

Building a Performance-based Certification Process at VDOT

Dennis Mankin, Platinum Performance Partners and Dr. Karen McGraw, Cognitive Technologies

Certificate programs are a must in any organization that must ensure consistent levels of quality across individuals who inspect the manufacture, delivery, and/or application of products. This is especially true for Departments of Transportation (DOTs) across this country because the role of the “inspector” is transitioning from internal resources to external private industry resources. At the same time, DOTs are challenged to ensure the same level of quality in the manufacture, delivery and application of asphalt products. This DOT took a “performance-based” approach during this tough transition period to build a powerful certificate program with measurable results.

Departments of Transportation (DOTs) across the country are challenged to maintain their roads and bridges in the face of large fiscal budgets cuts. Because the work does not diminish with the budget cuts, much of the labor and inspection processes are being transitioned to personnel in private industry. Ensuring the quality of roadway inspections in all phases of production, application and maintenance of is crucial to everyone who drives them daily.

The Need

This was the situation faced by the Commonwealth of Virginia and the Virginia Department of Transportation, VDOT. Although roads and bridges continue to be built in Virginia, much more of the funding and focus is now on maintenance of the current infrastructure. There continues to be a strong need for competent, experienced Inspectors to inspect the asphalt plants producing the materials and field application of the product to repair and replace asphalt roadways.

VDOT already had a Materials Certification School (MCS) in place to train and certify inspectors in all aspects of road construction and maintenance. VDOT’s MCS was established over 35 years ago and has been very successful in producing certified inspectors and technicians. Eleven different Certification Guides and workshops existed to accomplish this task. The overall VDOT/MCS goal and mission (shown below) is simple, yet very important on a number of levels:

Certified ‘inspectors’, in private industry and VDOT that will be able to consistently perform tasks in the field that they have been certified to produce through the MCS training and proficiency processes meeting both VDOT quality and Federal requirements of CFR 63.7

It was important because VDOT must ensure:

1. Private industry personnel (and VDOT personnel) consistently meet the VDOT quality specifications of the job requirements for *all* work performed on their roads and bridges, etc.
2. Everyone is meeting and exceeding the Federal requirements of CFR 637 to enable VDOT to continue to secure Federal financial support for their roadways and bridges
3. Safe roads for all people who travel through/on the roadways and bridges in the Commonwealth of Virginia.

Although VDOT had certification guides for each of the MCS Certificate programs, the participant guides and workshop materials were written primarily for internal VDOT personnel. In addition, they were quite dated in their look and feel. The overall design and structure limited learner’s ability to quickly find information, identify what was most important, capture key concepts and terms, and make the information their own. In addition, the design and content presentation was more “subject-matter-based” than “performance-based,” an important distinction that impacts the ability to retain and apply content to

produce desired results. An important distinction is that performance-based training is both outcome centered and learner centered. In other words, it improves the performance of individuals, which in turn adds value to *both* the skill set of the performer *and* the business results of the organization. The table that follows illustrates this distinction.

Subject-Matter vs. Performance-Based Content and Training

Subject Matter Based Content and Training	Performance-Based Content and Training
<ul style="list-style-type: none"> • Focused on topics and principles • Clusters “things you need to know” into logical conceptual groups • Presents both “nice to know” information and critical “need to know” information to provide a full picture of the subject area • Includes exercises that test the memorization of content • Labels the course with a topic-like title (e.g., Principles of xyz) • Headings are topics within the subject matter 	<ul style="list-style-type: none"> • Focused on enabling learners to produce the valuable outcomes associated with a job • Aligns content with outcomes of value to the job, eliminating content that does not support outcomes or critical processes used to achieve them • Headings are action-oriented (e.g., verbs, how to, etc.) • Includes practice exercises that call for simulation of job tasks • Teaching tactics are selected based on characteristics of the tasks • Content is selected based on its relevance to tasks that must be performed

Getting Started

Platinum Performance Partners (PPP) has had a long standing working relationship with VDOT. We assist them in conducting ‘performance-based’ job analysis, organizational alignment, instructional design and development, and other related projects. Our team won a bid to assist VDOT and the MCS to bring some life back into the Materials Certification workshops. Our approach was to apply a results or performance-based approach to the learning and certification process.

Our first project was to refine and redesign the Plant Asphalt Certification workshop materials and the Field Asphalt Certification workshop materials. Project tasks included designing and developing materials for two workshops, two certification study guides, two lab proficiencies, and two facilitator guides. Redesigned materials must address the two critical measurable factors that impacted the overall asphalt process:

1. Quality of asphalt materials produced, and
2. Effective and efficient delivery and application of the product

To accomplish this project, the PPP team used the *Performance DNA™* methodology, a validated process for the design and development of performance-based curriculum. As shown in Figure 1, this process began with the Business Analysis phase. During this phase we conducted an important alignment meeting with our sponsors at VDOT and the MCS to gain agreement for our approach for the goals of this project. This helped build the partnership for success throughout the project.



Figure 1. The Performance DNA Analysis process

After project alignment had been achieved, the PPP team worked through the other steps in the methodology. We conducted *performance analysis* to understand VDOT’s goals, confirm the job roles with the most impact on these goals, and the desired outcomes produced by each role. We then completed *key performer analysis* activities. This required interviewing individuals in each job role who were above average in their ability to deliver desired results. The output from this analysis was the outcomes and key work processes reported by the inspector and technician roles involved in the production, delivery and application of asphalt.¹ We also completed *influence analysis*, examining the effect the current training materials had on performance and identifying ways to improve their impact. Finally, we used the *Performance DNA Analysis* tool to consolidate our analysis and produce project reports.

Designing for Performance

Our team now understood the outcomes required and the work processes that had to be completed by each target job role to produce the outcomes. Before designing new materials to produce the required performance, we needed to better understand the current state of the content. We began with a process that was critical to project success—a thorough content analysis and “shred” of the existing participant guides and presentation material. A well-known saying, “Telling Ain’t Training” described our initial reaction to the existing materials, which reflected heavy subject matter presented through blocks of heavy text and SME lecture. We now knew what we had to work with, and where improvements would be needed to create materials that were performance-based.

During this analysis, we identified primary knowledge chunks and key concepts that aligned with the outcomes already identified. Using a table, we associated existing figures and tables with the key concepts and noted which of these needed additional work to improve clarity and effectiveness. In addition, we noted areas of duplicate coverage and inconsistency both within and across chapters, and content that appeared to be superfluous to the outcomes specified (i.e., “nice to know” information vs. “need to know”). This content analysis also enabled us to identify ways we could reorganize the content and/or modify headings to improve the learner’s ability to use it to perform. This process is illustrated in Figure 2.

¹ *Performance DNA™* has been used in many government organizations for the analysis of workplace performance. It is also the foundational process used in ASTD’s HPI Certificate program and has been taught and used by thousands of people worldwide.

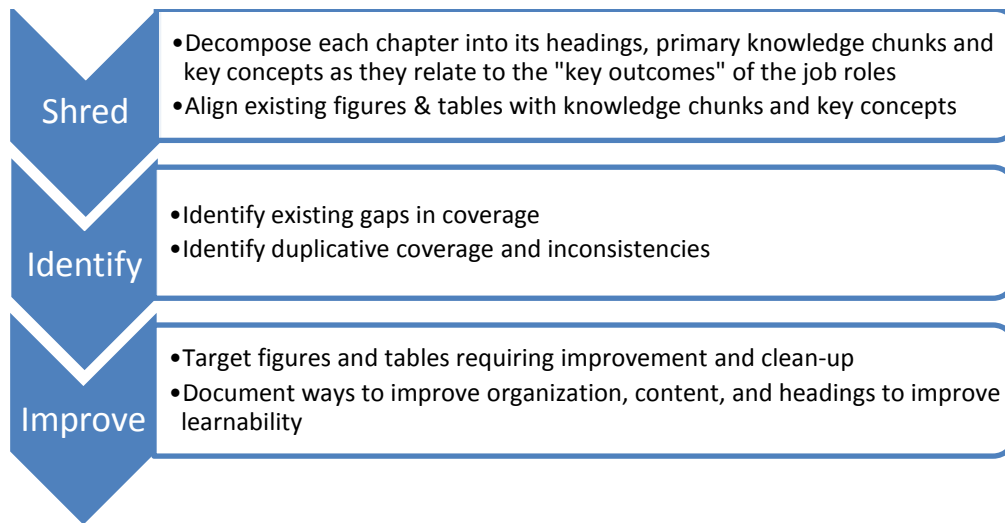


Figure 2. Content Analysis

We shared the output of the content analysis with the assigned subject matter expert (SME). This gave the team a starting place from which to work. It also enabled early identification new content to be secured, new figures required, and figures or text that required rework. Our next step was to solidify a design for the participant study guide that would improve the participant’s ability to

- Find information
- Extract critical information (best practices, safety information, procedures, etc.) and key concepts from other content
- Mentally organize the new knowledge
- Remember and recall information for the certification test
- Transfer learning to the job site.

Within the chapters of the Guides we used a variety of techniques to improve adult learning, depending on the chapter content and type of information being conveyed. Some of these included:

- Step-by-step procedures and photos directing “how to” activity
- Decision tables for “if-then” situations
- Graphics to provide context and additional information
- Step-by-step examples for completing sample problems
- Worksheets to guide procedural calculations and a reference section of formulas used in calculations.

Figure 3 illustrates a sample page from one of the certification study guides. A heading clearly establishes what the content is about, steps for proper storage are detailed with adequate white space separating ideas, and a figure provides a graphic example. At the bottom of the page a graphic symbol calls out a best practice for participants.

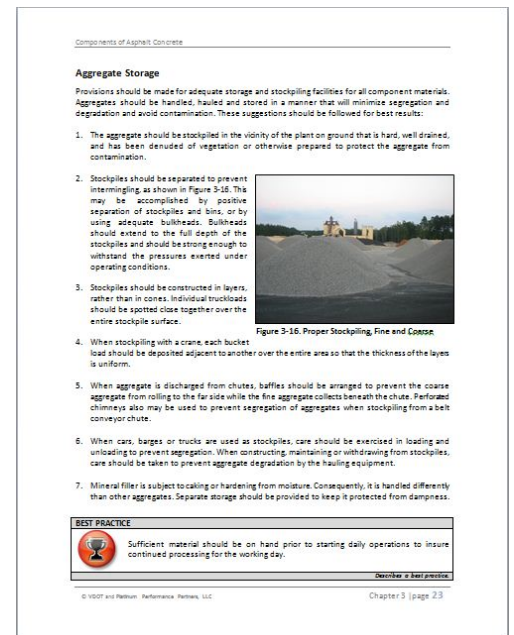


Figure 3. Sample page from a study guide

As we completed each component of the certification study guide, our design team worked closely with the assigned SME to

- Ensure accuracy and integrity of the content
- Guard against “subject matter creep” (i.e., the tendency for unnecessary “nice to know” content to be added back in to the learning material)
- Gain SME support and buy in for the design

In addition to the certification study guides, the team also produced refined PowerPoint presentation materials for the certification class, a facilitator guide to keep SME instructors focused and on track, and a workshop agenda.

Delivering Results

VDOT’s new Asphalt Field Certification Study Guide, Asphalt Plant Certification Study Guide, and supporting workshop materials set a new standard for performance-based training materials in VDOT. This enabled workshop attendees to

- Use chapter objectives to set an expectation for learning
- Better understand the structure of the content
- More easily identify important content
- Understand and define new terms
- Follow lab procedures more successfully
- Use the materials more effectively to complete certification tests
- Practice what they learned in lab proficiencies
- Complete a written exam based on the content learned.

However, the learning—and the work—does not stop there. In the field, both the industry inspectors and VDOT inspectors are reviewed on a random basis. These reviews ensure they continue to make their inspections according to strict VDOT specifications for a particular job and to meet Federal CFR 637 requirements. They are required to take annual on-line proficiency tests to keep their skills honed. In addition, every five years they must re-certify.

The challenges of managing VDOT, the third largest state-maintained highway system in the country, are increased by the tough situations (reduced budgets, reduced manpower, etc.) all state DOTs face today. All of us who drive Virginia roadways appreciate their efforts to minimize problems associated with producing quality materials and applying those materials. By taking a “performance-based” approach to the design and development of their materials certificate program, VDOT is leading the way in producing qualified VDOT and private industry inspectors and consequently, safer roads, tunnels and bridges.

About the Authors

Dennis Mankin is the founder and Managing Partner of Platinum Performance Partners www.platinumperformancepartners.com. Mr. Mankin has an extensive professional background, including 25 years in senior management and consultative positions working in business consulting, executive coaching, sales, and Human Performance Improvement (HPI). He was certified by ISPI and Dr. Joe Harless as a CPT in August 2003 and he is a project manager and facilitator of HPI processes worldwide. He has demonstrated skills and expertise in assisting organizations in exceeding competitive

organizational goals and improving overall business results using HPI processes. He is a co-author and co-publisher of *Performance DNA™* (analysis tools), used for the analysis of human performance and the “tools of choice” by over 6,000 HPI analysts worldwide. Mr. Mankin has been a member of ASTD for over 20 years and is an adjunct professor at the University of Tulsa, Singapore Institute of Management, Singapore Management University, and a guest lecturer to other colleges and universities in performance improvement technologies. He has been a licensed Merchant Marine Captain since 1985.

Dr. Karen McGraw is the founder and Principal Consultant for Cognitive Technologies www.cognitive-technologies.com. She leads strategic consulting and performance improvement engagements for both commercial and government clients. During her 29 years of business experience, Karen has applied her experience and wisdom about how people think, learn, and work to help clients achieve desired project outcomes. She has led strategic organizational development and technology projects in environments ranging from non-profits and civilian government agencies, to call centers, manufacturing facilities, print production, shipping warehouses, medical facilities, IT, telecommunications, financial, pharmaceutical, and sales. Karen is a co-developer of *Performance DNA™*, the leading methodology for analyzing human performance, the *Performance DNA Desktop* (software), and the *EASE* change management methodology. She is a long-time member of ASTD. She has published 5 books and has been an adjunct professor at the University of Texas, Arlington, and University of Maryland, University College.