

Training Programs, Processes, Policies, and Practices

DETAILS

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NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

NCHRP SYNTHESIS 362

**Training Programs, Processes,
Policies, and Practices**

A Synthesis of Highway Practice

CONSULTANT

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SUBJECT AREAS

Planning and Administration

Research Sponsored by the American Association of State Highway and Transportation Officials
in Cooperation with the Federal Highway Administration

TRANSPORTATION RESEARCH BOARD

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NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

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FOREWORD

*By Staff
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Highway administrators, engineers, and researchers often face problems for which information already exists, either in documented form or as undocumented experience and practice. This information may be fragmented, scattered, and unevaluated. As a consequence, full knowledge of what has been learned about a problem may not be brought to bear on its solution. Costly research findings may go unused, valuable experience may be overlooked, and due consideration may not be given to recommended practices for solving or alleviating the problem.

There is information on nearly every subject of concern to highway administrators and engineers. Much of it derives from research or from the work of practitioners faced with problems in their day-to-day work. To provide a systematic means for assembling and evaluating such useful information and to make it available to the entire highway community, the American Association of State Highway and Transportation Officials—through the mechanism of the National Cooperative Highway Research Program—authorized the Transportation Research Board to undertake a continuing study. This study, NCHRP Project 20-5, “Synthesis of Information Related to Highway Problems,” searches out and synthesizes useful knowledge from all available sources and prepares concise, documented reports on specific topics. Reports from this endeavor constitute an NCHRP report series, *Synthesis of Highway Practice*.

This synthesis series reports on current knowledge and practice, in a compact format, without the detailed directions usually found in handbooks or design manuals. Each report in the series provides a compendium of the best knowledge available on those measures found to be the most successful in resolving specific problems.

PREFACE

This synthesis will be of interest to state transportation agency personnel, the FHWA, and a variety of other transportation organizations that understand the value of robust and flexible training and development programs. AASHTO, the National Highway Institute, and other similar entities have identified training and development as a significant tool to ensure that state departments of transportation (DOTs) can attract and retain a well-qualified workforce. This synthesis is based on an understanding of the critical importance of training and development activities within state DOTs and the ability of state DOTs to attract, retain, and manage the talents of the workforce. It focuses not on specific training needs nor courses or competencies, but on program components required to have a sound set of policies, processes, and procedures for planning, developing, implementing, funding, and evaluating state DOT training, development, and education programs. It reflects an understanding that the rationale for training programs has changed. Today, the value of human capital programs is seen in direct proportion to the program’s ability to enhance the workforce capability to achieve the organization’s strategic goals and objectives.

A literature review is presented along with a discussion of survey results from 24 states, as well as information gleaned from follow-up telephone calls and focus groups convened at the 2005 state DOT training directors’ annual conference. In addition, interviews with a variety of public and private sector thought leaders in public administration, transportation, training, development, and education yielded insights that are integrated into the report. Appendices offer detailed survey responses, as well as additional information for training organizations in state DOTs.

Myra Howze Shiple, Randolph Morgan Consulting LLC, Woodbridge, Virginia, collected and synthesized the information and wrote the report. The members of the topic panel are acknowledged on the preceding page. This synthesis is an immediately useful document that records the practices that were acceptable within the limitations of the knowledge available at the time of its preparation. As progress in research and practice continues, new knowledge will be added to that now at hand.

CONTENTS

- 1 SUMMARY

- 3 CHAPTER ONE CHALLENGE OF MAINTAINING A KNOWLEDGEABLE WORKFORCE
 - Introduction, 3
 - Project Scope and Objectives, 4
 - Study Procedures, 5
 - Organization of Synthesis Report, 5

- 7 CHAPTER TWO ESSENTIAL COMPONENTS OF AN EFFECTIVE TRAINING PROGRAM
 - Introduction, 7
 - Trends Transforming Government, 7
 - Trends Transforming Workforce and Workplace, 8
 - Demand for a Knowledgeable Workforce, 9
 - Critical Role of Strategic Planning, 10
 - Competencies as a Foundation for Training Programs, 10
 - Succession Planning, 12
 - Training Organization, 13
 - What Is the Value Added?, 20

- 21 CHAPTER THREE EXPERIENCES OF STATE DEPARTMENTS OF TRANSPORTATION
 - Introduction, 21
 - State Department of Transportation Practices, 21
 - Strategic Planning, 21
 - Training Needs Assessment, 22
 - Critical Needs Assessment, 22
 - Organization Structure, 23
 - Delivery Mechanisms, 23
 - Funding Sources and Methods, 24
 - Training Evaluation, 25
 - Professional Certification and Related Programs, 25
 - Partnerships, 25
 - Opportunities, Challenges, and Constraints, 26
 - Sharing and Integrating Information, 26
 - Summary, 27

- 28 CHAPTER FOUR SUCCESSFUL PRACTICES FROM BUSINESS AND GOVERNMENT
 - Introduction, 28
 - American Society for Training and Development—BEST Awards, 28
 - Planning Training and Measuring Results, 29
 - Successful Practices in Training Program Design, 29
 - Successful Practices in Technology, 29
 - Managing the Tsunami of Change, 30

Training Metrics, 31
Succession Planning, 31

33	CHAPTER FIVE	CONCLUSIONS
34	REFERENCES	
35	BIBLIOGRAPHY	
36	APPENDIX A	QUESTIONNAIRE FOR STATE TRANSPORTATION AGENCIES
78	APPENDIX B	LIST OF PARTICIPANTS
79	APPENDIX C	ASTD 2005 STATE OF THE INDUSTRY REPORT: ASTD'S ANNUAL REVIEW OF TRENDS IN WORKPLACE LEARNING AND PERFORMANCE
83	APPENDIX D	ASTD COMPETENCIES STUDY
88	APPENDIX E	ADDITIONAL RESOURCES

TRAINING PROGRAMS, PROCESSES, POLICIES, AND PRACTICES

SUMMARY State departments of transportation (DOTs) offer an impressive array of training products and services to their very diverse workforces. Many have developed not only the more traditional course offerings in workplace skills (e.g., planning, interpersonal skills, communications, dealing with difficult people, and a great deal more), but also provide a wide variety of technical training, registration and certification programs, and assistance to their engineering, information technology, and other technical and professional staff. State DOTs either directly or through partnerships with colleges, vocational training organizations, and similar institutions offer technical and workforce skills training for the road construction and maintenance staff. Based on the information provided by survey responses and discussions with state DOT training directors at their annual conference in August 2005, there appears to be a culture in many agencies that values employees and understands that a successful organization must make strategic investments in its workforce both to maintain current skills and knowledge and to acquire new skills and knowledge. A number of the state DOTs have taken advantage of new technology and new adult education learning tools and techniques. Thirteen of the 16 state DOTs responding (of the 50 receiving the survey questionnaire) identified one or multiple technology tools, including learning management systems, video conferencing, and web-based training to enhance their training management and delivery capabilities. This level of investment was reinforced by the directors of training and others from state DOTs who attended the 2005 Training Directors conference. Finally, almost all of the DOTs responding to the survey and attending the 2005 Training Directors conference reported that they have either a strategic plan that clearly articulated the organization's programmatic goals and outcomes or a similar document that guided the content of their training programs and the infrastructure needed to support those programs. This direct correlation between the organizations' strategic goals and outcomes and the content of training programs is an essential ingredient for successful employee development in the first quarter of the 21st century.

These organizations also described being in the midst of major transformations that present complex program and management challenges, especially with regard to developing the workforce. In a number of state DOTs, parts of the agencies' training programs, particularly in the areas of planning and execution, have gaps and missing links when it comes to completeness, integration, and specificity. The majority of the responding agencies has strategic or business plans with measurable goals and outcomes and has identified some or all of the competencies required in the workforce to accomplish the identified goals and outcomes. However, fewer than half of these DOTs noted that they had assessed the competency level of the workforce, and even fewer have well-developed and implemented succession plans for occupations at any level of the organization. This proportional relationship was reinforced by discussions with training directors and others who attended the 2005 Training Directors conference. Therefore, although the training function understands the importance of ensuring that the workforce has the competencies to produce the products, goods, and services required, it does not yet have in place mechanisms to assess the presence or absence of those competencies in the current workforce. Similarly, most of the training organizations have evaluation methodologies that provide insight into the quality of the program and the learning that takes place for participants, but few then link the evaluation results with funding requests or with the distribution of funds to ensure that the most critical needs are being met.

The lack of strategic alignment and linkage is a significant issue for the state DOTs and one which, if not addressed, can undermine much of the successful work and programs that are currently in place.

Studies of public and private organizations have documented a direct relationship between their performance and their effective management and development of employees. For example, a recent study based on surveys of more than 400 U.S. and Canadian publicly traded companies showed that those with effective human capital programs have more than three times the shareholder value as do companies that do not have strong human capital programs.

The American Society of Training and Development (ASTD) has replicated this kind of finding in the winners of its BEST Awards. The ASTD Research Department's analysis of organizations that have won ASTD BEST awards "has found that companies with best practices in learning functions are among those with high levels of financial performance. The 21 public companies that won ASTD BEST awards in 2003 and 2004 outperformed the S&P 2005 Index by 2 to 1 for the past 5 years."

Although the ASTD research focused primarily on private-sector organizations, there is a clear translation between those findings for private-sector firms and similar results for public organizations. However, for those results to occur and for public organizations to reap the benefit, there must be a seamless alignment and linkage between and among training and all other components of the human capital management program, and a similar linkage and alignment between and among training programs and the funding mechanisms to support training.

Synthesis responses indicate that state DOTs are building from a solid base; however, substantial executive leadership and attention will be required to move the programs to the next level of strategic alignment. This implies that directors of state DOTs will need to be *directly* (implicitly) involved in setting the strategic direction for training programs based on the organization's strategic goals, objectives, and desired outcomes. It also means that the director must hold accountable those individuals who are responsible for ensuring that training and development activities—courses, developmental assignments, and the like—are viewed as essential tools for ensuring a workforce that is qualified to accomplish the work of the organization effectively and efficiently. Finally, it implies that training and development activities must be viewed as "value added" activities that are on the critical path for organizational success.

CHALLENGE OF MAINTAINING A KNOWLEDGEABLE WORKFORCE

Organizations are a human enterprise and their highest purpose is to make the strengths of people effective and their weaknesses irrelevant.

Peter Drucker

INTRODUCTION

American public service is in its third era of reform, and public service at all levels of government—state, local, and federal—is in the midst of profound change. From the founding of the republic until the late 1880s, government human resources policies were based on the spoils system. Those in power got to choose those who were employed, regardless of talent or capability. The spoils system worked initially, but then faltered. Because government services were not being done as U.S. citizens wanted, there was a demand for change. This resulted in a reform movement that ushered in the concept of a merit-based civil service. Recruitment and retention of employees was based on qualifications and the ability to pass written and oral examinations. This system worked well for nearly a century, and then it too became obsolete. Driven primarily by the introduction of technology into every level of society, the work to be done and the ways to accomplish work began to change dramatically. Once again, U.S. citizens began to demand a different type and level of service from all levels of government. It is against this dynamic background that this synthesis—examining the requirements for managing training programs for state departments of transportation (DOTs) in the first quarter of the 21st century—was prepared.

The trends dictating change are now clearly identified. In its recently completed multiyear, five-volume study of the “21st Century Manager,” the National Academy of Public Administration (NAPA) noted the following trends affecting both the workplace and the workforce (*The 21st Century Manager* 2004):

- Technical complexity—Increasing technical complexity in the workplace is driving the need for educated talent, particularly scientific, engineering, and information technology (IT) personnel.
- Information technology—Expanding IT capabilities are affecting hardware systems, work processes, and the types and numbers of people in the workforce.
- Workforce flexibility—IT is providing unprecedented workplace flexibilities, such as telecommuting, facilitating a more efficient workforce distribution. People

management approaches must accommodate the virtual workforce.

- Workforce mobility—Increased competition and the move toward self-managed retirement funds (particularly with a highly educated workforce) will threaten the financial ties that employees have with their employers. Recruitment strategies must be adapted to the appropriate candidate pools.
- Globalization—Business, production, economies, and workforces are becoming more multinational. As a result, managers (and organizations) confront increasing demands to compete, retain, and manage talent well.

Other factors that affect the workforce and the workplace are:

- Redefinition of government functions—Since the late 1970s the division of functions between government and private-sector organizations has been changing, introducing a level of contracting out of services heretofore unseen in state, local, and federal levels of government.
- Employees as an asset—One of the most important results of all of the reexamination of work and how it should be accomplished is that employees are now recognized as an asset. An asset is commonly defined as a “thing, person, or quality of value” and worth further investment to preserve or enhance the value. This fundamental change in thinking has profound implications for training and development programs in both public and private organizations.
- Diversity—The workforce is becoming increasingly diverse, with women and minorities entering the workforce in record numbers.
- Retirement of the “Baby Boomers”—The largest generational labor pool the United States has ever had is approaching retirement. Within 15 years most of this group will be either totally or partially out of the workforce.
- Shrinking labor supply—Similar to many other nations in the developed world, the U.S. birth rate is falling, resulting in slower growth in current and future labor pools.
- Multigenerational workforce—For the first time in U.S. history, public and private organizations have four or more generations of workers in the workforce. Although these workers share some common characteristics, there are also substantial differences in values, work experience, work habits, and expectations between and among the different generations.

- Citizens' demand for performance—Driven by technology, which makes instant and constant communications possible, U.S. citizens expect a quality, level, ease, and speed of service that was unthinkable even 15 to 20 years ago. In addition, individuals, especially at the state and local level, are demanding a greater voice in governmental decisions and an ever greater return on their investment of tax dollars, which in turn requires public organizations to examine their work processes, assess their organizational and employee performance, and measure that performance against publicly articulated qualitative and quantitative standards. The immediacy of access substantially reduces the margin of error that individuals are willing to accept.

In its 2004 white paper, *The Human Capital Challenge*, the American Society for Training and Development's (ASTD) Public Policy Council Chair Vincent J. Serritella noted that,

Now more than ever, the success of public and private organizations in the United States and throughout the world depends on the knowledge and capabilities of their employees. . . . The set of tasks formerly known as human resource services is now cast as a value chain of integrated processes and functions that are strategically positioned to help the organization compete. . . . Responding to the human capital challenge means more than just figuring out how to recruit and retain top talent. Organizations also need to address other obstacles to human capital development and management, including . . . (the) failure to align human performance practices, including compensation, work design, training, and performance management . . . with the organization's strategic goals, objectives, and outcomes.

State DOTs are affected by all of these trends. To meet the changing environment and the citizen demands for service, state DOTs must recruit a talented, knowledgeable workforce. Of equal importance, they must retain this talent and ensure that their knowledge and competence is both maintained and increased. Many of today's employees, and certainly those who will be joining the workforce over the next 15 to 20 years, are products of the knowledge economy, which can be defined as an economy characterized by the recognition of knowledge as a source of competitiveness; the increasing importance of science, research, technology, and innovation in knowledge creation; and the use of computers and the Internet to generate, share, and apply knowledge (see www.innovation.sa.gov.au/sti/a8_publish/modules/publish/content.asp.) They understand the power of knowledge and the need to keep that knowledge current. This understanding is found in all sectors and in all levels of the workforce. The presence or absence of well-thought-out and executed employee training and development programs is a significant factor contributing to the success or failure of recruitment and retention programs in both the public and the private sector. In its most recent survey of college graduates, published in May 2005, the National Association of Colleges and Employers (NACE) identified appropriate training and development opportunities as an important factor influencing job choices of recent, current, and future college graduates (see <http://www.nacweb.org/>).

State DOTs are well aware of these issues. A review of recent TRB publications reveals a focus on a variety of human capital issues related to attracting and retaining a well-qualified workforce. For example, its 2003 publication, *The Workforce Challenge: Recruiting, Training, and Retaining Qualified Workers for Transportation and Transit Agencies* stated:

The Committee on Future Surface Transportation Agency Human Resources Needs was convened by the Transportation Research Board to determine how these agencies can reorient their human resources efforts over the next two decades in order to respond to future changes in roles and responsibilities within their organizations. . . . The intent of this study . . . (is to) examine what is needed for transportation agencies to strategically alter key human resource activities—recruiting, training and retaining, and succession management— . . . to enable these agencies to continue to meet emerging workforce challenges and adjust to labor market realities (*The Workforce Challenge* . . . 2003, pp. 1–2).

That same year, TRB published *NCHRP Synthesis of Highway Practice 323: Recruiting and Retaining Individuals in State Transportation Agencies*. This report observed that:

Employees are the most valuable resource of any organization. Correspondingly, the issues of recruitment and retention at the professional level have become two of the most challenging that transportation professionals are facing in the 21st century. . . . It is vital that these issues be addressed if state departments of transportation . . . are to deliver the transportation systems needed to sustain the economic and mobility needs of our nation (Warne 2003, p. 1).

The report goes on to say that:

Workforce issues are at the forefront of discussions occurring in corporate America and within the ranks of public agencies. Public and private sector organizations are struggling to fill their ranks with individuals who possess the right sets of skills to deliver the products and services to their customers. . . . There are probably very few industries where workforce concerns are more acute than in the transportation industry. Challenges cross all modes, encompass virtually all skill sets, and appear to be more difficult to address with each passing year (Warne 2003, p. 3).

Also, in 2003, *TCRP Synthesis of Transit Practice 47: Corporate Culture as the Driver of Transit Leadership Practices* was published, and concluded that:

The transit industry is facing an ever changing work force, more sophisticated technology, a shifting economy, and the most diverse population to date. In this highly competitive work environment, it is essential to attract, develop, and retain strong leadership (Davis 2003, p. 1).

PROJECT SCOPE AND OBJECTIVES

FHWA DOTs and a variety of other transportation organizations understand the value of a robust and flexible training and development program. AASHTO, the National Highway Institute (NHI), and other similar entities have identified training and development as a significant tool to ensure that state DOTs can attract and retain a well-qualified workforce.

For example, AASHTO's strategic plan Goal 4, Objective D4, states that it will

Develop tools to assist states in addressing issues of workforce recruitment, retention, succession planning, and in-service training. Provide state DOTs with expertise and resource materials to help them make effective decisions regarding a variety of personnel recruitment and development issues.

An understanding of the critical importance of training and development activities within state DOTs prompted this synthesis study. This synthesis also focuses on the ability of state DOTs to attract, retain, and manage the talents of the workforce. In defining the project, the topic panel noted that “[a] well-trained, multi-disciplined workforce is necessary to ensure the effective and efficient development, delivery, and management of the nation’s transportation system. Efficient and timely training and professional development efforts will allow agencies and their partners to take full advantage of technological innovation, maximize workforce productivity, and ensure the efficient use of limited resources. . . .”

This synthesis will focus on the processes, policies, and practices needed to ensure that agency training and development programs have the infrastructure required to deliver training and development programs that support a high-performance organization.

This report was designed to focus not on specific training needs or courses or competencies, but on the program components required to have a sound set of policies, processes, and procedures for planning, developing, implementing, funding, and evaluating state DOT training, development, and education programs. Therefore, this synthesis examines the requirements for strategic planning, strategic human capital and workforce planning, the mechanisms to identify competencies needed in the workforce, and the degree to which the workforce has those competencies, as well as the ability to fund and execute a viable training, development, and education program that ultimately provides and prepares a workforce to accomplish the work of the organization successfully. It also reflects an understanding that the *raison d’être* for training programs has changed. As with other human capital programs, training programs in state DOTs have no intrinsic value in and of themselves. Their value is in direct proportion to the program’s ability to enhance the workforce capability to achieve the organization’s strategic goals and outcomes. Absent this impact, training, development, and education programs make no “value added” contribution and are, therefore, unlikely to be able to compete successfully for the shrinking pool of available public dollars.

STUDY PROCEDURES

For this study, a review of the pertinent literature was undertaken. It soon became apparent that the literature review

had to be broadly defined to include the changing nature of public service, of work, and of working relationships, both within transportation organizations, as well as between and among transportation organizations, other transportation-related entities, and the private sector. The literature review also examined the more traditional components of training, development, and education programs.

The literature review is accompanied by a discussion and analysis of the information provided by the survey results from a questionnaire sent to the training directors of each of the 50 state DOTs. Initially, 16 responded. Ultimately, 24 states provided input either through the survey or by means of detailed interviews and discussions about the topics covered in the survey. The synthesis is further enriched by the results of the annual Training Directors conference, held in Natchez, Mississippi, in October 2005. The majority of the 2005 conference topics were directly related to issues being examined in the survey specifically and the study more generally. In addition, interviews with a variety of public and private sector thought leaders in public administration, transportation and training, development, and education were undertaken. Thought leaders are individuals recognized by their peers as having creative and innovative ideas to solve current, and possibly future, issues and problems. The insights of these experts are integrated into the synthesis. The appendices provide additional information for training organizations in state DOTs.

ORGANIZATION OF SYNTHESIS REPORT

The synthesis report has five chapters.

Chapter one provides background on the issues related to the need for robust training, education, and development programs; the administrative infrastructure to sustain robust programs; a discussion of the study scope and procedures; and the organization of the synthesis report.

Chapter two presents the results of the literature review. It identifies both the more common viewpoints about conditions in the labor force, the public sector, and the private sector that affect training and development programs generally and those in state DOTs specifically. This chapter also discusses the literature findings on infrastructure elements, including strategic planning, needs assessment, competency identification and development, funding, partnerships, technology, evaluation, and other related topics.

Chapter three summarizes the results of the survey of state DOTs and the information shared at the 2005 Training Directors Conference.

Chapter four contains a discussion of successful practices from both industry and government, and insights acquired from thought leader interviews.

Chapter five summarizes the conclusions to be drawn from the literature review, the agency questionnaire results, the 2005 Training Directors Conference, the thought leader interviews, and industry practices.

A bibliography provides a detailed list of references, including articles, books, and reports that will assist in keeping state DOT training organizations well informed for years to come about the evaluation of critical components of training program analysis, development, delivery, and evaluation.

Appendix A contains the survey questionnaire and detailed survey results. Appendix B lists the state DOTs that participated in the survey and the 2005 Training Directors conference. These individuals are sources of expert advice and assistance to colleagues. Appendix C contains critical excerpts from the ASTD's 2005 *State of the Industry Report*, which provides one of the definitive analyses about major trends and issues in training and development. Appendix D contains detailed information on the exhaustive competency study prepared by ASTD and Appendix E cites additional resources provided by various organizations.

ESSENTIAL COMPONENTS OF AN EFFECTIVE TRAINING PROGRAM

Workers today must be equipped not simply with technical know how but also with the ability to create, analyze, and transform information and to interact effectively with others.

Alan Greenspan
Federal Reserve Board Chairman

INTRODUCTION

The literature review was constructed on the principle that in today's world a training program must be developed based on a broad understanding of what is happening in the world at large, as well as an understanding of the substantive work and strategic goals and objectives of the state DOT. The training program must also understand its linkage and relationship to other components of the agency's human capital program, including recruitment, retention, succession planning, and performance management. The organization's strategic goals and outcomes must drive the training and development program. Other key assumptions are that to be successful training professionals and agency management must:

- Understand that training exists as a tool to enhance performance.
- Identify the competencies that are required to achieve the strategic goals and outcomes of the organization, as well as which of the occupations must possess some or all of these particular competencies.
- Analyze the degree to which the current workforce possesses these competencies, and be able to identify both emerging and submerging (those competencies that are no longer needed) competencies.
- Ensure that the training and development needed for employees to acquire the various competencies is available either within the organization or through public and private partners.
- Develop evaluation methods that assess the degree to which training and development programs meet both the training objectives and the larger organization goals of the strategic plan.
- Be directly linked to the other components of the human capital system of the organization.
- Have a communications strategy and plan to ensure that decisions makers and employees at all levels in the organization understand how the training and development programs contribute to achieving strategic goals and objectives, and that these individuals know what is available, when it is available, why the

organization thinks the course is worth an organizational investment, and where the training program offerings will be available.

As is usually the case in today's world there are thousands of electronic and print books and articles relevant to the issues. To provide the maximum assistance to readers, this chapter includes the most directly relevant information to the topics at hand. The Bibliography cites additional references that may be useful for those who want or need to do more detailed research, but that are not specifically addressed in this report.

TRENDS TRANSFORMING GOVERNMENT

One of the most succinct summaries of what is transpiring in public service at the state, local, and federal levels is found in research completed in 2003 by the IBM Endowment for the Business of Government. The information summarized here is found both in the article, "Four Trends that are Changing Government," from its magazine *The Business of Government* (Abramson et al. 2003), and in a four-volume report that delves into each of the four trends in much greater detail. Both the article and the books can be found at www.businessofgovernment.org. These four trends are important because they dictate competencies that are or will be needed in public organizations over the next quarter of a century. Many organizations will need to design training and development programs to ensure that their employees can successfully handle the evolving nature of government. The authors of the article, Mark A. Abramson, Jonathan D. Breul, and John M. Kamensky, are known for their innovative thinking and for their ability to forecast coming changes in the operations of government.

In the introduction to this analysis the authors assert that:

Government is now being transformed . . . Based on five years of research on the changing ways of doing business in government (we) have identified four significant trends that are now transforming government: trend one: changing rules; trend two: emphasizing performance; trend three: improving service delivery; and trend four: increasing collaboration. . . . Each of the four trends . . . will require a steep learning curve and will be characterized by constant learning and adaptation. . . . The emphasis on performance will also require trial and error as government learns how to measure performance and reward or penalize executives for that performance. New approaches to service delivery will continue to be controversial . . . [I]ncreased collaboration will

also require a steep learning curve as government learns how to partner with nonprofit and profit-making organizations. . . . Over the past five years, federal, state, and local governments have been developing approaches to link organizational goals to intended results, oftentimes in customer-centric terms and occasionally beyond the boundaries of individual agencies.

The changing “rules of the game” is the first major trend identified. These changing rules affect both public servants and private individuals and affect the fundamental administrative infrastructure of government including “civil service systems, procurement practices, budgeting, and financial management. The new systems provide program managers with greater flexibility for the quid pro quo of more accountability on the part of program managers.” This combination “appears to be a powerful incentive for encouraging results-based management.”

In three states—Florida, Georgia, and Texas—the civil service remains merit-based, but employment is “at the will” of the state. The impact of this trend on training and development programs can be seen in the way training is developed and procured.

Trend number two “involves the increased emphasis on performance throughout government.” For the last decade, local, state, and federal government organizations have worked hard to identify their important mission and functions and to translate those into strategic plans with specific goals, objectives, and outcomes. These then become the basis for prioritizing work, and each program area must identify how its programs relate to and support accomplishing the goals, objectives, and outcomes, with a strong emphasis on results. “Results-based management provides a way of focusing on what government does, instead of solely on what it spends.” Two cities—New York City and Baltimore—“have pioneered the use of cross-cutting performance management as a way of improving organizational performance.” This second trend has had a profound affect on training and development programs that must now demonstrate how they contribute to improved individual and organizational performance. More fundamentally, training and development are now seen as a primary tool for improving performance of both individuals and organizations.

Trend number three is the demand for “improving service delivery.” Integral to this trend is the concept of citizens and/or other government or private-sector organizations as customers. This trend completely refocuses how business is done so that “instead of organizing around the processes they performed, they organized around those they serve.” One consequence of this change is the growing use of websites and other electronic methods that allow customers access 24 h a day, 7 days a week. It also assumes a shared responsibility between provider and customer, and leads naturally to the fourth trend. For training and development programs trend number three means changes such as multiple delivery media and the need to demonstrate, qualitatively and quantitatively, that the training and development programs and activities are value added. Furthermore, it means that the organization and the individual

employee have a shared responsibility to identify training and development needs and to see that those needs are met.

Trend number four is “increasing collaboration.” Citizens increasingly expect government to deliver results—clean air, safe food, healthy kids, safe streets, and specific to the *raison d’être* of state DOTs, economical, efficient transportation. There are few public (or private) organizations that are complete within themselves. The complexities of these issues are such that governments are more likely to achieve successful results

by creating collaborative efforts that reach across agencies, across levels of government, and across the public, nonprofit, and private sectors. . . . The key tools for doing this are partnerships and networks. . . . There are two drivers for the increased use of partnerships and networks in the public sector: (1) the communication revolution brought about by technology, which makes collaboration easier, and (2) the shift in societal power to the ‘market state,’ which ‘respects neither the borders nor the icons of the traditional state. Additional forces include the changing nature of work from labor-based production to the integration of knowledge-based work.

State DOTs are a prime example of a variety of partnerships between and among the federal government (FHWA and NHI); professional organizations such as AASHTO, colleges, and universities; and private-sector organizations. At the 2005 Training Directors Conference, every training director described at least one type of partnership that he or she uses to ensure that state DOT employees have access to the training and development needed to ensure a well-qualified workforce.

These four trends provide critical input for state DOT training programs. They suggest different ways for training programs to be developed and managed; for example, through collaborative and inclusive methods rather than the more traditional “silos of responsibility.” They suggest emerging competencies, such as partnering or networking skills that will be needed in the workforce. In addition, they focus on the need for training and development programs to demonstrate a *value added* contribution to the organization’s strategic goals and objectives, and on the need to continually improve customer service with the quality, quantity, and timeliness of training and development programs and events.

TRENDS TRANSFORMING WORKFORCE AND WORKPLACE

To understand the challenges facing training programs in state DOTs it is important to first understand both workplace and employment trends that will be in operation in the United States over the next several decades. There are three primary factors that will influence the workplace of the future. The first is a lower birth rate. In 1910, there were 30.1 births per 1,000 population. By 1955, the rate was 25 births per 1,000 population, and as of 2004 it is 14.14 births per 1,000 (National Center for Health Statistics). It is believed that the

U.S. birthrate will continue to fall. Because the U.S. birthrate is slowing, the rate of growth for the American labor force is shrinking at a time when the economy is predicted to grow at a relatively robust rate. This means that all sectors of the economy—public, private, and nonprofit—will be competing for a historically smaller pool of talent. According to the U.S. Bureau of Labor Statistics (BLS), “the annual rate of workforce growth for 2000 to 2010 is projected to be 1.1%, but drops to 0.4% for the period from 2010 to 2020 and to 0.3% for the period of 2020 to 2030. In comparison, the civilian labor force grew by 1.1% in the 1990s and 1.6% in the 1980s” (*Where the Jobs Are . . .* 2005).

Scarcity creates value. A declining birthrate that causes the labor pool to grow more slowly means that each individual in the labor pool is more valuable. It also means that the competition for these scarce resources will increase.

The second factor, identified by all of the TRB studies cited in chapter one, as well as in BLS analyses and studies conducted by the RAND Corporation, NAPA, and the Hudson Institute, is the impact of technology and innovation on the work process and therefore on the workforce.

The third factor is that the rate of change is predicted to continue to accelerate.

New products, services, and industries will be created, which will place a premium on having a highly skilled workforce. There will be an associated decrease in the demand for low- or unskilled workers as technology displaces workers performing routine, replicable functions.

An example of this drive toward increased use of technology is that in the early 1990s there were just over one million computer programmers, computer systems analysts and managers, hardware and software engineers and similar IT professionals. Today, according to the BLS, that occupational category has well in excess of 2.5 million members. Between now and 2012, BLS predicts an additional 179,000 jobs for computer software engineers and an additional 103,000 jobs for information systems managers (*Where the Jobs Are . . .* 2005).

These trends “place a premium on workers who demonstrate strong abstract reasoning skills, problem-solving, communication, and collaboration skills. . .” as well as strong interpersonal and networking skills. It is no longer sufficient for those with highly technical skills—engineers, scientists, IT professionals, accountants, engineering technicians, and construction trades—to rely solely on their technical skills. They must also have the human interaction skills required by the current and future workplace. These trends underscore the absolute demand for all organizations—public and private—to provide training and development programs and opportunities for their employees to ensure that they continue to maintain their current capabilities and learn the new skills and knowledge brought about by innovation with work processes, tools, and products (*Where the Jobs Are . . .* 2005).

DEMAND FOR A KNOWLEDGEABLE WORKFORCE

Knowledge across a wide variety of subjects is increasing exponentially. Therefore, today, and even more so in the future, knowledge represents both power and competitive advantage. Successful public and private organizations will be those entities that ensure that their employees continue to learn as their professions and the tools of the profession advance.

Since 1997, the ASTD has prepared a “State of the Industry Report” summarizing the trends in workplace learning and performance. This report provides one of the most authoritative analyses of what is happening in the world of workplace learning and performance. It provides data that state DOTs can use to compare the state of their own training programs and accomplishments. Comparison data includes hours of development, cost per hour, and similar features. This report also provides a special analysis of the “value added” to an organization by the public and private organizations who have been recipients of ASTD’s BEST Awards. It is worth noting that ASTD now defines its world as “workplace learning and performance.” This lends further support to our contention that training and development are tools for enhancing individual and organizational performance. The complete Executive Summary of the 2005 report can be found in Appendix C. The report concludes:

As the ASTD State of the Industry Report enters its ninth consecutive year of publication, we find ourselves in an exciting period in the field of workplace learning and performance (WLP). The perception of the value of learning in driving organizational performance is increasing, as is the level of investment in learning. The learning function is being run like any other business function with increased attention to operational efficiency, accountability, and connection to organizational strategy.

The 2005 report focuses on trends in the United States from 1999 through 2004, with projections for 2005, based on data submitted through ASTD’s benchmarking surveys (BMS), Benchmarking Forum (BMF), and BEST Awards program. . . . These three samples give the most comprehensive set of data available on both historical and current workplace learning and performance investments and practices in the U.S. This report serves as a barometer for the WLP community and provides data against which organizations can benchmark their own learning investments and practices.

The entire report is available at http://www.astd.org/NR/rdonlyres/B5CF7620-FA40-4B3C-8E7C-FC1745A73B7A/0/ASTD_StateoftheIndustry_2005.pdf for ASTD members. (Nonmembers can purchase the report through the ASTD on-line bookstore.)

Having provided an overview of trends that are affecting the functioning of government and the state of workplace learning and performance, this report focuses its attention on issues of importance for ensuring the appropriate infrastructure for successful training and development programs within state DOTs.

CRITICAL ROLE OF STRATEGIC PLANNING

So much to do and so few resources with which to do it! This is a truism of modern government, and training is no exception. Legislatures continue to pass laws and mandate actions without always supplying sufficient resources to achieve the results required. With so many competing demands, organizations must have a mechanism to identify and focus on “the critical few”—those actions, outcomes, and activities that are most likely to achieve the required outcomes. For most organizations, that mechanism is the agency’s strategic plan or similar document. As Carter McNamara wrote, “Simply put, strategic planning determines where an organization is going over the next year or more, how it’s going to get there and how it’ll know if it got there or not.” More information on McNamara’s ideas on strategic planning can be found at <http://www.managementhelp.org> (McNamara 1999).

In his book, *Strategic Planning for Public and Non-Profit Organizations* (1995), John R. Bryson describes strategic planning as a management tool whose primary purpose is to assist organizations in doing a better job of focusing attention on its most important work and in providing a plan to marshal scarce resources most effectively. It is also a tool that allows an organization’s employees to share the vision of what are the important areas of focus and what are the desired outcomes that the organization wants to achieve. It provides a basis for identifying the competencies needed in the workforce and a basis for both organization and individual performance assessment. The strategic plan is a current document.

It is about fundamental decisions and actions, but it does not attempt to make future decisions (Steiner 1979). Strategic planning involves anticipating the future environment, but the decisions are made in the present. This means that over time, the organization must stay abreast of changes in order to make the best decisions it can at any given point—it must manage, as well as plan, strategically.

For state DOTs, the strategic plan provides the training program with a point of departure for identifying the competencies needed in the workforce and for prioritizing training demands so that those that are the most important to the organization receive first priority for funding, development, and delivery.

COMPETENCIES AS A FOUNDATION FOR TRAINING PROGRAMS

David McClelland, a researcher on human motivation, first began to develop the idea of competencies in the 1960s. McClelland’s thesis was that the more traditional ways of predicting job success—examinations of knowledge and IQ tests—were not successful predictors of performance at the work site. Instead, he argued we should look for ways to identify other variables—“competencies”—that could predict job success. The work on competencies was further enhanced in the early 1980s when Richard Boyatzis was hired by the American Management Association to see if

management competencies could be identified. He was the first individual to define competency and to develop the behavioral interview methodology that is still the basis of most competency definition. Boyatzis defined a competency as “an underlying characteristic of an individual, which is causally related to effective or superior performance in a job.” Competencies can be traits, skills, aspects of one’s self-image or social role, or a body of knowledge that one uses. The emphasis is on outcomes, which makes competencies well suited for the work world of today with its emphasis on achieving outcomes. Paul C. Green has also been a major contributor to the use of competencies. He helped translate the concept into operational realities by defining how to develop and conduct behavioral interviews (and by actually coining the phrase “behavioral interview”). Green’s initial focus was on the manager’s use of the behavioral interview to improve selection. More recently, however, he has written on how job seekers can improve their interviewing skills (*Get Hired: Winning Strategies to Ace the Interview* 1996). Although Green’s focus in this publication was on getting the job, behavioral interviewing can be an equally useful selection technique for training and development by helping to ensure that those selected for training programs—in particular, for example, executive development programs—have the basic capabilities to warrant the substantial investment.

Many organizations are moving to competency-based assessment and training systems. The U.S. Office of Personnel Management has defined and validated competencies for all federal occupations and these provide the foundation for a number of public organizations at the federal, state, and local level to develop their own specific workforce competencies. Most organizations use competencies primarily for career development and training purposes. Arizona, Louisiana, Maryland, Mississippi, Ohio, and Texas are examples of state DOTs using competencies as a foundation for training and development programs. Any state DOT thinking about developing competencies should first review the substantial body of literature that already exists and can most likely find an excellent point of departure for identifying specific state DOT competencies.

In its discussion of competencies, the New York State Civil Service Commission says:

Competencies are a critical tool in workforce and succession planning. At a minimum, they are a means to:

- Identify capabilities, attitudes, and attributes needed to meet current and future staffing needs as organizational priorities and strategies shift; and
- Focus employee development efforts to eliminate the gap between capabilities needed and those available.

The New York Civil Service Commission went on to say that

organizations also have competencies. They are usually the result of collective individual competencies common throughout

the organization. Organizational competencies have significant impact on organizational results and are worth identifying, if not developing.

Organizational competencies can include process improvement, teamwork, performance measurement, values, project management, new ways of thinking or performing, and knowledge management. These are built, in part, on individuals having the competency or related competencies. For example, an organizational competency of strategic planning is dependent on managers having the skills to do the planning. In addition, the organization needs a workable planning process, skilled people assigned to coordinate the process, organizational performance measures, and systems for reporting performance data and tracking progress in meeting goals and objectives. All of these components could comprise the organizational competency of strategic planning.

Many public organizations develop career roadmaps that define the competency requirements for a particular type of work from entry level to the most senior performance level. This roadmap identifies the type and the location of the positions, as well as any training or developmental assignments offered by the organization that assist the individual in acquiring the competencies. This way an employee is empowered to make his or her own career decisions about which routes can be pursued to achieve the competency desired.

There is, however, a contradictory view of the value of competencies as the basis for training and development. The Gallup Organization has for years surveyed employees in a range of public and private organizations to identify what inspires exceptional performance. In their 2002 book, *Follow this Path: How the World's Great Organizations Drive Growth by Unleashing Human Potential*, Coffman and Gonzalez-Molina argue that competency-based training fails because it focuses on employee weaknesses rather than strengths.

Most organizations assume that anyone can excel at any job, provided they receive enough training and try hard enough. *Second, they take strengths for granted and try to fix weaknesses.* (Emphasis added.) This 'competency' approach is a huge waste of energy and time, no matter how well intended, designed, and executed it is. The reason is simple: It is based on three flawed assumptions.

Those who excel in the same role all display the same behaviors.

Each of these behaviors is learned.

Each of these behaviors should be learned, because improving weaknesses leads to success.

The competency based approach is very popular with human resource departments because its explicit aim is to 'develop people' and 'build human capital.' Human resources, therefore, becomes a 'strategic partner' by adhering to the official list of desired competencies. This places human resources (and training) in a defensive, rather than an offensive, position. . . . The competency approach is a dead end. It rarely succeeds in measurably improving either productivity, customer satisfaction, employee engagement or retention, or safety or performance records, all of which are the real measures of how effectively a person

works. . . . Being sent to learn something for which they have little interest or aptitude is not a good use of either employees' or trainers' time. Receiving training to augment strengths is rarely considered.

The Gallup Organization arguments are worth considering. While serving as the Chief Learning Officer for the Internal Revenue Service in the early 2000s, Dr. James Trinka experimented with training that would improve a manager's strengths rather than work on his or her weaknesses. The evaluations showed that the return on investment was significantly greater than the more traditional training to correct a weakness. A 5% or greater increase in a strength area resulted in a far better job performance than a similar increase in an area of weakness. The Internal Revenue Service concluded that it was more beneficial and cost-effective to focus on ensuring that within the entire team in an organization there were the requisite competencies, rather than trying to ensure that those who were weak in a particular area have training to improve the weakness (thought leader interview with J. Trinka, June 2005).

In his 1999 article, "Managing Oneself," Peter Drucker argued that

success in the knowledge economy comes to those who know themselves—their strengths, their values, and how they best perform. [He noted that] History's great achievers—a Napoleon, a daVinci, a Mozart—have always managed themselves. . . . Now, most of us, even those of us with modest endowments, will have to learn to manage ourselves.

In the article, he then asked and answered a series of questions:

- What are my strengths?
- How do I perform?
- What are my values?
- Where do I belong?
- What should I contribute?

Drucker argued that each of us should use feedback analysis to answer these questions and that after using feedback for analysis a few years we would clearly understand our strengths and weaknesses. His insights provide a useful framework for structuring an individual training and development program as well as an organizational one. More information on this can be found at <http://harvardbusinessonline.hbsp.harvard.edu>.

His insights about the importance of managing oneself were prescient. A few years after this article was published, NACE and other research organizations began reporting on the importance that college graduates and other knowledge workers were placing on their personal responsibility for ensuring that they continue to keep their knowledge and skills at the cutting edge.

This evolution of the allocation of responsibility between the organization and its employees suggests that training and development organizations must have mechanisms to ensure that they solicit input from employees as part of the needs

assessment process and they can structure programs that assume that individual employees have a share of the burden to ensure a well-qualified workforce.

SUCCESSION PLANNING

Succession planning is an important component of any organization's human capital management program and has important implications for structuring training and development programs. The Baby Boomers are retiring, the available labor force is predicted to grow at a much slower rate in the first third of the 21st century than it did in the last half of the 20th century, and the challenges to organizations are continuing to grow in number and in complexity. (Baby Boomers, defined as those born between 1946 and 1964, are redefining retirement, just as they have redefined each generational gate through which they have passed. Many are retiring between the ages 55 and 60. Because they have a longer life expectancy and generally enjoy better health than previous generations, many are choosing second, or even third, careers and are working part-time or full-time in these new endeavors. However, in 2034, the last of the Baby Boomer generation will turn 70, at which point the majority will have left the workforce. BLS predicts that birth rates will continue to decrease and that by the 2020–2030 decade, the annual labor force increase will be 0.3% as compared with an annual growth rate of 1.6% in the late 1990s and very early 2000s. Thirty years is a relatively short time to totally rethink how an organization will acquire, retain, and develop the talent needed to accomplish an organization's strategic goals and objectives in a significantly more competitive labor market.) These challenges suggest that succession planning will grow in importance and will focus on the identification and development of a cadre of well-qualified talent for both leadership and critical occupation positions.

Essential elements of a succession planning program are:

- Identify the positions for which the organization wants to ensure a readily available supply of well-trained candidates.
- Identify the mission-critical competencies needed to perform successfully in each position.
- Identify the positions, special assignments, training courses, educational experiences, coaching, and mentoring needed for individuals to develop the competence to perform successfully in each of the positions identified.
- Develop a methodology to identify and select individuals to be developed.
- Have a group of key executives, usually including the head of the organization, actively involved in each of these steps on an ongoing basis.

NAPA recently completed a review of the National Aeronautics and Space Administration's (NASA) human capital program, including its succession planning and leadership

development program. In recognition of the importance of succession planning for leadership positions, the Academy recommended that the administrator of NASA appoint an Executive Utilization Board, which he would personally chair, that "would have the corporate responsibility for identifying, developing, and assigning the top ten to fifteen percent of the career executives in the agency," thus ensuring that NASA will have available the leadership talent needed to fill leadership vacancies as they occur (*Human Capital Flexibilities . . .* 2005).

Succession planning is important not only because it ensures an orderly transition within an organization, but because well-trained, competent supervisors, managers, and executives are essential to successful organization performance and play a critical role in engaging the minds and hearts of employees in the work of the organization. In his book, *Peak Performance: Aligning the Hearts and Minds of Your Employees*, Jon R. Katzenbach says that:

The definition of higher performing workforces—any significant group of employees whose emotional commitment enables them to make or deliver products or services that constitute a sustainable competitive advantage for their employer—implies the following criteria.

- A larger than normal proportion (i.e., more than one-third) of individual workers consistently exceeds the expectations of their leaders and customers.
- The average worker performs better than the average competitive worker—[Katzenbach identifies training and development opportunities as one of the motivating/energizing mechanisms].
- A strong emotional commitment to higher standards and aspirations is reflected all across the workforce and appears to create a multiplier beyond what rational systems and programs could explain.
- The collective performance of the entire workforce or of its critical segments [typically the front line; Katzenbach defines 'the front line' as the employees who work directly with customers and the supervisors of these employees] forms the core of the institution's competitive advantage and is extremely difficult to copy.

A well-structured, well-run succession planning program is an essential ingredient for a successful organization. Although public and private organizations have different motivations and often different values, research continues to show that to be successful both must have a cadre of talented first line supervisors.

The Gallup Organization research in both the public and the private sector on what employees seek in an organization (employee engagement) consistently shows that well-trained first line supervisors are critical to individual and organizational success. For example, work units with well-trained supervisors can be as much as 40% more productive. More information about this research can be found at www.gallup.com.

A related and subsidiary component of succession planning is an organization's career development program. As Shelly Prochaska observed in her February 2000 article "Designing

Organizational Programs for Employee Career Development,” which was made available through the Society of Human Resources Information Center,

A comprehensive career development program will contain the following:

- An employee orientation program that offers detailed information about the career development program and the organization, its mission, and its values;
- A training program in which managers learn how to coach employees;
- A career development center or library where employees have access to job search and labor market information;
- Access to a career counselor for individual sessions;
- A performance appraisal system where employees receive ongoing feedback;
- Career development workshops on topics such as resume and letter writing, networking, interviewing, interest/value/skill exploration and identification, managing career burnout, and goal setting;
- A job posting system where employees have access to position announcements;
- Access to organizational job descriptions so employees are aware of necessary competencies and requirements for other positions;
- A career patching system so employees know what careers are available to someone with their skills and training;
- An EEO [Equal Employment Opportunity]/Affirmative Action program to ensure fairness and diversity in the workplace;
- Internal training programs where employees can build upon their skills and learn new ones to prepare them for promotions and to learn about the organization;
- A formal mentoring program where employees learn from others who are already in positions to which they may aspire;
- A succession planning program that identifies competencies for higher positions and identifies and develops potential employees who would fit those positions;
- A tuition reimbursement program that allows employees to enroll in college or professional development courses;
- A course on how to apply to college and select a program of study;
- A program for job rotation or internal internships where employees can have on-the-job experiences working in a new setting to develop and use new skills;
- A supervisory/management development program that trains supervisors and develops potential supervisors; and
- Exit interviews to ascertain why employees leave the organization.

In the report, *Career Development in the 21st Century*, Craig and Gilpin define career development by saying, “The individual-level aspect is often referred to as career planning, while the organization-level aspect is called career management.” This definition is well suited for today’s worker. He or she is in all likelihood a “knowledge worker,” who knows that his or her current and future career is dependent on continuing to learn and keeping current on the developing state of information in the chosen career field. Career development is no longer a patriarchal responsibility of the organization; it is a shared responsibility between employee and organization. Both stand to lose if the partnership is not forged and both stand to gain significantly if it is.

State DOTs employ the “traditional” knowledge worker, such as engineers and IT professionals, as well as the trades

and labor occupations associated with road and track building and maintenance. Both types of professions continue to change rapidly and require employees to be current with the changing work processes, materials, environmental concerns, and similar issues.

Succession planning is essential to organization success. Relatively few organizations at the state, local, or federal level have yet grappled with this issue successfully. No study has been done to ascertain exactly how many organizations do have a functioning succession planning program. However, based on a recent review of 24 federal agencies and the questionnaire responses from state DOTs, a safe estimate would be that less than 20% currently have a well-defined, operating succession program in place.

TRAINING ORGANIZATION

Organization Placement

There are three common rules of thumb on organizational placement for the training function in both public and private organizations. The placement is a function on training content and sometimes the size of the training program. The placement of training is also affected by the view of the organization’s leaders on the importance of training. The most typical placement is as a component of the human resources or human capital management function. The training function may also exist as a separate organization under the general umbrella of the administrative support infrastructure. The general lines of demarcation are based on the quantity and type of training. If the training program is predominately personal competence skills, which include leadership training, writing and communications skills, financial management, human resources management, organization policies and procedures, and similar subjects, it tends to reside within the Office of Human Resources or Human Capital Management. If the training is focused predominately on technical skills or professional skills, the training tends to be under the direction of those in the organization who have the technical or professional competency. For example, NASA’s leadership development programs are under the direction of the agency’s Chief Human Capital Officer. Its engineering and technical project management training programs are under the direction of the Chief Engineer. In their responses to the synthesis questionnaire, a number of state DOTs cited similar divisions of responsibility. The more general training and development was the responsibility of the Training Division or the training unit within the Human Capital Office. Technical training was the responsibility of the Chief Engineer or a similar position.

Centralized Versus Decentralized

Another question that frequently arises when organization structure is considered is: Should the training function be

decentralized or centralized (Rodriguez 2005)? The benefits of a centralized function include:

- A single focus of responsibility and accountability that “assumes accountability” for managing learning and development throughout the organization. The function usually reports to a Chief Learning Officer (CLO) or similar position.
- There are less likely to be “variances and redundancies.”
- Measurement of results can be more focused and more disciplined.
- A single organization can “leverage purchasing dollars” both for equipment and training programs.
- Centralization allows a single individual to “oversee and direct the company’s investment” and makes easier the comparison of the value of a training investment versus some other use of funds.
- It also “facilitates the sharing of best practices as it creates economies of scale and makes it easier to track initiatives.”

There are equally valid arguments for decentralization. They include:

- Helps ensure a more direct link between the program goals and the training and development programs and activities.
- Allows for a better alignment with business strategy and a greater possibility that trainers will become familiar with the business and programs for which they are providing training.
- Is consistent with the entrepreneurial values and culture of some organizations.
- Allows for a more consistent focus on leadership or technical or other business and program-specific training.

Either organizational model—centralized or decentralized—will work. The option chosen must be consistent with the organization’s mission, its values, its strategic goals and objectives, the work to be done, and the type of training and development needed by the organization’s employees. Other factors to consider include whether the organization is geographically dispersed or geographically concentrated and the degree to which it has and uses electronic means to deliver training and development programs.

Another organization structure is the corporate university (CU). The CU, according to a Society of Human Resources white paper, is different from a more traditional training department in the following ways:

Typically, the human resource development function reacts to training needs determined through employee surveys, individual or group requests, or new technology. These programs are most likely direct instruction on specific skills. A CU, on the other hand, can impart more than a new skill set for employees. It can actually be used as a holistic conduit to instill corporate values, culture, philosophy, history, leadership skills, and more. . . .

Components of a CU might include. . . courses such as: Business Education . . . , Professional Education . . . , Personal Development . . . Technical Instruction . . .

A CU must not only link to the business needs, but it must also meet the needs of individual employees to be effective. Learning has become a life-long commitment for many people in today’s workforce. Many organizations recognize this and are using employee development initiatives as an important part of their recruiting and retention programs.

The Society for Human Resources Management paper goes on to say that “properly conceptualized and executed, (CU) can be the strongest forum in the organization for helping to shape and give direction to not only significant organizational change but also to the business itself.” It can also help improve recruitment, increase revenues, reduce turnover, and make available a wider talent pool. Private-sector firms with effective CUs include: Land Rover, Motorola, Sears, and the Tennessee Valley Authority (Prochaska 2001). Some public-sector organizations, particularly at the federal level of government, are experimenting with the CU concept. Examples include the U.S. Department of the Interior, U.S. Department of Energy, and a number of U.S. Department of Defense organizational components. Public organizations should think very carefully about whether a “corporate university” is an appropriate mechanism for a training and development program delivery. They are expensive to establish and maintain, and the cost–benefit of the tailored training in the CU versus that which can be acquired at colleges and universities, or provided by private- and public-sector vendors must be carefully analyzed.

According to a research report by Bersin and Associates, the “massive shift” to e-learning has raised the issue of what is the most effective and efficient training organization. Its June 2005 study (“What Works” 2005) is based on interviews with “approximately 350 North American and global training organizations. Our goal was to understand what drives the effectiveness and efficiency of corporate training.” The study defined measurement elements effectiveness and efficiency as follows:

Effectiveness—The ability of the learning organization to meet the needs of the line of business managers. Includes developing, delivering, and measuring training that is timely, relevant, and results-oriented. The learning organization is aligned with corporate, HR, and business goals.

Efficiency—Developing and delivering training at an affordable cost. Includes sharing of best practices, vendors, and other resources, as well as the supporting technologies.

Key conclusions of this study were:

- Centralization of training, while a trend, does not necessarily improve effectiveness. More than half of the organizations studied use [of] what we call a “federated” model. Similarly to the organization of government in this country, the federated model has some centralized functions and others that are distributed.

The biggest driver toward centralization is technology—investments in a centralized Learning Management System (LMS) require a centralized budget, support infrastructure, and often a content management and development team.

- The role of the CLO directly improves the impact of an organization. Companies with strong CLOs have much higher effectiveness and efficiency measures than those without such a leader. The CLO has a dramatic impact on employee satisfaction in training as well. CLOs also create and enforce the use of meaningful measurements. . .
- Organizations with centralized LMSs perform at higher levels. The discipline and focus to implement and support a centralized LMS forces a learning organization to set in place other structures that improve performance and efficiency.
- Alignment with [Human Resources] HR has positive and negative impacts. Training organizations that align too heavily with HR tend to suffer. Over-alignment reduces the effectiveness of a learning organization and pulls it away from the line of business constituencies. However, certain programs, such as leadership, new hire, and compliance training, can be aligned effectively with HR.
- Sound resource allocation is both a cause and effect of an effective organization. One of the biggest drivers of high impact is the establishment of an independent, outwardly focused performance consulting organization. . . .
- Use of shared services is critical to success. A well-defined, outwardly focused shared service model is mandatory, no matter how the learning organization itself is organized. Organizations with such models can efficiently respond to business needs, create standards, and centralize budget decisions.
- Our research verifies that organization and management have a significant impact on a learning organization. Excellent technology, content, and instructional design are not enough. *Training cannot succeed without strong business leadership, alignment, performance consulting, measurement, standards, and program management* (emphasis added).

The following are insights from thought leaders—Six Components That Make a Critical Difference.

As part of the research for this synthesis, three thought leaders, J. Paul Longanbach, Dr. Susan Krup Grunin, and Dr. James E. Trinka, were contacted about what were the essential ingredients of an effective training program.

Longanbach is a training and organizational development expert with national and international experience in both the public and private sectors. Named to the Smithsonian’s endowed Lunder Educational Chair for education, he developed a comprehensive, educationally sound nationwide program for providing visual arts-linked educational resources that improve teaching and learning in U.S. classrooms. Grunin is currently a Senior Training Consultant with WatsonWyatt. Before joining WatsonWyatt, she directed the administrative and human capital training program for the federal judiciary. Trinka is the Associate Director for Training and Development for the Federal Bureau of Investigation (FBI). He directs the FBI Academy at Quantico, Virginia. These individuals were selected because they have a variety of public- and private-sector experience in establishing and managing successful training and development programs and reputations for thinking creatively about training and development issues. Their collective views are discussed here.

The ingredients for an effective and successful training program include:

- A program reflective of the organization’s strategic plan or business plan,
- A well-thought-out philosophy and set of values,
- Multiple delivery systems and mechanisms,
- An evaluation strategy and plan to continually refine training and development offerings,
- A strategy and plan to ensure the transfer of learning, and
- A communications strategy and plan to ensure that employees know what training and development activities are available and how these are related to improved performance.

First and foremost, the training and development program must flow from the organization’s strategic plan and its objectives and outcomes. This is the anchor that helps ensure that the program is “value added” and that it directly addresses the organization’s important issues, programs, and outcomes.

Second, every successful training program must develop and articulate a philosophy; a set of values and goals that are consistent with the agency’s strategic goals and outcomes. There should also be a career map for each occupation that identifies the competencies required at each level (e.g., entry, intermediate, and senior), the positions, work assignments, and internal or external training that can assist the employees in acquiring the needed competencies. This, too, must be consistent with the agency strategic goals and outcomes. This information must be transparent and available to all in a variety of traditional (e.g., written policies, hard copy newsletters, and discussed at conferences) and electronic formats (e-mail, websites, and electronic newsletters) so that employees can participate in the decisions about their professional development.

Third, there must be multiple delivery systems, because adults have very different learning styles. The best training and development programs recognize this; therefore, the growth in alternative delivery systems—traditional classroom, web-based, computer-based, coaches, mentors, and other methods to ensure learning transfer. Examples of those who do this successfully are the U.S. Department of Defense; U.S. Office of Personnel of Management through its GOLearn program, which is used by federal, state, and local governments across the country; and National Guard Bureau. FHWA programs and those of the Minnesota DOT are also examples of organizations with advanced multiple delivery systems.

Fourth, the best programs have an evaluation methodology and cycle to help recalibrate learning programs based on feedback from the training programs from supervisors about the performance of employees who take the courses. Training is not an end unto itself, but an instrument to improve individual and organizational performance. Therefore, performance assessment is an essential ingredient in training program evaluation.

Fifth, the evaluation must also be calibrated to consider environmental changes, the degree to which learning transfer occurs, and the cost of the program in relation to the tangible benefits derived for both the individual and the organization. To assess these elements, qualitative and quantitative measures of success are identified and a baseline measurement is established to provide a point of comparison to judge whether the programs and activities are achieving the desired outcomes.

Sixth, all must be cemented with a communications strategy and plan that is designed to address the various audiences within and outside the organization. Most organizations have at least six internal audiences—executives, managers, supervisors, subject matter experts in the particular program area, employees, and employees with special needs such as the hearing or sight impaired. If the organization has unions, those present a seventh audience. An organization’s external audiences may include political and career individuals in other executive branch organizations, legislative members and their staffs, trade associations, and similar groups. The communications plan must ensure that communications goes at least two ways—up and down—and that the multiple communications delivery mechanisms are in place to meet the various hearing and learning styles of different individuals.

All three thought leaders spoke of the importance of involving these various audiences in the program planning and decision processes, through needs assessment surveys, evaluation of course content, and through one or several advisory committees. They each commented on the power of properly constituted and run advisory committees to garner lasting support for learning and training programs. In their definition, “properly constituted” means that the people included are those who have both a stake in successful training programs and whose organizations will benefit from this success.

Competencies

For the last two decades, ASTD has identified and published information on the competencies required for training professionals. The latest version, published in 2004, updates the 1999 study and provides insight into the trends that are shaping the profession, as well as an update on competencies required for successful performance. The study is entitled *Mapping the Future: ASTD 2004 Competency Study, New Workplace Learning and Performance Competencies* (Bernthal et al. 2004) and can be accessed on the ASTD website at www.astd.org/astd/Research/competency_study/competency_study.html.

As the executive summary explains:

Each ASTD competency model marks a milestone in the expansion of the field from a singular focus on training to human and organization development to workplace learning and performance. . . [The study] provides a framework for the competencies that learning professionals need today and will

need in the future. This shifted focus from training to workplace learning and performance is one that is discussed in much of the literature, and is certainly consistent with the IBM study on the four trends that are changing government. The study reflects the input of more than 2,000 ASTD members and other practitioners.

According to ASTD, there are eight trends that are shaping the profession:

- Uncertainty—economic and fiscal uncertainties have left their mark on all and training is no exception.
- Blurring of lines between work and life—new organization structures are blurring the lines between work and other parts of life.
- Global impacts—instantaneous, worldwide communications change the way people relate and connect. There is increasing interdependency between peoples, companies, and governments.
- Diversity—workplace is increasingly diverse.
- Impact of change—change is ever with us.
- Security concerns—security includes the physical security of employees and facilities, as well as security of intellectual property.
- Impact of technology—technology is pervasive.
- Ethical issues—need for ethical conduct of public and private business; the unfortunate and very public failure of leaders to meet these standards is a constant in today’s world.

What then are the implications of these trends? The ASTD study conclusions are totally consistent with other research included in this synthesis.

- Being an expert in training and development is not sufficient; professionals must understand the programmatic and substantive work of the organization.
- There must be demonstrated value in training courses and activities, and these must be directly linked to the organization’s strategic goals and outcomes.
- The training professional has a special obligation to help both the organization and individuals “develop a culture of integrity by honoring its commitment to the value of people in the workplace.”
- Technology is a key learning tool. The training professional must know what is available and be able to articulate its relevance to the agency’s learning program.
- The power of the Internet should be used to communicate globally with customers for training products and offerings.
- The importance of one’s role as a developer of talent for the organization must be understood.

ASTD adheres to a traditional definition of competency—“Competencies encompass the clusters of skills, knowledges, abilities, and behaviors required for success across all WLP (workplace learning and performance) jobs.” These competencies are:

- Analyzing needs and proposal solutions,
- Applying business acumen,
- Building trust,
- Communicating effectively,
- Demonstrating adaptability,
- Driving results,
- Influencing stakeholders,
- Leveraging diversity,
- Modeling personal development,
- Planning and implementing assignments, and
- Thinking strategically.

These competencies are grouped into clusters (Business/Management, Interpersonal, and Personal) to facilitate understanding. A detailed discussion and definitions of these competencies are found in Appendix D.

The study also identified four roles: Learning Strategist, Business Partner, Project Manager, and Professional Specialist. This study is one of the most complete and relevant to the needs of state DOTs. It is firmly anchored in well done research and provides insights into current needs, and most importantly it clearly indicated where the profession is headed so that individual professionals and training program executives can get a glimpse of the future. This allows each DOT to compare the current with the anticipated and plan for the changes that may be needed.

Evaluation

This section discusses evaluation methodologies to be used in assessing training programs. The basic evaluation framework established by Fitz-enz and Phillips in their 1998 publication, *A New Vision for Human Resources*, is a classic in the literature. The new vision of human capital management enunciated by the authors has as its basic assumption a “value imperative.” The products that organizations produce, whether public or private, must add value and must contribute to achieving the organization’s programmatic strategic goals and objectives. Between 1991 and 1998 when this book was published, private-sector “HR budgets declined by 40% and staffing levels shrunk by nearly 25%.” The public sector experienced a similar decline. (Ironically, this reduction of budget and staffing only increases the need for the Human Resources professional’s flexibility and an even greater diversity of skills.) Any function that cannot articulate its value to the organization can expect to experience a similar decline. In light of this demand to justify existence, Fitz-enz and Phillips defined a model of components that must be developed to evaluate human capital programs. They apply as well to training and development programs. To assess value, an organization must assess its service, the quality of its products, and its productivity. From this flows the concept of return on investment. “In competitive companies, every function is a value-added operation. . . . [E]ach job must demonstrate an acceptable return on investment . . . [and] contribute in some way to continuous gains in product cost

reduction, quality levels, and customer service.” Indicators include cost, time, volume, and human reaction. In thinking about these as programmatic components, it is important to know what type of data is available to add in assessment (e.g., quality, ease of access, and cost to accumulate). The next step is to decide “what needs attention and what you are excelling at.” The actual development of metrics and “measuring change over time” are the final steps in the process (Fitz-enz and Phillips 1998).

When establishing an assessment process that is both qualitatively and quantitatively focused, an important decision is how many and what dimensions to measure. The tendency is to identify process rather than substance as the dimensions to measure, and to identify more measures than are really needed. The consequence of these typical mistakes is that program evaluation becomes a very cumbersome and difficult process, and the results of the evaluation do not justify the cost of gathering and assessing the data. Successful evaluation programs identify three to seven measures that are truly the “levers of power” in predicting performance.

Several other factors are essential for successful evaluation efforts. The evaluation program must:

- Have the time and attention of the function’s and the organization’s leadership;
- Be part of both the organization’s and the individual’s performance assessment requirements;
- Communicate results to appropriate internal and external stakeholders; and
- Use the results to revise and improve the program service, quality, and productivity. This is a circular and continuous process.

Measurement is both an art and a science, with a good amount of common sense mixed in. However, there must be some valid, quantitative component to assessment for it to be a credible assessment methodology. In *How to Measure Human Resources Management*, Fitz-enz and Davison (2002) provided some additional approaches for program assessment.

The accumulation and availability of information has spawned an obsessive drive for change and improvement. It is human nature that when something becomes easy to obtain, people want more and more of it. . . . As often happens, a need finds a solution. [Computers and the World Wide Web came along] . . . and gave everyone the ability to access educational material from anywhere at anytime. . . . The training and education programs produced and delivered by organizations for the benefit of their employees and customers take many forms and use many media. The argument over classroom versus self-directed versus on-the-job experience is pointless. Each topic has a medium through which it is best encountered. However, it is a truism that distance consumes value. . . . The further away the learning experience is from its application, the less it is relevant and retained. [T]he learning medium should be as close as possible to the skill being taught. . . . [W]e are not going to focus on the learning process but on the results of that process:

- How well did someone learn?
- How effectively did he or she apply the learning . . . ?
- What difference did it make to the business imperatives?

. . . . The three general measures of training are cost, change, and impact. Cost is defined as expense per unit of training delivered. Change is defined as gain in skill or knowledge or positive change in attitude by the trainee, and impact is defined as results or outcomes from the trainee's use of new skills, knowledge, or attitudes that are measurable in monetary terms in the organization's productivity, quality, or service results.

For those interested in a more technical discussion and in measurement formulas, please see Chapter 12 of the Fitz-enz and Davison book.

A final comment should be stated on measurement: programs can be measured in isolation, but the results have more meaning if they are measured as a component of the larger whole. For example, although each administrative infrastructure function, such as human capital, facilities management, and IT, have activities where the measurement is unique to the function, there are cross-cutting measures that can be used to compare how one function is doing in comparison with another. If the organization is interested in looking at functions both individually and collectively, it may want to consider identifying common measures across similar programs.

The Human Resources Program-Evaluation Handbook is also an excellent reference on the methods and approaches for training evaluation. In "Conducting Training Evaluation," from the *Handbook*, Quinones and Tonidondel (2003) noted that in 1998 companies were spending more than \$55 billion on training, but that this represented only the direct, out-of-pocket expense. It does not include on-the-job and similar training, and it does not take into account the more recent investments made in technology-based learning systems and software. A related estimate for training expenditure was 1.8% of payroll or, in 1998 dollars, approximately \$649 per employee. The authors also noted the changing workplace, the impact of technology, the multigenerational workforce, and the demand for greater organizational efficiency as trends affecting the demand for training. The five-step model proposed by the authors includes:

- Identifying training objectives,
- Developing evaluation criteria,
- Selecting an evaluation design,
- Assessing change as a result of training, and
- Performing a utility analysis (the utility analysis expresses the value of training in economic terms).

The most widely known and used of all training evaluation models is the Kirkpatrick Four Level Model. Kirkpatrick's book, *Evaluating Training Programs*, further developed his ideas that were originally published in 1959. The four levels of Kirkpatrick's model measure are:

- Student reaction—"What they thought and felt about the training."
- Learning—"The resulting increase in knowledge or capability."
- Behavior—"The extent of behavior and capability improvement and implementation and/or application."
- Results—"The effect on the business or environment resulting from the trainee's performance."

Kirkpatrick recommends use of "All of these measures . . . for full and *meaningful* evaluation of learning in organizations, although their application broadly increases in complexity, and usually cost, through the levels from level 1 to level 4" (see <http://businessballs.com/kirkpatricklearningevaluationmodel.htm>).

There are a variety of other models that can be selected to assess training programs, with each having strengths and weaknesses. However, successful evaluation programs share the following characteristics:

- The evaluation objectives are known and supported by all who are involved in the evaluation process; for example, the organization's executives, other leaders and managers, training staff, and employees who take the programs and classes offered.
- Data sources are known, understood, accurate, and maintained.
- The evaluation team collects and analyzes the minimum amount of data required to properly evaluate the program.
- The programs being evaluated have clearly stated goals and objectives and agreed on qualitative and quantitative measures against which results are assessed.
- The evaluation process is cyclical.
- Recommendations for change are acted on with needed program changes being integrated as appropriate.

E-Learning

According to recent research completed by Bersin and Associates, a learning research organization,

over the last five years, the training industry has been deluged with technology—learning management systems, development tools, blended learning, simulations, and much more. Our estimates show that as much as 20% to 30% of all training, by student hour, is delivered by e-learning in many organizations, a massive shift in delivery approaches in only the last few years.

Learning Circuits, an on-line magazine, published its first ever learning survey "to gauge the impact that technology developments, supplier consolidations, and the economy were having on e-learning efforts inside (the) organization." *Learning Circuits* is ASTD's source for e-learning. This complete survey, earlier surveys, and other studies on e-learning issues can be found at <http://www.learningcircuits.org/2003/nov/trends.htm>.

As might be expected, *Learning Circuits* found that public and private organizations are continuing to explore and to educate themselves on e-learning issues. More than 40% of the respondents had used e-learning “for some time,” which is defined as 5 or more years. Approximately 15% were beginning implementation of some facet of e-learning. The remaining 45% were in some stage of exploration or just beginning to look at options to actually designing and piloting programs. E-learning budgets were relatively stable over the last few years.

The e-learning tools and services portion of the survey revealed that nearly 60% of those responding use self-paced courseware, whereas just over 30% used “virtual classrooms to supplement traditional classroom-based training.” Electronic course registration was the most frequent e-learning support service used by survey respondents. The single greatest use of e-learning was for IT training and “general business skills, which included everything from leadership training to . . . diversity training.” E-learning is still at the stage of development where most e-learning is initiated by the training organization rather than by the program offices of an organization. Of those responding to the survey, more than 70% reported that their training staffs “had received development on how to produce and support e-learning initiatives.”

As is usually the case with the introduction of technology as a tool to support a program, we are still several years away from e-learning tools and programs being well-developed, totally integrated components of training and development programs. For most organizations, it takes 3 to 5 or more years to analyze the need; decide on and purchase the hardware and software; train subject matter experts, managers, leaders, and employees; develop, pilot, and revise the first programs; and then finally have the use of e-learning as an accepted component of the training and development program.

The question then arises as to what competencies are required for those individuals and organizations that have made or are considering making an investment in e-learning programs and technology. According to Sanders (2001), the following 31 e-learning competencies apply to the career field.

General (18): Adult learning, instructional design, performance gap analysis, change management, leadership, industry awareness, buy-in/advocacy, interpersonal relationship building and collaboration, consulting, business knowledge, systems thinking, contracting, project management, awareness of e-learning industry, communications, program evaluation, design and development of content, and implementation and support.

Management (3): Management of learning technology selection, management of learning technology design and development, and management of learning technology implementation.

Distribution method (6): Cost analysis and return on investment of distribution methods, limitations and benefits of the distribution method, effect of distribution method on learner, integration of distribution methods, remote site coordination, and technology evaluation.

Presentation method (4): Cost analysis and return on investment of presentation methods, limitations and benefits of the presentation method, effect of presentation method on learners, integration of presentation methods.

Although these are not typical competencies, they do represent a useful summary of the type of information and understanding that training professionals must have if they are to operate successfully in the world of e-learning technology, course content and delivery, and program evaluation.

In August 2004, Christopher Moore wrote “Using Models to Manage Strategic Learning Investments,” in which he argues that organizations should consider using maturity models to help inform the technology decision-making process.

A maturity model is a framework that classifies the evolution of a system from a less ordered, less effective state to a highly ordered, highly effective state. Maturity models have five levels or stages, typically beginning at stage one, ad hoc (sometimes called the ‘chaotic’ state), and ending at stage five, optimized (often referred to as ‘nirvana’). Throughout each stage, a maturity model tracks the evolutionary changes of key organizational characteristics based on the system being modeled. . . . Using the model as a frame of reference, organizations can set their sights on a particular state, assess where they currently are in relation to the model, create a strategy or plan to reach their destination, and measure their progress along the way (Moore 2004).

The complete discussion of maturity models and their applicability to learning technology decisions can be found at www.clomedia.com/content/templaates/clo_feature.asp?articleid=579@zoneid=31.

Finally, the question of the effectiveness of e-learning versus classroom learning should be raised. Because e-learning is relatively new as a subsidiary field within training, there is still debate about its effectiveness in relationship to the more traditional classroom training. The Department of Defense’s Advanced Distribution Learning Initiative and the University of Tulsa undertook a study to find the answer to this question.

Writing in the August 2005 issue of *Training and Development*, Traci Stizmann reported that

The answer appears to be yes according to researchers at the Department of Defense’s Advanced Distribution Learning (ADL) initiative and the University of Tulsa. In their work, Traci Stizmann, Robert Wisher, Kurt Kraiger, and David Stewart conducted a meta-analysis of 96 previously conducted studies that compared the effects of web-based and classroom instruction. . . . E-learning and classroom learning were found to be equally

effective when the content and learners were similar in both the web-based and classroom courses. . . . Learners were equally satisfied with the two methods of instruction. . . .

However, Stizmann et al. found that e-learning was more effective than classroom instruction when learners had more control over the content, sequence, or pace of learning.

WHAT IS THE VALUE ADDED?

When assessing any of the components of the training program—organization structure, succession planning, strategic training and development approach, program evaluation methodologies, staff competencies, e-learning, or other issues, the final questions to be answered are: What is the value proposition? Why is it worth making this investment for the organization? What is the benefit that justifies the cost of the investment?

Research by WatsonWyatt, a worldwide human resources consulting firm based in Washington, D.C., provides a contrary view to the traditional notion that training investments are beneficial to the organization's "bottom line," whether the organization is public or private.

WatsonWyatt maintains a Human Capital Index, which it uses to analyze a variety of human capital management issues, including the value of training. In this particular study, which included

750 large, publicly traded companies, training is actually linked to lower shareholder value, with companies providing it being worth 5.6 percent less than companies that do not provide training. Furthermore, companies that train during an economic slowdown have a market value that is 3.4 percent less than companies who don't train during this time. . . . the WatsonWyatt research shows that a large part of the problem stems from too much investment in 'developmental' training—developing people for future jobs. . . . The WatsonWyatt findings should not lead HR to abandon developmental training. . . . But, in the face of numbers that show training can be harmful to the bottom line, it is useful for HR to become healthy skeptics. All training is not equal. Companies must take a rigorous approach to the design of training programs to

reap the benefits of increased productivity, employee commitment, and shareholder value. There must be a strategy for return on investment (ROI). And the organization must capture the new skills.

The authors concluded their analysis by providing common sense advice about how to help ensure that training is a value added experience. Specifically:

- Use training technologies that build how-to skills that are highly relevant and immediately applicable.
- Stay away from theoretical or inspirational training approaches where "the rubber meets the sky."
- Follow up on training sessions with on-the-job coaching and support from managers.
- Build training around organizational objectives and strategies.
- Use credible trainers.
- Involve senior management.

The foregoing research reinforces the need for public organizations to link their training programs directly to the agency's strategic goals and outcomes, and to have a vigorous measurement program that provides insight on the value returned to the organization.

A different view of the value added question is provided by Elaine Biech, President and Managing Principal of ebb associates, inc., and the author of *Training for Dummies*. From her perspective, training attracts talent (which is born out by a variety of surveys, including the NACE survey of recent college graduates), keeps a company competitive, saves money, and it fosters across-the-board buy-in from staff that through training come to have shared values and shared experiences. So what is the test of success? According to Biech:

You know your training program is successful when the training department is invited to the decision-making table, when upper management taps into the trainers' skills and expertise to plan for the future. . . . Build a strong 'training track' that is connected to your company's current strategy. I guarantee that it will positively affect the bottom line.

EXPERIENCES OF STATE DEPARTMENTS OF TRANSPORTATION

INTRODUCTION

State DOTs play an essential role in both the economy and the mobility of the United States and its citizens. Like many public organizations, state DOTs are facing an aging workforce, work that is changing quickly in both what is done and how it is done, a demand to make strategic and cost-effective investments in technology, and a workforce that both needs and demands the opportunity to keep their skills and competencies at a level that allows successful job performance. The training programs of state DOTs are key to achieving this goal. For these training programs to be successful, they must have a robust infrastructure to support the planning, funding, and delivery of appropriate training programs. This chapter summarizes the information these organizations shared about their training program infrastructure.

STATE DEPARTMENT OF TRANSPORTATION PRACTICES

Gathering information about the experiences of state DOTs was multi-faceted. It included extensive discussions with training directors and members on the synthesis project committee, a survey distributed to the training directors of all 50 states, discussions with a various training directors and their staffs, and in-depth conversations and the experiences shared with participants at the 2005 National Transportation Training Directors Conference held in August 2005. The topics in this chapter include strategic planning; training needs assessment; critical needs assessment; organization structure; delivery mechanisms; funding sources and methods; training evaluation; professional certification; partnerships, opportunities, challenges, and constraints; and sharing and integrating information.

Sixteen states (32%) responded to the questionnaire, thus providing a snapshot of what is the current state of infrastructure for state DOT training programs. Complete results from the questionnaire are found in Appendix A. Discussions with training directors and other members of the Synthesis Topic Panel, as well as the in-depth discussions and the information shared at the 2005 National Transportation Training Directors Conference enrich the questionnaire results.

STRATEGIC PLANNING

Strategic plans provide the anchor for 14 of the 16 responding states (see Figure 1). The most common timeframe for a

strategic plan was 5 years. The others were for a time period that varied from no specific time to 20 years. More than half of the states updated their plan annually; two updated on a bi-annual basis. Only one state did not have a specific timeframe for plan updates. All strategic plans had been in place between 2 and 20 years, with the majority in place between 4 and 8 years. The strategic plans for 10 of the 16 organizations (62.5%) had a specific reference to workforce development and training or other references to employees as valued resources for the organization. As might be expected, most plans were both prepared and updated by the agency's executive staff, with input from business units and employees.

Of those states responding to the survey only 37.5% (6; California, Maryland, Missouri, North Dakota, Ohio, and South Carolina) had a succession planning process. All who had succession planning programs included the identification of training needs related to succession planning. Of states responding, 50% (8) had some type of process that linked funding requests and allocations and organization and individual performance assessment to the strategic plan or similar document. For example, the Ohio DOT reported that:

All division, office, and individual employee annual work plans are derived from the goals of the agency business plan. All budget requests must be justified and all justifications are based on business plan and work plan goals. Likewise, all performance evaluations rate employees on completion of work plan items. The agency also continuously monitors and rates itself according to Organizational Performance Indices (OPI). OPI are a quantitative measure of agency performance and are tied directly to the agency business plan.

At the Training Directors Conference, the Mississippi and Washington State DOTs presented their succession planning programs. Both programs have a rigorous selection process and a learning process that combines academic and experiential learning. Equally important, the programs have the active support and participation of key political and career executives, including sufficient funding.

Case Study: Mississippi DOT's LEAD Program

Mississippi's state DOT began its succession planning efforts in 2000 with a review of the workforce. The results showed that by 2006, 64% of the Mississippi DOT's (MDOT's) managers would be retirement eligible. To address this issue, MDOT engaged the ongoing support of upper management and developed its LEADS program. The program's goal was "to provide a continuous pool

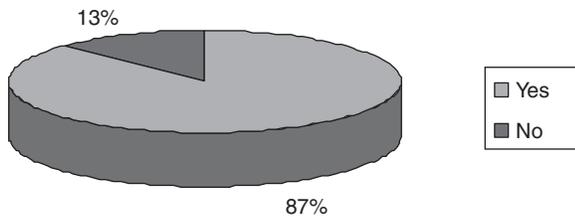


FIGURE 1 Percentage of state DOTs with strategic plans.

of potential leaders prepared to face the leadership challenges of today and tomorrow by assessing participants' leadership competencies and providing training that enhances and develops these competencies." Those selected participate in an 18–24 month experience, which includes individual assessment (360 degree assessment, career counseling, Myers Briggs), feedback delivered by professional external coaches, experiential learning, structured access to senior management, team projects and presentations, Individual Accelerated Development Plans, in-depth presentation skills course, networking opportunities, formal mentoring, and exposure to the work of all divisions within MDOT. The LEADS program has become a model for other state agencies in Mississippi and in 2005 the National Association of Government Training and Development selected the LEADS program for its prestigious "Program of the Year" award.

Strategic plans or similar documents are in place in state DOTs and appear to be an important management tool for determining agency priorities. The training function is linked to the strategic plan in a majority of agencies and is used as a point of departure for workforce development programs and activities. The missing ingredient for most agencies is a succession planning process. This result is consistent with that seen in the literature review. However, as the discussions at the Training Directors Conference made clear, many more state DOTs are beginning to think about succession planning as a tool to help mitigate the impact of an aging workforce.

TRAINING NEEDS ASSESSMENT

Fourteen of the 16 responding agencies, or more than 87%, conduct some type of training needs assessment (see Figure 2). Of those who do, 50% do the assessment annually.

The states use a variety of methods to assess training needs, but all have as part of the process some way of consulting with supervisory staff, employees, and other important internal stakeholders. Forty-four percent also have some form of consultation with external stakeholders. These stakeholders, as might be expected, are primarily consultants and

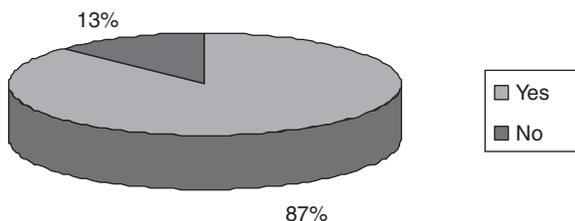


FIGURE 2 Percentage of respondents that conduct training needs assessments.

institutions that provide training for the state DOTs. The Washington State DOT's (WSDOT's) training management system has a function that allows for a monthly update of the needs assessment based on input from student evaluations, from a panel of experts, and the agency training staff. The Texas DOT (TxDOT) has a two-part annual assessment—the formal annual solicitation supplemented by a mid-year review "to identify and schedule immediate critical needs training." Seven of the agencies responding stated that the training needs were linked in some way with identified mission-critical competencies, thereby providing a basis for prioritizing training needs. The linkage between the results of the training needs assessment and funding requests was weaker than the linkage to mission-critical competencies. This may be an area that state DOTs want to consider giving some additional attention. Those states that do make some linkage include Arizona, North Dakota, Ohio, Texas, and Washington.

The survey results were validated through discussions at the Training Directors conference and additional discussions with Synthesis committee members. Training needs assessment is an integrated component of most state DOT training programs.

Case Study: Washington State DOT's Automated Training Management System (ATMS)

WSDOT's training program "is intended to enhance the attainment of department goals and objectives through appropriately trained and informed employees. . . ATMS is a resource developed to assist anyone in WSDOT who manages training, as well as the employees who require and receive training . . ." ATMS is a mainframe application in use in WSDOT since the early 1990s. Its five primary functions are: identify needs, schedule courses and classes, register employees and selected non-WSDOT employees, provide reports, and confirm classes. The system is used by managers, employees, and the training development staff. However, for the purposes of this study, its most intriguing feature is that it is constructed to provide continuous feedback on training needs and priorities. As described by WSDOT's training director: "WSDOT has a mainframe training management system that functions on a series of curriculum matrices that contain the recommended training determined by a panel of experts in each of our 13 curriculum areas. The system keeps track of how many employees have completed training, according to priority. The training staff reviews reports of the number of employees who have completed training. In general, our needs assessment procedures are automated. Training staff coordinates with the principal discipline leaders throughout the department to anticipate and document new and continuing needs."

CRITICAL NEEDS ASSESSMENT

As might be anticipated, the majority of those responding to the questionnaire, as well as those whose views were elicited through interviews, cited engineers, engineering technicians, and maintenance staff as the most important occupations. Of those who did not identify these occupations, one cited the agency leaders and another that "all

employees contribute to our vision and mission.” The methodology for identifying critical occupational needs varied significantly among agencies, ranging from anecdotal observation to those associated with the largest occupations or directly linked to requirements of the strategic plan. Nearly 70% of the agencies responding have identified the competencies needed for these mission-critical occupations. More than half of those responding have identified the competency level of some or all of the employees in these positions. The methods of assessing employee competency range from required courses and formal testing required for certification to supervisory assessments as part of the performance assessment process to assessment by one state auditors office. The results of these analyses are used to identify training and development strategies to close any competency gaps identified. Agencies have a variety of ways for periodically reassessing the progress made in closing the competency gaps identified. MDOT has a succession planning process that includes gap analysis and periodic review of progress made to close gaps. Others will continue to rely on the performance appraisal process and the certification process to handle these issues.

The process for linking the critical skills gap analysis to the training program is still a work in progress. More than 50% of those who responded to the questionnaire either did not respond to this question or do not have a process. Of those who do link gap analysis and program elements it is done through annual work and annual business plans, performance evaluations, or through the automated needs assessment process. The issue and methods of linkage got considerable discussion at the 2005 National Transportation Training Directors Conference. A number of states are beginning to examine the need for linkage as they wrestle with the issues of an aging workforce in the face of increased competition for scarce training resources.

ORGANIZATION STRUCTURE

Eleven of the 16 respondents, or nearly 70%, reported that the training function was a component of the human capital management program. This result was further validated through the interviews with training directors and participation at the Training Directors conference. In Louisiana, the training function is located in the Louisiana Transportation Research Center, which is a division reporting to the DOT’s Chief Engineer. In Pennsylvania, the Transportation University was located in the Center for Performance Excellence; however, as of July 1, 2005, it was “reconverted into a training division and was relocated into the Bureau of Human Resources.”

The reporting relationships vary from a direct report to the DOT Chief of Staff or Deputy Administrator to reporting through several layers up to the Director of Human Resources. The most frequent response was reporting

directly to the Director of Human Resources. Three of the reporting organizations had an articulated training and development philosophy and mission statement. In one state, the philosophy and mission statement were currently under revision.

From the questionnaire responses and information gathered through interviews and discussions, it appears that on average the reporting relationships are fairly traditional in terms of training and development reporting to the Director of Human Resources. In most states the delivery of managerial, professional, administrative and skills training resides with the training function. However, there is greater divergence with technical training. Those who have different arrangements tend to have technical and sometimes other training, under the authority of the District Engineer or a similar position. These arrangements are not dissimilar from what is found in federal organizations that have a similar workforce mix and in private organizations. With the current debate that is emerging about whether training should be centralized or decentralized, which is in large part being driven by technology issues, state DOTs will want to review their organization structures and current reporting relationships to see if they are still appropriate for the first quarter of the 21st century.

DELIVERY MECHANISMS

There do not appear to be any strong or particular patterns in whether training is developed and provided through internal staff and that which is developed and provided externally. The primary difference appears to be that external providers include colleges, universities, the NHI, FHWA, and other transportation industry-specific institutions. State DOTs appear to have a greater range of selection for external training sources than is the case with most public organizations.

All respondents to the survey questionnaire use a wide variety of delivery and learning techniques, ranging from formal classroom, field instruction, and electronic learning to job assignments, coaching, and mentoring. All but three of the respondents use web-based training, and one of those that does not is currently exploring its use. Of those offering web-based training, one-third offer their web-based courses on demand.

By 2006, nearly 70% of questionnaire respondents will use video conferencing to some degree. Thirteen of 16 respondents (81%), blend a variety of delivery mechanisms and techniques to deliver training to employees, including web and classroom, video conference and classroom, video conferencing with the web-based for Professional Engineering preparation courses, classroom with hands-on exercises for maintenance academy courses, and web-based in a computer class with an instructor. Participants work at his or her individual level, with occasional instructor-led sessions for the entire group. Most respondents use web and video to

provide participants with access to subject matter experts who may be geographically removed or whose schedules do not permit their personal presence in the classroom. Several states noted that their use of blended strategies was particularly important for technical training.

When compared with other local, state, and federal functions, state DOTs appear to have a wider range of choice for training delivery because of the strong support provided by federal funding through a network of funding to colleges and universities, and the very strong support for training and development provided by FHWA.

FUNDING SOURCES AND METHODS

Funding for training comes from a variety of sources, including directly through federal dollars or through classes provided by NHI and other federally supported entities. For example, the Texas and Washington State DOTs have dedicated training budgets managed by the training divisions with funding sources including both state and federal monies. In Arizona, funding comes from the operating divisions. Several states, including Arkansas and Idaho, reported that funding for technical training had its own budget, whereas other training needs were met through allocations that were components of a larger budget, such as that of the Human Resources Division. Maryland and North Dakota fund their training primarily or wholly with state funds. One state noted that training funding for engineering, maintenance, and equipment employees was dedicated. Others noted that some training funds came through federal reimbursement of the training expenditure. At the 2005 Training Directors Conference, the West Virginia DOT described their success in switching funding sources from “100 percent state funds to 100 percent federal funds through the SAFTEA-LU mechanism.” This switch has allowed the West Virginia DOT to have a secure, predictable funding source, which had not historically been the case.

Training as a percentage of the compensation budget is a commonly accepted way to judge the level of investment in training. The responses of percentage allocated ranged from 0.0043% to 4.3%. The most frequent response was approximately 1%. *Training Magazine's* “Top One Hundred Companies for 2004” (which includes technology companies) and the American Society for Training and Development’s 2003 “State of the Industry Report” indicated that leading private-sector companies have training budgets that average 4.1% of payroll. Public-sector organizations, on average, tend to fund training and development at the level of 1% and 2% of the compensation budget. Three DOTs, Arizona (4.3%), Texas (3.5%), and West Virginia (3%), are models with whom other DOTs may want to consult to learn how they were able to acquire funding levels that are substantially above average.

DOTs in Arizona, Maryland, Montana, North Dakota, Ohio, Texas, and West Virginia responded that “training, education, and development funds are considered essential human resource investments.” These organizations have used a variety of ways to secure funds and convince funding sources that training is a value added investment. One of those responding positively noted that although the number of courses and the funds allotted were not touched, staff to provide these courses had been reduced. The one state that responded that training funds were not considered an essential investment noted that the state was currently exploring outsourcing “for budgetary reasons.”

The decision makers for increasing or decreasing training funds were all reported to be at the highest levels within the state DOTs. The TxDOT noted that it has a Standing Committee on Training that made funding recommendations and decisions, and that this was a successful strategy for building program support and funding of training.

California, Texas, Washington, and West Virginia have multi-year funding for training; all others are subject to the annual appropriations process, including those who receive federal funding. Because multi-year funding provides some greater stability and can improve both planning and delivery of training (and then presumably increase the return on investment), other state DOTs may want to explore this funding option.

As might be expected, the responses to “What are your most difficult funding issues for training, education, and development” (Question 37) were quite varied. Responses included: affording and deciding on new technology, insufficient dollars and/or staff to meet the growing training requirements of the organization, and supervisors being unwilling to allow employees time away from the job to attend training. Two respondents mentioned the difficulty in educating decision makers, or “getting a seat at the table,” about the importance of funding training. One state was fortunate enough to report that it has not experienced funding shortfalls.

Successful funding strategies were equally varied. Two states reported that they always get sufficient funds to meet the identified needs. Several states mentioned that they had training advisory committees whose participation in the training decisions results in greater support than might normally be the case. Another agency mentioned that federal reimbursement provided a successful funding strategy. Yet a third agency mentioned that it pooled funds with others states in the region to provide training over the Training Learning Network. What is clear from the responses to this question, as well as from others in the survey, and from the discussions at the National Transportation Training Directors Conference, is that those training departments that are able to engage key political and career executives and other influential stakeholders systematically—and then able to deliver quality training products—are more successful than those who do not in acquiring funding.

This state DOT experience is consistent with what other public- and private-sector organizations report. Involving key decision makers and stakeholders is an essential ingredient for securing funding for training and development programs.

TRAINING EVALUATION

As was confirmed by the questionnaire results and the conversations and interviews with state DOT training officials, all states have some type of course and participant evaluation. Eight of the 16 respondents use one or more of the Kirkpatrick 4 Levels to evaluate their training offerings. (Kirkpatrick is still considered the “dean” of training evaluation methods; however, most public and private organizations find the 4th level either too complex or too expensive to use.) Both Arizona and Maryland use all four levels of the Kirkpatrick model to evaluate training. Ohio evaluates effectiveness through a post-course evaluation, which is compiled by employees immediately after the course is completed, and then uses a Likert 1-5 Customer Satisfaction survey after 30 days for the employee. At the end of 90 days, a similar survey is sent to the supervisor for completion.

Fifty percent of the agencies stated that the program and course evaluation results were either helpful or very helpful in securing management support for training programs and/or funding levels. For example, Arizona, which has a funding level equivalent to 4.3% of the DOT’s compensation budget, has found that the investment in a sophisticated evaluation process has contributed significantly to its success in acquiring training funding. However, only four agencies noted that they had qualitative and quantitative metrics that provide insight “into which courses, activities, and events provide the best value for the time and money invested.” Only two agencies, Texas and Washington State, were willing to share their metrics at this time. Pennsylvania noted that its program was undergoing significant revision and therefore it could not participate at this time. Both Ohio and Texas perform return on investment analyses as part of their training assessment process. As Ohio noted, “The agency is committed to data-based decision making. We constantly perform cost analyses of all of our training programs and have a variety of systems and tools in place by which we measure the value of our programs.”

All agencies have methods to use the evaluation information to revise training and education offerings. Texas uses optically scanned forms and puts the evaluation data into a database that is available to the training program administrator. It also uses the biennial evaluation of subject matter experts to keep course content accurate and up to date. Washington State also uses the optically scanned forms to input data to their automated system.

Most states do not appear to link their evaluation results with funding requests. Ohio, however, has a very structured process.

ODOT’s current Business Plan includes Organization Performance Expectations for a number of areas. The expectation of Central Office and district quality and human resources operations is to achieve the OPI [Ohio Performance Improvement] goals and to sustain them through the biennium . . . Included in the OPI goal is a measure for completion of training programs. ODOT’s current goal is 90%, a five percent increase over the previous year’s goal of 85%.

PROFESSIONAL CERTIFICATION AND RELATED PROGRAMS

All agencies responding to the survey require professional certification, registration, continuing education, and certification programs. These programs are for engineers, certain facilities occupations, and other technical occupations. Texas appears to have the broadest set of requirements, including annual Continuing Education Unit (CEU) requirements for human resources professionals. Continuing Education Credit is a nationally recognized method of quantifying time spent in a classroom during professional development. Ten hours of classroom instruction equals 1.0 CEU.

State DOTs have well-established programs to track these special requirements. All provide some degree of support for these requirements. The support includes providing study materials, administrative time to prepare, reimbursement for the cost of preparation courses and for taking the examination itself, and providing state-supported training so that individuals can keep their certifications or licenses. North Dakota provides a “one-time 1% monthly salary adjustment upon achieving certification.”

PARTNERSHIPS

All agencies have partnerships with colleges; universities; other federal, state, or local agencies and organizations; professional organizations; and private-sector vendors. Many of these partnerships are with centers that specialize in supporting transportation-specific issues and requirements. The majority of agencies have formal agreements with most partners. These organizations may also have some information agreements. Four states classified all of their partnerships as informal.

The Arizona DOT has an entire office devoted to partnering. Two states described their training advisory committee as a successful partnering effort. Pennsylvania has what it calls its “Agility Program,” which “has been a highly successful partnering arrangement across the state with numerous organizations.” WSDOT has an information agreement with one of its labor organizations to “conduct Workzone Safety Supervisors training for vendors and contractors.”

The TxDOT has formed a public-private partnership for a 10-year, multi-billion dollar highway construction project. The DOT training program was given responsibility for providing the training for both public- and private-sector

employees, and is described as follows by TxDOT's training director:

With the new advent of public/private ventures in the state with the \$128 billion Trans Texas Corridor project, contractors in the private workforce are going to be looking at the Department to set the guidelines or provide the actual training for their employees in numerous areas such as materials test and acceptance, inspection, DBE/HUB [Disadvantaged Business Enterprise/Historically Underutilized Business] Title 6 reporting, environmental issues, etc. TQD [Training, Quality, and Development] has already been requested to prepare a preliminary impact to the training operations and how we can accommodate increased training needs to the private sector.

When comparing state DOTs' training programs to those of other public organizations at the local, state, and federal level, state DOTs tend to be greater users of partnerships of all kinds. There is an extensive and complex network for relationships between state DOTs and professional organizations such as AASHTO, FHWA, and NHI, with its extensive funding and training course support; between and among DOT training programs and local community colleges, state colleges and universities, and private colleges and universities; and between state DOT training programs and a variety of professional organizations, such as those for engineers and other technical transportation professions.

OPPORTUNITIES, CHALLENGES, AND CONSTRAINTS

Opportunities—A number of agencies identified the opportunities to begin or expand e-learning, mentoring, and coaching programs, as well as blended learning for state DOT staff and expanding training offerings to meet new demands, offering training to both public and private employees based on the “advent of public/private ventures.” Two agencies identified developing a succession planning program.

Challenges—The themes from this question are keeping up with technology (including transferring to a statewide learning management system) and making sound technology investments, dealing with the impact and effects of large numbers of staff retiring, particularly when as individuals retire they cannot be replaced either at all or at least on a one-to-one basis. Another theme was addressing the conflicts that come with a multi-generational workforce and implementing within the DOT a statewide competency system. A third theme was linking the training function more closely to the agency or state strategic plan.

Constraints—The most predominant theme was an imbalance between demands and either dollar and/or staff resources, particularly in the face of a rising demand for training products and services. One response cited the need to convince management that not all performance problems could be solved through training.

These constraints are ones that are consistent with the issues facing public service organizations at every level of government, made both more difficult and more possible because most organizations are finally realizing the value of well-qualified employees—human capital—to the organization's ability to meet its strategic goals and outcomes. However, many of these same organizations do not yet fully realize that for staff to have the skills and knowledge to achieve the strategic goals and objectives, the institution must be willing to make very significant training and development investments. This may be the most important of the cost-benefit or return on investment issues facing state DOTs and most other public institutions.

SHARING AND INTEGRATING INFORMATION

Software Tools

The software tools identified by survey respondents include:

- Pathlore Enterprise Learning Management System (Arizona, Maryland).
- STARS Management Learning System (Arizona).
- Training Partner 2003, a learning management system (Pennsylvania).
- PeopleSoft 8.3 for training processes, course sessions, enrollments, course completion data, individual transcripts, etc. Automation links between the Department's Learning Content Management System for on-line courses and updates to PS8.3 on Training Transcripts (Texas).
- A new Learning Management System installed in 2005 to enhance the management and study of employee skills, and to what extent training meets those needs (California).
- On-Track, a training management system (Michigan).
- Training Records System—A propriety training database and learning management system (Ohio).
- Human Resource Information System for tracking attendance and hours of training, PeopleSoft 8.3 (Montana).
- ETRN is an internal mainframe tracking system used to track training completion and requirements. It is accessible to managers, supervisors, and employees (Louisiana).
- Meridian Software to develop web-based training (Idaho).
- Training laboratory with 10 desktop PCs (North Dakota).
- Mainframe Automated Training Management System (Washington State).

Other Means of Program Support

State DOTs use the full range of tools available in today's world, including e-mail, electronic publications, electronic

calendars, websites, web casts, Internet discussion rooms to help link communities of practice, and listserv for the electronic tools. The more traditional tools used by state DOTs include newsletters, magazines, meetings, conferences, seminars, and other group gatherings.

At the 2005 National Transportation Training Directors Conference, Dr. Allison Rossett provided an extensive presentation on the impact of technology on the development and delivery of training and development programs. She outlined the evolution of technology's impact on training delivery. Currently, training delivery is still primarily instructor focused, with technology providing tools to assist in the learning process. However, the more advanced public and private organizations are moving to "learner centered" training delivery, including on-demand training with access through the web, in person and electronic discussion groups, and similar techniques to ensure a well-trained staff. The most advanced organizations have gone one step further and are integrating performance and learning. For example, if a manager has a performance management problem, he or she can go online to a resource center and have immediately at hand not only the organization's policies and procedures, with successful practices for handling a variety of performance issues, but the names and contact information of experts who are available electronically or in person to discuss the issues and the potential solutions to the problem. An individual employee can

access frequently asked questions and answers for issues that arise as part of getting work done. In some of the most sophisticated learning environments, the learner can select the type of training based on his or her personal style of learning; for example, visually, and auditory. Although there is not yet a significant longitudinal body of data about these new approaches to learning, the early results suggest that "just in time learning" and these more tailored learning approaches provide for significantly greater information retention than more traditional teaching methods. Additional information about this topic can be found on Rossett's website: <http://edweb.sdsu.edu/people/ARossett/Arossett.html>.

SUMMARY

The survey responses have provided a useful overview of both the training program infrastructure of individual DOTs and the patterns of similarity and difference between and among state DOTs. Supplemented by the information gathered through detailed discussions with training directors and their staff members, and through participation at the 2005 Training Directors Conference, a real sense of the practices, issues, and challenges facing state DOTs as they work to provide an appropriate administrative infrastructure to support training and development activities in their organizations can be provided.

SUCCESSFUL PRACTICES FROM BUSINESS AND GOVERNMENT

In business (and in government) we've stopped talking about personnel administration or even human resources management. Now we are dealing with the management of human capital. . . . People are the most important asset of an organization.

Jac Fitz-enz
Author and HR Strategic Thinker

INTRODUCTION

An important part of any practical application research effort is to identify successful practices used by other organizations and share those through the research report. This chapter discusses successful practices used by both the private and the public sectors. In sharing these success stories, we realize that what works in one organization may or may not have direct transferability to another organization. However, the very concept of learning about another organization's success can often stimulate creative thinking and ideas that can be applied to one's own organization. It is in this spirit that the successful practices are provided.

AMERICAN SOCIETY FOR TRAINING AND DEVELOPMENT—BEST AWARDS

ASTD is one of the premier professional societies for members of the training and development, or as ASTD has renamed the profession, the workplace learning and performance improvement profession. Beginning in 2003, ASTD has presented the annual BEST awards to organizations in the public and the private sector from around the world who Build talent, Enterprise-wide, Supported by the organization's leaders, fostering a Thorough learning culture.

ASTD has tracked the performance of both its 2003 and 2004 winners of BEST awards. The public and private organizations are able to demonstrate that their training does, indeed, provide a value added contribution to the organization. In the article, "Best Practices in Learning Tied to Financial Performance," which appeared in the June 2005 issue of *Training and Development*, ASTD's Research Department analyzed the BEST award winners from 2003 and 2004

. . . as well as another study of high-performing learning organizations conducted by other companies, [to] identify similar characteristics that define excellence in learning functions. ASTD has found that companies with best practices in learning functions are among those with high levels of financial performance. The 21

public companies that won ASTD BEST awards in 2003 and 2004 outperformed the S&P 2005 Index by 2 to 1 for the past 5 years.

The BEST award is now in its fourth year. There are more than 60 public and private organizations whose training and development success stories are captured in these awards. They provide a rich source of data for state DOTs to learn how other organizations have provided exceptional training experiences for their employees. These are organizations whose training programs have a high percentage of mandatory training time, where leaders support learning throughout the organization, where learning objectives are components of performance management, and where a corporate level learning officer is in place. In addition, training is directly linked to the organization's strategic goals and objectives. Examples of the 2004 BEST winners included:

Accenture—learning from experience, failures as well as successes, is a vital part of the enterprise commitment to learning at Accenture, a global provider of professional and technical services with more than 100,000 employees. A win/loss review is conducted after every sales opportunity, and lessons learned are documented in a globally accessible database that is part of the company's knowledge management system. Employees learn safely from mistakes made in cutting-edge simulations that cover a wide range of business-critical skills, as well as from the failures and challenges shared by colleagues as part of the learning experience.

American Express—American Express recently reviewed its customer service training program to develop a more robust curriculum for its representatives. A simulated call center environment called SIMON (Simulated Online Network) was created. SIMON allows learners to practice typical tasks without the risks involved in helping a live customer. Feedback comes from the application, instructors, and coaches. The simulation curriculum is combined with a unique technology called LARA (Language Reduction Application), which helps learners meet customer needs by telephone more quickly and efficiently. SIMON has new employees meeting minimum job standards in less than half the time; some are even outperforming existing employees.

Defense Acquisition University—Integrating knowledge sharing into the learning environment is one of the success stories of Defense Acquisition University (DAU), the corporate university of the U.S. Department of Defense. Keeping employees up to speed with business changes is the mission of DAU's recent Rapid Deployment Training Initiative, which has teams create new learning materials for a digital repository—and be used by on-site mobile training teams—within 5 days of a change.

Performance metrics indicate that since 1998 DAU has increased the number of students trained from 33,000 to 72,000 per year, reduced faculty/staff from 643 to 540, and cut student travel costs from US\$531 million to \$18 million per year. The savings freed resources for e-learning, curricula modernization, and extended reach. This helped fund DAU’s Continuous Learning Center with over 60 modules that now has more than 200,000 registered users, and expanded the reach of DAU’s learning products into more than 116 countries worldwide.

Deloitte & Touche USA LLP—The key to effective new learning solutions is sometimes marketing and communications. Deloitte & Touche discovered that marketing and communications is the key to successful new learning solutions after launching its learning website—a virtual university and centralized learning hub for its 30,000+ workforce. Investment in a marketing/communications arm of the training organization significantly contributed to increases of 816% in learning website users and 745% in e-learning courses completed.

PLANNING TRAINING AND MEASURING RESULTS

The U.S. Office of Personnel Management, the central human capital agency for federal organizations, has compiled a “how to” manual entitled *A Guide to Strategically Planning Training and Measuring Results (2000)*. The *Guide* defines a four-step process to assist in this endeavor:

- Step 1: Analyze Established Goals to Identify Training Requirements
- Step 2: Develop Training Strategies to Achieve Goals
- Step 3: Integrate Training into Strategic Plans
- Step 4: Evaluate Training Goal Accomplishment.

The *Guide’s* introduction states:

Chances are that you have read something lately or participated in discussions about the payoffs of investing in training. For example, two major corporations recently made front page news by providing their employees with home computers. These corporations believe that this investment will contribute to an acceleration of skills for both employees and the company throughout the 21st century. In the business world there is increasing recognition that training the workforce is a win-win business strategy.

The *Guide* contains a wealth of best practices for learning organizations to use to increase their strategic focus on training and development activities and for measuring the results achieved. The *A Guide to Strategically Planning Training*

and *Measuring Results* is available at <http://www.opm.gov/hrd/lead/pubs/spguide.pdf>.

SUCCESSFUL PRACTICES IN TRAINING PROGRAM DESIGN

As part of its ongoing work to review issues relevant to human capital challenges, the U.S. General Accountability Office (GAO) assessed the lessons learned by six public organizations about the design of training and development programs. As part of this analysis, GAO offers its suggestions of successful practices (see Figure 3). This particular report was prepared at the request of Senator George V. Voinovich who, when Governor of Ohio, introduced a variety of learning programs in the state to improve individual and organization performance. The report defines an analytical framework for assessing training programs. The framework is anchored in GAO’s model for strategic human capital, which has four components—leadership; strategic human capital planning; acquiring, developing, and retaining talent; and results-oriented organizational culture (Figure 3). Under the leadership of Comptroller General David Walker, GAO has earned a worldwide reputation for its work in improving human capital management programs.

The suggested analytical framework for training and development also has four components—planning and front-end analysis, design and development, implementation, and evaluation (see Figure 4). The six case studies “. . . focused on ways these agencies (1) assessed agency skills gaps and identified training needs, (2) developed strategies and solutions to these identified training and development needs, and (3) determined methods to evaluate the effectiveness of training and development programs.” They provide rich detail about real experiences in identifying needs, developing solutions for those needs and evaluating the results achieved.

SUCCESSFUL PRACTICES IN TECHNOLOGY

At the 2005 National Transportation Training Directors Conference, Dr. Allison Rossett, Professor of Educational Technology at San Diego State University, and a national expert in the use of technology for training and development provided some perspective into the rapidly transforming world

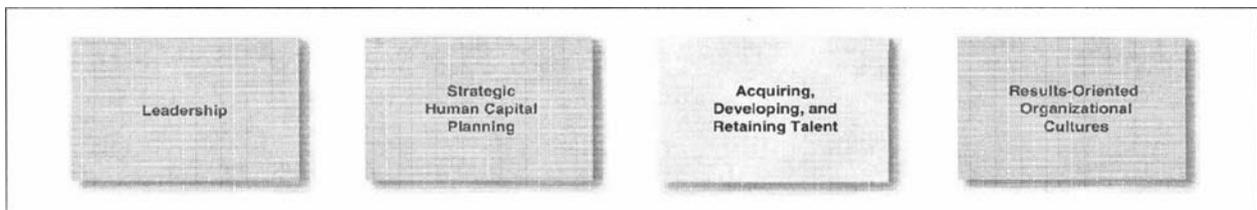


FIGURE 3 Cornerstones of GAO’s Model of Strategic Human Capital Management (Source: GAO).

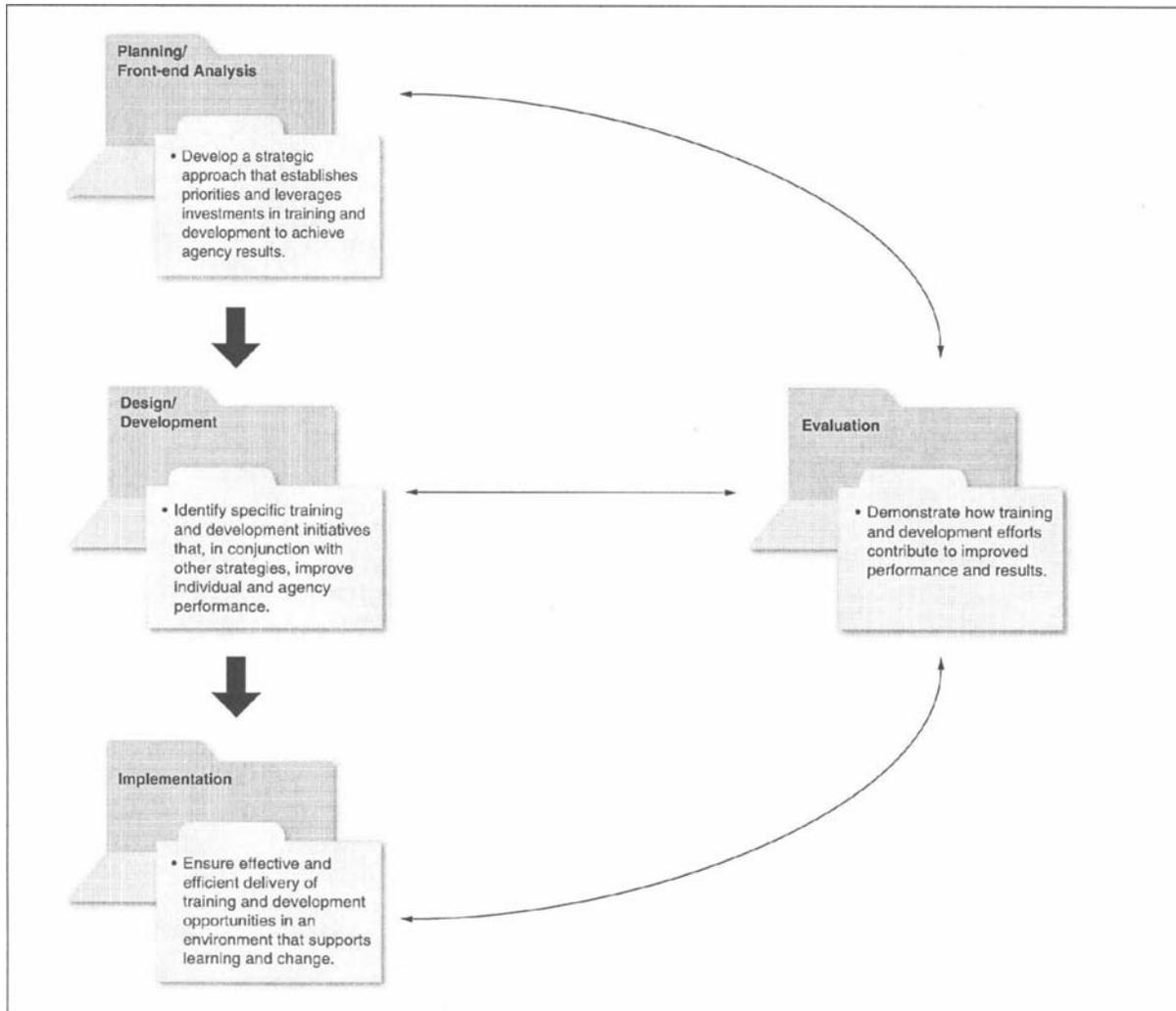


FIGURE 4 Four components of the training and development process (Source: GAO).

of educational technology. Her presentation, “How Technology Is Changing Nearly Everything for Our Students and for Us,” underscored the rapid changes occurring in the training world. Among her key points were:

- Currently, ASTM estimates that approximately 30% of training delivery is by means of technology.
- The trend is that successful public and private organizations are or will shortly become learning organizations.
- These organizations have a high level of literacy with well-educated employees who expect to be involved in their work and in the organization’s success, and who also expect the organization to provide training and development experiences that are directly relevant and rich in applicable information.
- In the new world of training and development more content will be delivered on demand in learner-centered environments through multiple resources. For example, in 2005 the U.S. Internal Revenue Service delivered 70% of its learning events electronically. Before he left General Electric (GE), CEO Jack Welch set a goal of

100% of GE’s training and development to be learner-centered and technology-enabled.

- In the not too distant future, performance and learning will be totally integrated as organizations and individuals embrace human performance technology and the increased value of on-demand, or “just in time” learning that is integrated into the workday.
- The technology of iPods and cell phones is rapidly developing to provide what is literally instant access to just in time learning.

Additional information and resources are available through Dr. Rossett’s website: <http://edweb.sdsu.edu/people/ARossett/ARbiblio.html>.

MANAGING THE TSUNAMI OF CHANGE

One way to understand the rate of change is by the length of various historical ages. The Agricultural Age lasted approximately 2,000 years, the Industrial Age approximately 350 years, and the Technology Age has lasted about 70 years.

With the identification and modeling of DNA, scientists and scholars are now beginning to speak of the Biological Age, which they estimate may last 35 years. Another way to understand the rate of change is that more information has been created in the last 30 years than in all of the rest of mankind's recorded history.

It is within this context that Amy Whitten, a Principle of the Whitten Group based in Jackson, Mississippi, discussed successful practices for managing organizational change at the 2005 National Transportation Training Directors Conference. She identified four types of reaction to change:

- Entrenched individuals who want minimal change,
- Overwhelmed individuals who withdraw and avoid changing,
- The learner who embraces change who is engaged and growing, and
- The individual who simply makes it up as he or she goes along.

Understanding these types and their approach to and impact on change is essential to developing strategies and plans for designing and implementing successful change. Keys to reducing resistance to change include powerful communication of the vision for change (which means that a vision was developed), a realistic implementation plan and time-frame supported by an appropriate level of resources, a sense of humor to get through the tough times, strong expectations of success and of employee and managerial contribution and participation, tough love, and calculated wins (ensuring that there are visible, measurable successes along the way and that those are both recognized and celebrated). Those interested in learning more about this approach to change can contact Ms. Whitten at www.thewhittengroup.com.

TRAINING METRICS

Although each state DOT must establish its own set of metrics that reflect the quality, quantity, and timeliness of its training and development efforts and their contributions to improving individual and organizational performance and to achieving the organization's strategic goals and objectives, there are a few measures that can be compared with national figures. For example, the ASTD 2005 *State of the Industry Report* contains 9 years of data about such issues as the average training expenditures and other relevant metrics. For example, according to the 2005 report, the average annual expenditure was \$820 per employee, an amount that has remained stable since 2002. The report further disaggregates the data for three major groups. For example, Benchmarking Forum (BMF) (Fortune 500 and large public sector) organizations spent \$1,190 per employee, which is a reduction from the average expenditure of \$1,366 in 2002. Another useful comparative metric in this report is the

average percentage of payroll that public and private organizations invest in learning. This metric showed an increase from 2.2% in 2002 to 2.5% in 2005, and then disaggregates these data by its three categories. For example, BMF organizations also decreased their percentage of payroll expenditure from 2.47% in 2002 to 1.99% in 2005. The report also provides useful comparisons about the sources of training—internal versus external. For example, some 25% to 30% of expenditures were for outsourced learning. It also has an excellent section on the use of technology in learning. Interesting data from the 2005 report show that nearly 30% of learning is now delivered by means of technology and that more than 50% of that was online. Of the online learning, 75% or more was self-paced.

The WatsonWyatt Worldwide Human Capital Index is a second source of comparative data for training, development, and other human capital programs (see <http://www.watsonwyatt.com/research/resrender.asp?id=W-488&page=1>). As ASTD does with its BEST award winners, WatsonWyatt's Human Capital Index develops metrics that demonstrate the values, or lack thereof, that flow from various human capital investments. This database has multiyear information from 750 corporations and a growing number of public-sector organizations.

A third source is the comparative data that can be found at the Saratoga Institute, a subsidiary of PriceWaterhouse Coopers. This database contains workforce diagnostics that can provide insights on issues where training and development may be the solution (see <http://www.pwc.com/extweb/service.nsf/docid/623831886DE2BC6A85256EBA0058BC4>). NAPA worked with the Saratoga Institute in the late 1990s and early 2000s to incorporate public organization data in the databases.

SUCCESSION PLANNING

Jack Welch, former CEO of GE, was famous for his attention to succession planning for key leadership positions within GE. He believed that succession planning was the key to organizational success. The following excerpt from a 1998 *Business Week* article about Welch demonstrates his participation in and commitment to succession planning. He was never "too busy." Selecting and grooming the next generation of leaders was his job (Byrne 1998).

Welch knows by sight the names and responsibilities of at least the top 1,000 people at GE. 'He knows their names. He knows what they do. That's an incredible reinforcement to the individual that he or she counts,' says Dunham of GE's Medical Systems business. . . . That message has been consistently hammered home by Welch since he became CEO in 1981. Nowhere does Welch put greater focus on people and performance than in the company's annual Session C reviews that begin in April and last through May. With three of his senior executives, Welch travels into the field to each of his 12 businesses to review the progress of the company's top 3,000 executives and keeps closest tabs on the upper 500.

. . . . These are intensive reviews that force those running the units to identify their future leaders, make bets on early-career “stretch” assignments, develop succession plans for all key jobs, and decide which high-potential executives should be sent to Croton-on-Hudson for leadership training. . . . How can Welch possibly weigh in with intelligent comments about so many diverse managers and executives? Largely, it’s because he has met so many of them. In an average year, Welch directly meets and interacts with several thousand GE employees. At the session, moreover, he sits behind a briefing book that contains every employee’s assessment of their strengths and weaknesses,

developmental needs, and short- and long-term goals, together with their supervisor’s analysis. Photos of the employees being tracked and reviewed accompany the package.

In every potential leader, Welch is looking for what he now calls “E to the fourth power,” his term for people who have enormous personal energy; the ability to motivate and energize others; “edge”—the GE code word for being instinctively competitive—and the skill to execute on those attributes.

CONCLUSIONS

The best companies (and public organizations) know, without a doubt, where the real productivity comes from. It comes from challenged, empowered, excited, rewarded teams of people. It comes from engaging every single mind in the organization, making everyone part of the action, and allowing everyone to have a voice in the success of the enterprise.

Jack Welch
Former Chairman and CEO,
General Electric

The themes discussed in chapters two, three, and four suggest that training is a critical success factor for state departments of transportation (DOTs). Chapter two identified the trends transforming government—changing rules, the emphasis on performance, the emphasis on improved service delivery, the requirement for increased collaboration—and juxtaposes those with the trends affecting both the workforce and the workplace—increased competition for a shrinking labor pool, the continued innovation driven by technology, and coping with the rate of change that ensues. Therefore, this concluding chapter discusses the demand for a knowledgeable workforce and the related demands it places on training and development organizations for a robust administrative infrastructure. The infrastructure includes organization placement, the competencies required for today’s training professional, and the essential need for the evaluation of programs that is then linked not only to improving program content and delivery, but also defines the value added contribution that training and development provides the organization. This segment of chapter two would not be complete without reference to the impact of e-learning on training delivery. And finally, the chapter includes a discussion of the critical importance of concrete ways to define the value added contribution of training and development programs to the organization’s ability to perform successfully. Chapter three shows both the strengths and weaknesses of how state DOT’s individually and collectively respond to the imperatives identified in chapter two, including case studies and examples of successful practices within state DOTs. Chapter four highlights best practices in the public and private sector for ensuring strong and vibrant training and development infrastructure, focusing on training program planning and design, successful use of information technology to manage and deliver training programs, managing change, and the critical importance of succession planning programs and the development and use of metrics to define value added.

The themes also suggest that like other administrative infrastructure functions, training programs in all their

aspects are in the midst of great change; from the exit of the “Baby Boomer” generation to the advent of technology to the examination of the proper organization structure and proper reporting relationships. The training function, regardless of where it is placed in the organization, continues to forge needed links between the larger organization’s strategic goals and outcomes and training products and services.

An area that needs continued focus is evaluation, establishing both qualitative and quantitative metrics and then linking those to the strategic goals and outcomes of the agency. Technology is an enabling tool in this journey, but much remains to be done to bring the full power of automation to bear on transportation training programs. Many training functions are struggling with an increasing workload in the face of stable or falling resources. Others, however, are able to make the argument that their contributions add value and contribute to the successful performance of strategic goals and outcomes. Examining the practices of state DOTs, such as Arizona, Texas, and Washington State, which are successful in acquiring needed support and funding, is instructive for others who are striving to increase both support and funding.

In an age of instant communications through multiple media, training programs will need to continue to enhance their communications and marketing capabilities. What is most encouraging is that research is emerging in the private sector that shows a direct link between a well-trained and informed workforce and increased profitability. Public organizations need to heed this experience and find ways through evaluation and metrics to document and express their ability to make this same kind of contribution on the public side of the equation.

State DOTs have, to varying degrees, all of the infrastructure components needed to develop and implement successful, value added contributions to their organization’s ability to meet the identified strategic goals and outcomes. The need is to link all of the components so that there is an integrated, seamless whole relating the training program directly to the organization’s ability to improve individual and organizational performance. Those few DOTs that have, wholly or for the most part, achieved the strategic integration have significantly better results than those who are still involved in the process.

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APPENDIX A

Questionnaire for State Transportation Agencies

SUMMARY OF RESPONSES As of March 19, 2006

Strategic Plan or Similar Document

1. Does your agency have a strategic plan, business plan, program plan, or similar document that identifies mission critical goals and desired outcomes?

State	Yes	No
Arizona	X	
Arkansas		X
California	X	
Idaho	X	
Louisiana	X	
Maryland	X	
Michigan	X	
Missouri	X	
Montana	X	
North Dakota	X	
Ohio	X	
Pennsylvania	X	
South Carolina	X	
Texas	X	
Washington	X	
West Virginia		X

2. What time period does it cover (e.g., one year, five years, other)?

State	One Year	Five Years	Other	N/A
Arizona		X		
Arkansas				X
California				X
Idaho	X			
Louisiana		X		
Maryland				
Michigan		X		
Missouri	X	X		
Montana				
North Dakota				
Ohio				
Pennsylvania		X		
South Carolina			3 years	
Texas		X		
Washington		X		
West Virginia				N/A

N/A = not available.

3. How frequently is it updated—Annually? Every two years? Every five years? It is not updated? Other?

State	Annually	Every Two Years	Every Five Years	Other/Not Updated
Arizona	X			
Arkansas				N/A
California	X			
Idaho	X			
Louisiana	X			
Maryland	X			
Michigan				Other
Missouri	X			
Montana				Other
North Dakota		X		
Ohio	X			
Pennsylvania	X			
South Carolina	X			
Texas		X		
Washington				Other
West Virginia				N/A

N/A = not available.

4. How many years has this document been in place?

State	No. of Years in Place?	Comments
Arizona	15	
Arkansas		N/A
California	The department has been doing some form of strategic planning since the late 1990s, when we came up with the mission statement (“Caltrans Improves Mobility Across California”). Our goals have been tweaked periodically during the last few years and in particular last year. The use of a simplified mission statement exemplifies the multi-modality of the mission, and is easier for staff to internalize, remember, and apply to day-to-day operations and tasks.	
Idaho	10 plus	
Louisiana	6	
Maryland	8	
Michigan	5	
Missouri	3	
Montana	5	
North Dakota	4	
Ohio	6	
Pennsylvania	2.5	
South Carolina	Not sure	
Texas	20 plus	With periodic updates
Washington	N/A	
West Virginia	N/A	

N/A = not available.

5. Does that document include a component specific to workforce development and training or other reference to employees as valued resources? If yes, would you please provide a copy attached to the questionnaire response.

State	Yes	No
Arizona	X	
Arkansas		N/A
California	X	
Idaho		X
Louisiana	X	
Maryland	X—SHA Business Plan 2004–2007 in Values and in Efficiency of Government goal	
Michigan	X	
Missouri	X	
Montana	X	
North Dakota	X	
Ohio	X— http://www.dot.state.oh.us/BusinessPlan0607/BusinessPlan06-07Final.pdf	
Pennsylvania		X
South Carolina	X	
Texas	http://www.dot.state.tx.us/insdotdot/geninfo.htm?pg=stratplan	X
Washington		X
West Virginia	N/A	

N/A = not available; SHA = State Highway Administration.

6. Who is involved in the preparation and update of the document?

State	Who Involved?
Arizona	Top management
Arkansas	N/A
California	Typically, the document is prepared annually, and updated quarterly by a journey-to senior-level transportation planner under the direction of senior management. The preparer acts as liaison to guide and coordinate the preparation of the Strategic Plan by delegated preparers in each of the 10 offices within the Division of Transportation Planning. The preparer collects these reports on a quarterly basis; compiles them into one unified and cohesive report; ensures consistency of format, language, and content; obtains Division Chief approval; and forwards a single Strategic Plan for the division to the Planning Deputy's office, where it is recorded and tracked quarterly. The Planning Deputy incorporates the Strategic Plan into his annual report to the Director.
Idaho	Executive staff
Louisiana	Each division
Maryland	All levels of management and employee teams
Michigan	A cross-functional team
Missouri	The Organizational Results Unit
Montana	The Director and top-level executives, and a consultant who became an employee charged with ensuring its use
North Dakota	The process starts with the executive level—the NDDOT Director and three deputy directors. The process extends down the organization through district engineers and division directors. There is also input from supervisors, who are invited to meet with the top executives and provide general input.
Ohio	Ohio DOT executive leadership (agency director and assistant directors)

Pennsylvania	Executive staff and support team
South Carolina	Senior management
Texas	Department administration, public information office, statistics are provided by the appropriate business unit.
Washington	Lead is Strategic Planning Division with input from major organizations within the agency.
West Virginia	N/A

N/A = not available.

7. Do you have a succession planning process? If yes, does it include the identification of training needs related to succession planning?

State	Yes	No
Arizona		X/NA
Arkansas		X
California	X/X	
Idaho		X
Louisiana		X
Maryland	X/X	
Michigan		X
Missouri	X/X	
Montana		X
North Dakota	X/X	
Ohio	X—Succession planning is formally reviewed with Executive Leadership as a critical part of the ODOT Human Resources Plan (HR Plan). Each District and Division Deputy Director annually submits a formal plan, reviewed by the assistant directors and Director for approval. This HR Plan consists of the following: (1) a detailed staffing level analysis, (2) temporary employee usage analysis, (3) retirement composite summary, (4) major projects and work plan projections, (5) summary planning sheet, and (6) tables of organization for each district and division. Overall, ODOT uses current trends to project future staffing level need. Although our succession planning methodology does not identify training needs related to succession planning, it is highly systematic and deliberate. It ensures continuity in critical positions, encourages growth and development of our existing workforce, and provides strategies for acquiring new talent to meet both current and future business needs.	
Pennsylvania		X
South Carolina	X	
Texas		X
Washington		X
West Virginia		X

N/A = not available.

8. How do you link the results of your strategic planning or similar process to funding requests, funding allocations, and organization and individual performance assessment?

State	Process for Linking
Arizona	N/A
Arkansas	N/A
California	Strategic planning is linked to the department’s fiscal operations through the annual budget and legislative approval processes. The fiscal year is from July 1 to June 30. Agencies typically forward their budget requests to the legislature in March, the legislature sends it to the Governor’s office in April, and the Governor’s office review

	<p>and recommendations are completed and sent to the legislature in May. By law, the legislature is required to finalize the budget by June 15. The final budget is effective July 1, and the agencies obtain their approved and final budgets within the first few weeks of the new fiscal year.</p> <p>Professional Development for Transportation Planning is funded from federal state planning and research (SPR) funds. While the budget process is going on, the Office of Professional Development is identifying training needs (see Questions 9–13 below), compiling training statistics for the current fiscal year, and planning its budget for the upcoming fiscal year. Ultimately, dollars approved through the budget approval process become matching state funds for SPR funded projects.</p> <p>In addition, and concurrent with the budget process, transportation planning managers in the districts and headquarters each meet with the Planning Deputy individually to discuss performance in the context of their respective strategic plans, to compare the year’s accomplishments with goals established at the beginning of the fiscal year.</p>
Idaho	No formal process
Louisiana	Agency goals are being developed for the July 2005–June 2006 fiscal year. Individual performance assessments are being directly tied to agency/section goals.
Maryland	No response
Michigan	N/A
Missouri	Tracker Measurement Program
Montana	The plan used the balance scorecard methods and the goals in the plan were the basis for employees’ performance appraisals at all levels of the department. There is no connection with the allocation of funds.
North Dakota	The strategic plan is a living document used by all levels of the NDDOT for planning and implementation of projects and activities.
Ohio	All division, office, and individual employee annual work plans are derived from the goals of the agency business plan. All budget requests must be justified and all justifications are based on business plan and work plan goals. Likewise, all performance evaluations rate employees on completion of work plan items. The agency also continuously monitors and rates itself according to Organizational Performance Indices (OPI). OPIs are a quantitative measure of agency performance and are tied directly to the agency business plan.
Pennsylvania	Through the strategic and business planning process
South Carolina	Not sure
Texas	N/A
Washington	Plan will include an implementation component that links funding and allocation.
West Virginia	N/A

N/A = not available; SPR = state planning and research.

Training Needs Assessment

9. Do you conduct a training needs assessment?

State	Yes	No
Arizona	X	
Arkansas	X	
California	X	
Idaho	X	
Louisiana	X	
Maryland	X	
Michigan		X
Missouri	X	
Montana	X	

North Dakota	X	
Ohio	X	
Pennsylvania	X	
South Carolina	X	
Texas	X	
Washington	X	
West Virginia		X

10. If yes, please describe your methodology.

State	Methodology
Arizona	One-on-one interviews, focus groups, written instrument
Arkansas	A team is used to develop the training needs assessment.
California	The Office of Professional Development (OPD) distributes a survey around the middle of May of each year to the transportation planning functions within each of the 12 district offices and the “modal” planning divisions located in headquarters; e.g., Rail, Mass Transit, Aeronautics, Local Assistance, and Transportation Planning. The survey captures the training needs perceived by the districts; i.e., dictated by transportation system requirements or mandated by federal or state law. The results of the Needs Assessment Survey—courses, seminars, and forums—are incorporated into OPD’s annual Strategic Plan.
Idaho	Questionnaire, focus groups
Louisiana	The construction and maintenance training units, responsible for course development, meet in the 1st quarter of each year with their respective Work Plan Committee members to discuss current course development status and prioritize the list of remaining training needs as well as new requests that have been received. The committee consists of the appropriate division director, district administrative personnel, district trainers, and other selected field personnel.
Maryland	Training coordinator, manager, and employee meet to conduct a Personnel Development Plan.
Michigan	Not done
Missouri	Focus groups statewide
Montana	We do not have a statewide survey, but rather identify gaps in knowledge, required training, and acquisition of new technology or procedures. We offer management development training to prepare employees to be supervisors. This is a prerequisite to becoming a supervisor unless the employee has one year of supervisory experience.
North Dakota	This year we used a survey provided by Upper Great Plains Transportation Institute for the Transportation Learning Network (TLN). The survey was distributed department wide to all divisions and districts. The results were used to provide feedback for TLN programming. Survey results are also being used to provide training through other avenues. We also collect individual professional development needs and career development needs annually through our Employee Professional Development Plan and Performance Appraisal process. Also, we are notified by divisions and districts of specific training needs for their employees.
Ohio	The Office of Training develops an annual work plan that includes ongoing analysis of the training needs of the existing workforce to meet the goals of the agency business plan.
Pennsylvania	In the past, functional area training needs assessments were conducted by each of eight colleges within the Transportation University corporate university structure. Additional organizational training needs assessments were conducted by training coordinators in the 11 engineering districts around the state.

South Carolina	Each employee completes a document that includes a minimum of three topics or areas that they believe they need training in to maintain or improve in their job—this is completed annually.
Texas	Two assessment are conducted annually—one a formal process and the second a mid-year assessment to identify and schedule for immediate critical needs. Formal process: A cover memo with supporting files is sent to each major business unit in the department (14,000+ employees); 25 districts, 21 divisions, and 8 offices plus administration. An Access database with active hyperlinks to the course descriptions along with how to build the response survey is included. Business units are allotted 60 days to gather, combine, and submit to the Training, Quality, and Development (TQD) Division. More than 250 courses (instructor-led) are listed in the training catalog. TQD takes responses and combines data into one useable report to identify what training needs are to be scheduled in what locations statewide in preferred dates. The survey tool was recently shared with about 10 other state DOTs that were looking for a model. Informal survey: A simple e-mail to each business unit’s training coordinator asking for a response by a certain date (usually within 14 days) for what critical policy needs courses are required for the remainder of the fiscal year. This allows for shorter-term scheduling as needed.
Washington	WSDOT has a mainframe training management system that functions on a series of curriculum matrices that contain the recommended training determined by a panel of experts in each of our 13 curriculum areas. The system keeps track of how many employees have completed training, according to priority. The training staff reviews reports of the number of employees who have completed training. In general, our needs assessment procedures are automated. Training staff coordinates with the principal discipline leaders throughout the department to anticipate and document new and continuing needs.
West Virginia	N/A

N/A = not available.

11. How frequently do you update the assessment?

State	Update Frequency
Arizona	When work changes, or there is low performance, or a new process is implemented
Arkansas	We are just starting to develop our plan and have not yet set a timeframe for updating the document.
California	Annually
Idaho	Every 2 to 3 years
Louisiana	Annually
Maryland	Annually
Michigan	N/A
Missouri	Every 5 years
Montana	On an as-needed basis
North Dakota	Annually
Ohio	Annually
Pennsylvania	Annually
South Carolina	Annually
Texas	Annually
Washington	Monthly via the automated system described in Question 10
West Virginia	N/A

N/A = not available.

12. Which internal (e.g., executive, managers, or employees) and external (e.g., customers or universities) are consulted when assessing or updating the organization’s training needs?

State	Internal	External
Arizona	Executives, managers, employees	Consultants
Arkansas	Upper and mid-level managers and employees	
California	Typically, the transportation planning functions within each of the 12 district offices, and the “modal” planning divisions located in headquarters; e.g., Rail, Mass Transit, Aeronautics, Local Assistance, and Transportation Planning.	
Idaho	Internal: all levels of department. This year, focus groups with executive staff, section managers, mid-level supervisors, and employees owing to increasing workforce challenges and an ambitious DOT vision.	Do not conduct external needs assessments. We are not yet functioning at this strategic level.
Louisiana	Division and section heads, managers, district administrators, district training coordinators, and specialists	To be developed by February 2006
Maryland	All customers are considered.	
Michigan	N/A	
Missouri	District and division directors	None identified
Montana	Managers, supervisors, and employees	This is done on an individual basis, not department wide. External: If our public involvement staff were to get less than stellar reviews from the public owing to poor skills, that would be identified as a training need. Once needs are identified if an external source can satisfy the need, we use their services.
North Dakota	Employees at all levels	Upper Great Plains Transportation Institute, Bismarck State College
Ohio	Internal customers at all levels—executive, managers, and employees—are consulted when assessing and updating the agency’s training needs. External customers with which we consult include the Ohio Department of Administrative Services and municipalities and counties (“locals”).	
Pennsylvania	In the past, training needs assessments were developed in consultation with both internal and external customers. At present, assessments are more the result of internal evaluations and consultations with management and training professionals.	
South Carolina	Some portion of executives, managers, and employees are consulted.	
Texas	Internal: All District Engineers, Division Directors, and Office Directors with oversight and input from the department’s Administration. Training coordinators from all business units are asked to compile and	Partnerships in research projects through the Texas Transportation Institute and the Center for Transportation Research often yield deliverables in the form

	submit information on the annual needs assessment for new training needs. TQD uses an on-going process on all courses delivered to conduct approximately 50 Subject Matter Expert (SME) course evaluations and reviews during any given fiscal year. This feedback from the SMEs is condensed into one comprehensive report and is distributed to the Standing Committee on Training for review and actions.	of training.
Washington	Executives, discipline leaders, curriculum committees, employees	Providers of training
West Virginia	N/A	

N/A = not available.

13. Are these needs directly related to the mission critical competencies identified in the organization's strategic plan or similar document?

State	Yes	No
Arizona	X	
Arkansas	N/A	
California	X	
Idaho		X
Louisiana	X	
Maryland	X	
Michigan	N/A	
Missouri	No response	
Montana	Sometimes	
North Dakota		X
Ohio	X	
Pennsylvania		X—The agency's strategic plan does not address mission critical competencies.
South Carolina	No response	
Texas	X	
Washington	Yes and no	
West Virginia	N/A	

N/A = not available.

14. How do you link the results of your training needs assessment to funding requests, funding allocations, and organization and individual performance assessment?

State	Linkage
Arizona	Pay raises are determined from assessments.
Arkansas	Training is being funded through our HR Division. Certain monies are allocated for certain internal training.
California	Office of Professional Development (OPD) funds the operational costs of training courses; e.g., instructor, consultant, and facility costs. Planning districts and headquarters units are usually responsible for travel costs; i.e., the cost of transporting an employee/participant to the course. In an effort to minimize the impact of travel expenses on the districts/headquarter units, OPD attempts to schedule sessions throughout the three or four major regions of the state: north—Redding, central—Fresno, and southern—Los Angeles; for example, in a manner that accommodates the greatest number of attendees reflected on the Needs Assessment Survey.

Idaho	At this time there is no formal linkage. This will be the first time our unit will try to link the training needs assessment to the strategic plan goals. We are attempting to operate at a strategic level to better support the DOT's identified vision.
Louisiana	Continuing and new needs are cited in the budget request document and work program documentation.
Maryland	Funding requests/allocations are based on previous budget vs. actual spent by division.
Michigan	No response
Missouri	No response
Montana	We use the current one-half of 1% of the SPR funds for training. Each area of the department identifies its needs and to the extent possible the funds pay for the training identified. The funds support training identified both for individuals on individual appraisals and other means and groups of employees needing to learn new technologies or procedures.
North Dakota	We program professional development based on identified needs based as determined in Question 10.
Ohio	The results of the assessment are reviewed by management. If it is determined that there is a link between newly identified training needs and the agency's business plan, the new courses are built into the Office of Training annual work plan and necessary funding is requested to support the development and deployment of the training.
Pennsylvania	Organization leaders and managers are responsible for employee training and professional development within their organizations. Training needs assessments are provided to these leaders by training coordinators. Ultimately, it is a management decision how much of the operational budget will be allocated to address training needs.
South Carolina	Not sure
Texas	Links are made by means of the most critical areas: safety related, operational skills, management skills, other mandatory training requirements, etc. An attempt is made to address needs in all program areas to provide at least a minimal coverage.
Washington	All of these factors are considered when allocating funds to programs within training.
West Virginia	N/A

N/A = not available; HR = Human Resources; SPR = state planning and research.

Critical Skills Identification

15. What are your most important occupations?

State	Most Important
Arizona	Construction engineers and techs., motor vehicle customer service reps., maintenance workers
Arkansas	No response
California	We presume the entry, journey, and senior levels of the Transportation Planner series. However, under a recently signed contract with California Community Colleges/ATTi (Advanced Transportation Technology initiative), we will soon identify and examine the full spectrum of occupations that could be considered critical or important.
Idaho	At this point, our anecdotal observation is that the most important occupations would be all positions that are responsible for providing leadership to DOT employees, especially executive staff, district engineers, and section managers.
Louisiana	Engineers, engineering technicians, maintenance field personnel, and other professionals.
Maryland	Transportation engineer and facility maintenance technician
Michigan	No response

Missouri	Field operations
Montana	Not yet identified
North Dakota	All employee positions contribute to our vision and missions. Our executive managers support this statement.
Ohio	All classifications within the Highway Technician series; all classifications within the Engineering series.
Pennsylvania	Engineers and equipment operators
South Carolina	Trades specialists and engineers
Texas	Engineering disciplines (structures, design, environmental, planning, and programming, etc.) and maintenance forces
Washington	Planning, engineering, and maintenance are the primary mission occupations. HR, Finance, Information Technology, Administration, and other support skills are also required to perform all department functions.
West Virginia	Civil engineers and engineering technicians

HR = Human Resources.

16. Please describe the methodology you used to identify these occupations.

State	How Identified
Arizona	Largest population in classification
Arkansas	No response
California	A contract with the California Community Colleges Advanced Transportation Initiative has only recently been finalized to identify most important occupations, and has been only recently implemented. No data are yet available.
Idaho	Currently, our conclusions are anecdotal rather than based on scientific analysis.
Louisiana	Structured Training Program and Leadership Development Program
Maryland	Based on the number of personnel identification numbers (PINS) granted to the administration.
Michigan	No response
Missouri	Focus groups and the strategic plan
Montana	N/A
North Dakota	Our executive management routinely reviews workforce positions.
Ohio	These occupations perform ODOT’s core business functions. Highway construction and maintenance duties are performed by highway technicians (HT). Approximately 2,500 employees (42% of the agency workforce) are classified within the HT series. Engineers perform duties ranging from the preliminary development of projects through the design, construction, and maintenance of Ohio’s roadways and bridges. Approximately 600 employees are classified in the engineering series. The remainder of ODOT’s workforce executes and supports the core business functions while maintaining the highest possible levels of quality and productivity.
Pennsylvania	High density and core business
South Carolina	No response
Texas	Maintenance due to the large number of employees (6,500 out of 14,000+ or 46% of workforce) engineering disciplines, because that work sets the stage for all projects—actual construction, contract administration, project administration, inspection services, staff services support, etc.
Washington	Derived from the agency mission.
West Virginia	We can’t get our mission done without them.

N/A = not available.

17. Have you identified the competencies needed for these occupations?

State	Yes	No
Arizona	X	
Arkansas		No response

California	X	
Idaho	X	
Louisiana	Some	
Maryland	X	
Michigan		X
Missouri	X	
Montana	X	
North Dakota		X
Ohio	X	
Pennsylvania	X—We have developed a detailed analysis of competencies for equipment operators through our Position Analysis Workshops and articulated in writing the results of this analysis in Position Analysis Workbooks (see attached).	
South Carolina	X	
Texas	X	
Washington	X	
West Virginia		X

18. Have you identified the competency levels of those currently fillings these positions? If yes, please describe your methodology for making these judgments.

State	Yes	No
Arizona	X—Each position analyzed and competencies compiled; some positions used Work Style Patterns method.	
Arkansas		X
California	X	
Idaho		X
Louisiana	Some—Required competency levels are reflected in the performance evaluations conducted to obtain construction technician certification and in the Safe Operating Checklists for heavy equipment operation required of heavy equipment operators. We use focus groups of Subject Matter Experts to identify knowledge, skills, and abilities needed. NHI Core Curriculum Matrix Development, December 2004.	
Maryland	X—Competency levels are measured by certification level testing.	
Michigan		X
Missouri	X	
Montana		X
North Dakota		X
Ohio	<p>Advancement in the HT series is contingent on successfully completing 44 courses and certifications and passing the related tests. The courses, course content, and tests are determined by subject matter experts and a joint labor-management team.</p> <p>In the engineering series, employees must pass the Fundamentals of Engineering exam administered by the Ohio State Board of Professional Engineers and Surveyors. Progression in the engineering series relies on passing the Professional Engineering exam administered by the same state board.</p> <p>Additionally, all 6,031 employees in the agency receive annual performance evaluations that measure performance and competency of goals that are based on the agency business plan.</p>	

Pennsylvania	Competency levels of employees are reviewed with supervisors annually through the Employee Performance Review process. New employees can review appropriate Position Analysis Workbooks for their position to develop an individual training plan based on competency needs.	
South Carolina		X
Texas	Yes. Competencies are identified through a process involving the State Auditors Office for business titles and then through the department’s Business Title Classification Committee (BTCC). The BTCC takes information compiled and processed through the Compensation section of the HR Division. Progressively more demanding and skill challenging competencies are identified for each business title in a progressive career ladder.	
Washington	Yes and no	
West Virginia	No	

HR = Human Resources; NHI = National Highway Institute.

19. Have you identified training and development strategies and programs for closing the gaps identified?

State	Yes	No
Arizona	X	
Arkansas		X
California	X	
Idaho		X
Louisiana	Some—Developing skills to job-specific skills	
Maryland	X	
Michigan		X
Missouri	X	
Montana	X	
North Dakota	N/A	
Ohio	X	
Pennsylvania	X—Supervisors and managers work with training coordinators to ensure that employees are provided with appropriate training opportunities to close gaps.	
South Carolina	X	
Texas	X	
Washington	Yes and no	
West Virginia		X

N/A = not available.

20. What are your process and timeframe for periodically reassessing what are the gaps and for adjusting training and development strategies and tactics to close the gaps?

State	Process	Time Frame
Arizona		Yearly review
Arkansas	No response	
California	Annual training assessment	
Idaho	We are attempting to forge a role that will allow us to conduct competency analyses and to assess the competency level of employees.	
Louisiana	Feedback from district training specialists, quarterly meetings, and as contacted.	
Maryland	Annually all classifications are reviewed and training strategies individually identified.	

Michigan	No response	
Missouri	No response	
Montana	There is no organized department-wide process at this point. We are developing a succession plan and once that is underway, a process should be in place. We are evaluating and assigning competencies to all our positions, and to the training we offer now as a first step to getting an organized gap analysis. We have Human Resources Information System that we can assign competencies to positions, people, and training to get reports of gaps and lists of training that may fill gaps in competencies.	
North Dakota	N/A	
Ohio	Each employee's Employment Development Plan is reviewed and updated as part of the annual performance evaluation.	
Pennsylvania	Central office training staff and district training coordinators conduct periodic visits with county maintenance managers and assistant district engineers to discuss training needs and gaps.	
South Carolina	No response	
Texas	Use Kirkpatrick Level 3 assessments. A random sampling of 25% of all course participants is sent to the supervisor of the course participant to measure the level of skill/knowledge application in the workplace. Level I assessments are used to change objectives as needed in the course curriculum to close skill gaps.	
Washington	The department, along with other state agencies, is currently compiling, validating, and prioritizing competencies for all job classes as part of a conversion to a competency-based personnel management system. Competencies will be used in identifying gaps in training.	
West Virginia	No response	

N/A = not available.

21. Are these also your occupations with the largest number of employees? If no, please identify those occupations which are your largest. Have you identified the competencies needed for these? Have you identified the competency level of those currently filling these positions?

State	Largest Number	Comments
Arizona	Yes	
Arkansas	Yes, engineers, maintenance, administrators, and planning	We have identified the competencies for these occupations, and we have identified the competencies of employees holding these positions.
California		
Idaho	No, technical occupations are the largest.	We have not yet identified the competencies for technical occupations or assessed the degree to which those in technical occupations have these competencies, except those that require certifications.
Louisiana	Yes/yes	Have not yet identified the level of competency by employee.
Maryland	Yes	
Michigan	Yes	Competencies not identified
Missouri	Field maintenance is the largest.	Competencies identified
Montana	Yes	Have not yet identified level of competency by employee.
North Dakota	N/A	
Ohio	Yes	

Pennsylvania	Yes	Engineers and equipment operators are high-density positions within the agency.
South Carolina	Yes	
Texas	Yes/yes/yes	
Washington	Yes	See response to Question 20. When conversion of entire state workforce to new competency-based HR system is completed, then competencies will be available and used.
West Virginia		Maintenance workers are our largest category of employees.

N/A = not available; HR = Human Resources.

22. How do you link the results of your critical skills identification to the development and implementation of training plans and programs, funding requests, funding allocations, and organization and individual performance assessment?

State	Yes	No
Arizona	No response	
Arkansas	No response	
California	Annual training assessment process	
Idaho	I wish that we did.	
Louisiana	Training courses are developed for the education level necessary for the job classification as identified by the core skill level for technicians with input from the district training coordinator.	
Maryland	This effort has not been fully adapted across the MD SHA. However, there are several successful programs across the administration.	
Michigan	N/A	
Missouri	No response	
Montana	See response to Question 20.	
North Dakota	No response	
Ohio	All division, office, and individual employee annual work plans are derived from the goals of the agency business plan. All budget requests must be justified and all justifications are based on business plan and work plan goals. Likewise, all performance evaluations rate employees on completion of work plan items. The agency also continuously monitors and rates itself according to Organizational Performance Indices (OPI). OPIs are quantitative.	
Pennsylvania	This is accomplished during the annual business plan development process by organizational leadership and management.	
South Carolina	No response	
Texas	No response	
Washington	Curriculum committees identify and prioritize training. Training curriculum matrices are used as the basis for resource allocation.	
West Virginia	No response	

N/A = not available; SHA = State Highway Administration.

Structure for Accomplishing Employee Training and Development

23. Is training and development a component of your organization’s human capital management program? If no, where is it located organizationally?

State	Yes	No
Arizona	X	
Arkansas	Usually in training and safety	

California	The Training and Development program is located with the Division of Transportation Planning (DOTP). DOTP is responsible for career development of all classifications that support transportation planning in the department (Caltrans).	
Idaho		No, it is located within HR, which is embedded within the Administrative Services Division, reporting to an administrator rather than the director or board of directors.
Louisiana		No, it is located at the Louisiana Transportation Research Center (Division under Office of Engineering reporting to LADOTD Chief Engineer).
Maryland	X	
Michigan		X
Missouri	X-HR Division	
Montana	X	
North Dakota	X	
Ohio	X	
Pennsylvania	X-The Transportation University is presently located in the Center for Performance Excellence. It will shortly be reconverted into a training division and relocated into the Bureau of Human Resources.	
South Carolina	X	
Texas	X	
Washington	X	
West Virginia	X	

HR = Human Resources.

24. To whom does the training and development program report?

State	Reporting	Comments
Arizona	Chief of Staff, ADOT Director's Office	
Arkansas	Usually the HR Division	
California	PD reports to an office chief (senior level transportation planner), one of 10 office chiefs who report to the Division Chief of Transportation Planning, and the Deputy for Planning and Modal Programs.	
Idaho	HR Director	The HR Director is very supportive of the need to operate strategically, but that position does not operate at the strategic level either.
Louisiana	LTRC Associate Director of Technology Transfer	
Maryland	Deputy administrator	
Michigan	Bureau director	

Missouri	HR Director	
Montana	This is not a centralized function. HR is responsible for safety, soft skills, management topics, and training needs in areas that do not have their own training coordinator. Engineering, motor carrier services, and maintenance and equipment have their own training coordinators that take care of the technical training needs of those areas and rely on the HR training to offer the soft skills to their employees.	
North Dakota	HR Director	
Ohio	The Training Administrator reports to the Deputy Director of Quality and Human Resources. The Deputy Director of Quality and Human Resources reports to one of three agency assistant directors, who report to the agency director. See http://www.dot.state.oh.us/Info/orgtable.asp for the agency organizational chart.	
Pennsylvania	Present: Director, Center for Performance Excellence (as of May 27, 2005) Future: (after July 1, 2005): Director, Bureau of Human Resources.	
South Carolina	HR Director	
Texas	Director, Human Resources Division and also to a higher level committee—the Standing Committee on Training composed of the Director of Training; the Directors of HR, Construction, and Design; three district engineers; and the Assistant Executive Director for Operations (no. 3 person in department organization).	
Washington	Director of HR	
West Virginia	Director of HR	

HR = Human Resources; LTRC = Louisiana Transportation Research Center.

25. Please attach a copy of your training and development philosophy and mission statement and a copy of your current organization chart for training and development.

State	Yes	No
Arizona	No response	
Arkansas	No response	
California	No response	
Idaho	No response	
Louisiana	Mission: To identify, develop, and deliver job-related training and educational programs and materials to LADOTD personnel and the transportation industry. To identify, enhance, transmit, and implement transportation-related technology, and to support LTRC and the LADOTD through the provision of a broad range of publishing and electronic media. Philosophy: In support of the section’s mission, the Troops to Teachers staff is committed to professionalism, excellence, cooperation with its customers, and continuous quality improvement in every aspect of our responsibilities.	
Maryland	See MD SHA Business Plan Values, etc.	
Michigan	No response	
Missouri	No response	
Montana	There is no organization chart that covers all training functions in the agency. Training policy currently under revision.	

North Dakota	The closest wording to a training mission statement would be Objective 4.4 in the NDDOT Strategic Plan. As Training Director, I report directly to the HR Division Director. My assistant is the only other regular employee in the training office.	
Ohio	Mission statement—"The Office of Training, in accordance with ODOT's Mission, Values, Goals, and Objectives, provides services to ensure that ODOT has a well-trained, flexible workforce that can adapt to ever-changing needs."	
Pennsylvania	The philosophy and mission statements are currently undergoing revision.	
South Carolina	No response	
Texas	No response	
Washington	No response	
West Virginia	No response	

SHA = State Highway Administration; HR = Human Resources; LTRC = Louisiana Transportation Research Center.

Training, Education, and Development Delivery Mechanisms

26. What types or categories of training and development are provided internally, and by whom?

State	Internal
Arizona	Corporate—Management, Supervisory, Professional Development, Computer, Process Improvement, Facilitation. Technical—Construction, Maintenance, Customer Service, Enforce, Computer, Project Management, etc.
Arkansas	Supervisory training, HR issues (sexual harassment, workplace diversity, etc.) and some training provided for engineers needing professional development hours.
California	Professional development seminars and forums. For example, the annual Professional Development Liaison (PDL) seminar is designed to apprise Professional Development Liaisons [to Office of Professional Development (OPD)] of policies, programs, and procedures of OPD, and of courses and seminars scheduled or planned. The Senior Forum is another example, wherein OPD brings senior transportation planners together annually to share information and glean ideas for improving Caltrans planning. A Transportation Planning (TP) Rotation Program allows personnel who support Caltrans to rotate through assignments within and outside of Caltrans as a means to enhance their own career development and promote a well-rounded employee able to handle a diverse and broader range of job challenges.
Idaho	We provide management, leadership, communications, conflict resolution, interviewing, hiring, performance, and meeting management. The Division of Highways provides technical training, including Western Alliance for Quality Transportation Construction certification training, supplemented by NHI training on an on-going basis.
Louisiana	LTRC training staff developed training courses, materials, job aid, and exams administered by district training specialists in LADOTD specific operations; performance evaluations, technical workshops, specialty seminars and as-needed instruction for new technologies.
Maryland	Interpersonal, Equipment Certification; other engineering/technical courses are provided by in-house trainers.
Michigan	A full range of courses including Managing Change, Project Management, Performance, Communications, Effective Decision Making, Diversity, Writing, and similar offers. These courses are for managers and supervisors, as well as employees. The Learning Opportunities Grid links competencies to classes. The Supervisor and Manager Training Grid provides a listing of class offerings, target audience, competency link, whether internal or external vendor, etc.

Missouri	Information systems, computer-assisted design and development, technical (work zone, equipment, etc.)																																																																																										
Montana	Management, soft skills, equipment and maintenance, engineering, civil rights.																																																																																										
North Dakota	Other than Employee Orientation, which is specifically for NDDOT employees, and facilitation of a select number of specialty courses (i.e., "The 21 Irrefutable Laws of Leadership," developed by John Maxwell), all courses are provided by external sources.																																																																																										
Ohio	A variety of equipment, computer, soft skills, management, and technical training courses are provided internally by Office of Training staff and internal subject matter experts.																																																																																										
Pennsylvania	<p>The following graphic illustrates fairly well delivery means for various kinds of training, although we are moving away from outsourcing training and moving towards training in-house as much as possible.</p> <table border="1"> <thead> <tr> <th>TYPE OF TRAINING:</th> <th>Provided In-House</th> <th>Contractor Outsourced</th> </tr> </thead> <tbody> <tr><td>Performance management</td><td>X</td><td>X</td></tr> <tr><td>Computer training</td><td>X</td><td>X</td></tr> <tr><td>Management training</td><td>X</td><td>X</td></tr> <tr><td>Supervisory training</td><td>X</td><td>X</td></tr> <tr><td>Diversity/EEO training</td><td>X</td><td>X</td></tr> <tr><td>Sexual harassment</td><td>X</td><td>X</td></tr> <tr><td>Communication</td><td>X</td><td>X</td></tr> <tr><td>Conflict resolution</td><td>X</td><td>X</td></tr> <tr><td>Teamwork</td><td>X</td><td>X</td></tr> <tr><td>Total Quality Management</td><td>X</td><td>X</td></tr> <tr><td>Leadership</td><td>X</td><td>X</td></tr> <tr><td>New employee orientation</td><td>X</td><td></td></tr> <tr><td>Technical equipment operator</td><td>X</td><td></td></tr> <tr><td>Technical (engineer)</td><td>X</td><td>X</td></tr> <tr><td>Customer service</td><td>X</td><td></td></tr> <tr><td>Basic skills (language, math, literacy, etc.)</td><td>X</td><td>X</td></tr> <tr><td>First aid and CPR</td><td>X</td><td>X</td></tr> <tr><td>Recruiting process</td><td>X</td><td></td></tr> <tr><td>Testing process</td><td>X</td><td></td></tr> <tr><td>Compensation administration</td><td>X</td><td></td></tr> <tr><td>Performance appraisals process</td><td>X</td><td></td></tr> <tr><td>Discipline process</td><td>X</td><td></td></tr> <tr><td>Grievance process</td><td>X</td><td></td></tr> <tr><td>Termination process</td><td>X</td><td></td></tr> <tr><td>Reward policies and procedures</td><td>X</td><td></td></tr> <tr><td>General personnel policies</td><td>X</td><td></td></tr> <tr><td>Labor relations</td><td>X</td><td></td></tr> <tr><td>Employee benefits</td><td>X</td><td></td></tr> <tr><td>Other: customer service/process mgmt.</td><td>X</td><td>X</td></tr> </tbody> </table>	TYPE OF TRAINING:	Provided In-House	Contractor Outsourced	Performance management	X	X	Computer training	X	X	Management training	X	X	Supervisory training	X	X	Diversity/EEO training	X	X	Sexual harassment	X	X	Communication	X	X	Conflict resolution	X	X	Teamwork	X	X	Total Quality Management	X	X	Leadership	X	X	New employee orientation	X		Technical equipment operator	X		Technical (engineer)	X	X	Customer service	X		Basic skills (language, math, literacy, etc.)	X	X	First aid and CPR	X	X	Recruiting process	X		Testing process	X		Compensation administration	X		Performance appraisals process	X		Discipline process	X		Grievance process	X		Termination process	X		Reward policies and procedures	X		General personnel policies	X		Labor relations	X		Employee benefits	X		Other: customer service/process mgmt.	X	X
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South Carolina	Supervisory Training, Time Management, Sexual Harrassment, Myers–Briggs Type Indicator, “7 Habits of Highly Effective People,” safety courses by our Safety Office (CPR, Driver Improvement, etc.)
Texas	<p>The following are provided internally to all department personnel with supervisor approval through TQD:</p> <ul style="list-style-type: none"> a. Management, Leadership, Soft Skills—Supervising DOT, Leadership Skills for Success, Leadership at Work, Area Engineer Course, etc. b. Mandatory/Policy Oriented—Interviewing and Hiring, Performance Management, Progressive Discipline, New Employee Orientation, Hazardous Communications, etc. c. Engineering—technical related—Hydraulics, Structures, Materials and Test, Design, Environmental, Construction, Planning and Programming, Traffic Operations, etc. d. Contract/Project Management e. Heavy Equipment and Maintenance Operations related—dozer, maintainer, loader, dump truck, load and tie down, etc. f. Maintenance Management—Maintenance Section Supervisors Course, Crew Leaders Course, Maintenance Contract Inspectors Course, Maintenance Office Managers Course. g. Technical skills—alternative fuels, heavy equipment hydraulics, welding (six different courses), engine performance diagnostics, preventive maintenance for heavy equipment, etc. h. Miscellaneous—Right-of-way acquisitions, GEOPAK, Global Positioning System, Information Technology System, International Municipal Signal Association certification, etc. <p>For a comprehensive list/menu of all training offered internally go to the following link: http://www.dot.state.tx.us/hrd/tdp/catalog/courseindex.htm?orderby=code</p>
Washington	Technical and professional, leadership, employee development, Information Technology, Maintenance, and Safety.
West Virginia	Technician, supervisory, and equipment operators

LTRC = Louisiana Transportation Research Center; NHI = National Highway Institute.

27. What types, or categories, of training and development are provided externally, and by whom?

State	Categories	By Whom
Arizona	Corporate and technical	Consultants, universities, colleges
Arkansas	In the engineering and technical fields courses. Other employee training. Usually these courses are some type of computer training. A variety of other training.	Provided by FHWA, NHI, University of Arkansas, AASHTO, and various contractors. Local community colleges State government Inter-Agency Training Program
California	Office of Professional Development’s Transportation Planning Rotation Program encompasses both internal and external rotations	
Idaho	Enterprise architecture, project management	Occasionally training is brought in.
Louisiana	NHI training courses for engineers and senior technicians.	Consultants/Subject Matter Experts develop and deliver courses and workshops for continuing education and technical skills. Contracted instructors for personnel, CAD, and geo-information. LA CPTP (Division of Administration) and LSU management instructors for the Employee and Management Development Program
Maryland	Same as above, also includes universities, consultants, FHWA, NHI, LTAP, etc.	

Michigan	Technical Writing, Negotiation Skills, Project Management	External vendors
Missouri	Managerial is provided by a local university.	
Montana	Some technical training, particularly engineering, accounting, and audit training	From earlier response, vendors selected as needed—consultants, universities, etc.
North Dakota	All types	Providers would include the NHI, FHWA, Bismarck State College, special contractors, etc.
Ohio	A variety of sources offer a variety of training courses. The number is too large to include.	
Pennsylvania	See response to Question 26	
South Carolina	Examples include: Customer service Various courses Crane operator training Engineering skills enhancement classes	Midlands Technical College NHI York Technical College Clemson University
Texas	Specialized areas such as certification training for purchasers, certification for right-of-way agents, certification and continuing education for surveyors. PC-based skills training often used out of training programs from a number of training vendors located across the state.	
Washington	The department provides a limited amount of technical (mainly engineering) training to local jurisdictions.	
West Virginia	Technician, supervisory, equipment operators, and maintenance workers	

NHI = National Highway Institute; LTAP = Local Technical Assistance Program.

28. Does your organization use formal classes, job assignments, coaching, mentoring, or other techniques as components of your training, education, and development delivery mechanisms?

State	Yes	No
Arizona	X	
Arkansas	Formal classes	
California	X	
Idaho	X	
Louisiana	X	
Maryland	X	
Michigan	X—based on grid	
Missouri	Formal classes	
Montana	X	
North Dakota	X	
Ohio	ODOT delivers education and training in a variety of ways, including classroom instruction, field instruction, videoconferencing, computer training, hands-on training, on-the-job mentoring, and seminars delivered by in-house and outside sources.	

Pennsylvania	X	
South Carolina	X	
Texas	X	
Washington	X	
West Virginia	X—formal classes, job assignments	X—mentoring

29. Does your organization provide web-based training? On demand?

State	Web Based	On Demand
Arizona	X	X
Arkansas	X	X
California	X	X
Idaho	X	X
Louisiana	X	
Maryland	X	
Michigan	X	
Missouri	X	
Montana	X	X
North Dakota	X	X
Ohio	Web-based is currently being explored as a delivery option.	
Pennsylvania	X	X
South Carolina	X	
Texas	X	X
Washington	X	X
West Virginia	X	

30. Does your organization use videoconferencing as a training delivery mechanism?

State	Yes	No
Arizona	X	
Arkansas		X
California	X	
Idaho	X	
Louisiana		X—To be developed in 2006
Maryland		X
Michigan	X	
Missouri	X	
Montana	X	
North Dakota	X	
Ohio	X	
Pennsylvania	X—occasionally	
South Carolina		X
Texas	X—We have been using video teleconferencing (VTC) as an interactive mode instead of one-way information distribution training for the past 2½ years. All department New Employee Orientation (2 days), Maintenance Section Supervisors Course (32 h), and Maintenance Contract Inspectors Course (24 h) are performed via VTC. SMEs are also conferenced in for sections (approximately 1 h each in four areas) for the Area Engineer Course (32 h). VTC courses in Workplace Violence Prevention for	

	Supervisors (4 h) and Substance Abuse for Supervisors (4 h) is also conducted via VTC. Outside training originating from Texas A&M University–Galveston has been brought in via VTC for environmental specialists to obtain specific Environmental Affairs Division training. Numerous divisions conduct monthly or bi-monthly training seminars in various technical areas (bridge structures, construction inspection, environmental issues, public transportation, planning, and programming processes, etc.). Our VTC systems are administered and scheduled in the Training section for the department. Systems are averaging 2,500–3,000 h of use monthly.	
Washington		X
West Virginia		X

31. Do you blend a variety of delivery mechanisms? If yes, which ones and for what types of training and development?

State	Yes	No
Arizona	X—Web/classroom; video conference/classroom	
Arkansas	X	
California	X	
Idaho		X—We mostly use stand-up training.
Louisiana	X	Programmed instruction texts, quality assurance manuals, certification materials, instructor-led training, seminars, workshops for construction personnel, AV courses, and instructor-led courses for maintenance personnel
Maryland	Yes, we blend all types of training whenever possible.	
Michigan		X
Missouri	X	
Montana	X—We use video conferencing with the web-based for the PE preparation course. We combine classroom with hands on in the maintenance academy. Our courses are designed to include lectures, media, and interaction to reinforce learning.	
North Dakota	X—We have used the Training Learning Network (previously called Tel8) for a number of years. Earlier this year, we completed installation of a video conferencing network with all eight district offices.	
Ohio	Yes. One example is C.O.R.E. (Courses ODOT Requires of Employees) training, which all new employees receive on their first day of employment. This includes mandatory training in workplace violence prevention, diversity, and sexual harassment. It is delivered by a trainer who is in the room with Central Office employees and video conferenced via interactive equipment to all 12 districts throughout Ohio. Heavy equipment training is also added, which includes classroom instruction in operation, safety, etc., of our construction and maintenance equipment	

	followed by hands-on operation of the equipment in an equipment training field.	
Pennsylvania	X—We have typically created blended training delivery taking training originally developed as computer-based training or web-based training and conducted that training in a computer classroom with instructor. The training proceeds on an individual level with occasional breaks for the instructor to conduct group clarification of difficult or challenging portions of the training.	
South Carolina		X
Texas	The following methods are used: a. On-line and Instructors Led Training (ILT). Several courses require accessing policy or other material contained on-line and then completing a preassessment course as a prerequisite to attendance. Other ILT courses require a post-test assessment that is completed on-line. b. Some ILT courses involve on-line access for class exercises or reference (such as plans on-line, manuals, etc.) as part of the course. c. Some ILT courses are majority ILT taught, but incorporate VTC for SMEs to provide lectures or Q&A sessions as part of the course (e.g., department’s 32-h Area Engineers course is instructed by adjunct instructors who are actual area engineers. TQD handles all enrollment, administration support, and course coordination. There are four 1-h sessions at different times during the course when an SME joins the class via VTC (class may be in Houston and the SME in Austin). Four VTC sessions are done by the Office of Civil Rights on Sexual Harassment and Grievances, Environmental Division, Occupational Safety Division—safety, and HR Division—drug abuse, disciplinary actions, etc.	
Washington	X—Mainly technical	
West Virginia		X

PE = Professional Engineers; SME = Subject Matter Experts; HR = Human Resources.

Funding Sources and Methods

32. How are training, education, and development courses and activities funded in your organization?

State	How Funded
Arizona	Through the DOT divisions
Arkansas	It depends on the training needed. If it is engineering-type training it involves a certain percentage if training is through NHI or FHWA. If it is training involving the non-engineering employees, it may involve the district or division that the employee works for to pay from their budget. Development depends on what is needed for the training. It may be developed in-house, through grant money it may be outsourced.

California	Professional Development for Planning is funded from federal SPR funds. While the budget process is going on, the Office of Professional Development is identifying training needs (see Questions 9–13), compiling training statistics for the current fiscal year, and planning its budget for the upcoming fiscal year. Ultimately, dollars approved through the budget approval process become matching state funds for SPR-funded projects.
Idaho	Technical training has its own budget. All other training comes directly from the trainee’s cost center.
Louisiana	Surface Transportation Program federal—reimbursement
Maryland	General fund
Michigan	Classes are funded by each operational area.
Missouri	Course funding is a portion of the HR budget.
Montana	Some are reimbursed with federal aid and are managed by the HR training program. Other funds come from the operating budgets of different areas in the department. Engineering and maintenance and equipment have dedicated training funds.
North Dakota	The majority of funding is state. We receive \$80,000 in SPR federal funds through our Planning and Program Division.
Ohio	Within the budget of the Office of Training
Pennsylvania	There is no separate funding line for training.
South Carolina	Not sure
Texas	Texas has a dedicated budget related to training activities based on demand and delivery.
Washington	Primarily through a centralized budget managed by the Training Branch of the HR office.
West Virginia	100% state funds until SAFTEA-LU (Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users now 100% federal funds)

NHI = National Highway Institute; SPR = state planning and research; HR = Human Resources.

33. What percent of your compensation budget is allocated for training, education, and development activities?

State	Percent Allocated
Arizona	4.3%
Arkansas	Not sure
California	1%
Idaho	1.0–1.5%
Louisiana	100% of the Technology Transfer Section’s budget
Maryland	Approximately 2%
Michigan	0.0043%
Missouri	No response
Montana	Approximately 1%
North Dakota	Approximately 0.47%. This figure is arrived at by dividing the HRD training budget of \$470,000 by \$100 million, which is for salary and benefits. There are other training dollars spent in NDDOT; for example, the Information Technology Division provides all IT-related training.
Ohio	Not certain of percentage; Office of Training for FY2006 has \$2,020,783
Pennsylvania	Unknown
South Carolina	1.5%
Texas	Approximately 3.5%
Washington	Approximately 1%
West Virginia	3%

34. Are training, education, and development funds considered essential human resource investments or are they among the first budget items to be cut or eliminated when funding must be reduced?

State	Yes	No
Arizona	X—Training has never been cut.	
Arkansas	No response	

California	No response	
Idaho		From my perspective, learning is not yet valued this way at the department level. There are times, and this is one of them, when options such as outsourcing of training are explored for budgetary reasons.
Louisiana		Budget cuts are normally distributed evenly.
Maryland	It is considered essential.	
Michigan	We have experienced staff cuts, but not cuts in courses.	
Missouri	No response	
Montana	Essential investments	
North Dakota	Our funds are considered an investment; we have not had major cuts in funding. When priority training has been identified, funds have been added to accommodate that need. Top management was not willing to lower the reimbursement percentages for tuition reimbursement and pledged additional funds, if needed, to maintain the current level.	
Ohio	They are considered essential human investments. Training has been one of the programs receiving the greatest percentage of funding increase in the last 2 years.	
Pennsylvania	Training, education, and professional development are considered important, but they do not have separate funding lines that could be cut. Organizational managers must make the tough business decisions about how to balance training needs against tight budgetary conditions. Generally, training has fared well.	
South Carolina	No response	
Texas	They are considered essential HR investments. TxDOT's administration over the years (and presently) has been very supportive and pro-active in the training functions of the department.	
Washington	Training is considered an important priority in WSDOT. However, funding is allocated through legislative action.	
West Virginia	Considered essential	

HR = Human Resources.

35. Who are the decision makers for either increasing or decreasing training, education, and development funding levels?

State	Decision Makers
Arizona	Top management and Office of Economic Development administrator
Arkansas	HR and upper management
California	The primary decision maker is the Transportation Planning Division Chief.
Idaho	Executive staff
Louisiana	Undersecretary, Office of Management and Finance
Maryland	Administrator/Deputy Administrator
Michigan	Departmental Manager and Legislature

Missouri	Department director
Montana	Executive management with support and encouragement from the training staff where identified needs exist
North Dakota	Business Support Management and top executives
Ohio	ODOT's executive leadership; state and federal funding sources
Pennsylvania	Organization leaders and managers
South Carolina	No response
Texas	Standing Committee on Training, with direction from the department's upper level management (administration) based on recommendations from TQD.
Washington	Training Manager, HR Director, department executives, legislative action
West Virginia	Commissioner and Business Manager

HR = Human Resources.

36. What is the time limit for spending your training, education, and development funds—Annually? Multi-year? No year?

State	Annual	Multi-Year	No Year
Arizona	X		
Arkansas	No response		
California		X	
Idaho	X		
Louisiana	X		
Maryland	X		
Michigan	X		
Missouri	No response		
Montana	X		
North Dakota	X		
Ohio	X—ODOT's fiscal year is July 1–June 30		
Pennsylvania	X—Training is subsumed by operational budget planning.		
South Carolina	No response		
Texas	X	X	
Washington		X	
West Virginia		X	

37. What are your most difficult funding issues for training, education, and development?

State	Most Difficult
Arizona	New technology
Arkansas	No response
California	Retirement and politics. See responses to Question 54 "Constraints."
Idaho	Attempting to take a seat at the strategic table, to dialogue with leaders/decision makers about the need for succession planning and workforce plans tied directly to the strategic goals. . . We completely subscribe to TRB's Workforce Challenge findings and recommendations. . . .
Louisiana	Not enough funding and staff downsizing
Maryland	Dispensing a flat budget fairly
Michigan	Educating decision makers
Missouri	Unfunded mandates
Montana	Convincing some managers to allow people who have to travel long distances or who have tough scheduling issues to attend or to allow, for example, limited numbers of construction personnel to attend training during the construction season when necessary.
North Dakota	Employees having time away from busy work schedules to attend professional development seminars.

Ohio	We have not experienced funding issues. We have experienced issues with ceilings on staffing levels. The Ohio Office of Budget Management and the state legislature have capped our agency staffing level and, as a result, we have to maximize use of our current subject matter experts and trainers rather than hiring additional employees to accommodate the increased training demands.
Pennsylvania	Training funding does not have a separate budget line. It comes out of the organization’s (Bureaus and Engineering Districts) operating budget. This is a two-edged sword. It tends to protect training dollars during tight fiscal years; however, it precludes centralized strategic allocation of training budget dollars.
South Carolina	No response
Texas	Maintaining a contingency funding reserve for identified critical training needs during a fiscal year. For example, if all funding allocation is identified for specific programs and delivery, and a critical need arises that requires development and/or training dollars, then cutting a scheduled delivery often is the result to meet the critical need. This goes back to the “old way” of doing business—spend it or lose it, or you will not get as much the next year. If you earmark dollars for contingency needs, and then do not spend those funds by the end of the fiscal year, you must return the money to the general fund.
Washington	Providing adequate support for priority needs while meeting a broad range of training needs.
West Virginia	Trying to get the funding to meet the training needs of our employees.

38. What are your most successful funding strategies for training, education, and development?

State	Successful Strategies
Arizona	Arizona always gets money needed
Arkansas	No response
California	We exercise a statewide focus, with headquarters being the primary steward of funds.
Idaho	Idaho Transportation Department is fragmented in this regard; there is no systematic strategy.
Louisiana	The LTRC Technology Transfer and Training Advisory Committee chaired by the Associate Director, Technology Transfer
Maryland	Disperse funds to most effective areas
Michigan	Decentralized training budget. Each area pays for its own employees to attend classes.
Missouri	Outsourced multi-year contracts
Montana	The federal-aid reimbursement program. It has funded training that was needed, but unanticipated, by an area or training that is more than one area can fund. The program is very popular with management because it is reimbursed by federal aid that goes into the department’s cash reserve that’s then reappropriated in subsequent legislative sessions.
North Dakota	We have pooled funding with other states in Region VIII to provide training events over Training Learning Network. We have also pooled funds with local public entities through the Bismarck State College Partnership to provide quality training for public employees in the Bismarck–Mandan area.
Ohio	In addition to being able to secure a generous budget for the Office of Training owing to executive management’s commitment to training initiatives, we encourage and support employees to utilize a variety of generous tuition reimbursement/professional development programs that are available to all employees.
Pennsylvania	(1) Charge backs for nonattendance, (2) making out service training in service through contracting, and (3) customizing NHI courses to focus on public administrator training needs and requirements.
South Carolina	No response
Texas	Traffic safety, personal safety, and maintenance field related
Washington	Delivering quality training that is responsive to mission-related priorities
West Virginia	No response

LTRC = Louisiana Transportation Research Center; NHI = National Highway Institute.

Training Evaluation Methods

39. Please describe your approach to evaluating training, education, and development activities.

State	Evaluation Approach
Arizona	Kirkpatrick four levels for training effectiveness; training administration uses other methods.
Arkansas	We compare our results with those in neighboring states
California	No response
Idaho	Idaho Transportation Department has instituted Return on Investment questionnaires at 30-, 60-, and 90-day intervals. We also do evaluations (\pm) at the end of each training event.
Louisiana	Conducting pilot courses, participant feedback, district training specialist feedback, and monitoring
Maryland	Kirkpatrick four levels of evaluation
Michigan	We use Kirkpatrick's Level 1 evaluations and best practices.
Missouri	Kirkpatrick's Levels 1 and 2
Montana	All classes are evaluated at Kirkpatrick Level 1. We use a combined form for some classes that encourage implementation of skills on the job. Instructional design of many classes includes assessments of participant learning and some incorporate pre- and post-test assessments, in some cases; e.g., equipment operators and performance tests. At this point, we don't do formal Level III or IV assessments.
North Dakota	Post-course evaluations
Ohio	ODOT evaluates the effectiveness of education and training through a post-course evaluation that is completed by employees immediately upon completion of a course; a 30-day post-course Likert 1-5 Customer Satisfaction survey, which is sent to the employee to evaluate whether the knowledge gained in the training has been applied on the job and increased efficiency and productivity; and a 90-day post-course Likert 1-5 Customer Satisfaction survey that is sent to the employees' supervisor to evaluate whether the knowledge gained in the training has been applied on the job and increased efficiency and productivity. The results are compiled electronically and reported on monthly and quarterly Statewide Focus Reports as a Customer Service measure. Changes to class offerings, data, and support materials are evaluated and changed according to the evaluations and surveys.
Pennsylvania	We perfunctorily evaluated all training at Kirkpatrick's Level 1. We perform Level 2 evaluation on most of the training conducted in the department as well. We have occasionally conducted Level 3 evaluations but these have been episodic and for specific purposes. We experimented with Level 4 evaluations and found them to be difficult and generally not worth the cost/benefit.
South Carolina	Class evaluations by participants, observation of classes
Texas	Our approach is always to keep an open mind and that what we instruct today is subject to change tomorrow as a result of technology changes, process changes, research-based changes, funding changes, etc. The training program is only as good as the end results—that is, did our audience come away with a new skill or knowledge that can be applied on the job to make their job performance more efficient and cost-effective.
Washington	WSDOT uses the Kirkpatrick's model of training evaluation. Course evaluations (Level 1) are used for all training. Exams (Level 2) are used for technical training.
West Virginia	Kirkpatrick Level 1

40. How effective have these evaluation efforts been in securing management support for your agency's training, education, and development programs?

State	How Effective
Arizona	Very
Arkansas	It is sometimes effective.
California	No response

Idaho	Not effective
Louisiana	Excellent management support for training
Maryland	Somewhat effective
Michigan	Not a factor in current decision making
Missouri	These are effective.
Montana	Our management has been very supportive of training over the years. The training assessments have not been required as a prerequisite for funding training, but have been used more to determine whether the training needs to be tweaked to be more effective. Training is supported if we can show a need to train for new technology or if there is an area in which employees need training to prepare for management positions or to improve their work skills.
North Dakota	We have strong support for our training, education, and development programs.
Ohio	Management is highly supportive and is committed to making decisions based on collected data.
Pennsylvania	Generally good
South Carolina	No response
Texas	Very successful. See response to Question 44 for details.
Washington	Satisfactory
West Virginia	

41. How effective have these evaluation efforts been in securing funding support for your agency’s training, education, and development programs?

State	How Effective	Comment
Arizona	Very	
Arkansas	N/A	
California	No response	
Idaho	Not effective	
Louisiana	Funding maintained at \$2 million+ each year	
Maryland	Somewhat effective	
Michigan	Minimal	
Missouri	No response	
Montana	See answer to Question 40	
North Dakota	We have strong support for our training, education, and development programs.	
Ohio	Management is highly supportive and is committed to making decisions based on collected data. As a result, funding requests for training, education, and development are typically granted. The agency has allocated a substantial amount of funding for training its workforce.	
Pennsylvania	Again, generally good, particularly because it is the managers themselves who make the training budget allocation decisions.	
South Carolina	No response	
Texas	Not as effective. The training budget has only experienced modest increases in dollar allocations over the past several years, despite information provided showing the return on investment in the training program.	
Washington	Satisfactory	
West Virginia	Yes, they are effective.	

N/A = not available.

42. Do you have both qualitative and quantitative metrics for training and development programs? If yes, do these measures provide insight into which courses, activities, and events provide the best value for the time and money invested?

State	Yes	No
Arizona	X/X	
Arkansas	N/A	
California	N/A	
Idaho		X
Louisiana		X
Maryland		X
Michigan		X
Missouri	No response	
Montana	With the exception of evaluation of individual courses, most of our measures are qualitative, and we have not conducted return on investment studies.	
North Dakota		X
Ohio	X—The agency is committed to data-based decision making. We constantly perform cost analyses of all of our training programs and have a variety of systems and tools in place by which we measure the value of our programs.	
Pennsylvania	X/generally	
South Carolina	No response	
Texas	Yes, return on investment is a part of our information gathering to determine if a program should be continued.	
Washington	Not directly	
West Virginia	No response	

43. Are you willing to share your qualitative and quantitative measures and results with others? If yes, please provide a contact—name, title, telephone and e-mail.

State	Yes	No
Arizona		X
Arkansas	N/A	
California	N/A	
Idaho		N/A
Louisiana		N/A
Maryland		N/A
Michigan	N/A	N/A
Missouri	N/A	
Montana		N/A
North Dakota		N/A
Ohio		X
Pennsylvania		Not at this time; the training management program is undergoing significant revision.
South Carolina	No response	
Texas	X— Ray L. Belk, SPHR Director, Training, Quality and Development 512-486-5448 Rbelk@dot.state.tx.us	

Washington	X—Contact David Acree	
West Virginia	No response	

N/A = not available.

44. How do you use evaluation results to revise training and development offerings?

State	How Use
Arizona	Yearly, training is revised using the feedback from Level 2, and two evaluations and a summative evaluation from the instructor.
Arkansas	N/A
California	N/A
Idaho	All trainings are revised given direct trainee input regarding design effectiveness. This year will be the first that we actually have quantitative data regarding return on investment resulting from questionnaires to supervisors and employees at time intervals. . . .
Louisiana	By revising as necessary
Maryland	All evaluations are used to determine whether to keep, revise, or terminate courses and/or vendors.
Michigan	It is informal and based on our ability to respond; e.g., changing instructors, lengthening or shortening sessions.
Missouri	No response
Montana	The trainers consider participant reactions in class and adjust within a class. We also look at the post-training evaluation and adjust accordingly. If the trainer is in doubt, he/she talks to the people who attended to get more specific feedback.
North Dakota	We consider comments from participants when revising courses.
Ohio	See answer to Question 39.
Pennsylvania	Information is passed to decision makers and training developers/managers for tweaking or making major revisions.
South Carolina	No response
Texas	All training data results are collected into Scantron forms, which are then processed to consolidate data on each course for general training information and then by each specific objective of the course. An administrative assistant in the section is responsible for the input of all data collected by course (for both student and supervisor evaluations). That data are available to each program administrator (PA) on a common shared drive, who may view the results of evaluations on a continually updated basis. The PA is charged to identify problems that occur in the scoring ratios of any objective to determine if the objective is unclear, the material is unclear, or other instructional problem. Corrective action is then taken by the PA in either the objective, the content, or with the instructors of the course. We also use a formal SME evaluation that is detailed to the objectives of the course. Each course is evaluated by an SME every 2 years. Those SME evaluations are reported to the Standing Committee on Training for action and/or guidance.
Washington	Course evaluations are recorded on an optically scanned form and results entered into an Access database. Instructor ratings are distributed to internal and external instructors.
West Virginia	No response

N/A = not available; SME = Subject Matter Expert.

45. How do you link the results of your training, education, and development program evaluation process to funding requests, funding allocations, and organization performance assessment?

State	How Results Are Linked
Arizona	No response
Arkansas	N/A
California	N/A
Idaho	To date we have not been able to do this.
Louisiana	N/A
Maryland	Evaluations are tracked and measured by both the participant and the instructor.

Michigan	N/A
Missouri	No response
Montana	This is not done at a department-wide level.
North Dakota	N/A
Ohio	<p>ODOT utilizes a 2-year Employee Development Plan (EDP). The EDP has temporarily been suspended while an agency process-improvement team, utilizing Baldrige-based criteria for performance excellence, works on updating it. As a result, the EDP will be better aligned with ODOT's current course offerings, including the 35 new courses and 8 certifications created as a result of the new HT Academy. It will be a more efficient paperless process and will tie into our statewide Training Record System. All employees, in consultation with their supervisors, are required to complete an EDP. The following criteria are used when completing the plan: (1) the employee will use the training in their current position, (2) the training will help to increase the employee's productivity, (3) the training is linked to the organization's and the employee's work goals, (4) training is mandatory for the employee in their current position, (5) the training will increase employee well-being and safety awareness on the job, and (6) the training will help the employee to build confidence in overall work performance.</p> <p>ODOT's current Business Plan includes Organizational Performance Expectations for a number of areas. The expectation for Central Office and district quality and HR operations is to achieve the Organizational Performance Indices goals and to sustain them through the biennium. These measures ensure ODOT meets its goals of having a well-trained, safe, and productive workforce. Included in the OPI goal is a measure for completion of training programs. ODOT's current goal in this area is 90%, a five point increase over the previous year's goal of 85%.</p>
Pennsylvania	Linkages are weak at this time.
South Carolina	No response
Texas	Results are reported. However, the funding level has not experienced a proportionate increase to success and demand.
Washington	Mainly anecdotally
West Virginia	No response

N/A = not available; HR = Human Resources.

Professional Certification, Registration, Continuing Education and Certification Programs

46. Do you require professional certification, registration, continuing education, and certification for occupations? Please show what is required by occupation.

State	Yes	Occupations
Arizona	X	Engineers, auditors, accounting, construction engineers, and techs
Arkansas	X	
California	X	We require professional certification for a number of classifications; for example, engineers and surveyors. Professional Certification for Planners is of prime concern, and we have been looking at a number of alternatives, including American Institute of Certified Planners.
Idaho	X	Only for Western Alliance for Quality Transportation Construction technical occupations.
Louisiana	X	
Maryland	X	Facilities Maintenance Technicians require equipment certification.
Michigan	X	
Missouri	X	
Montana	X	Engineers, engineering technicals—professional licenses or certification through the in-house career ladder, first aid/CPR for positions in remote areas—mostly engineering and maintenance positions; defensive driving for all employees who drive department vehicles; civil rights training, new employee orientation, safety orientation at time of hire or when a person

		takes a new job with new hazards; current Commercial Drivers License (CDL) for employees who drive commercial motor vehicles. For positions in which employees are required to be registered or licensed (e.g., engineers and CDLs), the employees are required to meet the requirements, but may or may not get department support. State policy prohibits paying for testing.
North Dakota	X	A PE certification is required for these engineering positions: District Engineers, Engineering Division Directors, Office Directors, Deputy Director for Engineering. A Senior Professional in Human Resources certification is required for the HR Director position. The director of Financial Management must be a CPA. The director of legal must be a licensed attorney. Our drivers' license examiners must become certified license examiners. Some supervisory equipment operator positions require Automotive Service Excellence certification.
Ohio	X	ODOT has many job classifications for its 6,031 employees. One would have to see the State of Ohio Classification Specifications provided by the Ohio Department of Administrative Services to answer this question. Link provided: http://das.ohio.gov/hrd/classindex.html
Pennsylvania	X	Currently this information is not readily available.
South Carolina	X	
Texas	X	Professional Engineers: PE Certification by Texas Board Of Engineering Licensing Right-of-Way Acquisition Agents: Bi-annual certification Certified Purchasers: Annual continuing education requirements Surveyors: Annual CEU requirements Human Resource Professionals—Society for Human Resource Management certification as Professional in Human Resources or Senior Professional in Human Resources, annual Professional Development Hour requirements Lab Technicians—annual certification Hot Mix Inspectors—Level 1A, 1B, and Level II bi-annual certification
Washington	X	Primarily engineers
West Virginia	X	Department of Health pays for training and work release time for class time only.

PE = Professional Engineer.

47. How are these requirements met?

State	How Requirements Are Met
Arizona	They are tracked on Arizona's Learning Management System
Arkansas	N/A
California	No response
Idaho	Through testing
Louisiana	Training provided and scheduled by the training section. Employee completes on department time; structured training programs and policy.
Maryland	Training and testing
Michigan	N/A
Missouri	No response
Montana	We offer training materials and programs for engineers to pass the FE and the PE exams.
North Dakota	Individuals are responsible for their own certification. However, the NDDOT does provide study materials and up to 3 days of professional time off to prepare for and take the exams.
Ohio	The agency supports these requirements in a variety of ways—funding, work release, internal certification training, external certification training, etc. This is dependent on the specific certification or continuing education requirement.
Pennsylvania	This information is not readily available.
South Carolina	No response

Texas	Through a combination of internal and external training programs
Washington	By completing Engineers in Training and PE exams
West Virginia	No response

PE = Professional Engineers; FE = Fundamentals of Engineering; N/A = not available.

48. Where you require certifications, continuing education, or other professional credentials, do you provide full funding, partial funding, work release time to study, prepare for or take exams, or use other means of supporting these efforts?

State	Support Provided
Arizona	Tuition reimbursement; pay for exam preparation
Arkansas	Not sure
California	No response
Idaho	Yes, we provide funding for technical training certifications.
Louisiana	Full funding with work release time as approved by the supervisor
Maryland	Full funding
Michigan	N/A
Missouri	Partial funding for PEs
Montana	Yes. If the department or a supervisor requires an employee to attend training, all expenses are paid by the department and the employee is allowed to participate during work hours in compliance with the FLSA (Fair Labor Standards Act). We do not pay for employees to take professional tests (e.g., P.E. or CPA) nor pay for renewal fees, but we do make training available for them to keep up their licenses.
North Dakota	We provide study materials and up to 3 days of professional time off to prepare for and take the exams. Exam costs are paid by the individual. However, employees are eligible for a one-time 1% monthly salary adjustment upon achieving certification. In addition, for positions that require a certification, NDDOT pays the recertification costs.
Ohio	We provide full funding and agency time to take the course and the exam.
Pennsylvania	Yes
South Carolina	It depends on the certification—we provide full funding for some.
Texas	Partial funding is provided as allowed by department policy and/or state statute. Work release time or study time on the job is also allowed as approved by the immediate supervisor.
Washington	Tuition reimbursement is available for exam preparation.
West Virginia	No response

N/A = not available; PE = Professional Engineer.

Partnerships with Other Agencies, Private Sector Organizations, Non-Profit Entities, Public Sector Agencies, and Universities

49. With whom do you partner for training, education, and development activities?

State	Partners
Arizona	Other agencies, community colleges, universities, private-sector vendors, and providers
Arkansas	Other agencies within state government
California	We include local, regional, and other state agency staff in training classes and academies at no cost to participants.
Idaho	Colleges, universities, private-sector vendors
Louisiana	LA Division of Administration/Comprehensive Employee Training Program for management, leadership, supervisory training, parish adult education centers
Maryland	Maryland colleges, universities; LTAP center, intra/inter-agency contracts, contractors, consultants
Michigan	Training vendors, FHWA, AASHTO, Michigan Department of Civil Service
Missouri	We do not partner.
Montana	Technical colleges, universities, consultants (we invite and sometimes require consultants to attend training when they want to do specialized work for us), LTAP. We also invite cities, counties, and FHWA to participate in our training.

North Dakota	Upper Great Plains Transportation Institute for the Transportation Learning Network, BSC Partnership for training of public employees in the Bismarck/Mandan area.
Ohio	The Ohio Department of Administrative Services, NHI, FHWA, Ohio Ready Mixed Concrete Association, Ohio Aggregates and Industrial Minerals Association, and Flexible Pavements, Inc., are a few examples of our training partners.
Pennsylvania	We partner with local universities, county technical trade/vocational schools, and local governments (counties and municipalities).
South Carolina	No response
Texas	TxDOT partners with the following agencies and vendors for training, education, and development activities: (a) University of Texas–Arlington, (b) University of Texas–Austin through the Center for Lifelong Engineering Education, (c) Center for Transportation Research—a part of the Texas A&M University system, (d) Texas Engineering Extension Service—a part of the Texas A&M University system, (e) Texas Tech University, (f) Texas Transportation Institute—a part of the Texas A&M University system, (g) University of Houston, (h) University of Central Texas, (i) Amarillo College, (j) The Professional Development Center at University of Texas–Austin, (k) NHI, (l) National Transit Institute–Rutgers, (m) Richards & Associates (nuclear gauge), (n) SOS Technologies—first aid, (o) SpeedShore (heavy equipment, safety, confined space), (p) International Municipal Signal Association, (q) David Ford Associates–California–HEC-HMS training, (r) Tarrant County College–alternative fuels, (s) Texas Asphalt Pavement Association—HMAC and course delivery, (t) Texas Concrete Pavement Association, (u) McTrans–Florida (Highway Capacity Software training). All of these partners are coordinated through TQD for department-wide training delivery. Numerous (200+) other training vendor suppliers are used on an as-needed basis such as soft skills development, specialized software training, etc.
Washington	Unions and universities
West Virginia	We use Fairmont State University for technician training. They have developed an on-line degree program.

NHI = National Highway Institute; LTAP = Local Technical Assistance Program.

50. Are these partnerships the result of a formal agreement; e.g., contract, memorandum of understanding, other written agreement, or are they informal in nature?

State	Partnership Arrangements
Arizona	Arizona has written interagency agreements with government agencies; contracts with private sector
Arkansas	Informal
California	Formal and informal
Idaho	No, Idaho Transportation Department has formal agreements.
Maryland	Informal
Michigan	Informal
Missouri	No response
Montana	Informal
North Dakota	Informal
Ohio	Formal agreements
Pennsylvania	These partnerships can be both informal and formal. Partnerships with local universities and technical trade/vocational schools are generally contractual in nature. Partnerships with county and municipality government are also generally contractual in nature using formal Agility agreements.
South Carolina	No response
Texas	No. Items a–u in Question 49 all have formal written contracts in place. All contracts are approved through the department’s Contract Services Officer or General Services Division.
Washington	Informal
West Virginia	Fairmont State is a formal partnership.

51. If you have identified successful practices for partnering, please share both the practice and the organization.

State	Successful Practices
Arizona	Arizona has an entire office devoted to partnering.
Arkansas	N/A
California	N/A
Idaho	No response to this item.
Louisiana	PPM 47—Training Advisory Committee
Maryland	No response—However, under others to consult: we are current in the process.
Michigan	As a result of feedback from employees regarding economic concessions, we partnered with the State Employees' Credit Union to provide financial planning and counseling webinars (Internet seminars) to employees.
Missouri	No response
Montana	We had an informal relationship with the Montana Contractors Association to create a cooperative training program in which Montana Department of Transportation and contractors' personnel could attend courses and make it more cost-effective and do it as a tax-exempt activity. Unfortunately, it didn't work out—the time just was not right.
North Dakota	Upper Great Plains Transportation Institute and BSC—identified earlier in responses.
Ohio	We believe that all of our partnerships are successful and perform continuous assessments of their programs to ensure quality.
Pennsylvania	Our Agility program has been a highly successful partnering arrangement across the state with numerous organizations. For further information on PennDOT's Agility program, please contact Sherry Zimmerman at 717-705-1331.
South Carolina	No response
Texas	See responses to Questions 49 and 50.
Washington	Informal agreements whereby Northwest Labors—Employers Training Trust Fund conducts Workzone Safety Supervisors training for vendors and contractors. Training is needed to meet WSDOT contract requirements.
West Virginia	No response

N/A = not available.

Opportunities, Challenges, and Constraints

52. What are the two greatest opportunities for training, education, and development in your organization in the next five years?

State	Two Greatest Opportunities
Arizona	E-learning, mentoring
Arkansas	Greatest opportunities—(1) The Maintenance Training Program (if approved) will help narrow the gap between the senior employees leaving via attrition and the new employees starting with less knowledge and experience in these types of jobs. (2) There is also an opportunity to train the next generation of supervisors to where they really understand the proper means and methods of leadership.
California	First, we must and are taking advantage of a new generation of planners through high school and college outreach, to encourage students to follow a curriculum necessary to become planners. The department's Adopt-A-School program, housed in the Office of Professional Development, targets high schools, and the Office of Professional Development's recruitment program targets colleges and universities within and outside of California.
Idaho	Working with strategic leaders to truly embed a system-wide learning philosophy and methodology into the Idaho Transportation Department.
Louisiana	The 14,000 square foot LTRC Transportation Training and Education Center is scheduled to open in Fall 2005. The Center will be used to partner with universities and private sources to deliver transportation training to LADOTD, local governments, contractors, consultants, and suppliers. Develop technical training for engineers with SME's found within LADOTD, including succession planning and knowledge/experience transfer.

Maryland	Succession planning and web-based training
Michigan	
Missouri	On-line learning and video conferencing
Montana	(1) Training to bolster skills after the competencies for the positions have been identified. Many of the duties have changed. For example, our maintenance employees are expected to inspect contractors' work. As we contract out more, contract and project administration will be more important. (2) Determining what skills are required and preparing employees to take positions that require those skills.
North Dakota	Support from the executive level of NDDOT, progressive programs like Mentoring Opportunites (our formal mentoring program) and our Succession Planning program.
Ohio	No response
Pennsylvania	Expanding E-learning opportunities and expanding structured on-the-job training and knowledge management.
South Carolina	On-line learning and distance learning opportunities
Texas	With the new advent of public/private ventures in the state with the \$128 billion Trans Texas Corridor project contractors in the private workforce are going to be looking at the department to set the guidelines or provide the actual training for their employees in numerous areas such as materials test and acceptance, inspection, DBE/HUB Title 6 reporting, environmental issues, etc. TQD has already been requested to prepare a preliminary impact to the training operations and how we can accommodate increased training needs to the private sector.
Washington	Developing blended learning that takes advantage of live training and e-learning. Converting statutorily required training to e-learning where appropriate.
West Virginia	Technician series for development and succession planning

LTTC = Louisiana Transportation Research Center; SME = Subject Matter Expert.

53. What are the two greatest challenges for training, education, and development in your organization in the next five years?

State	Two Greatest Challenges
Arizona	Keeping up with technology; generational differences
Arkansas	Having sufficient time and money
California	Answer subsumed in response to Question 54 "Constraints."
Idaho	Overcoming executive resistance to perceive human capital investment as equal in importance to other fiscal investments.
Louisiana	As more experienced personnel retire, we are faced with cutting the organization by that number.
Maryland	Strategic succession planning without PINS
Michigan	Economic climate. Making time for staff to attend the training offered.
Missouri	No response
Montana	(1) Determining what's relevant and passing on institutional knowledge when the experienced employees retire. (2) Working effectively with intergenerational barriers and expectations.
North Dakota	Our very small staff of regular employees, which is only two individuals. Time constraints on employees' time, which is a limiting factor for attendance at training events.
Ohio	No response
Pennsylvania	Tying training to the department's strategic direction and transferring agency training management to a commonwealth enterprise-wide learning management system.
South Carolina	No response
Texas	Meeting expectations of the quantity of training delivery that is being demanded with existing staff resources.
Washington	Implementing training for the new state government competency-based personnel management system. Implementing training for the new automated personnel management system.
West Virginia	No response

PINS = personal identification numbers.

54. What are the two greatest constraints for training, education, and development in your organization in the next five years?

State	Two Greatest Constraints
Arizona	Staffing and time
Arkansas	N/A
California	Retirements and politics are the two greatest constraints we have. Critical skills change with the experience level of the workforce, itself a function of the many retirements that are beginning to occur and that will come in the next few years. During the first few years of Office of Professional Development's existence, 1999–2004, the Transportation Planning Academy was geared toward bringing up to speed a significant number of new hires that resulted from cutbacks in the mid-1990s. Now those new hires are approaching journey level, just as retirements are beginning to increase. The result is professional development in constant flux, leaving largely unknown the critical skills and needs of the workforce. Couple this with the political forces—California's historical delay in having a budget on time, for example—and the challenge of planning and scheduling key courses, seminars, and forums becomes more pronounced. Office of Professional Development has been fortunate in having the strong support of the Transportation Planning Division Chief and the Planning Deputy, even in times of budgetary constraints. They have made a concerted effort to "keep the doors open" in anticipation of an economic turnaround.
Idaho	Lack of understanding at the executive level
Louisiana	Downsizing
Maryland	Lack of additional funding and PINS
Michigan	Lack of funding. Lack of flexibility to respond quickly to needs—especially in the area of procurement.
Missouri	Having the time to train and the staff to do the training
Montana	(1) Getting management to recognize that not all performance problems can be fixed with training. (2) Reinforcing the importance of management's role in recognizing training as work, sending employees to training that can be applied to their work, and ensuring they apply what they learn on the job.
North Dakota	Our very small staff of regular employees, which is only two individuals. Time constraints on employees' time, which is a limiting factor for attendance at training events.
Ohio	No response
Pennsylvania	Funding
South Carolina	Funding and manpower to deliver the training statewide for 5,000 employees
Texas	Limited staff resources. We have a legislatively mandated HR staff ratio of 1:85 for the entire department. Training personnel are included in that HR ratio. With a staff of 21 to deliver more than 200 different courses, more than 1,500 course sessions per year is at times a real stretch. We have reached capacity for delivery. Without additional personnel new programs will be introduced at the expense of other programs that will have to be scaled back.
Washington	Funds and staff
West Virginia	Funding and workload

N/A = not available; HR = Human Resources; PINS = personal identification numbers.

55. How do you link the results of your strategic planning or similar process to funding requests, funding allocations, and organization performance assessment?

State	How Results Are Linked
Arizona	No response
Arkansas	N/A
California	No response
Idaho	Idaho Transportation Department does not
Louisiana	Beginning in 2006, Planning Performance and Review forms will be linked to the LADOTD's strategic plan and agency goals.

Maryland	No response
Michigan	N/A
Missouri	No response
Montana	This has not been done.
North Dakota	The link is made through the budgeting process at the executive level with recommendations by the HR Director.
Ohio	No response
Pennsylvania	Through the strategic planning and business planning process
South Carolina	No response
Texas	No response
Washington	See response to Question 22
West Virginia	No response

N/A = not available; HR = Human Resources.

Means to Share and Integrate Information

56. What automated tools do you use to support training, education, and development activities in your organization?

State	Automated Tools to Support Training
Arizona	Pathlore Enterprise Learning Management System
Arkansas	N/A
California	A new system for tracking employee training was implemented in May 2005, called Learning Management System (LMS). LMS will greatly enhance the management and study of employee skills and to what extent training meets those needs.
Idaho	Idaho Transportation Department has just purchased Meridian software and, hence, the capacity to develop web-based training. This is a future goal.
Louisiana	ETRN—internal mainframe tracking system to track training completion and requirements accessible to managers, supervisors, and employees.
Maryland	Pathlore’s Learning Management System tracks all administrative training activities.
Michigan	On-Track (Training Management System), e-learning, Intranet
Missouri	Powerpoint, Learning Management System, laptops
Montana	HRIS system for tracking attendance and hours of training, web-based training that includes assessment of performance in course, on-line enrollment for larger training conferences.
North Dakota	We have a training lab with 10 desktop PCs.
Ohio	ODOT’s Training Records System is the propriety training database/learning management system.
Pennsylvania	We use a Learning Management System called Training Partner 2003.
South Carolina	Internal website for registering for some classes, mainframe training system to keep up with the training an employee has taken.
Texas	Utilization of PeopleSoft 8.3 for training processes, course sessions, enrollments, course completion data, individual transcripts, etc. Automation links between the department’s Learning Content Management System (LCMS) for on-line courses and updates to PS 8.3 on Training Transcripts.
Washington	Mainframe Automated Training Management Training System
West Virginia	On-line college courses

N/A = not available.

57. What other means do you use to share and integrate information?

State	Other Means of Program Support
Arizona	State of Arizona STARS Learning Management System
Arkansas	N/A
California	Senior Forum, PDL Seminar
Idaho	Idaho Transportation Department has integrated formal coaching/mentoring from an

	organizational development intervention perspective into our post-training activities. We bring together trainees to “de-construct” experiences, reintroduce and practice skills application exercises, and discussion to allow for better internalization of training concepts and skill sets. We also provide one-on-one coaching and mentoring.
Louisiana	E-mail, newsletters, publications, website
Maryland	No response
Michigan	Internet team rooms, webinars, streaming video web casts
Missouri	Video conferencing
Montana	Meetings and coordination with other trainers in the department, use of subject matter experts in training, and provides train the trainer courses for technical trainers.
North Dakota	We communicate training opportunities via e-mail and maintain an electronic training calendar.
Ohio	No response
Pennsylvania	MS Outlook e-mail and Electronic Construction Management System. We are currently exploring options for a knowledge management system.
South Carolina	E-mail
Texas	Group releases of e-mails to attendees of recent courses when policies or operational procedures change related to an area that course covered. Memorandums for circulation to all business units. Use of team rooms and bulletin boards on the Learning Content Management System. Quarterly meetings via VTC with all department training coordinators, HR officers, and directors of administration. Presentations on training courses/events at various department-sponsored conferences such as Construction, Design, Bridge, Traffic and Maintenance, and HR Conferences, etc. Attendance at national level conferences such as AASHTO HR Conference, National Transportation Training Directors annual conference.
Washington	Web, Internet, intranet
West Virginia	No response

N/A = not available; HR = Human Resources.

Others With Whom We Should Consult

If there are others, either within state DOTs, in other public-sector organizations, the private sector, nonprofit sector, or academia, with whom we should consult, please provide their name, institution, and contact information.

State	Other With Whom to Consult
Arizona	No response
Arkansas	No response
California	Chris Hatfield, Chief, Office of Professional Development (916-653-1277) or Mike Gordon, Administrator (916-653-3529).
Idaho	No response
Louisiana	No response
Maryland	We are currently in the process of forming the MD SHA University. When this project is complete, we will have identified <i>core</i> , <i>recommended</i> , and <i>elective</i> training for each classification within the administration. I am happy to provide this information as it becomes available.
Michigan	No response
Missouri	No response
Montana	No response
North Dakota	Executive Director, Transportation Learning Network (TLN)—TLN is an Internet-based, two-way interactive telecommunications network in U.S. DOT Region 8. The network links the transportation departments in Wyoming, Utah, South Dakota, North Dakota, and Montana with the Mountain–Plains

	<p>Consortium universities; North Dakota State University, Colorado State University, University of Wyoming, and Utah State University. TLN is headquartered at The Upper Great Plains Transportation Institute at North Dakota State University. A schedule of events is listed on the TLN website. The main purpose of TLN is to increase communication among the network participants.</p>
Ohio	
Pennsylvania	<p>Our Agility Program has been a highly successful partnering arrangement across the state with numerous organizations. For further information on PennDOT's Agility Program, please contact Sherry Zimmerman at 717-705-1331. Michelle Mont, Pennsylvania Turnpike Authority, 717-939-9551</p>
South Carolina	No response
Texas	No response
Washington	No response
West Virginia	No response

SHA = State Highway Administration;

APPENDIX B

List of Participants

State DOTs Responding to the Questionnaire

Arizona	Montana
Arkansas	North Dakota
California	Ohio
Idaho	Pennsylvania
Louisiana	South Carolina
Maryland	Texas
Michigan	Washington
Missouri	West Virginia

State DOTs Attending 2005 National Transportation Training Directors Conference

Arizona	South Carolina
Arkansas	South Dakota
Georgia	Utah
Idaho	Virginia
Massachusetts	Washington
Mississippi	West Virginia
Missouri	Wyoming
North Dakota	

Other Organizations Attending 2005 National Transportation Training Directors Conference

David A. Allsbrook, Jr, P.E. Volkert and Associates Raleigh, North Carolina	Mark J. Morvant, P.E. Associate Director, Technology Transfer Louisiana Transportation Research Center Baton Rouge, Louisiana
Patsy Anderson, Director of Technology Transfer Kentucky Transportation Center University of Kentucky Lexington, Kentucky	Joseph S. O'Toole Associate Administrator Office of Professional and Corporate Development Federal Highway Administration Washington, D.C.
Rick Barnaby Training Programs Division Manager National Highway Institute Federal Highway Administration Arlington, Virginia	Dr. Allison Rossett Professor of Educational Technology San Diego State University San Diego, California
Patsy Chustz Training and Development Manager Louisiana Transportation Research Center Baton Rouge, Louisiana	Myra Howze Shiplett President RandolphMorgan Consulting LLC Woodbridge, Virginia
Ivory Williams, Director Mississippi Center for Technology Transfer Jackson State University Jackson, Mississippi	Amy Whitten, J.D., Principle The Whitten Group Jackson, Mississippi

APPENDIX C

ASTD 2005 State of the Industry Report: ASTD's Annual Review of Trends in Workplace Learning and Performance

Authors: Brenda Sugrue and Jay Rivera

The State of the Industry Report is an annual accounting of trends in workplace learning and performance (WLP). The information below is quoted directly from the Report's Executive Summary.

This year's report focuses on trends in the United States from 1999 through 2004, based on data submitted through ASTD's Benchmarking Service (BMS) and Benchmarking Forum (BMF). In addition, we include an analysis of organizations that won ASTD's BEST awards in 2003 and 2004. The BEST Award group replaces the Training Investment Leaders group, which was drawn from the BMS and BMF samples in previous years. These three samples are the most comprehensive sets of data available on both historical and current workplace learning and performance investments and practices in the United States (see Table C1).

TABLE C1
Data Sources

Data Source	Samples	Average Number of Employees	Average Payroll \$M
<i>BMS = Benchmarking Service Organizations</i>	<i>BMS</i>		
Samples for 1999 to 2002 come from ASTD's Benchmarking Service, which is used by a broad cross section of U.S. organizations. The 2003 sample includes additional organizations that completed a special survey on key indicators in August 2004.	2003 (n = 344)	6,866	290
	2002 (n = 276)	6,661	451
	2001 (n = 270)	4,961	222
	2000 (n = 394)	3,859	161
	1999 (n = 405)	2,672	98
<i>BMF = Benchmarking Forum Organizations</i>	<i>BMF</i>		
ASTD's Benchmarking Forum is a group of large Fortune 500 companies and public sector organizations that share data and best practices with one another. These organizations submit detailed data on their training investments and practices each year. Only organizations that submitted enterprise-wide data are included.	2003 (n = 26)	100,168	4,930
	2002 (n = 17)	66,823	6,175
	2001 (n = 25)	63,259	4,213
	2000 (n = 26)	122,302	3,015
	1999 (n = 27)	71,008	3,207
<i>BEST = BEST Award Winners</i>	<i>BEST</i>		
Organizations that were honored for their exceptional efforts to foster, support, and leverage enterprise-wide learning for business results.	2004 (n = 24)	40,883	
	2003 (n = 23)	18,572	

The three samples for which data are presented in this report provide three groups against which you can benchmark WLP investments and practices in your organization. The BMS sample includes the broadest range of U.S. organizations in terms of size and industry and should be interpreted as the U.S. norm. The BMF sample represents very large and mostly global organizations, most of which are based in the United States. Between one and three BMF organizations are based outside the United States in any given year.

- New this year is the sample of organizations that won ASTD BEST awards in 2003 and 2004. The BEST awards program recognizes organizations that demonstrate a clear link between learning and performance. Through a rigorous blind review process, 23 winners were selected from 76 submissions in 2003, and 24 winners were selected from 83 submissions in 2004. There were three non-U.S. winners in 2003 and five in 2004. The winners were selected based on the following criteria:

- Evidence that learning has value in the culture
- Evidence of a link between learning and performance
- Evidence that the organization has leveraged technology in learning
- Evidence of innovative learning initiatives.

For this report, we reanalyzed the winners' data to identify commonalities in their learning investments, strategies, practices, and performance outcomes.

- The average annual expenditure per employee in ASTD's broadest sample of organizations (BMS) has remained steady at about \$820 since 2002.
- Average expenditure per employee in our sample of large organizations (BMF) was consistently higher, but decreased from \$1,366 in 2002 to \$1,190 in 2004.
- The average expenditure per employee in organizations that won ASTD BEST awards in 2003 and 2004 was more than \$2,000 each year since 2002.
- The average percentage of payroll invested in learning increased from 2.2% in 2002 to 2.52% in 2004 in BMS organizations, but decreased from 2.47% in 2002 to 1.99% in 2004 in our sample of large organizations (BMF). The average expenditure as a percentage of payroll in BEST award winners was considerably higher, ranging from 3.2% in 2002 to 4.16% in 2004.
- The percentage of expenditure for external services has risen steadily since 2002, with the average now being 27% in BMS and BEST organizations, and 36% in BMF organizations.
- The number of hours of formal learning per employee has averaged about 28 h in BMS organizations and about 38 h in the larger BMF organizations from 2002 to 2004.
- The average number of employees per WLP staff member in 2004 was 194 in BMS organizations and 325 in BMF organizations in 2004. The average number of hours of content provided per WLP staff member was 541 in BMS organizations and 505 in BMF organizations in 2003.
- The average cost per learning hour provided was \$596 per hour in BMS and \$1,430 per hour in BMF organizations in 2003. However, the average cost per learning hour received was \$56 in both BMS and BMF organizations, because BMF organizations, being larger, have greater reuse of each hour of learning that is provided.
- Expenditure per employee group was greatest for customer service employees in 2003, with an average of 18% of expenditure going to that single employee group. However, an average of 28% of learning expenditure went to employees with managerial responsibilities (first-line supervisors, middle and senior managers, and executives combined).
- In both BMS and BMF organizations, managerial and executive development combined were allocated the most learning content in 2003 and 2004, followed closely by information technology, business processes, and industry-specific content. Use of technology for delivering learning continued to increase in all samples (BMS, BMF, and BEST).
- The projections for 2004 are 29% in BMS, 35% in BMF, and at least 29% in BEST organizations. More than half of technology-based delivery was online in 2003 and 2004, and at least 75% of online learning was self-paced.
- The percentage of BMS organizations doing Level 1 evaluation in 2003 was about the same as in 2002 (74%), but the percentage doing Levels 2, 3, and 4 declined in 2003, to 31%, 14%, and 8%, respectively. The case is very different in BEST organizations; all BEST organizations are doing Level 4 evaluation to demonstrate the link between learning and organizational performance.
- Common characteristics of BEST winning organizations were
 - High level of investment in learning (although some spend less than the norm)
 - Measurement and demonstration of efficiency and effectiveness of the learning function

- Alignment of learning with business needs and individual employee competency needs
- Provision of a broad range of internal and external formal and informal learning opportunities
- Chief-level (or C-level) involvement and support for learning
- Combination of learning with other performance improvement solutions.

Interpretation

- An increasingly competitive global economy and the realization that human capital is the key to organizational performance have been a mixed blessing for workplace learning and performance professionals in recent years. WLP professionals' stock has gone up as the perceived value of learning has increased. The status of the learning organization has been elevated as more and more organizations appoint a chief-level officer with responsibility for learning who reports directly to the CEO rather than through HR. But with elevated status come elevated expectations. These expectations are translated into mandates to "run learning like a business," "demonstrate the value of learning," and "drive organizational performance.
- Organizations that really get the link between learning and performance have stepped up to the plate with, if not increased investment, at least increased efforts to align learning with business goals, target learning resources at mission-critical competencies, and measure both the effectiveness of learning and the efficiency of the learning organization in delivering improved performance outcomes.
- We see these trends most clearly in the sample of ASTD BEST award winners. Not all BEST organizations spend more than the norm on learning, but all maximize and measure the efficiency and effectiveness of their investment, and align learning with business and individual employee competency needs. The BEST organizations also provide a broad range of internal and external learning opportunities for employees, going beyond traditional formal learning activities to begin formalizing the informal; for example, legitimizing and providing structures for knowledge sharing and coaching.
- The BEST learning organizations have C-level involvement and support, and systematically involve leaders as role models and teachers. The BEST learning organizations also embrace the integration of learning and other performance improvement strategies. The BEST attribute performance gains as much to non-learning solutions as to learning solutions.
- The focus of BEST learning organizations on coaching, knowledge sharing, non-learning performance improvement strategies, and measurement parallels and validates the inclusion of these as areas of expertise in ASTD's new competency model for the WLP profession.
- While the BEST learning organizations lead the way, other organizations are still struggling with the transition from a position of entitlement or luxury to a position of criticality and scrutiny. In our largest and broadest sample of organizations (BMS), only 8% report that they are evaluating effectiveness in terms of business impact. On the other hand, the drive for efficiency is evident across the board as use of technology increases in all samples, at least for delivery of learning. If organizations take advantage of the integration and data collection capabilities of their technology-based learning management systems, then there is the potential for greater alignment and more measurement of learning and performance outcomes.

- There is variation in averages across the three samples included in this report (BMS, BMF, and BEST). For example, average expenditure per employee in 2003 was \$818 in BMS, \$1,299 in BMF, and \$2,240 in BEST organizations. There is also variation within each sample. For example, expenditure per employee ranged from \$290 to \$2,766 in BMF organizations in 2003. Such variation may make it seem difficult to choose a suitable benchmark for any WLP indicator. Each organization has to determine appropriate levels of investment and learning practices primarily in light of current business needs and related workforce competency gaps. External benchmarks in the form of averages provide meaningful and useful norms, but there may be situations where it is appropriate to deviate from those norms.
- Any analysis of the state of the industry is only as good as the data on which it is based. While ASTD is confident that its samples are representative, its survey questions have not kept pace with changes in the industry. In 2005, ASTD will introduce a new set of metrics that will allow us to report on and connect more of the dots between a broader range of learning opportunities and individual, group, and organizational performance variables. ASTD plans to benchmark separately efficiency, effectiveness, alignment, and sustainability indicators and identify which indicators are most critical to each of those attributes of a learning organization.
- As the WLP industry and profession evolves, so too must the methods for monitoring and reporting its state on an annual basis. Meanwhile, we can say for sure that as the year 2004 ends, the state of workplace learning and performance is healthy and growing.

ASTD 2004 State of the Industry Report, ASTD, Washington, D.C., 2005. Readers who would like to read the remainder of the State of the Industry Report can go to www.astd.org and click on reports. You have to be a member to get free access to the full report.

APPENDIX D

ASTD Competencies Study

There are many studies available that examine the competencies needed for successful performance in the learning organization. Among the very best is this work on competencies from the ASTD. There is substantial additional information on the subject at ASTD's website: www.astd.org. The website here takes the reader directly to the competency study. Access to this part of the website requires membership in ASTD.

http://www.astd.org/astd/Research/competency_study/competency_doc.htm

ROLES

Roles are broad areas of responsibility within the WLP profession that require a certain combination of competencies and Areas of Expertise (AOEs) to perform effectively. They are described in sensible, intuitive, and everyday language. Like competencies, roles can be demonstrated in the context of most WLP jobs. Roles are not the same as job titles; they are much more fluid, depending on the application or the project. For the WLP professional, playing the roles is analogous to maintaining a collection of hats when the situation calls for it; the professional slips out of one role and accepts another.

This study has identified four unique roles within the workplace learning and performance profession: Learning Strategist, Business Partner, Project Manager, and Professional Specialist. These four roles are further defined as follows:

Learning Strategist

Determines how workplace learning and performance improvement can best be leveraged to achieve long-term business success and add value to meet organizational needs; leads in the planning and implementation of learning and performance improvement strategies that support the organization strategic direction and that are based on an analysis of the effectiveness of existing learning and performance improvement strategies.

Business Partner

Applies business and industry knowledge to partner with the client in identifying workplace performance-improvement opportunities; evaluates possible solutions and recommends solutions that will have a positive impact on performance; gains client agreement and commitment to the proposed solutions and collaboratively develops an overall implementation strategy that includes evaluating impact on business performance;

uses appropriate interpersonal styles and communication methods to build effective long-term relationships with the client.

Project Manager

Plans, resources, and monitors the effective delivery of learning and performance solutions in a way that supports the overall business venture; communicates purpose, ensures effective execution of an implementation plan, removes barriers, ensures adequate support, and follows up.

Professional Specialist

Designs, develops, delivers, or evaluates learning and performance solutions; maintains and applies an in-depth working knowledge in any one or more of the workplace learning and performance specialty areas of expertise, including Career Planning and Talent Management, Coaching, Delivering Training, Designing Learning, Facilitating Organizational Change, Improving Human Performance, Managing Organizational Knowledge, Managing the Learning Function, and Measuring and Evaluating.

Areas of Expertise

Professional areas of expertise are the specific technical and professional skills and knowledge required for success in WLP specialty areas. Think of AOEs as the knowledge and skills an individual must have above and beyond the foundational competencies. To function effectively in a given AOE, a person must display a blend of the appropriate foundational competencies and unique technical/professional skills and knowledge. An individual may have expertise in one or more of the following specialty areas (listed alphabetically here):

- Career Planning and Talent Management
- Coaching
- Delivering Training
- Designing Learning
- Facilitating Organizational Change
- Improving Human Performance
- Managing Organizational Knowledge
- Managing the Learning Function
- Measuring and Evaluating.

Designing Learning

Designing, creating, and developing learning interventions to meet needs; analyzing and selecting the most appropriate

strategy, methodologies; and technologies to maximize the learning experience and impact.

Please note: This information is based in part on the IBSTPI (International Board of Standards for Training, Performance, and Instruction) competency study for instructional design competencies: *The Standards* [R. Richey, D.C. Fields, and M. Foxon, with R.C. Roberts, T. Spannaus, and J.M. Spector (2001)].

Improving Human Performance

Applying a systematic process of discovering and analyzing human performance gaps, planning for future improvements in human performance, designing and developing cost-effective and ethically justifiable solutions to close performance gaps, partnering with the customer when identifying the opportunity and the solution, implementing the solution, monitoring the change, and evaluating the results.

Please note: This information is based in part on *ASTD Models for Human Performance Improvement* (Rothwell 1996 and 2000)

Delivering Training

Delivering learning solutions (e.g., courses and guided experience) in a manner that both engages the learner and produces desired outcomes, managing and responding to learner needs, and ensuring that the learning solution is made available or delivered in a timely and effective manner.

Measuring and Evaluating

Gathering data to answer specific questions regarding the value or impact of learning and performance solutions, focusing on the impact of individual programs and creating overall measures of system effectiveness, and leveraging findings to increase effectiveness and provide recommendations for change.

Facilitating Organizational Change

Leading, managing, and facilitating change within organizations.

Please note: This information is based in part on the 20th edition of the Organization Change and Development Competency Effort. Contributors include ODN (Organization Development Network), ODI (Organization Development Institute), the Academy of Management Directors of OD university programs, Twin Cities ASTD Chapter, and more than 3,000 individuals from around the world. R. Sullivan, W.J. Rothwell, and C. Worley coordinated the ongoing research.

Managing the Learning Function

Providing leadership in developing human capital to execute the organization's strategy; and planning, organizing, monitoring, and adjusting activities associated with the administration of workplace learning and performance.

Coaching

Using an interactive process to help individuals and organizations develop more rapidly and produce more satisfying results; and improving others' ability to set goals, take action, make better decisions, and make full use of their natural strengths.

Please note: This information is based on the ICF (International Coach Federation) Credentialing Process Examination.

Managing Organizational Knowledge

Serving as a catalyst and visionary for knowledge sharing; developing and championing a plan for transforming the organization into a knowledge-creating and knowledge-sharing entity; and initiating, driving, and integrating the organization's knowledge management efforts.

Career Planning and Talent Management

Ensuring that employees have the right skills to meet the strategic challenges of the organization; ensuring the alignment of individual career planning and organization talent management processes to achieve an optimal match between individual and organizational needs; and promoting individual growth and organizational renewal.

Competencies

Competencies are clusters of skills, knowledge, abilities, and behaviors required for job success. Managers need to know about competencies to make appropriate personnel decisions and guide employees' performance.

Employees need to know about competencies because they provide a road map of how to succeed on the job. The study identified the following set of competencies—presented here in alphabetical order—that are considered important and necessary for the majority of individuals in the workplace learning and performance profession:

- Analyzing Needs and Proposing Solutions
- Applying Business Acumen
- Building Trust
- Communicating Effectively
- Demonstrating Adaptability

Driving Results
 Influencing Stakeholders
 Leveraging Diversity
 Modeling Personal Development
 Networking and Partnering
 Planning and Implementing Assignments
 Thinking Strategically.

These competencies are grouped into clusters (Business/Management, Interpersonal, and Personal) to facilitate understanding. The competencies are listed alphabetically under each cluster.

Business/Management Competencies

Analyzing Needs and Proposing Solutions
 Applying Business Acumen
 Driving Results
 Planning and Implementing Assignments
 Thinking Strategically.

Interpersonal Competencies

Building Trust
 Communicating Effectively
 Influencing Stakeholders
 Leveraging Diversity
 Networking and Partnering.

Personal Competencies

Demonstrating Adaptability
 Modeling Personal Development.

Interpersonal Competencies

BUILDING TRUST

Interacting with others in a way that gives them confidence in one's intentions and those of the organization.

Key Actions

Operates with Integrity

Demonstrates honesty and behaves according to ethical principles; ensures that words and actions are consistent; walks the talk; and behaves dependably across situations.

Discloses Position

Shares thoughts, feelings, and rationale so that others understand positions and policies. Maintains confidentiality; keeps private or sensitive information about others confidential.

Leads by Example

Serves as a role model for the organization's values, takes responsibility for delivering on commitments, gives proper credit to others, and acknowledges own mistakes rather than blaming others.

Treats People Fairly

Treats all stakeholders with dignity, respect, and fairness; listens to others without prejudging; objectively considers others' ideas and opinions, even when they conflict with prescribed policies, procedures, or commonly held beliefs; champions the perspectives of different partners even in the face of resistance; and engages in effective conflict resolution.

Ensures Compliance with Legal, Ethical, and Regulatory Requirements

Ensures that processes and results comply with relevant legal, ethical, and regulatory requirements; and monitors compliance and creates reports if needed.

Communicating Effectively

Expressing thoughts, feelings, and ideas in a clear, concise, and compelling manner in both individual and group situations; actively listening to others; adjusting style to capture the attention of the audience; developing and deploying targeted communication strategies that inform and build support.

Influencing Stakeholders

Selling the value of learning or the recommended solution as a way of improving organizational performance; and gaining commitment to solutions that will improve individual, team, and organizational performance.

Leveraging Diversity

Appreciating and leveraging the capabilities, insights, and ideas of all individuals; working effectively with individuals having diverse styles, abilities, motivations, and backgrounds (including cultural differences).

Networking and Partnering

Developing and using a network of collaborative relationships with internal and external contacts to leverage the workplace learning and performance strategy in a way that facilitates the accomplishment of business results.

BUSINESS/MANAGEMENT COMPETENCIES

Analyzing Needs and Proposing Solutions

Identifying and understanding business issues and client needs, problems, and opportunities; comparing data from different sources to draw conclusions; using effective approaches for choosing a course of action or developing appropriate solutions; and taking action that is consistent with available facts, constraints, and probable consequences.

Key Actions

Gathers Information About Client Needs

Collects information to better understand client needs, issues, problems, and opportunities; reviews organizational information and human performance outcomes; studies organizational systems to better understand the factors affecting performance; integrates information from a variety of sources; and asks internal and external partners for input and insight.

Diagnoses Learning and Performance Issues

Uses research methods to isolate the causes of human learning and performance problems; proposes theories to understand and explain the factors affecting performance; detects trends, associations, and cause–effect relationships.

Generates Multiple Alternatives

Gathers information about best practices; thinks expansively and brainstorms multiple approaches; generates relevant options for addressing problems and opportunities and achieving desired outcomes; and maintains a database or bank of possible solutions and their effectiveness.

Searches for Innovative Solutions

Challenges paradigms and looks for innovative alternatives; and draws upon diverse sources for ideas and inspiration in creative problem-solving activities.

Chooses Appropriate Solution(s)

Formulates clear decision criteria; evaluates options by considering implications, risks, feasibility, and consequences on the client system and on other parts of the organization; and prioritizes and chooses an effective option.

Recognizes Impact

Considers the implications of learning and performance decisions, solutions, and strategies in other contexts; and makes

decisions using a broad range of knowledge that extends beyond the limitations of the organization and its immediate needs.

Proposes Solution(s)

Recommends a plan or process for making changes; and clearly explains rationale for the recommended solution and how it will address the performance gap or opportunity.

Applying Business Acumen

Understanding the organization business model and financial goals; utilizing economic, financial, and organizational data to build and document the business case for investing in workplace learning and performance solutions; and using business terminology when communicating with others.

Driving Results

Identifying opportunities for improvement and setting well-defined goals related to learning and performance solutions; orchestrating efforts and measuring progress; and striving to achieve goals and produce exceptional results.

Planning and Implementing Assignments

Developing action plans, obtaining resources, and completing assignments in a timely manner to ensure that workplace learning and performance goals are achieved.

Thinking Strategically

Understanding internal and external factors that impact learning and performance in organizations; keeping abreast of trends and anticipating opportunities to add value to the business; and operating from a systems perspective in developing learning and performance strategies and building alignment with business strategies.

PERSONAL COMPETENCIES

Demonstrating Adaptability

Maintaining effectiveness when experiencing major changes in work tasks, the work environment, or conditions affecting the organization (e.g., economic, political, cultural, or technological); remaining open to new people, thoughts, and approaches; and adjusting effectively to work within new work structures, processes, requirements, or cultures.

Key Actions*Seeks to Understand Changes*

Seeks to understand changes in work tasks, situations, and environment as well as the logic or basis for change; and actively seeks information about new work situations and withholds judgment.

Approaches Change Positively

Treats changes as opportunities for learning or growth; focuses on the beneficial aspects of change; and speaks positively and advocates the change when it helps promote organizational goals and strategy.

Remains Open to Different Ideas and Approaches

Thinks expansively by remaining open to different lines of thought and approaches; and readily tries new and different approaches in changing situations.

Adjusts Behavior

Quickly modifies behavior to deal effectively with changes in the work environment; acquires new knowledge or skills to deal with the change; does not persist with ineffective behaviors; and shows resiliency and maintains effectiveness even in the face of uncertainty or ambiguity.

Adapts to Handle Implementation Challenges

Effectively handles global, cultural, economic, social, and political challenges to the effective implementation of learning and performance solutions; and works to overcome barriers and deal constructively with nontraditional or challenging situations.

Modeling Personal Development

Actively identifying new areas for ones' own personal learning; regularly creating and taking advantage of learning opportunities; and applying newly gained knowledge and skill on the job.

http://www.astd.org/astd/Research/competency_study/competency_doc.htm

APPENDIX E

Additional Resources

ORGANIZATIONS

Many of the organizations listed here have research and publications that are available without charge. Most also have a membership fee, which then provides access to a much broader range of research, publications, and member services.

American Council on Education

<http://www.acenet.edu/AM/Template.cfm?Section=CPA>
The American Council on Education website has a wide variety of resources, including a Center for Policy Analysis that conducts research and analysis on education issues and an excellent set of on-line resources including a library of white papers and other research on distance learning. Although the focus is primarily higher education, much of the research on learning is applicable to the practical applications useful to state departments of transportation (DOTs).

American Society for Training and Development (ASTD)

www.astd.org
ASTD is the most prominent of the professional organizations for continuous learning information. ASTD is also a source of information about on-line or e-learning.

American Society for Human Resources Management (SHRM)

www.shrm.org
SHRM is the best of the professional organizations dealing with private-sector human resources issues. They have a wonderful research department that does cutting edge human resource research.

Brookings Institute

www.brookings.edu
The Bookings Institute is a nonprofit organization that has a wealth of research and knowledge about public policy issues, including human resources management.

Cranfield University School of Management

www.som.cranfield.ac.uk/som/
Cranfield is a leading British university that has cutting-edge research on international human resources issues.

Council for Excellence in Government

www.excelgov.org/
Works to improve the performance of American government and government's place in the lives and esteem of U.S. citizens and others around the world.

E-Learning Guild

www.elearningguild.com

This is a website that provides resources, research, a community of practice, and other information and events for those interested in e-learning issues.

Governing.com

<http://governing.com/govlinks/glassn.htm>
This website provides a list of a number of public professional organizations with a state government focus and serves as the on-line supplement to Governing.com's state and local government sourcebook.

Human Resources Institute (HRI)

www.hri.org
HRI is a consortium of several hundred private-sector firms that pool their resources to conduct research on human resource issues that are expected to confront organizations several years in the future. It is a wonderful resource for identifying future issues of concern to organizations.

International Society for Performance Improvement

www.ispi.org
This organization focuses on human performance technology and workplace performance. It provides highly regarded training courses, has established a variety of related communities of practices, and makes available research and other resources for training professionals and others interested in human performance technology issues and practices.

National Academy of Public Administration

www.napawash.org
The Academy's Center for Human Resources Management is one of the best of the nonprofit organizations doing research on public-sector human resource issues. This site also provides access to general management studies, environmental studies, organization performance improvement studies, and the like.

National Association of Government Training and Development

<http://www.nagtad.org/nagtad/index.htm>
This organization is a source of information for federal, state, and local training and development professionals to learn about what is occurring nationwide and to locate or validate best practices.

National Association of State Personnel Executives (NASPE)

www.naspe.org
The NASPE is the professional organization of state Directors of Human Resources. This site provides excellent research and

information on human capital issues of interest to state governments.

Organization of Economic Cooperation and Development (OECD)

www.oecd.org

The OECD is a leading researcher on international human resources issues around the world.

Partnership for 21st Century Skills

<http://www.21stcenturyskills.org/>

The Partnership for 21st Century Skills is an advocacy organization that identifies and advocates the integration of certain skill areas needed for the 21st century. Although their focus is broader than the workplace, the database on 21st century skills and their publications is useful for the practical applications needed by state DOTs.

Center for Creative Leadership (CCL)

www.ccl.org/index.shtml

The CCL is an international, nonprofit educational institution. Through our research, it is developing models of managerial practice.

Conference Board

www.conference-board.org/

The Conference Board creates and disseminates knowledge about management and the marketplace to help businesses strengthen their performance and better serve their customers. It also provides information on consumer confidence, leading economic indicators, and the Consumer Confidence Index.

Sloan Consortium

<http://www.sloan-c.org/>

The Sloan Consortium is a consortium of institutions and organizations “committed to quality on-line learning.” It publishes *The Journal of Asynchronous Learning Networks* and the Sloan-C series of books about on-line education.

U.S. Department of Education

<http://www.ed.gov/rschstat/landing.jhtml?src=ln>

The U.S. Department of Education has an extensive electronic library of education research and statistics, including a significant number of articles on e-learning.

U.S. Government Accountability Office (GAO)

www.gao.gov

The GAO is the U.S. government’s auditor. It provides reports on agency and program performance. It is an excellence source of information on human capital management, organizational and individual performance management, metrics, and similar topics.

U.S. General Services Administration (GSA)

www.gsa.gov

The GSA is a U.S. government agency that leads the government’s telework and mobile office research and best practices. It also provides information about technology needed to establish telework and mobile offices.

U.S. Office of Personnel Management (OPM)

www.opm.gov

The OPM is the U.S. federal government’s central human capital management authority. The website has information on every human capital management topic.

Abbreviations used without definitions in TRB publications:

AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ACRP	Airport Cooperative Research Program
ADA	Americans with Disabilities Act
APTA	American Public Transportation Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATA	American Trucking Associations
CTAA	Community Transportation Association of America
CTBSSP	Commercial Truck and Bus Safety Synthesis Program
DHS	Department of Homeland Security
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
IEEE	Institute of Electrical and Electronics Engineers
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITE	Institute of Transportation Engineers
NASA	National Aeronautics and Space Administration
NCFRP	National Cooperative Freight Research Program
NCHRP	National Cooperative Highway Research Program
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005)
TCRP	Transit Cooperative Research Program
TEA-21	Transportation Equity Act for the 21st Century (1998)
TRB	Transportation Research Board
TSA	Transportation Security Administration
U.S.DOT	United States Department of Transportation