

# 10 WAYS TO BETTER BLENDED LEARNING FOR KNOWLEDGE WORKERS



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Session 1222

*Supplemental Materials*

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## About Your Speakers



Deborah L. Stone

**Deborah Stone** ([Dstone@dls.com](mailto:Dstone@dls.com)) has been the President and CEO of DLS Group, Inc. since 1982. Headquartered in Denver with an East Coast branch office in Washington, DC, DLS specializes in improving performance by leveraging cutting-edge technologies based on proven research, theory, and best practices.

A Certified Performance Technologist, Deborah has received over 20 professional awards, including Microsoft's Award of Excellence for the Outstanding Performance Support System. A certified Human Performance Technologist, she has delivered over 75 presentations and three Masters' Series at various conferences and has co-authored numerous articles that focus on applying the latest, proven research to real-world performance solutions.



Steven W. Villachica

**Dr. Steve Villachica**, ([SVillachica@dls.com](mailto:SVillachica@dls.com)) is Chief Learning Officer (CLO) for DLS Group, where he specializes in applying cognitive research and assessment to technology-based delivery platforms. A frequent presenter at international conferences and member of ISPI and ASTD, Steve co-authored the chapter on PSS in the second edition of the *Handbook of Human Performance Technology*.

A two-time winner of ISPI's Outstanding Systematic Approach award, he completed his doctorate in educational technology at the University of Northern Colorado. Steve is also a Certified Performance Technologist.

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## Agenda

- ✓ Identify knowledge workers
- Apply ten appropriate blended learning strategies
- Describe lessons learned in applying the strategies

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## What's All the Buzz About Knowledge Workers?

THE WALL STREET JOURNAL

*"We're all knowledge workers now" (Thurm, 2006)*

"In the early twenty-first century, it's likely that a quarter to a half of workers in advanced economies are knowledge workers"  
*(Davenport, 2005)*

"The only way an organization in a knowledge-based economy and society can excel is by getting more out of the same kind of people—by managing its knowledge workers for greater productivity and 'to make ordinary people do extraordinary things'"  
*(Peter Drucker, 2002)*

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## Spotting Knowledge Workers



Do the following groups represent knowledge workers?

- Pharmaceutical sales reps
- Airplane mechanics
- Factory workers
- Technical trainers
- Construction workers
- Law-enforcement investigators

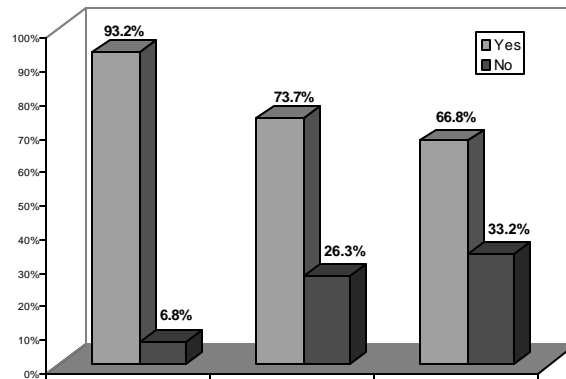
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## What is Blended Learning?

*Definitions*

Which of the following definitions of blended learning are accepted and used by your organization?



A blend of instructor-led classroom events and any form of technology-enabled instruction used outside the classroom.

A blend of a variety of Web-based technologies and learning components.

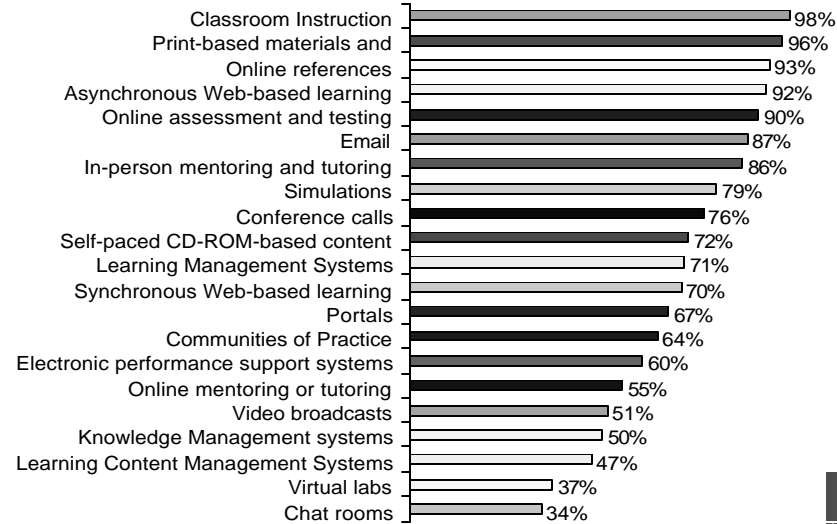
A blend of formal and informal learning events and experiences.

(Pulichino, 2004) <sup>6</sup>



## What is Blended Learning?

*A Mix of Media*



(Pulichino, 2004) 7



## Why Is This Important?



- Learning and job support for knowledge workers are different
  - ◆ Problem-solving and decision making
  - ◆ Novelty
  - ◆ Formal and tacit knowledge
- Approaches cut across media
- Media don't affect learning. They affect efficiency and access (Clark, 1994)
- Various approaches can decrease ramp-up time and improve productivity
- Budgets and performance requirements constrain approaches

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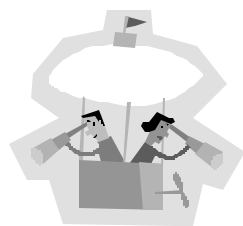
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- Describe lessons learned in applying the strategies

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## 1: Model expert performance using role plays, video, and/or audio



- Rationale
  - ◆ “You can observe a lot just by watching”  
–Yogi Berra
- Potential Approaches
  - ◆ Streaming audio and video
  - ◆ Comic strip panels
  - ◆ Guest presenters

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## 2: Use experts as coaching “narrators”



- Rationale
  - ◆ Learn from the best
- Potential Approaches
  - ◆ Separate experts for each topic in novice courses
  - ◆ Multiple experts for each topic in higher-level courses

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## 3: Situate learning and performance in authentic settings



- Rationale
  - ◆ Train how you fight; fight how you train
- Potential Approaches
  - ◆ Case study
  - ◆ Online simulation
  - ◆ Problem-based learning



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## 4: Teach the mental models, “rules of thumb,” and process controls that guide expert performance

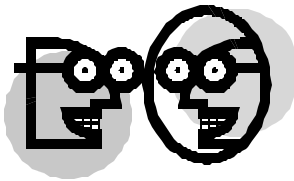


- Rationale
  - ◆ Make invisible cognitive skills visible
- Potential Approaches
  - ◆ Graphically depicted mental models
  - ◆ Stated rules of thumb (heuristics) and process controls (what to do next)
  - ◆ Practice beyond mastery

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## 5: Use articulation and reflection loops



- Rationale
  - ◆ State what you’re thinking and compare it to experts
- Potential Approaches
  - ◆ Open-ended questions comparing what learner would do to the expert’s response
  - ◆ Think-alouds during coaching and mentoring

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## Interactive Exercise 1

### *Blended Learning Strategies 1-5*



- Split into groups of 2-5.
- Refer to Exercise 1 in your Supplemental Materials.
- Select a group of knowledge workers.
- Select at least two strategies for delivering effective blended learning.
- Write down how you'd apply the strategies in the last column.
- After 10 minutes, we'll debrief.

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## Interactive Exercise 1 Debriefing

### *Blended Learning Strategies 1-5*



- What group of knowledge workers did you identify?
- What strategies did you select to deliver blended learning to these workers?
- How would you apply them?

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## 6: Employ scaffolding to enable learners to perform real tasks until they master them



### ■ Rationale

- ◆ Training wheels help you perform immediately

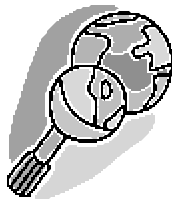
### ■ Potential Approaches

- ◆ Long/short leash instruction
- ◆ Job aids, including cue cards
- ◆ Novice and expert “views” of software

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## 7: Teach global before detailed skills



### ■ Rationale

- ◆ Knowing the big-picture “lay of the land” guides people as they solve problems

### ■ Potential Approaches

- ◆ Provided big picture
- ◆ Funneled sequences of instruction that place the organization, group, job, mental models, and tasks in context

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## 8: Increase the complexity and diversity of examples over time



### ■ Rationale

- ◆ Learn how to respond to what you'll face on the job

### ■ Potential Approaches

- ◆ Representative "slam dunk" case study evolves to an open-ended simulation
- ◆ On-the-job training assignments grow increasingly complex

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## 9: Embed learning and job support within a community of practice



### ■ Rationale

- ◆ Learn how to "play nice" with the people in your neighborhood, broaden your resources, and ensure currency

### ■ Potential Approaches

- ◆ Coaching/mentoring
- ◆ Networking
- ◆ Wikis, blogs, and forums
- ◆ Success-stories databases
- ◆ Group-based practice activities

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## 10: Separate what users need to practice from what they need to access

- Rationale
  - ◆ It takes less time to use information than to practice performance to mastery level
  - ◆ Training is difficult to access on the job
  - ◆ Information is more volatile and less expensive to update
- Potential Approaches
  - ◆ Modularized information, training, job aids, and tools
  - ◆ “Use” objectives, rather than “recall”
  - ◆ Friendly, intuitive, and consistent interface design that eliminates or minimizes the need for training
  - ◆ Information and tools embedded on the job and accessible during training, rather than buried in the training

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## Interactive Exercise 2

### *Blended Learning Strategies 6-10*



- Split into groups of 2-5.
- Refer to Exercise 2 in your Supplemental Materials.
- Select a group of knowledge workers.
- Select at least two strategies for delivering effective blended learning.
- Write down how you'd apply the strategies in the last column.
- After 10 minutes, we'll debrief.

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## Interactive Exercise 2 Debriefing

### *Blended Learning Strategies 5-10*



- What group of knowledge workers did you identify?
- What strategies did you select to deliver blended learning to these workers?
- How would you apply them?

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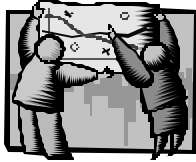
## Agenda

- ✓ Identify knowledge workers
- ✓ Apply ten appropriate blended learning strategies
- ✓ Describe lessons learned in applying the strategies

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## Ten Blended Learning Strategies

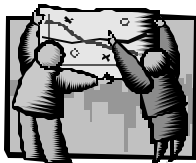


1. Model expert performance using role plays, video, and/or audio
2. Use experts as coaching “narrators”
3. Situate learning and performance in authentic settings
4. Teach the mental models, “rules of thumb,” and process controls that guide expert performance
5. Use articulation and reflection loops

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## Ten Blended Learning Strategies (continued)



6. Employ scaffolding to enable learners to perform real tasks until they master them
7. Teach global before detailed skills
8. Increase the complexity and diversity of examples over time
9. Leverage communities of practice before, during, and after training
10. Separate what users need to practice from what they need to access

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## Lessons Learned



- Teaching and supporting complex cognitive skills requires different strategies
- These strategies are complementary
- Focus on keeping it real
- Employ appropriate mixes of blended learning media
- These strategies improve transfer and decrease ramp-up time to job performance

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## Thank You!

For more information describing these strategies, please see:

Collins, A. Brown, J. S., & Holum, A.(1991). Cognitive apprenticeship: Making thinking visible. *American Educator: The Professional Journal of the American Federation of Teachers*, 15 (#3), 6-11, 38-46. Available at <http://www.21learn.org/arch/articles/brownseely.html>

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# KNOWLEDGE WORKER FACTOIDS

As part of our study, we asked more than 200 knowledge workers in four very different organizations – the U.S. Defense Intelligence Agency, the testing service ETS, the drug firm Novartis, and the research institute Battelle – to keep a daily log over a ten-day period. For each of their knowledge interactions, they estimated the amount of time spent searching for knowledge, scheduling meetings with experts, eliciting expertise, and interpreting and applying the knowledge gained. All told, the participants recorded more than 3,000 interactions.

We'd assumed – as many managers do – that the employees would put most of their knowledge acquisition efforts into finding out where information resided in the organization and then negotiating with each source for an opportunity to discuss it. In fact, as the chart shows, employees spent, on average, less than 17% of their time searching and scheduling, and more than 80% eliciting, interpreting, and applying. The results are consistent across organizations and for workers of all ages, positions, and lengths of tenure.

Jacobson & Prusak (2006).

Based on work with 15 communities of practice across a number of industries, we have shown consistent ways that network analysis can inform interventions and help move a community from an ad hoc group to one with a greater propensity to create value for the host organization. By making seemingly invisible interactions visible, network analysis helps community leaders make informed and ultimately more successful interventions.

Cross, Laseter, Parker, & Velasquez (2006).

It's already apparent that the firms with the highest degree and quality of knowledge work tend to be the fastest growing and most profitable. Microsoft, for example, is one of the most profitable organizations in the history of the planet. Pharmaceutical firms not only produce sophisticated and life-saving drug treatments, they also tend to have high profit margins. Growth industries generally tend to be those with a high proportion of knowledge workers.

Davenport (2005).

Today, knowledge workers comprise a plurality of the work force. While at the beginning of the 20th century, unskilled labor accounted for about 90% of the work force, today that figure is closer to 20%. As a result, the knowledge work force has become the linchpin to an organization's success, as the world morphs into a knowledge economy.

The change represents a significant challenge to managers who are accustomed to managing workers in more traditional roles. The minimum cost of tools and technologies that supports these workers, estimated to be between \$5,000 and \$10,000 per employee per year, is growing steadily, yet most companies have failed to recognize the changes they need to make in how they conduct business.

Corporate managers need to look for ways in which they can view and manage their human resources as a pool of intellectual capital—raw material for the knowledge economy. Knowledge workers spend at least 20% of their time each day searching, and the majority of those searches fail or do not provide complete results.

Spira (2005).

In sum, topflight research communities, and increasingly demanding American customers and their growing appetite for ever more sophisticated products and services, all spell more knowledge work in the United States, not less. Between 1999 and 2003 (the latest year for which we have data), the number of IT-related white-collar jobs in the United States actually increased. IT wages are rising, too (adjusted for inflation and the business cycle).

Reich (2005).

Knowledge workers grew as a share of total employment in each of the five decades and were the fastest-growing group in all but the 1950s.

Wolff (2005).

Two main principles of knowledge-worker management can be summarized as follows:

- Emphasize collaboration and professionalism; de-emphasize incentive schemes and performance measures. Play up knowledge workers' natural tendencies to be committed to their work and its overall objectives.
- Emphasize iterative work structures rather than linear, sequential ones. Don't overplan. Alternate between unstructured individual experiences and structured integration of individual work.

Austin (2006).

To get things done, knowledge workers are adopting more manageable forms of messaging like blogs and wikis. And as organizations attempt to coordinate dispersed groups around the world, they're adopting blogs, wikis, and other collaborative communication software to make messaging manageable. E-mail apps often have limited searching, sorting, filtering, and customizing features, as well as list-oriented interfaces that become unwieldy under large loads. But group collaboration software gives users more control and better tools for defining how incoming information gets processed and presented.

Claburn (2006).

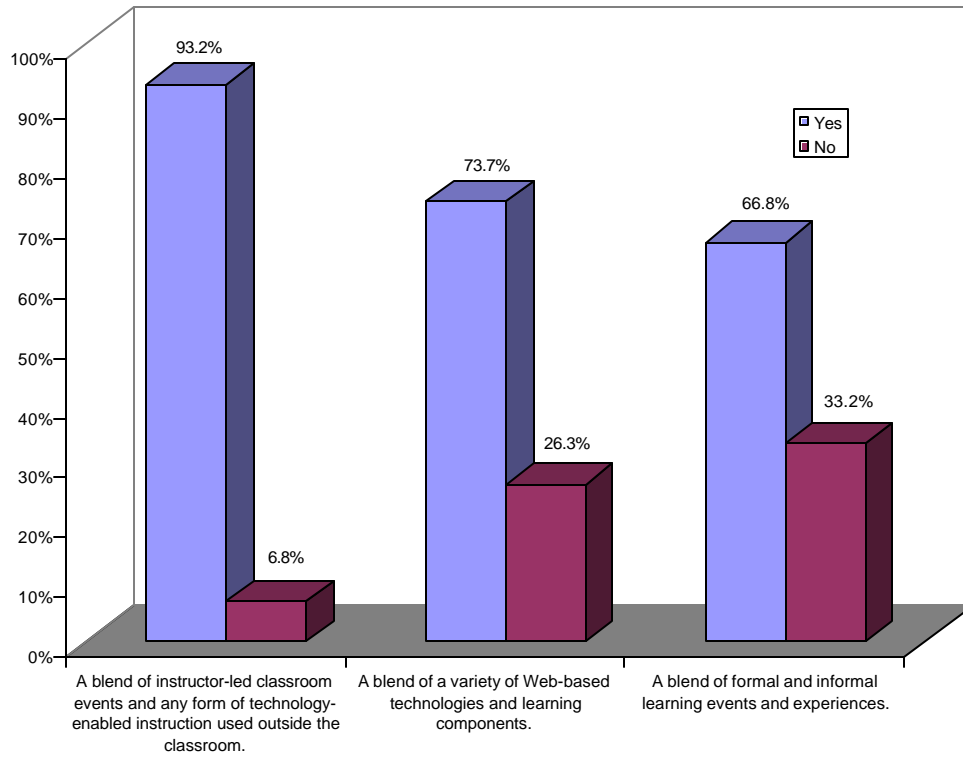
Knowledge workers make decisions that significantly impact organizational resources and are themselves a significant and costly resource; knowledge workers compose 43 percent of the white-collar sector, which in turn comprises 67 percent of the service sector.

Roach (1991).

Many of the problems relate to the very nature of knowledge work: its inputs are not clearly definable; it generates intangible outputs; and it allows a high degree of discretion on the part of the performer. Knowledge work is often complex and non-routine, and commonly requires the contribution of several people to complete a given task.

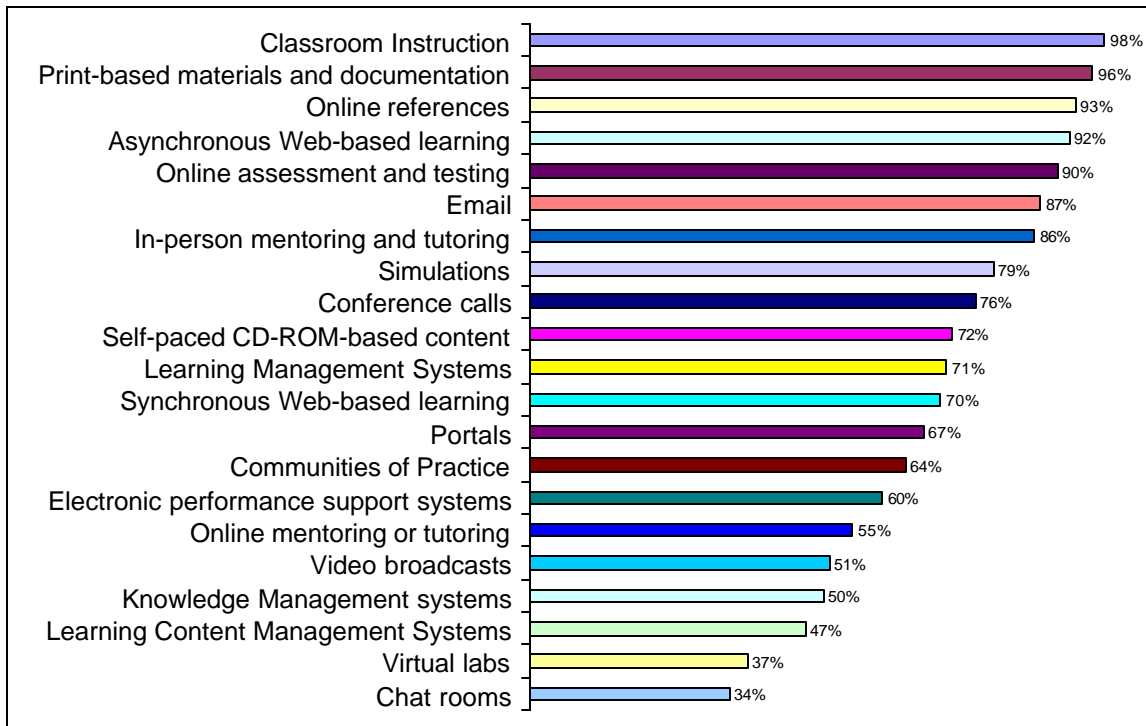
Beruvides & Sumanth (1987).

# DEFINITIONS OF BLENDED LEARNING



Pulichino, J. (2004)

# COMPONENTS OF BLENDED LEARNING



Pulichino, J. (2004)

# OVERVIEW: 10 BLENDED LEARNING STRATEGIES

<b>Strategy</b>	<b>Example</b>	<b>Application</b>
1. Model expert performance using role plays, video, and/or audio.	➤ New York Life Insurance Managing Partners	➤ Video models a managing partner addressing inappropriate office behaviors occurring in a branch office.
	➤ Colorado Reading First	➤ Text dialog models the corrective feedback a teacher would provide when teaching reading to an elementary school student.
2. Use experts as coaching “narrators.”	➤ Astellas Pharmaceuticals	➤ Seasoned reps narrate the training that coaches novices how to conduct successful speaker programs.
3. Situate learning and performance in authentic settings.	➤ National Association of Securities Dealers—Regulation	➤ Auditors review confirmations, account forms, and other financial documents in an electronic “file cabinet”—just as they would on the job.
	➤ Colorado Reading First	➤ Elementary school teachers practice grouping children based on actual test data and diagnostic tools.
4. Teach the mental models, “rules of thumb,” and process controls that guide expert performance.	➤ California Commission on Police Officer Standards and Training (POST)	➤ Training is based around a mental model of the detective’s job.
	➤ National Association of Securities Dealers—Regulation	➤ Lesson sequence follows the mental model auditors use to conduct exams. Instructions provide process control indicating the current state of the exam.
	➤ New York Life Insurance Managing Partners	➤ Managing partner discusses rules of thumb such as “reps need to be registered in their clients’ home states.” She also discusses process control indicating what to do next.
5. Use articulation and reflection loops.	➤ National Association of Securities Dealers—Regulation	➤ Students articulate their rationale for making a decision, then compare their thinking to the articulation of an expert.

<b>Strategy</b>	<b>Example</b>	<b>Application</b>
6. Employ scaffolding to enable learners to perform real tasks until they master them.	➤ National Association of Securities Dealers—Regulation	➤ Cue cards provide step-by-step instructions. Novice auditors can get additional information about conducting examinations. Novice computer users can get additional information about using the computer.
7. Teach global before detailed skills.	➤ National Association of Securities Dealers—Regulation	➤ Curriculum begins with big-picture overviews of the organization, where they fit into it, broker-dealer operations, and the mental models experts use to conduct exams.
8. Increase the complexity and diversity of examples over time.	➤ New York Stock Exchange	➤ Training begins with a simple problem the student will solve, then it moves to more complex variations on the same problem.
9. Leverage communities of practice before, during, and after training.	➤ Intelligence Agency	➤ Analysts contact experts, who act as knowledge brokers helping them specify the nature of the problem as well as identifying strategies and resources to use in solving it.
10. Separate what users need to practice from what they need to access.	➤ Colorado Reading First	➤ Links indicate where teachers can directly retrieve the information they need about the program, without having to search through the lessons. Additional links provide a glossary that teachers can access as they complete a lesson.

# INTERACTIVE EXERCISE 1: BLENDED LEARNING STRATEGIES 1-5

## Instructions

1. Split into groups of 2-5.
2. Select a group of knowledge workers.
3. Select at least two strategies for delivering effective blended learning.
- 4 Write down how you'd apply the strategies in the last column.
5. After 10 minutes, we'll debrief.

<b>Strategy</b>	<b>Rationale</b>	<b>Potential Approaches</b>	<b>Your Own Efforts ④</b>
1. Model expert performance using role plays, video, and/or audio.	“You can observe a lot just by watching.” – Yogi Berra	<ul style="list-style-type: none"> <li>➤ Streaming audio and video.</li> <li>➤ Comic strip panels.</li> <li>➤ Guest presenters.</li> </ul>	
2. Use experts as coaching “narrators.”	Learn from the best.	<ul style="list-style-type: none"> <li>➤ Separate experts for each topic in novice courses.</li> <li>➤ Multiple experts for each topic in higher-level courses.</li> </ul>	
3. Situate learning and performance in authentic settings.	Train how you fight; fight how you train.	<ul style="list-style-type: none"> <li>➤ Embedded case study.</li> <li>➤ Online simulation.</li> <li>➤ Problem-based learning.</li> </ul>	
4. Teach the mental models, “rules of thumb,” and process controls that guide expert performance.	Learning what experts do in their minds requires making invisible cognitive skills visible.	<ul style="list-style-type: none"> <li>➤ Graphically depicted mental models in advanced organizers and instructional content.</li> <li>➤ Stated rules of thumb (heuristics) and process controls (what to do next).</li> <li>➤ Allow opportunities to practice to mastery—and beyond.</li> </ul>	
5. Use articulation and reflection loops.	State what you're thinking and compare it to experts.	<ul style="list-style-type: none"> <li>➤ Open-ended questions comparing what learner would do to the expert's response.</li> <li>➤ Think-alouds during coaching and mentoring.</li> </ul>	

# INTERACTIVE EXERCISE 2: BLENDED LEARNING STRATEGIES 6-10

## Instructions

1. Split into groups of 2-5.
2. Select a group of knowledge workers.
3. Select at least two strategies for delivering effective blended learning.
- 4 Write down how you'd apply the strategies in the last column.
5. After 10 minutes, we'll debrief.

<b>Strategy</b>	<b>Rationale</b>	<b>Potential Approaches</b>	<b>Your Own Efforts ④</b>
6. Employ scaffolding to enable learners to perform real tasks until they master them.	Training wheels help you perform immediately.	<ul style="list-style-type: none"> <li>➤ Long/short leash instruction.</li> <li>➤ Job aids, including cue cards.</li> <li>➤ Novice and expert “views” of software.</li> </ul>	
7. Teach global before detailed skills.	Knowing the big-picture “lay of the land” guides people as they solve problems.	<ul style="list-style-type: none"> <li>➤ Provided big picture.</li> <li>➤ Funneled sequences of instruction that place the organization, group, job, mental models, and tasks in context.</li> <li>➤ Layers of elaboration.</li> </ul>	
8. Increase the complexity and diversity of examples over time.	Learn how to respond to what you'll face on the job.	<ul style="list-style-type: none"> <li>➤ Representative “slam dunk” case study evolves to an open-ended simulation.</li> <li>➤ On-the-job training assignments grow increasingly complex.</li> </ul>	
9. Leverage communities of practice before, during, and after training.	Learn how to “play nice” with the people in your neighborhood, broaden your resources, and ensure currency.	<ul style="list-style-type: none"> <li>➤ Coaching/mentoring.</li> <li>➤ Wikis, blogs, and forums.</li> <li>➤ Success stories databases.</li> <li>➤ Group-based practice activities.</li> </ul>	

<b>Strategy</b>	<b>Rationale</b>	<b>Potential Approaches</b>	<b>Your Own Efforts ④</b>
10. Separate what users need to practice from what they need to access.	It takes less time to use information and perform than to practice performance to mastery level. Information and tools that are embedded in the training are difficult to access on the job.	<ul style="list-style-type: none"> <li>➤ Modularized information, training, and tools.</li> <li>➤ Job aids and information systems.</li> <li>➤ “Use” objectives, rather than “recall.”</li> <li>➤ Friendly, intuitive, and consistent interface design that eliminates or minimizes the need for training.</li> <li>➤ Information and tools embedded on the job and accessible during training, rather than buried in the training.</li> </ul>	

# BIOGRAPHIES

**Deborah Stone** ([Dstone@dls.com](mailto:Dstone@dls.com)) has been the President and CEO of DLS Group, Inc. Deborah has received over 20 professional awards, including Microsoft's Award of Excellence for the Outstanding Performance Support System. She has also co-received the International Society for Performance Improvement's awards for Outstanding Performance Intervention, Outstanding Instructional Product, and Outstanding Systematic Approach.

A frequent author and international presenter, Deborah was a co-author and presenter at ISPI's first two award-winning HPT Institutes in Chicago and San Francisco. She also co-authored the chapter on PSS in the second edition of the Handbook of Human Performance Technology. A certified Human Performance Technologist, she has delivered over 75 presentations and three Masters' Series at various conferences and has co-authored numerous articles that focus on applying the latest, proven research to real-world performance solutions. Deborah is the proud mother of a teenaged boy named Sam and a cat named Gizmo.

**Dr. Steven Villachica**, ([SVillachica@dls.com](mailto:SVillachica@dls.com)) is Chief Learning Officer (CLO) for DLS Group, where he specializes in applying cognitive research and assessment to technology-based delivery platforms. A frequent presenter at international conferences and member of ASTD, Steve also co-authored the chapter on PSS appearing in the second edition of the Handbook of Human Performance Technology.

A two-time winner of ISPI's Outstanding Systematic Approach award and Certified Performance Technologist, he completed his doctorate in educational technology at the University of Northern Colorado. Steve is also a Certified Performance Technologist.

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