rampant. Technical experts and leaders—and often fellow HR professionals—believe that technical training cannot be successful if it resides in HR. Comments from the interviews support that belief:

- "Technical training is not successful if it is in HR."
- "Being in HR is a liability."
- "Technical training is not efficient if it resides in HR."
- "If HR is viewed as a strategic partner it can report into HR and HR can make it work, but that is relatively rare."

HR can do a number of things to deal with these misconceptions. Involving SMEs in training activities and setting up governance structures comprised of executives and technical leaders helps. While there may be initial resistance, stakeholder involvement is a good arrangement for everyone. Tim Weilbaker, owner of Process Thinking, a consulting firm, and a former operations director in the automotive industry, tells an interesting story about a technical expert joining an HR training organization: "People told him that they couldn't believe that he 'sold out and went to the dark side.' He had to prove he was still one of them—one of the technical people. He needed to convince them that he knew what type of training they needed. His peers took a 'wait and see' attitude until he proved himself. In the end, because he understood what he was up against and because he was extremely likeable, it became a win/win situation."

Such misconceptions typically have existed in organizations for a long time. They may be based on real experience in the company or may be residue from experiences people had at other companies. Whether they are a reality or just a perception, they must be addressed. It will not be easy to change them, although marketing can be an effective tool. Marketing messages can be crafted in a way that addresses the misconceptions, reframes them, and

provides the real information. It is important that those deep-seated beliefs be acknowledged and addressed; otherwise there will be resistance to technical training or misunderstandings that will create a negative reputation.

Reading the Signs of Diminishing Value

Finding the "value" of training, calculating it, and explaining it to others is a dilemma that many in the training and development industry face. "Value to an employer is always rooted in what you can bring to the organization that will help achieve the business goals" (Dunk, 2007, p. 42). The fact that the technical training organization has not established or shown its value is often reflected in subtle ways, such as the following:

- The technical training budget is the first to be cut in a business downturn.
- Course attendance is poor despite commitment from business organizations.
- Organizations bypass the internal training organization and engage with technical training vendors directly.
- Despite the existence of a technical training organization, business organizations appoint their own technical training resources.
- The technical training organization is moved down in the organizational hierarchy as reflected on the organization chart.
- As space allocations are made, the technical training organization is located away from the business, possibly with other horizontal functions in a remote building.

Each of these signs, in and of itself, may not be a reflection of the value of technical training; each might very well be attributed to other factors. However, when they occur in aggregate, they are difficult to ignore and are more likely a sign of stakeholders' perceptions of diminishing value. These issues must be addressed—by analyzing root causes—because if there is not a belief that technical training is needed or important, even a great marketing campaign will not resolve the issues.

SEVEN LESSONS LEARNED FOR MARKETING TECHNICAL TRAINING

By Gordon L. Johnson

Once you learn how to market training, it's important to understand the particular nuances that are involved in marketing technical training. It's not that it's harder to do, because it's really not. It's just different. Everything you've learned from marketing soft-skills training will not apply to technical training.

Here are the top seven things to keep in mind when marketing technical training. Once you build these into your knowledge base, you'll be off and running.

1. Know What You Don't Know

All of us have encountered at least one work challenge at some point in our careers when we responded in a way that seemed OK at the time, but later on, we looked back and said, "What was I thinking?" The answer is sometimes we don't know what we don't know, but we act anyway. That's the big challenge in marketing technical training versus soft-skills training. With soft-skills training, we already "get it." We understand the training topics and have some frame of reference so we can easily learn more if we need to. With technical training, sometimes we don't have a clue and it can be difficult to develop a frame of reference to start moving on the learning curve. The result is that we try to market, write copy, or figure out who needs the training, when we don't truly understand it. Then learners may read about the courses and think we don't know what we're doing, that we don't understand the technology. Even worse, we may never know this if no one tells us. We may just think that no one is interested in the training, when, in fact, we didn't do a good job communicating its value and illuminating the WIIFM. Luckily, it's fairly simple to avoid all that; understand up-front there's a big learning curve that you must conquer, and then spend the time it takes to do it. Subject-matter experts are your greatest allies in this, and you should become best friends with them. They can help you in so many ways, like explaining the technology to you, for one. When they're explaining it to you, don't be afraid to ask them to back up a few steps and explain it from a very fundamental level. And don't tell them you understand if you really

don't. If you tell them you don't get it, most will go to great lengths to make sure that you do.

2. The Best Way to Communicate

Because technical training covers so many areas and isn't just confined to computer technology, not all of your learners will be IT people. However, if you do find yourself marketing to the IT folks, understand up-front that they are different and need to be marketed to differently.

I'm going to generalize here and say that most IT people think computers are wonderful things. Thus, they would much rather use a computer to go online to find out about a product than talk to a salesperson. That's probably true of most of us, but even more so with IT people. If you know this, then you know that to market to IT people, you must communicate according to their preferences. Focus on e-mail marketing, a great learning portal, webinars, pod-casts, banner advertising, e-newsletters, and all of the other things that involve the computer and the Internet.

3. Certification Drives Passion

All marketing professionals know that when they're trying to convince someone to take action, an emotional argument beats a logical argument every time. That's why marketers spend a lot of time trying to figure out what makes buyers tick, so they know which arguments work best. When detailing the benefits of your technical training, you can say you'll increase productivity, make them more knowledgeable, reduce their frustrations, make them more efficient, etc. But the one benefit that beats all others is to tell them they'll get certified. Why does certification strike such a chord with so many technology professionals? Because it means marketability, which translates into job security, which brings more money, which means their kids can go to college. This is the thought process. It can be subconscious, but think about it. Almost every decision we make in life is fundamentally based on surviving, thriving, and ensuring the well-being of our offspring. Remember training in the 1990s? Certifications were

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at their peak with the Microsoft MCSE program and other successful programs from Novell and Cisco. The vendors who sold technology training had a hard time keeping up with demand. When the dot.com bubble burst and IT wages plummeted, most of those same technology training companies went out of business because certification no longer translated into huge salaries. However, some of this value has come back, and certification does still translate into more dollars and more job security. So you should consider a certification program to see if it makes sense for your organization.

4. Go for the Groundswell Effect

Earlier, I talked about how hard it is for us to understand technical training versus soft-skills training. We are not alone. In some cases, even CIOs and other business leaders you think would surely get it, really don't. There may be only a few people in your company who understand what kind of training they need. Those people tend to be the skilled professionals who are actually operating the equipment, developing the software, or administering the network. Because of this, it's important to know that, much of the time, they make the buying decisions. You're going to have more luck marketing directly to them rather than to their managers or to their manager's managers. In fact, you have to market to all of them. But never forget the end-learner, and you certainly shouldn't depend on management to fill up your classes.

5. Decide Like a Scientist

Earlier, I wrote about the importance of appealing to emotion rather than to logic in marketing. I may have given you bad advice. In all things except for certification, you should appeal to logic. Think about marketing to Dr. Spock, the ultimate techie. What kind of decision-making process would he go through? Again, not all of your technical training consumers are technology people, but you have to play the percentages and market to your biggest constituency. Logical arguments mean you need to give them lots of information and seriously reduce your use of superlatives and marketing fluff. They are a big turnoff for the logically minded. I can't overemphasize the importance of giving them a lot

of information, however. Your best tool is the course outline. Don't give them the short version. Give them the whole shebang, which includes all of the bullets, sub-bullets, labs details, etc. Rest assured they'll read it all before they decide to register. Last, make sure your course outlines are written or edited by the subject-matter expert, so that they are accurate and not filled with marketing fluff.

6. Targeting Is More Important Than Ever

The best kind of training from a marketing perspective is the training that appeals to a highly defined audience. With soft-skills training, everybody needs communication skills, negotiation skills, and management skills, but not everybody needs to understand how to develop code for an SQL Server database. When you have to market to everyone, your marketing costs go way up, and your message gets watered down. When you know there is a select group of learners who really need your course, your marketing costs get lower and you have the ability to fine-tune your message. Targeting to potential learners is everything, and segmenting your lists of potential learners is critical. I'd say it's about 50 percent of your marketing job. You're halfway there if you can obtain the right lists to give you the information you need to do some quality targeting.

7. I'm Not Registering If Fred Doesn't

Why is it that the quality of technical training is either really good or really bad, with little in between? It's the instructor. A great technical instructor can save a bad class, while a poor instructor can turn good courseware into a wasted experience. That scenario is not as true for soft-skills training. Sometimes an inexperienced instructor can do OK with good courseware. Also, technical people respect people who have the knowledge they desire. Before they register for a class, many of them want to know who's teaching the class. If the instructor is experienced, has a bunch of certifications, or if the learner has already heard of him or her, the decision to register is simple. But usually the learners won't know who the instructor is, so they look for someone they respect to tell them that this is a good class and a valuable use of their time. That's why referrals are

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so important. From what I've learned over the years, as least two out of three students know someone who has taken this very class and has talked to him or her about it before making the decision to register. So how do we use this information for marketing? First, understand the importance of testimonials, quotes, and showing lists of people who have taken your training. This will increase their comfort level and make the decision to register much easier.

The Bottom Line

There are two things I failed to mention in the aforementioned list, and I didn't mention them because they are the fundamentals of marketing training and are not specific to technical training. First, make it incredibly easy for your learners to find and register for training, and second, get management's buy-in and support. These are the foundation of any good training marketing program. Take care of these two and all of the others above, and you should be in very good shape!

Gordon L. Johnson is the vice president of marketing at Expertus, Inc. Among other things, Expertus helps corporate training organizations increase their training adoption by improving their marketing strategies, learning portals, and implementing tried-and-true marketing tactics.

Marketing Principles Applied to Technical Training

Marketing internal technical training programs requires the application of marketing principles similar to those used for the marketing of any product or service. These methods include developing a value proposition, defining the target market, differentiating technical training products and services, and branding the overall technical training program. These preparatory activities enable the technical training organization to create an effective marketing plan and use the right marketing tools to communicate and market technical training to stakeholders.

Describe the Value Proposition

Showing value is necessary to market all types of training. As Martyn Etherington, vice president of marketing at Tektronix, confirms: "Training

departments, like marketing departments, complain that they cannot get a seat at the table. There are two reasons for not having a seat at the table: you are playing a victim or you are irrelevant. To avoid becoming either, you need to demonstrate relevancy and measurable impact to the business." The only exception may be in the area of training that is mandated by law or policy.

While everyone agrees that expressing the value of training is important, articulating that value remains difficult. It is a big obstacle in the L&D industry. "The one thing most people in the field of workplace learning and performance haven't learned how to do is persuasively, aggressively, and strategically present the case for learning in language that CEOs understand, embrace, and feel compelled to act upon" (Bingham & Jeary, 2007, p. vii). They need to get a voice in the company and make themselves relevant to the main decision-makers—CEOs—and other stakeholders. Technical training organizations are in a better position than others to do so, as Murphy (1996) points out: "Precise measurements of 'return' and 'payback' are often elusive, but many training groups—particularly in technical training—already have the advantage of thinking in terms of results and measurable outcomes. Use these data in marketing your training effort, just as your marketing and sales people highlight the unique capabilities and successful performance of products" (p. 11).

One has to ask why showing and expressing the value of technical training is so difficult? For one, it may be a mental block. Value has a quantitative connotation and training professionals may want to avoid difficult calculations. But as Dunk (2007) encourages us: "Understanding value is not about a complicated mathematical equation applied remotely to an L&D solution. In many cases there are too many variables and, in any case, they change all the time. It is more to do with understanding the perspectives of the key stakeholders, and expressing your proposition in terms that are important to them" (p. 46). Furthermore, there is not just one value proposition. At the end of the day, each of the stakeholder groups needs to be able to easily understand "What is in it for me?" This can only be answered if value propositions are targeted at specific stakeholder groups in marketing messages. A study by IBM and ASTD, which investigated perceptions of the strategic value of L&D functions, found that the value

of the training function needs to be communicated at various levels of the organization (O'Driscoll, Sugure, & Vona, 2005). To gain alignment across the company, training executives should clearly articulate the value of learning at the enterprise, business unit, and individual employee levels.

If an order of importance were placed on stakeholders, Bingham and Jeary (2007) believe executives are the most critical group to be convinced of the value of training. Executives mostly care about the contribution to and impact of technical training on the business. Therefore, the value proposition for executives should show how technical training contributes to the achievement of business goals. Managers, another stakeholder group, are caught in the middle. They need to show how their organization contributes to the company, but they are also concerned with the development of their employees and the associated costs. Hence, the value proposition for managers should include both aspects. Technical leaders are most interested in how the technical training advances the technology they are championing and how they will be recognized for their involvement in training. Employees mainly want to know when and where they can learn the skills they need to maintain existing products as well as develop new skills to keep up with constantly changing technology. Targeted value propositions should address those priorities and make clear what stakeholders can gain from technical training.

Define the Target Market

Most technical training organizations have a limited budget and otherwise limited resources and cannot provide unlimited training services. Consequently, the training leader must define and segment the target market into smaller groups that share one or more criteria. This can be done along technologies, product lines, geographical divisions, or organizational hierarchy. Segmenting enables the technical training organization to better serve, as well as better market, training services. Customized marketing messages resonate better and are more applicable to the target group's needs. Defining what the technical training organization can do and, equally important, what it cannot do for each target group helps to manage their expectations. The clearer, the better so that misunderstandings can be avoided.

If there are other training organizations in the company, clear boundaries need to be defined so that a target group does not receive conflicting or overlapping messages from multiple training organizations. Most employees are not involved enough in training to be able to differentiate whether a particular offering was offered by HR or the technical training organization (if not part of HR) or a business organization. It is not necessary that they make this distinction. However, the technical training organization should work with the other training organizations to ensure target groups do not receive messages about training that confuse them. Receiving multiple, seemingly redundant messages, whether they are from the technical training organization or not, will likely create the impression that the training organization does not know what is going on and is wasting company resources.

Training vendors are usually very clear about their target markets. They typically market personal effectiveness skills training to the HR organization and IT training to IT. Technical functional training that is finance-related is marketed to the finance organization and technical functional training that is legal-related is marketed to the legal organization. Vendors find it harder to locate company contacts for R&D or manufacturing organizations. If technical training is not a corporate function but reports into the business, these vendors may need to conduct a more active search, as it is more difficult for them and the appropriate training contacts to connect. If the technical training organization is not the one making the final buy decision, then the vendors will put a lot of effort into locating the person who will make that decision and they will contact individual business organizations directly, at times causing confusion and duplication of effort.

Categorize and Differentiate Products

Due to differing backgrounds and work experiences, stakeholders have different expectations about what the technical training organization can do. Some have a positive view and expect a lot; others have never had a good experience with training and may expect very little or nothing at all. Therefore, the training organization has to define the services and products it offers and educate

stakeholders through communication and marketing. The descriptions of products and services have to be clear and as inclusive as possible to show how training serves the organization as a whole. Developing a portfolio of technical training products and services, as described in Chapter 5, is useful for many purposes, including marketing. The portfolio creates a common understanding by describing the various products and services, the purpose of each, costs, and so forth. The portfolio is useful for discussions with executives. It can also be used as marketing collateral for other stakeholder groups. It is important to document the benefits of each product or service, as it may help with demand creation. What seems like a benefit to one person, however, may not be a benefit to the next. On the other hand, a person may be able to derive multiple benefits from one offering, as described by Roger Courville, principal of the 1080 Group, LLC, a web-conferencing training vendor:

- "*Corporate benefits:* The company will save money, comply with the law, and gain a unique advantage.
- *Personal benefits:* A new transferable job skill is learned, and a certification is gained.
- *Social benefits:* Trainees have a chance to learn from an industry luminary, subject-matter expert, or celebrity.
- *Promotional benefits:* Attendees will be entered into a drawing for a free giveaway."

Brand Technical Training

A brand is something visible and memorable stakeholders can identify with and refer back to. It often gives a concept like technical training a shape, visual, name, or catch phrase. It ties activities, products, and services to one common reference point. Effective brand names build a connection between the brand as it is perceived by stakeholders and the actual product or service. The brand name should be conceptually on target with the product or service. Technical training can be given a recognizable and memorable "face" and name through the use of a logo. Holding a competition to develop a name and logo for technical training is a fun and effective way to involve stakeholders and create buy-in. The goal is for the brand name to have a

positive connotation, be easy to remember, and transcend trends. The ultimate goal is brand recognition, which means the brand is widely known by technical training stakeholders. Technical training professionals must develop or align stakeholder expectations behind the brand experience, creating the impression that technical training and its products or services have certain qualities or characteristics that are unique and set it apart from other training organizations or technical training vendors. The technical training brand should reflect how the technical training organization wants to be perceived by its stakeholders and how it wants to portray its products and services. The brand should convey attractive qualities or characteristics like innovative training solutions, new technology, or 24/7 accessibility to training. The brand shows what the technical training organization can deliver. The branding strategy should be jointly developed and shared with the entire technical training organization to enable everyone to become a brand steward—from the administrative assistant and the course designer to the project manager and the technical training leader. Successful brands are well defined and have the support of the entire organization.

The art of creating and maintaining a brand is called brand management. A brand is managed and conveyed with every action technical training professionals take, with every product or service that is offered, with every piece of communication that is sent out, and with every contact the training organization makes with stakeholders. It is important to always refer back to it. "Branding isn't just one aspect of your marketing campaign. It is the combination of everything your business stands for. Branding is not created with a single, stand-alone event—rather it is created over time through a series of strategically thought-out actions" (brandXpress blog, 2006). The brand experience of stakeholders is the sum of all points of contact with the brand and its representatives. Careful brand management, supported by a good marketing campaign, can be highly successful in convincing stakeholders to take advantage of the technical training offered instead of going to other sources to fulfill their needs. From the perspective of brand owners, branded products or services also command higher prices. When two products resemble each other, but one of the products has no associated branding, people often select the more expensive branded product on the basis of the quality of the brand or the reputation of the brand owner.

The downside of branding is that the brand may have become so effective and established that employees expect certain things from it. If a change to the technical training portfolio is required, such as reduction of services, and the brand is still remembered as representing a complete portfolio, stakeholders may begin to discount the brand. Rebranding may be a necessary but difficult thing to do. Conversely, if the brand was defined or perceived narrowly and the technical training organization cannot break out of that box, the brand may be very limiting. If at all possible, it is best to stay away from including transient things when describing the brand. Focusing on the stable or predictable aspects in the ever-changing technical world is a tall order. Additionally, brand associations and stakeholders' perception of the brand should be checked frequently for early signs of misalignment.

A good technical training brand is not just powerful for getting stakeholders to accept the products and services. Branding technical training can be a powerful contributor to the overall value proposition and perception of a company. Ideally, branding is tied to all the different stages employees go through when they interview with a company to the time they retire. "HR can create and enhance the internal brand through these interactions with employees by providing branded HR products and services (compensation, benefits, career opportunities, learning experiences, internal communications), branded processes (hiring, on-boarding, promotion, exiting), and branded infrastructure (self-service, HRS) to support the experience" (Losey, Meisinger, & Ulrich, 2005, p. 185).

BRANDING TECHNICAL TRAINING IN THE MEDICAL FIELD

By Donna Nickerson and Merle Adelman

A professional medical sub-specialty society in the field of cardiology used a successful branding campaign to increase awareness and usage of new innovative medical technology. In collaboration with medical device manufacturers, the training program was co-branded. The purpose of the program was to expose

society members—clinicians—to new medical technology and devices and provide them with a hands-on opportunity to test and use these devices. The society's annual meeting provided the perfect venue for clinicians to view firsthand and interact with new technological developments. In addition to the scientific sessions at the annual meeting, the technology exhibits were heavily marketed to attendees.

Because attendees are typically wary of sales pitches and are most interested in learning how they can apply technology to patient care from unbiased experts, the hands-on component was designed to enable attendees to observe demonstrations, try out the equipment, ask questions, and discuss actual cases with clinical experts. This allowed attendees to learn about new technologies and expand their knowledge in a non-sales environment.

As part of the technology exhibits, manufacturers were provided space to set up their equipment. Attendees were encouraged to handle the equipment and speak with clinical and educational staff about its usage. Group and one-on-one demonstrations were also provided. Other than the manufacturer's name, no marketing posters or displays were allowed in the technology exhibits.

Signage, handouts, and logos were part of the promotional material—wherever a notice appeared, both the society logo and the manufacturer logo were included. This provided implicit endorsement of the activity from the society and a positive association to the participating manufacturers for the attendees. Co-branding provided a number of benefits to attendees, the society, and manufacturers:

- Endorsement of the educational value of the program by the society
- Assurance for attendees that it was an educational program rather than a sales pitch
- Increased perceived value of the manufacturers' brands through their support of the program

The program was associated with a number of positive outcomes, including:

- Positive feedback regarding the value of being able to talk to unbiased clinical experts about the technology

(*continued*)

- Increased attendance year-to-year as the exhibits gained popularity with attendees
- Increased participation year-to-year by manufacturers
- Increase in medical device exhibits year-to-year
- Extension of the program to smaller conferences
- Increased revenue for the society to apply to other training programs

In summary, the organizers of the program found that co-branding the program was the key to its success. With the society's brand, it signaled that the exhibits were educational to attendees and for learning—rather than sales—purposes. Limiting sales material and collateral within the exhibits also served to avoid compromising the integrity of the event as a learning event. Additionally, the clinical experts from the manufacturers were able to build rapport and relationships with attendees—the future users and decision-makers surrounding their products.

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Develop a Marketing Plan

Brand management also involves ensuring uniform marketing messages through development and execution of a marketing plan. A formal marketing plan will ensure that marketing and communication activities are defined in detail and listed in order. Training implementation and delivery timelines should be shown as milestones on the plan along with corporate events and holidays to ensure technical training activities do not compete with other major planned activities. The messaging will vary by event and must be crafted for the situation. While the development, execution, and maintenance of the marketing plan needs to be assigned to someone in the training organization, anyone in the technical training organization is positioned to craft a message as long as it is coordinated through a central person who can ensure there are not any mixed messages and that approval is obtained. This person may also make sure that partnering organizations are informed of upcoming announcements and

corporate publishing standards and style guides are followed. If promotional kits and supplies for booths at company events or giveaways at training events need to be purchased, the marketing plan should account for that.

A good marketing plan requires a budget. Marketing is an investment and, like all other things, costs money. But as Gordon Johnson, vice president of marketing at Expertus, Inc., put it: "Companies do not spend a lot of money on marketing to employees." Unfortunately, limited resources tend to be used for advertising materials like posters and table tents and tokens such as giveaways or raffle prizes. Ideally, any idle resources within the training or larger organization are leveraged for things like developing and updating a training website.

At least once every quarter, the marketing plan should be revisited. It is too easy to develop a marketing plan and then put it aside without reexamining it. Just the fact of having one does not suffice. The active use and management of the marketing plan makes the difference. Getting feedback from a subset of stakeholders assures the right activities are listed. Additionally, regular self-examination to determine whether the technical training organization is on track with marketing—whether the things listed are still the right ones and whether they are working for stakeholders—is proactive. Given how fast technology is changing, it is safe to assume that any marketing plan has to be adjusted frequently.

Choose the Right Marketing Tools

The type of marketing vehicles the technical training organization should use depends on the organizational culture, available technology, and existing communication infrastructure and processes. The communication channels that are historically used should be leveraged because employees will expect to obtain information through these tried-and-true channels. It is a good idea to test out innovative marketing techniques with a small audience or focus group to get a feel for the audience's reaction. Ask stakeholders questions such as:

- How interested are you in technical training?
- Have you attended technical training courses in the last three months? If so, how did you learn about them?

- Have you visited the technical training website? If not, why not? If you have visited it recently, what did you think of it? Did you find the information you were looking for?
- What communication vehicles from the technical training organization have you noticed? Which ones do you think were effective?
- What information do you remember receiving from the technical training organization? Was it helpful?
- Is the current level of technical training communication sufficient? If not, what should change?
- Do you believe training and learning are valued by managers and supervisors?

Depending on the feedback from stakeholders, the team can explore a variety of different marketing vehicles and channels. Technical learners are more devoted to technology, so they find more information online than from print sources. Intranet marketing of technical training activities is a fast and effective way to get the word out, provided the information is regularly updated and timely. The downside of using an intranet as a primary means of communication is that it is based on the assumption that employees will regularly visit the site to obtain information. In some company cultures, employees are very web savvy and receive all of their information from a robust intranet. However, in other companies, particularly where intranet sites are not maintained with accurate information, employees visit them once but do not return.

The more global and virtual companies are, the less feasible on-site or print marketing is, so getting information in print to a small office in a remote country is probably not worth the money. An electronic newsletter delivered through email may be better. As is the case with many newsletters sent on a regular basis, employees may ignore them. So it would be dangerous to assume the information and training invitations have been read, just because they were received.

While stakeholders may not register the brand consciously, every little bit helps to increase brand recognition. Advertising in company videos or annual reports is a great way for the technical training organization to gain

exposure. The inherent belief that only worthwhile activities are showcased in such internal communication vehicles is beneficial. If technical training programs are highlighted in these, employees believe they must be of value. The potential downside is that videos and annual reports are distributed to a lot of employees and the technical training organization needs to be prepared to support any increase in demand that results.

Presenting at industry conferences and writing external publications on technical training practices are good opportunities to demonstrate the organization's training expertise. Often it is easier to get recognition from strangers or outside people because the "grass is always greener on the other side." Once things are written up for an external event they can be leveraged for internal marketing. Unfortunately, these things take a long time and the reward is more long-term. It may take months to find out whether the technical organization won an industry award or was accepted at a conference. Plus, the competition is intense so some efforts may not yield any payoff.

Leveraging industry and benchmarking reports to show comparative data on training can be useful. Overall training investment, training dollars invested per employee, and the number of training professionals per business employee are just some examples of comparative data that can be used for marketing purposes. Sometimes data can show how special an activity is, how much competitors invest in their employees, and what the overall investment of a company in its employees looks like. The marketing messages can highlight scarcity, exclusiveness, desirability, and so on. The technical community, in particular, values and responds to data. The multitude of industry resources such as ASTD, SHRM, Training Industry, Inc., and Gartner makes access to training data fairly easy.

Industry and corporate recognitions are good ideas for marketing technical training. Quotes from respected technical leaders on their satisfaction with the technical training organization or specific technical programs or solutions can have a big impact. Testimonials from customers are very useful if the individual making the statement is highly respected, influential, and known throughout the organization. Attending business group meetings, leveraging blog posts, attending steering committees, using the chain of command, advertising in employee orientation sessions, and word of mouth

COMMON MARKETING MECHANISMS FOR TECHNICAL TRAINING

An online survey administered to training and HR professionals in Fortune 1000 and select global companies identified the following methods that are commonly used to market and communicate technical training. They are listed in rank order:

- Intranet/website (49 percent)
- E-mail notifications (46 percent)
- Course catalogue (35 percent)
- Learning management system (33 percent)
- Course advertisements (30 percent)
- Newsletter (24 percent)
- Branding (21 percent)
- Bulletin board (12 percent)
- Posters (8 percent)
- Table tents/signage (6 percent)

are also effective ways to promote the training organization and its offerings. Setting up a booth with handouts and posters at a company event is a low investment/high visibility activity that can showcase the technical training organization's products and services.

Common Sense and Marketing Technical Training

Some principles that should be used in marketing technical training seem so obvious and simple that they may be forgotten. However, simple things can often have a big impact. Identifying the "emotional drivers" behind people's behavior (the WIIFM) and incorporating them into marketing efforts can be very effective. It is imperative to make it easy to work with the technical

training organization. While it is not a marketing technique per se, proactive customer service goes a long way toward building a positive reputation.

Use Emotional Drivers

Using what Tilmore (2008) calls "emotional drivers" is an effective way to get attention and support for technical training. Tapping into these can enhance marketing efforts. The emotional drivers that apply to technical training are

- *Greed:* Getting something for free
- *Knowledge:* Increasing or enhancing skills
- *Fear:* Avoiding falling behind
- *Superiority:* Obtaining mastery or expertise through certification
- *Approval from others:* Being noticed for doing the right things
- *Guilt:* Avoiding procrastination and taking action

Many other emotionally based principles can be leveraged for marketing technical training. In some cases, training content alone is not interesting or compelling enough for employees to sign up for a course when they are busy. Giving employees the opportunity to win a prize through a drawing or raffle increases their curiosity and introduces some fun and excitement into the training. Of course, the prize must be something desirable and valuable. Technical employees appreciate the latest gadgets; a Nintendo Wii™, an Apple iPod®, or a Livescribe Pulse™ Smartpen are just a few examples of prizes that technical employees enjoy winning. Smaller or non-technical giveaways are less likely to interest technical experts. The use of a raffle and prize can add an extra incentive to bring large numbers of employees to training when they might not normally attend.

The desire for knowledge is one of the emotional drivers that motivates employees to attend all types of training, not just technical training. By tapping into employees' desire for knowledge, marketing messages can be used to associate increased knowledge—through training—with greater success on the job and at the company. Company marketing messages about the

importance of acquiring new knowledge show that the company values learning and considers it important for both the company's and employees' future success. Such messages should make the connection between the skills learned in the training and their relevance to the organization or company. This is easier to do for technical training than for non-technical training since the impact of technical training is more direct and more easily linked to performance.

The fear of falling behind peers in knowledge and skills is omnipresent for technical employees because of the rate of technological change. It is a pressure that technical employees accept as a fact of life. Capitalizing on this tension in marketing messages helps the technical training organization fill its courses and helps technical employees stay up-to-date on technical skills.

While certifications are not as popular today as they were ten years ago, there are nonetheless plenty of fields that either require them for specific jobs or strongly encourage them. Therefore, courses that contribute toward certification requirements are very valuable to technical employees. In general, internal technical certification programs enable the organization to develop standard levels of skill mastery and proficiency. Certification programs also help with workforce planning because they provide a structured means for organizations to close widespread skill gaps. Certifications are desirable to employees because the skills are often transferable from company to company. These benefits should be highlighted when marketing technical training.

Seeking approval is another emotional need that drives employees to attend training, particularly when the training is taught by a respected expert. When only a few individuals are selected to attend a particular technical course, it can carry prestige as a special recognition for a high-potential employee. Training enrollment processes and guidelines can be designed to promote a "scarcity mentality" that makes the training valuable.

Finally, to help alleviate guilt and encourage action, marketing messages should acknowledge the challenges that get in the way of completing training. For example, if a course is only offered in a distant location or is too expensive to attend, the messages should offer solutions. If a course is perceived as too difficult or the failure rate for exams is too high, the messages should address

these barriers and offer alternative solutions. Make it clear that common concerns have been addressed—if they indeed have been—and that there is no better time to attend training to convince employees to sign up.

Make Engagement Easy

Exceptional customer service may not be a "true" marketing tool, but it is paramount to make engagement with the technical training organization as easy as possible. Bureaucracy should be avoided. Regardless of the role stakeholders play in technical training activities, it should be simple, easy, and rewarding to interact with the technical training organization. An orientation to the training portfolio and operating model should be provided to each stakeholder, along with roles and responsibilities, in order to set clear expectations and avoid misunderstandings. A technical training intranet is critical for making engagement easy. Not only is an intranet good for distributed learning, but it is also useful for marketing training. A large part of internal training organizations' marketing efforts should be focused on how to make it easier for learners to find training online. Many learners, especially in larger companies, do not bother to take courses offered by the training organization because it is too hard to find courses or register for training. If they become confused or discouraged, they will put it off until another day.

Training experts must keep in mind that training is an "extracurricular activity" for SMEs; in other words, it is not their day job. Quick responses to inquiries, working with stakeholders to solve their problems, and other "win/win" solutions go a long way. If VIs are taking the time to teach, it should be an easy process for them. For example, course materials and teaching aides should be ready in advance, and documentation of attendance should be easy for VIs to complete. Doing whatever it takes is especially important when attempting to build a positive reputation for the technical training organization.

Many people in the training organization and the company can support technical training. The key is to find those stakeholders who will support the technical training organization and contribute to its positive reputation. The goal should be to have contacts throughout the organization at every level. The more employees who become involved in technical training, the

more "pull" for technical training across the organization. Jim Collins (2001) describes the transformation organizations can undergo with increasing stakeholder involvement: "The good-to-great transformations never happen in one fell swoop. There was no one single defining action, no grand program, no one killer innovation, no solitary lucky break, no wrenching revolution. Good to great comes about by a cumulative process—step by step, action by action, decision by decision, turn by turn of the flywheel—that adds up to sustained and spectacular results." (p. 165). The more people in the company who are engaged in technical training, no matter what role they play, the more people will talk about it, making the stakeholders of technical training inherent marketers of technical training.

Summary: The Prospect of Marketing Technical Training

Increasing demands, including the need to market technical training, bring unique challenges or "hurdles" to the technical training organization. Once the hurdles are understood and addressed, training professionals must market their products and services by applying generally accepted marketing principles. This includes articulating the value proposition, scoping the target market and audience for technical training, developing a portfolio of technical training products and services, developing a training brand, and creating a dynamic marketing plan. This is a tall order and requires action on the part of training professionals.

As discussed in Chapter 2, the role of the training professional continues to change and simply designing and delivering training is no longer sufficient. In order to be a true strategic partner, training professionals must continuously grow their skills. "This new skill set includes a firmer grasp of business and finance; a more strategic overall mindset about the learning profession; a greater awareness of and responsibility for creating one's own brand within an organization; and a recognition that presenting the value of training and learning is a daily challenge, not a once- or twice-a-year event" (Bingham & Jeary, 2007, p. 1).

CASE STUDY: NEW PLATFORM, TRAINING, AND MARKETING FOR MICROSOFT UNIFIED COMMUNICATIONS

Bob Austin, director of Microsoft training, certification, readiness, and marketing for internal employees at a major telecommunications company, describes the challenges in developing and marketing strategic technical training in support of the Microsoft Unified Communications (UC) platform.

Value Proposition

Nearly four years ago, Bob's organization was challenged to develop an innovative way to build employees' knowledge and skills of Microsoft's UC platform. It wasn't so simple, however. UC is a recent push from Microsoft, Cisco, Nortel, Avaya, IBM, and a host of others in the IT industry to integrate traditional software and hardware applications with old and new voice technologies from traditional voice vendors. The business need was to develop a large staff of highly skilled and versatile data and voice experts who would be capable of selling, installing, and servicing a multi-vendor UC platform of services.

The Challenge

Since no one vendor offered a complete UC solution, employees had to be rapidly trained on how to collaborate with vendors, both partnering and competitive, in the development, deployment, and serving of UC solutions. A UC solution might involve collaboration with IBM and Microsoft, who own the market for email with Lotus Notes and Outlook, respectively, and Avaya, Nortel, Cisco, and Alcatel-Lucent, who integrate voice functionality into desktop applications. Rarely is an internal training organization expected to develop technical training involving multiple external products, technologies, and competitors. The UC platform was unique in that it required more than the company's own products and technology; it required effective collaboration with major IT competitors. An additional challenge was that the same technologies that were "hot" three years ago were already outdated, and hence knowledge acquisition would need to be continuous to enable employees to remain abreast of developments in the UC space. The training plan also had to be effectively marketed to engage employees to buy into the training plan and develop this new, highly sophisticated set of product and technology knowledge and skills.

Target Audience

The project started with, and continues to have, aggressive training goals for those in sales, engineering, software development, solution delivery, project management, and line management functions, many of whom had little or no experience with UC. As with just about every new talent development program, executive sponsorship of the training program was a first critical step. Executive motivation and sponsorship were high given the sales expectations, product deadlines, and training and certification targets in the business agreement with Microsoft. It was later discovered that additional stakeholders included middle and lower management ranks, who turned out to be the least motivated for change.

Marketing Plan

A comprehensive marketing plan was needed due to the large number of resources who would be committed and the new division that was needed to take the new line of products and services to the marketplace. Stakeholders had to understand what was available to them, what particular parts of the training menu would apply to their roles, and the process to gain the necessary skills. Looking back, the marketing plan answered the needs of executives on funding as well as the needs of the field sales and technicians on getting the work done, but did not address middle management (and hence the lack of motivation on their part).

Marketing Approach

Many of the communication efforts were low-key, and middle management had the responsibility of selecting qualified candidates to join the new division. The power bestowed upon middle management was sufficient, and ultimately their support of the initiative increased as their role and responsibility increased. As candidates were selected, details of the programs were provided to them, and they eagerly jumped onboard to enhance their skills and achieve some top-notch IT certifications in the process. After a core group of UC professionals became proficient, more employees willingly, and many on their own time, sought to increase their capabilities through numerous internal and external means. The core UC professionals created a plethora of service literature, including articles, brochures, case studies, data sheets, and white papers, and are actively hosting web seminars and participating in UC conferences.

Execution

With executives lined up to the vision, middle management feeling empowered, and line workers eager to start, execution of the plan began. The marketing plan did not end after the first execution; it continued for months, as many were eager to hear the certification results. The training had to be delivered initially on three continents, scaled quickly to over four hundred program participants, and had to be centrally planned, executed, and controlled from North America. The response was pure enthusiasm and the result was a strong individual commitment to a successful training experience, an important ingredient in a time-sensitive, vital training program. The willingness to work hard and to take advantage of the various pre- and post-course training resources was evident in the attitudes and actions of the trainees. The positive results helped to justify the investment that was required to train employees.

Summary

Continuous marketing of the internal training and certification program was critical to the program's success. The global program impacted employees on five continents, twenty-seven countries, and eleven time zones and resulted in hundreds of employees trained as Microsoft Certified System Engineers (MCSEs), Live Communication Server 2005 (LCS), Exchange and Office Communications Server (OCS) 2007 application specialists. The certification results and the level of qualified resources to hit the field motivated managers to continue their high level of involvement. Student satisfaction with the training is at an all-time high and has been measured at every stage of the initiative. Across the board, executive, middle management, and end-customer feedback has been overwhelmingly positive—a response that has fueled the continuation of the commitment to UC for the foreseeable future. In summary, the UC training and certification program resulted in collaboration across Microsoft and alliance partner companies to produce cutting-edge technologies, products, and processes for consumers.

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Technical Training Delivery and Evaluation

COMMON METHODS OF DELIVERY of technical training are discussed in this chapter, along with the preparation that is necessary to initially deliver technical training courses. Training evaluation is presented in the context of *formative evaluation*, which occurs before training is finalized, and *summative evaluation*, which is used to show the value, effectiveness, and impact of technical training. Factors within the work environment, including the support of managers and peers, are also seen as important contributors to the transfer of technical training to the job.

Preparation for Training Delivery

Once technical training materials have been developed and are ready for delivery, a number of preparatory activities should take place. Training

materials and technology should be piloted to discover any weaknesses in the design and make improvements. Instructors also have to be prepared to deliver training. Establishing a formal VI program is one way to ensure a steady stream of internal trainers.

Piloting Training Solutions

Technical training should be piloted, or tested, prior to implementation. The process tests the assumptions underlying the training, the design of the training, the materials, hands-on components, technology, and other equipment necessary to deliver the training. Flaws and improvements can be identified before the training is delivered on a larger scale. Technical experts typically appreciate the piloting process because it is a respected practice in their own functions. The amount of testing that is necessary will depend on the length, complexity, and delivery strategy of the training (Biebel, 1995).

Piloting is different from training content validation with SMEs, where the intent is to verify the accuracy and completeness of the training material. Significant revisions to content and/or reorganization may be required following a technical content review. If these are not completed before the pilot, the focus of the pilot will default to the adequacy of the training material, and the opportunity to test other aspects of the training will be foregone. So training content should be stable or nearly final prior to piloting.

All types of technical training can be piloted. If training is instructor-led, the instructors should be ready to deliver the training near or soon after the pilot. A master trainer or the instructional designer may deliver the pilot session, with VIs participating in the course along with a representative group of students. Participants are expected to take notes on any questions or comments they have about the material. The training should be delivered as intended, without any shortcuts, to test the flow and transition among activities. When there is a hands-on component or simulation, student performance should be observed to ensure instructions are clear and complete. Observations of the content sequencing, timing, activities, and hands-on components should be captured. The pilot may uncover flaws, omissions,

timing issues, and/or technology issues, among other things. A debriefing with participants following the pilot is useful to consolidate their feedback. If only minor changes are needed, the training may be ready for regular delivery. Unfortunately, due to some of the challenges associated with technical training, as mentioned in Chapter 2, it may not be possible to pilot all courses.

Establishing a VI Base

If the company does not already use internal technical experts to deliver training, it may be necessary for the training organization to develop a VI program—providing such a program is supported and modeled by the executives. A VI program leverages the expertise of skilled technical employees to teach peers and disseminate technical knowledge and skills to employees. Because VIs understand the technology, processes, and work environment within a company and are familiar with the culture, they are better able to demonstrate how technical content relates to the job. When they are known and respected for their expertise, VIs lend credibility to technical training activities. VIs' support of system implementations and process improvement initiatives is evident in their role as instructors. In general, technical expert involvement in training strengthens stakeholders' buy-in. It is also cost-effective and reduces dependence on vendors.

A VI program should include: a selection process for identifying instructors, a preparation phase to prepare them for teaching, an ongoing performance management process, and formal recognition for service. The best way to recruit instructors is through nominations from management. Selection criteria can be provided to ensure managers select technical experts who are best qualified to teach, such as those who have

- Technical expertise in the training content area
- Effective communication skills, in person and virtual
- Solid performer on the job
- Positive interest in training

Before nominated individuals are confirmed, they should be fully informed about the investment that will be made in them and what is expected from them.

Nominees often do not have formal training on how to instruct or teach concepts. Erin Buckley, a learning development specialist, explains that the training organization should make it easy for technical experts to become effective trainers: "Give them the essential tools for successful facilitation of learning events. Provide them with the course materials well in advance so they can become familiar with the content and flow of information. Share the basics of adult learning principles and presentation skills." The preparation process is explained in the next section of this chapter.

Once VIs are prepared to teach and have the opportunity to audit a few courses and co-teach with partners, an instructor development plan should be written as an informal contract between the VI, his or her manager, and the training organization. The contract should explain how instructor performance will be monitored and provide additional resources for instructors. Student evaluations are typically used to measure instructor effectiveness. This data mainly points out those instructors who are scoring in the lower range.

Highly effective instructors will be sought after, and their classes will fill up quickly. Because instructors are volunteers, monitoring their effectiveness should be done in a polite and helpful way. VIs should receive feedback on their courses in a supportive manner, with coaching on how to make improvements.

VIs are highly valued partners in the training process. Because of the two competencies involved—technology and training—they provide a level of expertise that training professionals alone cannot. It is important to show appreciation for their involvement through formal recognition events. First, let the organization know what the VIs are providing in terms of technical knowledge and skills. News articles and presentations on the success of the program can provide recognition for both the VIs and the training organization. While VIs often find intrinsic satisfaction in sharing their knowledge and teaching others, they should also receive personal recognition for their efforts. Recognition from executives and leaders is greatly appreciated, as well as plaques and gift vouchers.

Preparing Instructors for Training Delivery

Train-the-trainer (TTT) sessions are usually held to prepare instructors to deliver training. TTTs may be held in traditional classrooms or with blended solutions that include an instructor-led component. If the training involves a lab, simulation, or technology component, training on these teaching methods is also required. To properly prepare VIs to deliver technical training, the following are important points:

- **Technical expertise**—SMEs are well suited to be VIs because they have the requisite background knowledge. To be effective instructors, they must understand the training content thoroughly (McClellan & Pater, 2004).
- **Exposure to the training content**—VIs should be exposed to the course as students themselves. They should complete the course, tests, and hands-on components to gain the student perspective on the course design.
- **Instructional methods**—It is critical for technical experts who serve as VIs to gain delivery skills by learning adult learning principles and coaching and reinforcement methods and then practicing these skills.
- **Instructional technology**—For blended technical training, where the instructor incorporates instructional technology into the course, the VI needs to learn how to use the technology seamlessly. Many nuances have to be mastered for smooth transition between instructor-led training and online components (Bonk, Graham, Cross, & Moore, 2005).
- **Hands-on components**—Instructors need to master the demonstrations, hands-on components, and simulations in the sessions they teach. They need to demonstrate competence facilitating these components and effectively troubleshooting issues that may arise.

Importantly, the instructor needs exposure to the course he or she will teach and practice with any associated instructional technology. Boot camps, training sessions on multiple topics scheduled over the course of

several days, are useful to prepare VIs to teach. Courses, demonstrations, and practice sessions can be scheduled back-to-back in a boot-camp style to prepare groups of VIs.

VIs should deliver their first sessions of the course very soon after the TTT to ensure the content and instructional methods are fresh in their minds and their motivation is high. Pairing a new instructor with a master trainer or another VI is advised for the initial sessions to ensure all of the training material is presented.

Modes of Technical Training Delivery

As mentioned earlier, there is a general lack of information about technical training. This also holds true for technical training delivery methods. However, the training literature does shed some light on the predominant delivery methods, including classroom, e-learning, and blended training, all of which are discussed below. The role of hands-on training, simulations, social networking tools, vendor training, and mandatory training, as they relate to technical training, are discussed below.

Classroom, e-Learning, and Blended Training

ASTD (2009) found a higher incidence of classroom training (68 percent) than e-learning (32 percent) in their review of training delivery methods. Unfortunately, they did not analyze the data for delivery methods within specific content areas such as IT and systems training or profession and industry-specific training. It can be projected that, because technical training accounts for approximately 60 percent of training in the ASTD study, these statistics generally apply to technical training, which means that the predominant modes of delivery of technical training are classroom training, e-learning, and blended learning The literature on technical training corroborates this without giving specific numbers.

Traditional classroom training is still the most common form of delivery for any type of training. It is most effective for technical training when the technical skills to be taught require extensive practice of physical skills and interaction with others in a face-to-face setting (Baldwin-Evans, 2006).

Intact groups who attend classroom training together are more likely to support each other in applying the training back on the job. Classroom training may also be the best option to certify skills mastery. A major drawback of traditional classroom training is the lack of interaction with the instructor or with peers following the session. If they have difficulty applying learning on the job, students can email or call the instructor with questions, but problem solving and troubleshooting are left up to the student.

Some technical concepts and procedures can be effectively delivered through e-learning, which is more cost-effective and convenient than classroom training. For example, technical training content that can be delivered in short segments is well suited for e-learning. Bert Sandie, director of technical excellence at Electronic Arts, explains, "We have a new paradigm of learning. Now we are moving everything online, delivered via pod casts, audio casts, and open portals. The need for classroom training is not as high, and instead we need to enable SMEs as peer mentors, give them tools to share knowledge, and make it easy for them." A major benefit of e-learning is that it can be deployed relatively easily and consistently to employees in dispersed locations.

The blending of classroom training with e-learning and/or collaborative learning technology is a great way to obtain the benefits of both delivery methods. An example of blended learning is a course that includes prerequisite reading (online pre-work), classroom instruction, self-paced practice, a follow-up virtual meeting, and ongoing discussion threads. A major advantage in this case is the ongoing interaction and support of the instructor and students that extends beyond the classroom session. Another example is provided in the next sidebar.

Blended training is particularly helpful when learners need to access technical content and reference material on the job. A classroom component of blended training can provide instruction on how to locate, access, and use relevant information in training databases, and the database can subsequently be accessed "just in time" when needed on the job. The case study on technical training at Toyota Motor Sales in Chapter 5 explains the portfolio of training services that technicians receive, including hands-on classroom training and

BLENDED TECHNICAL TRAINING IN THE TRANSIT INDUSTRY

Kristen Strandy, a training manager for a security provider in the transit industry, is responsible for delivering blended technical training solutions on video surveillance products to equipment manufacturers and customers. Her students are mechanics, maintenance technicians, and operations managers. Strandy delivers interactive classroom-style training at the customer site, with training modules on system functionality, equipment installation, device configuration, storage logistics, system commissioning, and troubleshooting. Strandy tailors the material to meet site-specific requirements. Instructor led demonstrations using both training and customer-owned equipment augment and reinforce classroom lessons. Attendees receive supporting documentation, including step-by-step instructions for commonly accessed functions and configurations, equipment specification sheets, wiring diagrams, system commissioning, quality check forms, and a DVD containing all training material and presentations. Strandy follows up with live WebEx® training sessions following the site training to review and reinforce product features and functioning.

a vehicle diagnostic tool called "Techstream" that allows just-in-time access to repair information and online training resources. Blended learning does require careful integration and organization of the learning across the delivery methods (Weinstein, 2008).

Hands-On Components and Simulations

Unlike other types of training, technical training often has a hands-on component to facilitate technical skills development. This may involve use of equipment, procedures, and/or technology in the training session. With the opportunity to practice skills, students are more engaged in the learning process, have better knowledge retention, and are better able to apply concepts to the job. With instruction and the opportunity for practice, students learn

more than theory: they gain skills and receive immediate feedback on their performance. The hands-on component also increases the variety of learning methods to make training more exciting and immediately applicable. Developing hands-on components for technical training can be costly, however. As mentioned in Chapter 6, designing, setting up, and troubleshooting a hands-on component can take an inordinate amount of time.

When it is not safe or feasible in the real world to practice technical procedures—due to the potential for costly accidents or equipment or system damage—computer simulations are used to enhance learning and skills acquisition. Computer simulations offer a risk-free environment for students to master new skills, presenting an artificial duplication of the environment for the purposes of learning and skill practice. With advances in simulation software, complex, realistic scenarios and environments can be created, manipulated, and controlled, providing excellent learning opportunities.

The range of simulations that are used in technical training vary greatly. Simulations may be instructor-led and computer-assisted in a blended solution, self-paced computer simulations, or computer simulation games. For example, call center agents use software simulations to learn business transactions. The simulation emulates the software application and presents various interactive business scenarios for agents. The agents make decisions based on the scenarios, which result in different outcomes. When simulations are used as part of a blended learning solution, the simulation complements and reinforces the other learning methods. Self-paced simulations allow students to work independently at their own pace and to practice as needed. Besides the cost, computer simulations can have issues related to reliability, validity, user system requirements, and the need for frequent software upgrades. Nonetheless, the benefits of simulations for technical training can far exceed the costs and limitations. Bell, Kanar, and Kozlowski (2008), in a review of current issues and trends in simulation-based training, noted that "today's high-end technologies offer the capability to provide information-rich content and immerse trainees in high fidelity, dynamic simulations." In fact, virtual reality simulations are used in a number of industries today as a method to engage and train audiences (Aggarwal, Balasundaram, & Darzi, 2008).

Simulators are used in the military, aviation and nuclear industries and in the surgical field to effectively train people on technical procedures in high-stakes environments (Special Report, 2008). For example, simulators can mimic driving a train, advanced life support, surgical procedures, flight control, and air traffic management without the risks associated with the real environment. The case study of Lufthansa Airlines presented in Chapter 2 is an example.

Social Networking and Collaborative Technology

A common informal means of sharing knowledge and expertise is through a Community of Practice (CoP). Members of CoPs share a common interest in a specific discipline, function, or profession and collaborate on topics based on their interest and passion. CoPs are self-organizing. The discussions are often focused around work-related problems, obstacles, and solutions and therefore can be a competitive advantage for a company. It is widely recognized that technology supports CoPs to enable people in different locations and time zones to network and share their expertise. Recent studies show that there has been an enormous increase in people who desire to share their expertise, opinions, and time with others through social networking and collaborative technologies (Bingham, 2009). Terrence Seamon, a training consultant, explains that "these new tools are expanding our paradigm of workplace learning. They are all about linking learners. And the links are direct (learner to learner) and can happen anywhere, any time."

The collaborative technology that can be used to support informal learning and knowledge management include wikis, blogs, discussion forums, and online communities. The benefits of these technologies, when used in support of CoPs or learning in general, include:

- Increased access to experts, resources, and help
- Increased networking, knowledge sharing, collaboration, and problem solving across the company
- Just-in-time learning on the job from experts within the company

Collaborative technology will not replace or eliminate the need for formal training; it can, however, be embedded into formal training. Training

professionals should find out which social networking and collaborative technologies technical experts prefer and embed those into training. Training professionals can also use discussion forums to obtain advice from experts on a range of training topics: content, training needs, preferences, and so on.

If CoPs do not exist, the training organization can develop the business case to initiate CoPs in strategic areas and encourage technical leaders and technical experts to facilitate them for the purpose of enabling informal learning and development of expertise within the company. Don Gladney, a doctoral student in the educational technology program at Pepperdine University, notes: "Learning happens all the time and everywhere. Learners don't care about the training organization's need to count, track, and control—they simply want or need to learn something. The informal network tends to be self-correcting fairly quickly, and good information builds reputations and references. Make it easy and more people use it. Make it valuable and even more people will use it."

Vendor-Supplied Technical Training

In some instances it is cost-effective and appropriate to engage vendors to deliver technical training. For example, when training vendors specialize in new technologies, they may be the sole source on the subject. Vendor training may also be part of a multi-million-dollar equipment or technology purchase and therefore should be leveraged. Certifications, such as those required on the job for safety, may be easiest to complete through an external certification body that maintains performance standards. Vendor training may be offsite, onsite, generic, or customized training. Consultants and/or contract training professionals can support the full range of technical training–related activities. The potential to augment the technical training portfolio with vendor training as part of a short- or long-term solution should be considered.

Vendor training can extend the capabilities of the technical training organization; however, there are a number of considerations. Training vendors have preferred delivery methods and technology, and some will be more flexible than others in accommodating a global training audience

and the company's internal training processes. For example, not all vendors will release their copyrighted training material for electronic delivery to students. Vendor instructor skills will vary. Some will be more proactive in managing customer satisfaction with trainers. While customizing vendor training increases cost, generic versions of vendor courses may not meet the needs of students and may be overloading them with irrelevant information. The use of vendor training may also lead to fragmentation of the overall training program if the content is not well aligned to training objectives. For worldwide training delivery, multiple vendors and courses may have to be evaluated for delivery to dispersed employees.

We have several recommendations for incorporating vendor training into the technical training portfolio: (1) start out small with vendors in low-risk areas in which vendors have been successful in the past; (2) ask technical experts for their preferred technical vendors; (3) send technical experts to audit vendor training offsite before organizing sessions of vendor training onsite; and (4) check the vendor's references. On average, if six or more people have to be trained, bring a vendor onsite to lower the cost. Build relationships with vendors over time and assess their flexibility and willingness to collaborate on cost-effective solutions such as credits, vouchers, and volume discounts. Once vendors are onsite, they may attempt to solicit additional contracts directly with the business, without the involvement of the training organization. Therefore, address the authorization of training engagements, evaluation of instructor effectiveness, use of copyrighted material, and other issues up-front and put them in the contract with the vendor.

Training services such as design, e-learning, and training technologies can be outsourced. Outsourcing requires proper planning and strategic foresight. The business case for outsourcing must be compelling, and resources will have to be used to manage the vendor contact, fee structures, and ongoing supplier management.

Mandatory and Compliance-Driven Training

Although mandatory and compliance-driven training is not a delivery method per se, it warrants mention because of its prevalence in technical

training. An industry report (ASTD, 2008) showed that mandatory and compliance training comprises 14 percent of training budgets and is particularly critical in regulated industries such as financial services and healthcare. Mandatory training includes both technical and non-technical training. Required training that pertains to laws and regulations, codes of conduct, and ethics is often delivered and tracked by HR, legal, or finance. Examples are sexual harassment, insider trading, conflicts of interest, bribery, and financial integrity. Many companies address HR-required training with self-paced e-learning modules and testing to ensure courses are completed in their entirety. HR or legal typically tracks completion rates and follows up with the managers of employees who have not completed the training. LMSs are enabling more efficient tracking of required training.

Employees generally are not excited about such required training, and hence motivation to complete it in a timely manner often is an issue. Student no-shows, cancellations, and rescheduling are not uncommon so negative consequences are sometimes planned to increase compliance. For example, employees who do not download critical IT patches and follow brief training instructions are locked out of their network accounts if they have not completed the prescribed training. While it is annoying to get a call from a manager or become disconnected from the network, the consequences are mostly minor. In many companies the lack of consequences is a big issue because it takes away the incentive for employees to complete the training.

Required technical training is more complicated. One type is regulatory training mandated by government. Examples include training that is regulated by the Occupational Safety and Health Administration, Environmental Protection Agency, and Federal Drug Administration. Regulatory training may apply to all employees in a company or to specific job classifications. A key differentiator between required technical training and required non-technical training is that there may be serious consequences to mishaps, errors, or failures in the former case. For instance, the consequences of failing to follow OSHA safety requirements may be loss of job, loss of license, severe injury, or even death. Because of the potential severity of the consequences, regulatory training is typically conducted by a certified instructor

in a traditional classroom setting with hands-on, practice components to ensure mastery. The emphasis is on skills development and the ability to problem solve and respond to various scenarios.

Not all required technical training is externally regulated. Some is mandated by the company or expected within the profession to gain a standard level of mastery. In these cases, required training is associated with specific jobs and roles. The amount of time dedicated to required technical training can be significant. Therefore, planning and coordination are required. When the amount of required training is significant, programs are often established to facilitate compliance and make it as easy for employees as possible.

Evaluating Technical Training

Training professionals and their stakeholders want to know that the technical training they have designed and invested their time and money for is of high quality and results in increased or enhanced job performance. Training quality and various factors in the work environment can support or thwart the practice of new skills. These enablers and barriers in the "transfer environment" need to be considered because of their impact on training effectiveness. When it comes to evaluating the outcomes of technical training, there are many theories but few practical case studies, examples, or detailed instructions on how to determine the business impact of such training.

Transfer of Training to the Job

Training transfer, or learning transfer, generally refers to an employee's ability to apply knowledge and skills learned from training to the job. Training transfer is an important concept because the training is not likely to influence performance unless training transfer occurs.

Transfer may be easier to achieve in technical training than in other types of training. Technical employees often seek out technical training on their own and are motivated to dive into new technical topics. Generally speaking, they embrace technical concepts and technology and are eager to try out what

EVOLVING DEFINITIONS OF TRAINING TRANSFER

Broad and Newstrom (1992) originally defined training transfer:

> **Transfer of Training**—the effective and continuing application, by trainees to their jobs, of the knowledge and skills gained in training

Broad (2005) more recently updated the definition to focus on performance as opposed to training, to include all types of learning experiences and not merely training, and to broaden the training audience. The newer definition is

> **Transfer of Learning to Performance**—the full application of new knowledge and skills to improve individual and group performance in an organization or community

While the focus of our book is on technical training, the more recent definition highlights the improvements to individual and group performance that executives and managers expect from training.

they learn. Training knowledge is more easily transferred when it is applicable to the job and the conditions under which it was learned are similar to the work environment. And technical training is typically more relevant to the job than other types of training and therefore more easily transferred. Technical training frequently has a hands-on or simulation component, as discussed earlier in this chapter, which further reinforces learning and application. Technical training content also tends to be more objective: there are "right" ways of doing things and practicing technical skills either works or does not work. Feedback on one's performance tends to be immediate. The technology or machinery either functions or it does not and an experiment either works or does not, so learners quickly recognize when they did something wrong. Because managers of technical employees are not always expected to have the same depth of expertise as their employees, managers may not be able to guide or coach employees when they are back on the job.

In contrast, employees often complete personal effectiveness training because their manager recommended it. While skills practice should be

incorporated into personal effectiveness training, often in the form of role plays and business simulations, there are many ways to demonstrate personal effectiveness skills. The content is more subjective, and the feedback about one's practice of personal effectiveness skills is not automatic or clear-cut. The employee must enlist management or a trusted peer to observe his or her performance and give feedback. Feedback also varies in terms of its helpfulness. In an ideal scenario, managers can provide coaching and feedback for learning personal effectiveness skills because they have mastered the skills themselves.

A review of the research on training transfer is useful for identifying those conditions and actions that will best support technical training transfer. In their review of the literature, Burke and Hutchins (2007) summarized important characteristics related to the design of training, the learner, and the work environment that impact training transfer. These characteristics are shown in Table 10.1.

Several factors associated with the design of training positively influence the transfer of learning. The learning goals focus the learner's attention and ensure the training is conducted in an effective and efficient manner.

Table 10.1. Research on Training Transfer

Training Design	*Learner Characteristics*	*Work Environment*
• **Learning goals:** Learning goals and objectives focus learners' attention and energy.	• **Cognitive ability:** The learner's general mental ability related to training.	• **Transfer climate:** Those situations and consequences in organizations that inhibit or facilitate the use of training on the job.
• **Content relevance:** Learners perceive training to be more valid when it is consistent with the work environment.	• **Self-efficacy:** The learner's competency to perform tasks associated with training.	• **Opportunity to perform:** The opportunity to use new learning in the work setting.

(*continued*)

Training Design	*Learner Characteristics*	*Work Environment*
• **Practice and feedback:** Performance of new skills in training with feedback increases learning.	• **Anxiety/negativity:** A learner characteristic that may negatively impact learning and training transfer.	• **Manager support:** Support learners receive from their managers to use their new skills and knowledge.
• **Behavioral modeling:** Observing examples of both effective and ineffective performance increases learning.	• **Openness to experience:** A characteristic that may positively impact learning and training transfer.	• **Peer support:** Support learners receive from peers and colleagues to use new skills and knowledge.
• **Error-based examples:** Sharing examples of what can go wrong (mistakes) increases learning.	• **Motivation:** The intensity and persistence of the learner's efforts in learning before, during, and after training.	
	• **Perceived usefulness:** A learner's perception of the value of the training.	
	• **Career planning:** A learner's perception of the benefits of the training in enhancing current or future job performance.	
	• **Organizational commitment:** A learner's interest in gaining new knowledge at work based on commitment to the organization.	

Modified from Burke and Hutchins, 2007.

The content must be relevant to the job and consistent with the work environment. It is less about how to transfer concepts and theory and more about how to apply specific technical skills to the job (McLagan, in Holton, 2003). One of the challenges with vendor training is that it often includes

information that is not directly relevant to the company and job. Because it is not contextualized it is difficult for employees to transfer all the learning to the job. A training design that includes the opportunity to practice, receive immediate feedback, problem solve, and make corrections (typically part of technical demonstrations and hands-on exercises and simulations) facilitates training transfer.

The technical training organization has control over training design, but not over other factors influencing training transfer. While many of the characteristics that are associated with training transfer are inherent to individuals, they can be influenced by managers and peers. For example, a manager can influence an employee's self-efficacy by providing opportunities to acquire skills through assignments and mentoring. An employee's motivation is also influenced by the manager: both the manager's attitude and expectations about training and incentives and consequences tied to skills development can influence an employee's behavior to some degree.

Many factors in the work environment can serve as barriers to training transfer. For example, if the technology that an employee is trained on is not available in the work environment, the employee will not be able to apply the technical skills beyond what he or she practiced in the classroom. Or, if the technical skills apply to a certain technology and the employee does not have an opportunity to use the technology in his or her current work, the opportunity to use the new skills is lost. As with any learning, new skills need to be used and applied quickly or they will deteriorate.

Even though managers of technical employees are not expected to possess deep technical knowledge and may not be able to coach technical employees or guide them on technical subjects, managers still influence training transfer. When managers encourage transfer, employees are more likely to apply new skills on the job. Managers can support transfer or discourage transfer in both overt and indirect ways. Managers can support it by being aware of employees' training needs and including technical skills development in career development plans. Managers should discuss training with employees, including how it applies to the job, and support employees by providing the time, tools, equipment, and opportunity to

practice new skills. Managers can also create a culture of learning within their organizations by:

- Promoting networking, the sharing of ideas, and team problem solving
- Using intact training sessions whenever possible to enable peers to receive training together
- Expecting employees to teach peers following training
- Formalizing coaching and mentoring roles in support of learning and technical skills development

TRANSFERLOGIX™ TECHNOLOGY FOR MANAGING TRANSFER

Dr. Ed Holton, professor of human resource, leadership, and organization development at Louisiana State University and author of numerous research-based publications on training transfer, has developed a web-based integrated training transfer management system called TransferLogix™. His system focuses on those transfer factors that can be influenced and managed in an organization to achieve positive training outcomes. This comprehensive approach to diagnosing the organization has a greater potential for an impact on training transfer than examining transfer issues related to individual courses.

Holton's system is based on the Learning Transfer System Inventory™ (LTSI), a diagnostic survey for assessing potential transfer barriers such as managers' support, managers' sanctions, peer support, and/or resistance to change. With transfer barriers pinpointed for the organization, structured focus groups and interviews with employees can be held to identify potential solutions. Subsequent interventions might include manager training, getting employees more involved in training design, providing greater recognition to those who acquire and demonstrate new skills, and increasing manager feedback, among others (Holton, Bates, Bookter, & Yamkovenko, 2007).

(*continued*)

For organizations that want to maximize training investment, the TransferLogix™ system offers a number of automated features to enhance training transfer:

- Needs assessment capability
- Training behavioral objectives that link to training transfer
- The LTSI, which assesses transfer barriers across the organization
- Polling to identify transfer strategies from trainers and managers
- Solutions based on the results of the LTSI
- Transfer contracts that promote employee-manager goal setting and dialogue about training transfer
- Manager pre- and post-surveys to determine the positive impact on job performance
- Follow-up reminders on important learner and manager transfer actions

The online features of the system also include training event management and report generators. More information is available at: www.ltsglobal.com.

Because technology changes rapidly, technical employees are dependent on technical training and, whether they realize it or not, they need their managers to support their continued development.

Evaluation of Technical Training Programs

Training is evaluated to show its benefits, value, effectiveness, and impact, among other things. The results of training evaluation are used to improve training, justify training, and decide whether to continue training. Stakeholders value different aspects of training and, therefore, are more interested in certain types of training evaluation. For example, students care about the relevance of training and whether it is a good use of their time. Managers

expect employees to acquire skills they will use on the job. And executives want to see the overall impact of training relative to their investment.

Training evaluation focuses on formative or summative evaluation, although there are other methods, such as program evaluation. Formative evaluation is of interest to training professionals, SMEs, and students. It involves evaluating the process of training, including the instructional materials, content and design, learning objectives, delivery, technology, hands-on components, and so forth (Combs & Falletta, 2000). The purpose is to identify any weaknesses of the training, with the intention of improving it (Wang & Wilcox, 2006). Training professionals usually incorporate formative evaluation when they finalize training materials, following the steps of the ADDIE model. Training professionals recognize the value of testing the material during a pilot. They know that any shortcomings, omissions, sequencing issues, and so forth can be identified during the pilot and resolved thereafter. Training professionals who have the time to complete the training development life cycle will typically perform a formative evaluation to ensure the training product is of high quality.

Instructors will still be preparing to deliver the material at the time of the pilot. Feedback should be given to instructors about their training performance. There can be considerable variability in delivery across instructors, environments, locations, and cultures. Students are asked to rate instructor behaviors on a training evaluation form in the classroom or online. This provides a subjective measure of students' satisfaction with the training, the instructor, and the technology. While student training evaluation forms are thought to have shortcomings, they are a very economical way to quickly obtain students' feedback. However, they are subject to bias and do not always tell the whole story. Students may say one thing on a training evaluation form (rate the training as average) and another thing to their manager (say that the training was poor). If comments to a manager are negative, they may be escalated to the training organization quickly.

Executives are very interested in the outcomes of training, and summative evaluation addresses this. There are differing opinions on how to best evaluate training outcomes. Dr. Salvatore Falletta, associate professor of human resource development at Drexel University and founder of

Leadersphere, says: "Donald Kirkpatrick's model for training evaluation was first introduced in 1959 and has become the de-facto standard for measuring training and learning, despite its shortcomings and the availability of alternative evaluation approaches. The Kirkpatrick model is overly simplistic and doesn't consider many important intervening factors that enable or inhibit performance."

As we mentioned earlier, the Kirkpatrick model includes Level 1 (reaction to the training, instructor, technology, and classroom environment), Level 2 (learning), Level 3 (behavior or performance as a result of training), and Level 4 (the effects of students' performance on the business). Level 2 learning, is also measured relatively easily through the use of knowledge and performance tests. But the ability to pass a test does not directly relate to consistent practice and application of new skills on the job. This is about as far as most training professionals go. Nickols (2005) comments that "occasionally there is an attempt to determine transfer of training or behavior change on the job and job performance effects . . . (and) it is a rare effort to quantify the bottom-line effect of training and use that figure for ROI" (p. 125). Kirkpatrick also does not address factors in the transfer climate that might account for the success of training.

Concerning Level 4, Kirkpatrick and other researchers do not provide insight or practical examples of how to measure training results. Researchers agree that the complexity and difficulty of Level 4 evaluation is due to training being a subsystem within the larger organizational context; they confirm it is virtually impossible to isolate and attribute a particular business result to a training initiative because of so many other factors in the organization (Wang & Wilcox, 2006). It can be done however, by taking a baseline measure of specific operational indicators that training is anticipated to impact and then taking post-measures of the same indicators following training. However, this takes time and expertise and involves opportunity cost. Opportunity cost in this case is the opportunity to design and develop more training.

Besides Kirkpatrick's model, there are numerous theories of how to measure ROI. In promoting their theories, authors tend to criticize training practitioners for not measuring ROI, saying it may be due to their "lack of understanding of measurement theory and evaluation." If there were case

studies in the training literature on how to do so in a manner that was both cost-effective and credible to business stakeholders, practitioners would surely use them. However, we found few examples of how to do so.

One recent study of the impact of technical training on the organization is worth mention. Bowman and Wilson (2008) measured the effectiveness of performance-based training for national water system operators for the U.S. Environmental Protection Agency. By measuring water turbidity (the cloudiness caused by particles in drinking water) at participating water plants before and after technical training, they found improvements in plant filtration performance they attributed to training. Since turbidity is associated with bacteria and viruses, the researchers then estimated the potential health benefits resulting from the improvements in filtration. These results are an excellent example of the impact that technical training can have. However, the study had a complex experimental and statistical design and was carried out by a team of experts, which may be beyond the resource capability of many training departments.

In summary, formative evaluation is an instrumental part of the instructional design process that contributes directly to the quality of training materials. Summative evaluation is conducted routinely and includes indicators pertaining to student feedback, learning, and performance outcomes. Factors within the learning environment that affect training transfer are also evaluated on occasion. Evaluating the impact of improved performance (from learning) to bottom-line business results can be done in certain cases in which the technical skills directly relate to business operations. In contrast, ROI calculations are conducted much less often; useful resources on how to develop meaningful ROI calculations are lacking in the training literature.

The best advice we can give a technical training organization that desires to show the impact of technical training is to start small and organize an evaluation pilot. We recommend the following steps:

- Select a technical skill area and course that is strategic to the business and closely linked to critical business operations. A technical certification involving skill and performance mastery is ideal.

- Identify operational performance measures that can be attributed to employees' skill level (Berge, 2008). These are often related to time, quality, and cost.
- Select periods of time for gathering these performance measures, including a baseline before people are trained and certified.
- Request support from statisticians or process control experts in the organization to analyze and display the results.

When you demonstrate success at a small level with a hand-selected technical training course or program, executives and other stakeholders will provide feedback on whether further evaluation should be conducted. To learn more about evaluation, we suggest you refer to *The Targeted Evaluation Process: A Performance Consultant's Guide to Asking the Right Questions and Getting the Results You Trust* (Combs & Falletta, 2000) as an alternative to the Kirkpatrick approach.

Summary: Learning from Technical Experts

Technical experts are heavily involved in technical training. In this chapter—and the entire book—we have emphasized the importance of involving technical experts in technical training. The training organization is dependent on technical experts. Their involvement increases the credibility, quality, and relevance of training. Ideally, technical experts are passionate about learning and agree to teach others. With the popularity of social networking and collaboration technologies, technical experts can share their knowledge and help others solve technical problems. Technical expert involvement in both formal and informal technical learning is a competitive advantage for a company due to the increased networking, teaching, collaboration, and problem solving it affords. The establishment of a VI development program is a strategic investment in both learning and improved performance. Furthermore, evaluating technical training programs and training transfer serves to identify necessary improvements as well as demonstrate the value and effectiveness of training.

CASE STUDY: LEARNING TECHNOLOGY AT DREXEL UNIVERSITY

John Morris, the chief technology officer of the Center for Graduate Studies of Drexel University in Sacramento, California, was instrumental in designing the learning technology system that is in place today, which contributes to the university's ranking as one of the best technological colleges as reported by *U.S. News & World Report*. Drexel was the first university to require all students to have microcomputers in 1983 and 1984 and originally began offering online learning in 1996, long before the proprietary universities that offer online education and training today.

The integrated system of technology that Drexel uses to engage students in the learning process at its graduate center include the following technical components:

- Fully outfitted classrooms with "content" podiums, embedded microphones, video cameras, flat-panel monitors, content projectors, multiple SMART Board™ interactive whiteboards, and integrated HD video conferencing
- "Content" podiums providing content source (computers, DVD/VHS/CD), audio, video, and display management through the use of interactive touch screens
- Collaborative environment integrating multiple device types such as laptop computers, PDAs (Palm©, iTouch©), and smart phones (iPhone©, RIM Storm™)
- Live web-casting/webinar capabilities from desktop or room
- Scheduled and ad hoc room and desktop content capture for pod-casting and vodcasting
- Ad hoc feedback and polling through the use of Turning Technologies' web, PDA, and smart-phone-capable ResponseWare™
- Multiple wireless network systems for both open and secure connection and security
- Virtual collaboration software: Wimba Live Classroom©, Adobe® Connect™ Pro and GoToMeeting™
- Learning management system with Blackboard© (Classic and Vista) and full online teaching capability and online student portal

The SMART Boards™, a product of SMART Technologies ULC, display content on an electronic touch screen whiteboard. The flexible pen-and-finger system allows the instructor to incorporate information and graphics into the content on the fly with the touch of a hand or the swipe of a pen. The content, with added notes and illustrations, is saved along with the video and audio components of the session for students to review online. In fact, students are encouraged to minimize note-taking so they fully engage with the instructor and actively contribute to discussions. Because every class is scheduled to be captured, synchronized, and available online within hours of the session, the content can be used for multiple purposes:

- Learning on demand for students who missed the session or those who desire to review key parts of the session
- Supplemental material for online courses
- Source material for frequently asked questions (FAQs)
- Reusable learning objects, or learning artifacts, for subsequent sessions

One of the goals of the learning technology is to get instructors out from behind the traditional podium. Use of the technology at Drexel is easy due to its intuitive design. Lynn Ryan, academic technology support coordinator at Drexel, trains instructors on how to use the technology, and they quickly become proficient. The system is user-friendly and hence instructors don't usually worry about the technology while teaching. Instead, they can focus on engaging with students and the content they are delivering. Moreover, instructors don't have to keep turning around to reference content they are presenting on the SMART Boards™ since the classroom is configured with multiple flat-panel monitors that display content from the back of the room as well as the front. These monitors also display video feeds of students in remote locations who are participating in the session. The andragogy is supported by Drexel information technology staff at the center during class hours and from Drexel's main campus in Philadelphia continuously.

Students in the graduate programs at the Sacramento Drexel campus are taught how to use the technology and are expected to incorporate it into their presentations and group work and take these skills back to the job. Carl (Tobey) Oxholm III, senior vice president and dean of the graduate center, confirms that "the Drexel degrees we offer are designed to give our students the substantive knowledge and practical skills they will need to succeed in their careers. The learning environment at our graduate center is a key component of fulfilling our educational mission, because it is (or soon

will be) how the world really works." The expectations are high for instructors and students to be able to convey ideas, communicate, work in virtual groups, and engage with those in the session as well as others at remote sites.

With the technology, Drexel is able to offer a full continuum of learning, from face-to-face to online. John Morris explains: "We assume face-to-face traditional classroom learning is the best method. However, some learners don't engage well when only one learning method is available." For individuals with a keen interest in technology and those who desire the flexibility that hybrid learning models afford, there is ample opportunity to experience the best in learning technology at Drexel University.

GLOSSARY

ADDIE	A popular instructional design life cycle that includes the following phases: analysis, design, development, implementation, and evaluation. The phases form the acronym ADDIE.
Advisory Team	A team that is formed to provide expert input to the technical training organization on training requirements, priorities, content, and delivery.
American Society for Training and Development (ASTD)	An international professional association and leading resource on workplace learning and performance issues.
Benchmarking Forum (BMF)	The American Society for Training and Development Benchmarking Forum.
Budgeting	Forecasting future expenditures and revenues.
Business Model	A high-level visual representation of how an organization serves, or intends to serve, its customers and stakeholders.

Business Training	Training on concepts that teach skills to understand and work effectively within a company.
Capability	A quality, ability, or feature that has the potential to be used or developed.
Chief Executive Officer (CEO)	One of the highest-ranking corporate officers (executives) or administrators in charge of a company.
Chief Information Officer (CIO)	The head of information technology within a company.
Chief Technology Officer (CTO)	The head of technology within a company.
Computer-Based Training (CBT)	A form of training delivery involving use of a computer.
Content Authoring/ Management Systems	Technology used to develop and manage training content through prompts, navigation, help files, and alerts.
Contextualization	Putting technical training content within the appropriate business or technical context to increase understanding and application.
Coopetition	A business term referring to "cooperative competition," wherein competitors work together in areas where they do not have a competitive advantage for the purpose of sharing costs.
Differentiators	Factors that distinguish technical training from non-technical training.
Funding	Allocating resources to line items on a budget.
Human Resource Development (HRD)	The process of developing and unleashing expertise for the purpose of improving individual, team, work process, and organizational system performance (Swanson & Holton, 2009).

Integration	A set of project management processes for controlling information, requirements, and change control to enable a large multifunctional team to stay in sync with program decisions and changing business conditions.
IT Training	Training on content involving the development, maintenance, and use of computer systems, software, and networks.
Learning Management Systems (LMS)	Software or web-based technology for training administration, content management, training delivery, evaluation, and/or other learning functions.
Mission Statement	A statement that describes an organization's purpose or reason for existence.
Non-Technical Training	Training that is not technical training, for example, personal effectiveness or business training.
Occupational Safety and Health Administration (OSHA)	An agency of the U.S. Department of Labor with the mission to prevent work-related injuries, illnesses, and deaths by issuing and enforcing rules (called standards) for workplace safety and health.
Operating Model	A high-level visual representation of important relationships and repeatable processes the technical training organization uses to operate.
Opportunity Cost	The value of the next-best alternative that is foregone as a result of making a decision.
Personal Effectiveness Skills	Skills that enable individuals to understand and manage themselves.
Personal Effectiveness Training	Training on content that teaches skills to understand and manage oneself.

Return on Investment (ROI)	A ratio of the benefit or profit derived from a specific investment, compared with the cost of the investment itself.
Scalability	Potential for variability and expandability as a competitive advantage.
Society for Human Resource Management (SHRM)	An international association devoted to human resource management.
Stakeholder	Anyone who has a stake in technical training, is affected by technical training or the problem it will address, or can assist with technical training.
Stakeholder Management	The organized process of identifying stakeholders, assessing their needs, designing solutions, and delivering them in an organized and systematic way, maintaining communication and dialogue with the stakeholder.
Steering Committee	A group of senior stakeholders who provide guidance, direction, and strategic decision making.
Strategy	A pattern of decisions and actions evident in an organization over time (McGee, 2005).
Subject-Matter Expert (SME)	An expert in a particular area or subject matter, technical or non-technical, who assists with training content development.
Talent Management	The implementation of an integrated strategy or system designed to increase workplace productivity by developing improved processes for attracting, developing, retaining, and utilizing employees with the required skills and aptitude to meet current and future business needs (SHRM, 2009).
Team Charter	A document that describes a team's mission and objectives and other information such as scope, team member roles, and decision-making processes.

Technical Functional Training	Training on content specific to a discipline, function, or profession.
Technical Leader	An employee with extensive knowledge and skill in a technical discipline, function, or profession who has risen to a formal or informal leadership position within the organization or company.
Technical Training	Training on content related to any technology.
Technology-Based Training (TBT)	A form of training delivery involving use of technology. It includes both computer-based training and web-based training as well as other technology such as Internet, satellite, broadcast, audio or videotape, or interactive television.
Training	The process to obtain or transfer knowledge, skills, and abilities needed to carry out a specific activity or task (modified from SHRM, 2009).
Training Needs Assessment	A method that training professionals use to gather stake holders' training needs.
Training Needs Analysis	The process that training professionals use to analyze and validate training needs.
Training Strategy	A formal training plan, including the organization's vision and mission, strategic goals, guiding principles, business and operating models, portfolio, and roadmap.
Vision Statement	A statement about an organization that presents an aspiring view of the future and asserts what the organization is best at or seeks to achieve.
Volunteer Instructor (VI)	A technical expert or subject-matter expert who volunteers to serve as an instructor to train peers.
WIIFM	An acronym for "What's in it for me?" pertaining to stakeholder interests.

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"*Demystifying Technical Training* is a must-read for CLOs, managers of training, instructors, and instructional designers. All who read it will gain critical insights into how to lower the cost and improve the efficiency and effectiveness of learning."

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