

10 WAYS TO BETTER BLENDED LEARNING FOR KNOWLEDGE WORKERS



Deborah Stone, CPT
CEO & President

Steven Villachica, Ph.D., CPT
Strategic Advisory Board

www.dls.com

Presented at the 2008 ISPI International Conference
New York NY
Sunday, April 6, 2008
11:00 am -12:30 pm
Session 4-1168

Supplemental Materials

TABLE OF CONTENTS

Presentation Slides.....	1
Overview: 10 Blended Learning Strategies.....	15
Blended Learning Strategies	17
Citations.....	19

10 Ways to Better Blended Learning for Knowledge Workers



Deborah L. Stone, CPT
DLS Group President and CEO
www.dls.com

Steven W. Villachica, Ph. D., CPT
Associate Professor of IPT
Boise State University
DLS Group Strategic Advisory Board

Presented at the 2008 ISPI International Conference
New York NY

1



About Your Speakers



Deborah L. Stone

Deborah Stone (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.



Steve Villachica, Ph. D., CPT (SVillachica@dls.com) Steve is a member of DLS Group's Strategic Advisory Board and Associate Professor of Instructional and Performance Technology at Boise State University. His research interests include 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.

2



Agenda

- ✓ Identify knowledge workers
- Apply ten appropriate blended learning strategies Overview, p. 4
- Describe lessons learned in applying the strategies

3



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)

4



Spotting Knowledge Workers



Do the following groups represent knowledge workers?

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

5

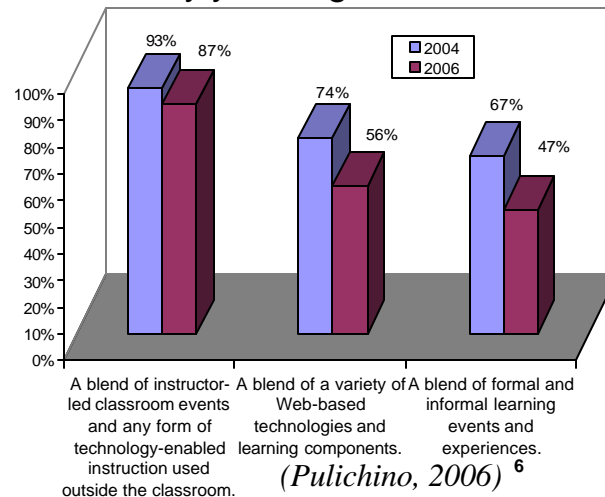


What is Blended Learning?

Definitions

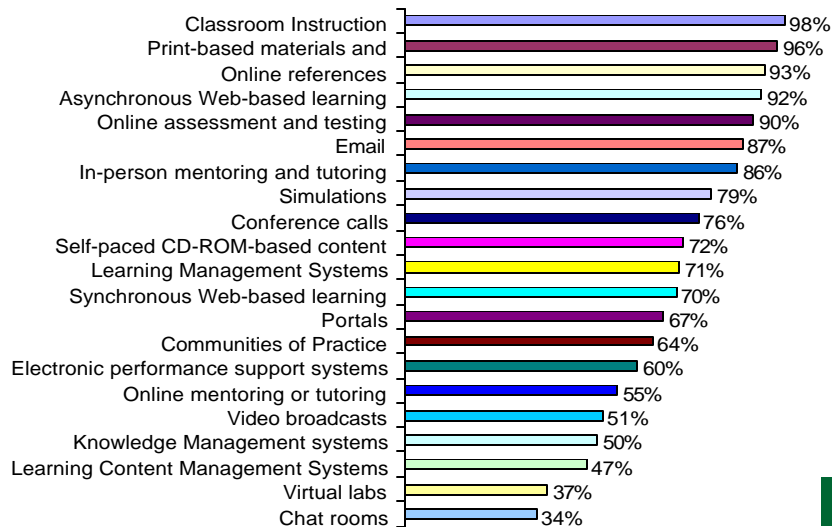
Which of the following definitions of blended learning are accepted and used by your organization?

Good instructors have been blending media, learning, and experiences since instruction began.



What is Blended Learning?

A Mix of Media in a Big Tent



(Pulichino, 2004) 7



Blended Learning

“Blended learning integrates *seemingly opposite* approaches, such as formal *and* informal learning, face-to-face *and* online experiences, directed paths *and* reliance on self-direction, and moments in class and engagement at work.”

--Rossett, 2008



Anchor Blend



Bookend Blend



Field Blend



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

9



Agenda

- ✓ Identify knowledge workers
- ✓ Apply ten appropriate blended learning strategies—assuming:
 - ◆ Identified strategic business objectives
 - ◆ Conducted a needs assessment
 - ◆ Determined blended learning addresses the causes of the performance gaps
 - ◆ Selected one of the blended learning approaches
- Describe lessons learned in applying the strategies

10



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
- ◆ Role play

11



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

12



3: Situate learning and performance in authentic settings



- Rationale

- ◆ Train how you fight; fight how you train

- Potential Approaches

- ◆ Case study
- ◆ Immersive simulation
- ◆ Problem-based learning

13



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



- Rationale

- ◆ Make invisible cognitive skills visible

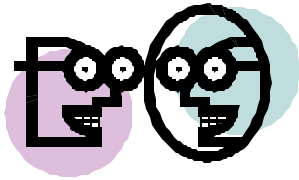
- Potential Approaches

- ◆ Graphically depicted mental models
- ◆ Situation awareness, problem representation, interpretation
- ◆ Rules of thumb (heuristics) and process controls (what to do next)
- ◆ Practice beyond mastery

14



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

15



Interactive Exercise 1

Blended Learning Strategies 1-5



- Split into groups of 2-5.
- Refer to the Blended Learning Strategies on p. 6 of your Supplemental Materials.
- Select a group of knowledge workers.
- Make any assumptions you need about performance gaps.
- 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.

16



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?

17



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

18



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

19



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

20



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

21



22



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

23



Interactive Exercise 2

Blended Learning Strategies 6-10



- Split into groups of 2-5.
- Refer to the Blended Learning Strategies on p. 7 of your Supplemental Materials.
- Make any assumptions you need about performance gaps
- 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.

24



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?

25



Agenda

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

26



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

27



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/brown_seely.html

28



OVERVIEW: 10 BLENDED LEARNING STRATEGIES

Strategy	Example	Application
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.

Strategy	Example	Application
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.

BLENDING LEARNING STRATEGIES

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.

Strategy	Rationale	Potential Approaches	Your Own Efforts ④
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"> ➤ Streaming audio and video. ➤ Comic strip panels. ➤ Guest presenters. 	
2. Use experts as coaching “narrators.”	Learn from the best.	<ul style="list-style-type: none"> ➤ Separate experts for each topic in novice courses. ➤ Multiple experts for each topic in higher-level courses. 	
3. Situate learning and performance in authentic settings.	Train how you fight; fight how you train.	<ul style="list-style-type: none"> ➤ Embedded case study. ➤ Online simulation. ➤ Problem-based learning. 	
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"> ➤ Graphically depicted mental models in advanced organizers and instructional content. ➤ Stated rules of thumb (heuristics) and process controls (what to do next). ➤ Allow opportunities to practice to mastery—and beyond. 	
5. Use articulation and reflection loops.	State what you're thinking and compare it to experts.	<ul style="list-style-type: none"> ➤ Open-ended questions comparing what learner would do to the expert's response. ➤ Think-alouds during coaching and mentoring. 	

Strategy	Rationale	Potential Approaches	Your Own Efforts ④
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"> ➤ Long/short leash instruction. ➤ Job aids, including cue cards. ➤ Novice and expert “views” of software. 	
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"> ➤ Provided big picture. ➤ Funneled sequences of instruction that place the organization, group, job, mental models, and tasks in context. ➤ Layers of elaboration. 	
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"> ➤ Representative “slam dunk” case study evolves to an open-ended simulation. ➤ On-the-job training assignments grow increasingly complex. 	
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"> ➤ Coaching/mentoring. ➤ Wikis, blogs, and forums. ➤ Success stories databases. ➤ Group-based practice activities. 	
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"> ➤ Modularized information, training, and tools. ➤ Job aids and information systems. ➤ “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. 	

CITATIONS

Austin, R.(2002) Managing knowledge workers: Evolving practices and trends. *Science: Next Wave*. Retrieved 2/16/2007 from http://sciencecareers.sciencemag.org/career_development/previous_issues/articles/1470/managing_knowledge_workers.

Beruvides, M.G., & Sumanth, D.J. (1987). Knowledge work: A conceptual analysis and structure. In *Productivity Management Frontiers-I* (pp. 127-138). London: Elsevier Science.

Brown, J. S., A. Collins, & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18 (#1), 32-42.

Casey, C. (1996). Incorporating cognitive apprenticeship in multi-media. *Educational Technology Research & Development*, 44(1), 71-84.

Claburn, T. (2006). Wikis, blogs slow the mail avalanche. *InformationWeek*, 1113, 58-59.

Clark, R. E. (1994). Media will never influence learning. *Educational Technology, Research & Development*, 42(2), 21-29.

Clark, R. E., & Blake, S. B. (1997). Designing training for novel problem-solving transfer. In R. D. Tennyson, F. Schott, N. M. Seel, & S. Kijkstra (Eds.) *Instructional Design Perspectives. Volume 1: Theory, Research, and Models* (pp. 183-214). Mahwah, NJ: Erlbaum.

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.

Cross, R., Laseter, T., Parker., A., Velasquez, G. (2006). Using social network analysis to improve communities of practice. *California Management Review*. 49(1), pp. 32-60.

Curtis, R, Leon, D., David Leon Partnership, & Miller, R. (2002, November-December). Supporting knowledge work with physical design. *Knowledge Management Review*, 5(5) pp 27-29.

Davenport, T. (2002) Can you boost knowledge work's impact on the bottom line? *Harvard Management Update* 7(12), pp. 3-4.

Davenport, T. (2005) *Thinking for a living*. Boston, MA: Harvard Business School Press.

Davenport, T., Thomas, R.J., & Cantrell, S. (2002). The mysterious art and science of knowledge-worker performance. *MIT Sloan Management Review* 44(1), pp. 23-30.

Drucker, P. (1974). *Management*. New York, NY: Harper & Row.

Drucker, P. (2002, October). Knowledge work. *Executive Excellence* 19(10), p. 12.

Ericsson, K. A., & Charness, N. (1994). Expert performance: Its structure and acquisition. *American Psychologist*, 49, 725-747.

Graham, C. L. (1996). Conceptual learning processes in physical therapy students. *Physical Therapy*, 76, 856-864.

- Hammer, M., Leonard, D., & Davenport, T. (2004). Why don't we know more about knowledge? *MIT Sloan Management Review* 45(4), pp. 14-18.
- Harris, P. (2006). Beware of the boomer brain drain. *T+D Magazine* 60(1), pp. 30-33.
- Jacobsen, A. & Prusak, L. (2006). The cost of knowledge. *Harvard Business Review* 84(11), p. 34.
- Lesgold, A., Lajoie, S., Brunzo, M., & Eggan, G. (1992). A coached practice environment for an electronics troubleshooting job. In J. Larkin & R. Chabay (Eds.) *Computer Assisted Instruction and Intelligent Tutoring Systems: Establishing Communications and Collaboration* (pp. 201-38). Hillsdale, NJ: Erlbaum.
- Lesgold, A., Lajoie, S., Logan, D., & Eggan, G. (1990). Applying cognitive task analysis and research methods to assessment. In N. Frederiksen, R. Glaser, A. Lesgold & M. G. Shafto (Eds.), *Diagnostic monitoring of skill and knowledge acquisition*. Hillsdale, NJ: Erlbaum.
- O'Byrne, K., Clark, R. E., & Malakuti (1997). Expert and novice performance: Implications for clinical training. *Educational Psychology Review*, 9, 321-332.
- Pulichino, J. (2004). *The Trends In Blended Learning Research Report*. Santa Rosa, CA: The eLearning Guild.
- Reich, R. (2005, April). Plenty of knowledge work to go around. *Harvard Business Review* 83(4) p. 17.
- Reigeluth, C. M. (1999). The elaboration theory: Guidance for scope and sequence decisions. In C. M. Reigeluth (Ed.) *Instructional-design theories and models--Volume II: A new paradigm of instructional theory* (pp. 425-453). Mahwah, NJ: Erlbaum.
- Ritchie, S. M., & Rigano, D.L. (1996). Laboratory apprenticeship through a student research project. *Journal of Research in Science Teaching* 33, 799-815.
- Roach, S. (1991, September-October) Services under siege: The restructuring imperative. *Harvard Business Review* 82-83.
- Savery, J. R., & Duffy, T. M. (1996). Problem-based learning: An instructional model and its constructivist framework. In B. G. Wilson (Ed.) *Constructivist Learning Environments: Case Studies in Instructional Design* (pp. 135-148). Englewood, Cliffs, NJ: Educational Technology.
- Spira, J. (2005, February) Services under siege: In praise of knowledge workers. *KM World* p. 1, 26-27.
- Thurm, S. (2006, January 23). Companies struggle to pass on workers' knowledge. *Wall Street Journal*, 2006, B1.
- Villachica, S. W., & Stone, D. L. (1998). CORNERSTONE: A case study of a large-scale performance support system. In P. J. Dean & D. E. Ripley (Eds.) *Performance improvement interventions: Performance technologies in the workplace* (pp. 437-460). Washington, DC: International Society for Performance Improvement.
- Walker, D. (2006). Wiki-wild world. *Information Age*. Retrieved 2/14/2007 from http://www.information-age.com/article/2006/january/wiki-wild_world.

Williams, S. M. (1992). Putting case-based instruction into context: Examples from legal and medical education. *The Journal of the Learning Sciences*, 2, 367-427.

Wilson, B. G. & Cole, P. (1996). Cognitive Teaching Models. In D. H. Jonassen (Ed.) *Handbook of research for educational communications and technology: A project of the Association for Educational Communications and Technology* (pp. 601-621). New York: Macmillan Library Reference USA.

Wolff, E. (2005) The growth of information workers in the U.S. economy, 1950-1990: The role of technological change, computerization, and structural change. *Communications of the ACM*. 48(10), 38-42.