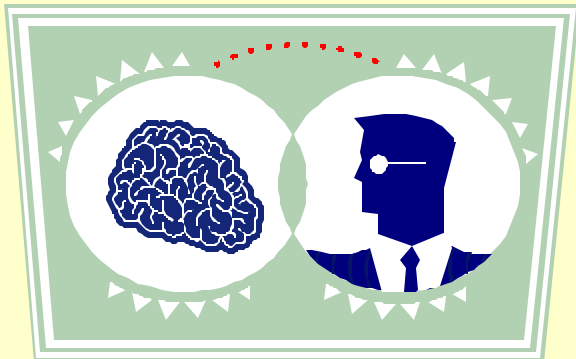


# Turning Recent Research on Learning Strategies into Practice

## *Practical Applications of Cognitive Apprenticeship*

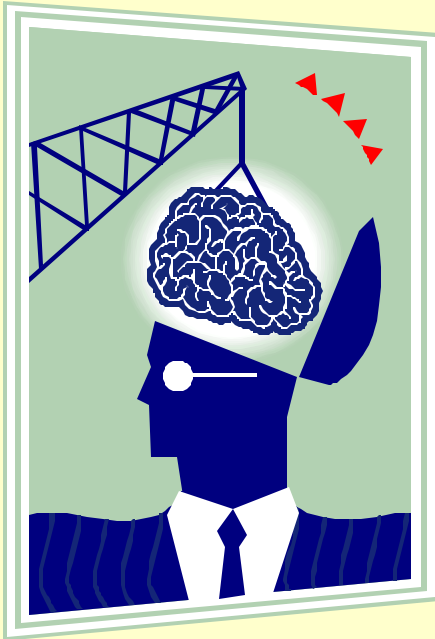


Deborah L. Stone, CPT  
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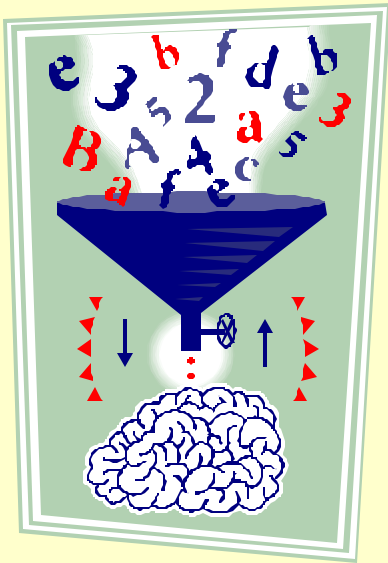
**Presented at the 2005 ASTD ICE Conference, Orlando, FL**

# Background: Knowledge Workers



- Knowledge work is the fastest-growing segment in today's workforce (Brown, 1999).
- Knowledge workers (KW) gather, analyze, synthesize, and disseminate information.
- As the information KWs use changes constantly, they encounter much novelty with little repetition. They form an organization's human capital.
- KWs comprise at least 40 percent of all workers (Spira, 2005).

# Background: Teaching KWs



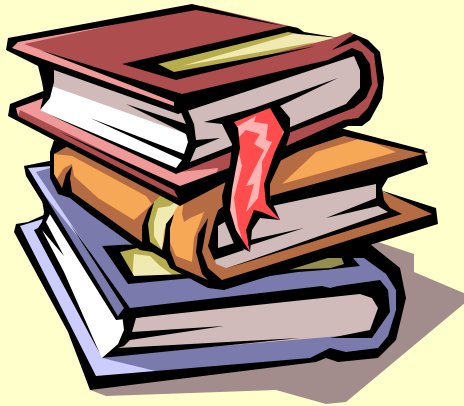
- KW expertise cannot be readily observed, which makes transferring it problematic.
- To address this challenge, Collins, Brown, and Holum (1991) advanced an instructional approach called a “cognitive apprenticeship.”
- A cognitive apprenticeship consists of strategies to address content, method, sequencing, and sociology in learning and job-support environments.

# Background: Population



- National Association of Securities Dealers-Regulation (NASDR) examiners (~550).
- Conduct exams of over 7,000 Nasdaq firms to ensure compliance with securities regulations.
- On average, novice examiners took more than two years to become proficient at their jobs.

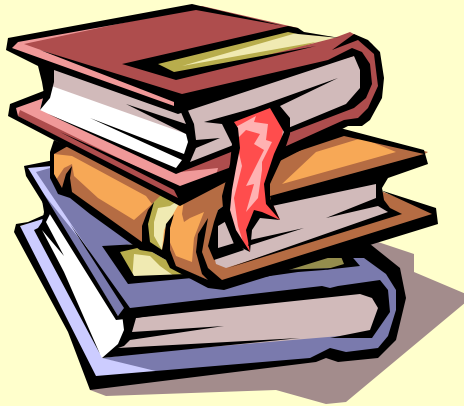
# Background: Literature Review



Cognitive apprenticeships have measurably improved the performance of:

- Surgical interns (Velmahos et al., 2004).
- Dermatology students (Roesch et al., 2003).
- Student nurses (Cope, Cuthbertson, and Stoddart, 2000).
- Aviation antisubmarine warfare operators (Czech, 1999).

# Background: Literature Review (continued)



Cognitive apprenticeships have measurably improved the performance of:

- Automotive maintenance technicians (Schaper and Sonntag, 1998).
- Lifelong learning (Dunlap and Grabinger, 2003).

# Methodology: Approach

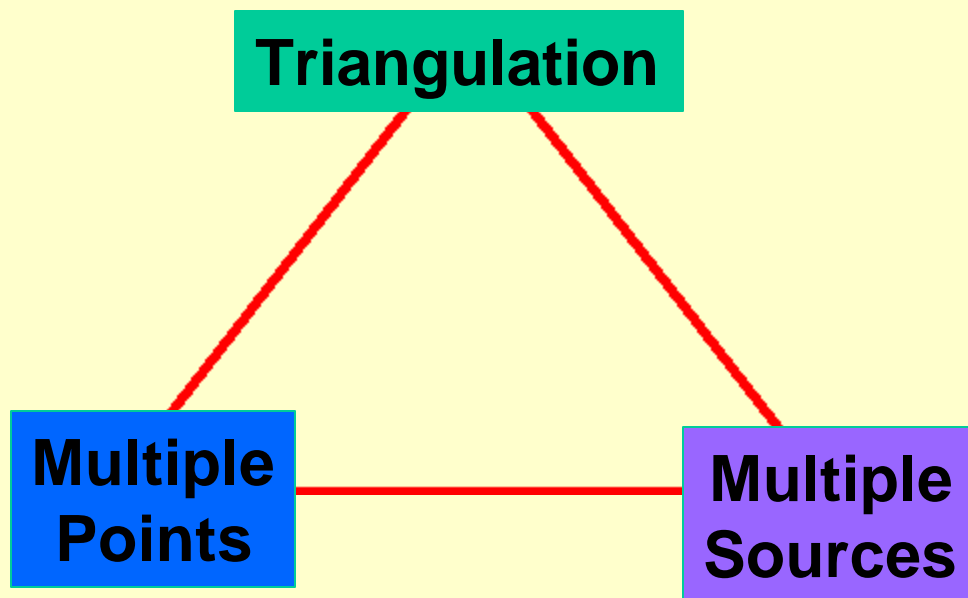


DLS Group, Inc. (DLS), used cognitive apprenticeship strategies to create a performance support system for securities industry KWs.

Our hybrid approach combined:

- Collaborative action-oriented research (Sagor, 1992).
- Rapid application development (RAD) (Martin, 1991).

# Methodology: Attempts to Ensure Credibility



- Data collection at multiple points in the development process
- Data collection from multiple sources
- Data triangulation

# Results



--Villachica & Stone  
(1998)

The CornerStone PSS produced the following results:

- Reduced new-hire ramp-up time from 2.5 years to 1 year.
- Reduced training time by 85 percent.
- Reduced time required to conduct examinations of securities firms by 20%.
- More accurate and consistent exams.
- A 229% ROI, with a 5-year payoff.

# Applications to Practice



As a framework, the cognitive apprenticeship acts as a high-level shell.

Components of this shell consist of strategies that support the entire performance solution, including:

- Content.
- Methods.
- Sequencing.
- Sociology.

Practitioners can apply these strategies to create reusable design objects.

# Publications

- 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.
- Martin, J. (1991). *Rapid application development*. New York: Macmillan Publishing Company.
- Sagor, R. (1992). *How to conduct collaborative action research*. Alexandria, VA: Association of Supervision and Curriculum Development.
- Villachica, S. W., & Stone, D. L. (1998). CornerStone: A case study of a large-scale performance support system. In P. J. Dean and D. E. Ripley (Eds.), *Performance improvement interventions: Performance technologies in the workplace* (pp. 437-460). Washington, DC: International Society for Performance Improvement.