



## **The Job is the Learning Environment: Performance-Centered Learning to Support Knowledge Worker Performance**

By Noel T. Dickover

Published in the *Journal of Interactive Instruction Development*, Vol. 14, No. 3, Winter 2002.

### **Abstract**

Performance-Centered Learning is a systemic, holistic approach to optimizing support for performance on the job. PCL makes all corporate assets available to knowledge workers when they are performing job tasks so that they can solve actual problems. Such assets include job related templates, tools, access to experts, and experiential data from peers (case studies, lessons learned). The PCL approach is illustrated by a website that provides just-in-time learning, collaboration, and performance support tools to improve overall performance of Department of Defense Acquisition Program managers.

### **The Job is Where You Learn**

Studies have shown that as much as 85% of all learning occurs on-the-job (Raybould, 2000). Knowledge workers seem to learn best when performing their job functions. Through encountering problems and engaging in inquiry they increase their overall understanding and the skills that relate to their job performance (Schon, 1983).

Reg Revans, the founder of Action Learning, recently said, "One of the most important developments in management learning and development over the past decade has been the growing realization that learning occurs best when it is directly related to real work, to "doing," or to "action" (Revans, 1998). The knowledge workers are not learning to improve their knowledge and skill base; they are learning so they can solve job specific problems or to accomplish job-specific tasks.

Although learning is not their primary goal at work, over time knowledge workers who are learning while doing will advance in their skills and job knowledge. This leads knowledge workers to an inextricable linkage between knowing and doing in the context of their work environment (Choi & Hannafin, 1995). Their ability to perform tasks and solve problems will grow until eventually they are considered subject matter experts within their fields.

### **Learn-then-do Problems**

In discussing systematic models for instructional design, Wilson states that, "By its nature, instruction is removed from the work context...the two spheres are kept separate for convenience and efficiency" (Wilson, 1999). Training that is independent of the job supports a "learn-then-do" approach to education. Studies have shown that training conducted independent of the job loses its effectiveness in a relatively short period of time (Mager and Pipe, 1997; Hemmes et al, 1998; Clark and Estes, 2000). In some studies, it has been shown that training products and strategies actually reduce

the ability for people to use their work related knowledge (Druckman and Bjork, 1994; Druckman et al, 1997). Unless the training is directly related to a person’s job skills, it does not lead to significant differences in performance or improvement in knowledge. Add to this fact, the idea that 85% of all learning occurs on the job, the potential for independent learning for improving on-the-job performance is not very high. Even if done well, the overall potential performance gain for the training independent of the job may only be around 15% (Raybould, 2000).

There is another problem with learn-then-do training. It is not designed to be accessed while someone is performing a job task. If knowledge workers attempt to access learn-then-do training material while on the job, they must negotiate the trainer-centered navigation structure and attempt to apply it to their unique needs. Often they are required to extrapolate the trainer-centered material in order to connect it to their particular context and problem set.

A learn-then-do approach is useful in novice training and in instances where real world tasks are too difficult to learn on-the-job. Yet, too often, a learn-then-do approach is employed in instances where a learning-while-doing approach would be better suited to the learning need. To understand the differences in approaches so you can determine when to employ one over the other, study Figure 1, which describes these differences in detail.

Elements	Learn-Then-Do	Learn-While-Doing
Navigation, flow of content	Self paced or Instructor-mediated lecture. Navigation follows sequential flow of the content.	Learner-driven. User-centered navigation allows the knowledge worker to hyperlink through the knowledge domain
Degree of content usage	All Material is covered before completion	Material covered is based on inquiry
Content Association	Set lessons with associated tests	Question-based reasoning methodology
Temporal association	Scheduled event, time specific	Just-in-time, non-time specific
Job aids	Seen as outside resources	Intimately linked with learning assets
Assessment strategy	Assessment is in the testing process	Assessment is tied to on-the-job performance
Collaboration	Optional. Contact with single expert	Required. Contact with numerous peers and experts

**Figure 1.** Differences between a learn-then-do approach and a learning-while-doing approach are shown in this chart

### Performance Centered Learning

If we accept the notion that the job is a learning environment, then it is clear how we should go about supporting knowledge workers' job performance: Our learning assets, knowledge assets, and performance support tools must be designed and integrated to support knowledge workers engaged in performing work tasks and solving work problems. At the moment when the knowledge worker needs to find information,

generate new skills, access job aids, or engage in conversation, all relevant resources should be available to support them. At the time they need work-specific information or skills is the time workers will be most receptive to expanding their experiences and leveraging their backgrounds (Revans, 1983).

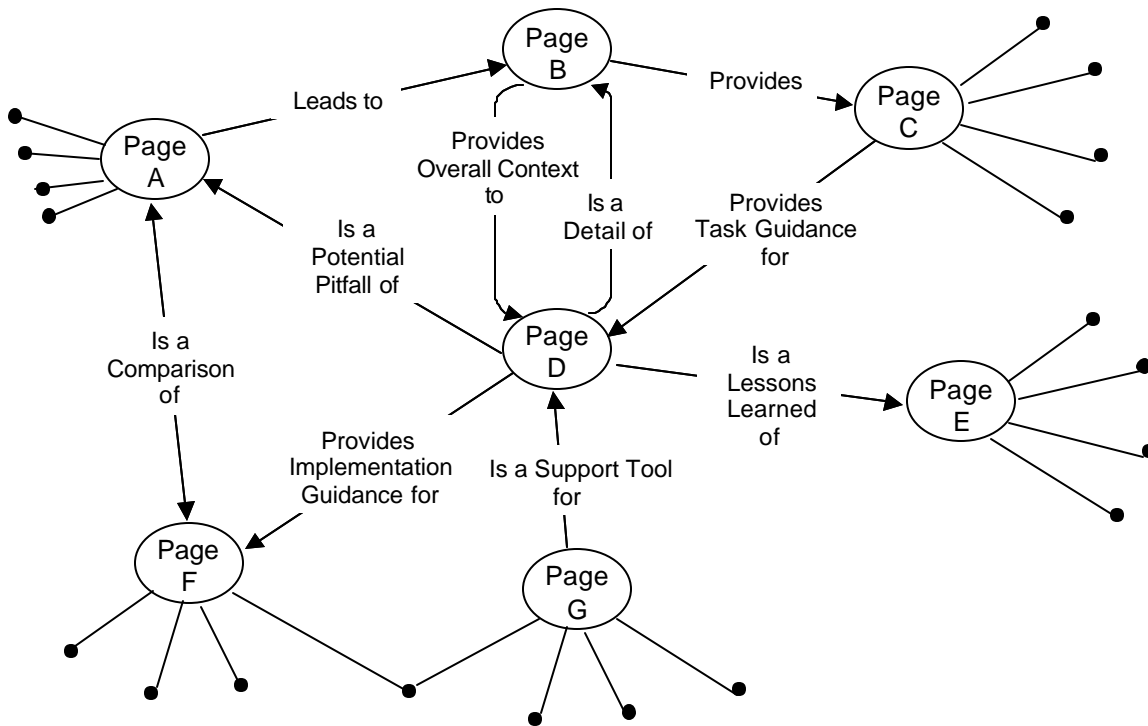
This approach, which I term Performance-Centered Learning (PCL), requires that, while actually working on the job, knowledge workers have access to context specific learning assets, job related templates, tools, access to experts, and experiential data from peers (case studies, lessons learned). These resources must be both instantly available and directly related to the problems and tasks the knowledge worker is working on. This is a systemic, holistic approach to optimizing support for performance on the job.

PCL support elements include:

- Fundamental learning information in non-sequential format
- Explanatory content
- Process information
- Task guidance information
- Relevant performance support tools
- Templates
- Examples
- Case studies, lessons learned, and best practices
- Access to experts
- Access to peers

PCL assets must be structured around the needs of the knowledge workers. While in the process of working a complex problem or task, the knowledge workers must have access to all relevant assets at that moment. Because the same structure will be accessed for different purposes, there can be little or no specified sequence through the content. Instead, the content must be designed to allow the knowledge workers to access just the portions that apply to their particular circumstance. Each time this PCL structure is accessed by a knowledge worker, the path through the material may be radically different.

To describe this idea, let's look at both a diagram describing a potential set of related web pages. In Figure 2, the use of each web page (represented by a circle) is based on its set of relations with the other pages in the PCL structure. In this example there is no single starting point. In actual web page development, the developers must ensure that the doorways into the PCL structure match the knowledge workers' understanding of the material.



**Figure 2.** Example of a PCL Page relationship structure.

PCL structures must take maximum advantage of the internet's hyperlinking capabilities. The value of the information is maximized when all key information is instantly available from the page the knowledge worker is accessing. Search engines should not be the only means to find information. If done well, a set of related content that includes all or most of the PCL support elements can significantly enhance a knowledge worker's ability to find and use information when its most needed.

### **PCL Approach in Action**

The Department of the Navy Acquisition Reform Office (ARO) and the Department of Defense Acquisition University (DAU) are in the process of developing a Community of Practice (CoP) website (Lesser et al, 2000) to support Department of Defense Acquisition Program Managers (<http://www.pmcop.dau.mil>). Within the Program Manager (PM) CoP, key functional areas of expertise were chosen to enable community building and performance support. The Risk Management Focus Area, one of five key focus areas selected, is employing a PCL approach towards cultivating a community around the performance of risk management tasks and activities. This site is still relatively new, with a formal release date of October 2001.

The risk management community, which currently has over 300 members including many the top government and industry risk professionals, provides just-in-time learning, collaboration and performance support tools to improve overall on-the-job risk management performance. The intent is for government and industry acquisition workforce personnel to access and use the site while performing risk management tasks or addressing risk management problems.

**Figure 3.** Opening page of the Risk Management portion of PMCoP.

The approach taken in the risk management focus area is an explicit merging of learning assets developed by instructional designers (then validated by community subject matter experts) and knowledge assets developed and submitted by risk management practitioners. In associating content to the risk management knowledge domain, beginning in March 2001 the risk management focus area team engaged in community building to gather a group of risk management experts (both program managers and risk managers) to identify problems and tasks facing program managers. Additional work was done to uncover the questions commonly asked by novices and practitioners engaged in implementing risk management.

The content includes guidance documents, examples, templates, and lessons learned information. In some cases, the knowledge assets are being transformed into online performance support tools that will aid in task performance. Online discussions and project based collaboration among risk focus area members are being cultivated and encouraged. This, along with risk fundamental learning information, process information, and access to peers and experts will provide a solid foundation of content to support program office professionals.

**Risk Management** Search » Help

Risk Management > Planning > Planning Tasks > Create a Risk Management Plan > Planning a Risk Management Plan

### Planning a Risk Management Plan

SME Validated Task Guidance

The questions within *Planning a Risk Management Plan* focus primarily on the process of planning and writing risk management plans. Throughout the site we offer a more fundamental understanding of risk management as well as support from experts in the field of risk management if at any time during your exploration you feel as though you need additional information.

- What Else might I need to know?
  - Planning Guidelines for Preparing Risk Management Plans
    - What guidelines should be followed in planning a risk management program?
    - What factors have to be determined about risks?
    - What are some typical risk areas found in a program?
    - How do you identify the critical areas that have risk?
  - Components of a Risk Management Plan
  - Steps to Getting Started

Integrated Learning content

### Levels

Please select an area of task that you are most interested in:

- [Understanding Risk Management Plans](#)
- Planning a Risk Management Plan**
- [Risk Management Job Aids and Expert Support](#)

Practitioner Developed knowledge Assets for this task

Figure 4. Task Guidance integrated with practitioner knowledge assets

**Risk Management** Search »

References and Resources

### Risk Management References and Resources

Practitioner Developed Knowledge Assets

Submit your contribution:

Case Studies

- Implementing a Risk Management Process
- Question regarding risk organization assignments
- Results of Inadequate Risk Management

Events

- Fifth Annual PSM Users' Group Conference
- INCOSE Symposium on Risk Management, March 1999
- INCOSE Symposium on Risk Management, May 2001

Learning Materials

Submit your contribution:

Case Studies (selected)

- Events
- Examples
- Learning Materials
- Lessons Learned
- Presentations
- Processes & Methods
- References
- Regulatory
- Related Websites
- Tools & Forms

Figure 5. Practitioner developed knowledge assets

A performance centered design approach is being employed for site design. To validate the design, both usability testing and performance evaluations are still being employed on the both interface and content. This site is still far from completion. The end goal is to fully integrate all relevant content (learning material, process guidance, knowledge assets, tools and discussions) so that the risk managers have immediate and clear access to the critical information related to their task or problem. By using both experts and novices in the design process, the risk management focus area community site is being tested and refined to improve acquisition worker risk management performance.

### **PCL approach compared to standard knowledge management approaches**

A PCL design approach is significantly different than what is normally advocated in knowledge management initiatives. Often knowledge management is concerned with collecting knowledge to associate with a knowledge domain taxonomy or category structure (Lesser et al, 2000). The goal of this approach is to automate the process of collection and storage of information to aid in the retrieval process. The goal of PCL is not to automate the information resources in a knowledge domain but to improve the performance of the knowledge workers. Knowledge domain information can be broken

up into logical and distinct information chunks or nodes that contain things like descriptive and referential information, process charts, policy documents, implementation guidance, historical information, captured lessons learned, agreed upon best practices, etc. By associating the concepts and PCL support elements we can provide the knowledge workers a structure that aids in associating the information to their particular contexts.

### **Recommendations**

While the implementation of PCL is still being refined, there are several recommendations that should be followed for successful implementation. These relate both to the quality of the content and the usability of the design.

### ***How to Implement PCL***

To build a Performance-Centered Learning Content Structure, Use knowledge extraction techniques employed in expert systems and performance support systems. Include an initial needs analysis and heavy user involvement to ensure the content meets user expectations

To implement a PCL approach, one should:

- Identify the knowledge domain
- Identify the key questions, problems, and tasks people associate with the knowledge domain
- Identify the organizing concepts within a knowledge domain
- Gather content from knowledge domain subject matter experts into back-end data structures
- Storyboard the content from the data structures into logical chunks or nodes of information
- Associate the chunks of information (in the form of storyboards) within the knowledge domain around the problems, tasks, and organizing concepts
- Code this structure into an online, web based format that allows additional contributions and changes by knowledge domain participants.

*-- Noel T. Dickover*

- Focus on the problems, questions, and tasks that your group of knowledge workers care about. Facilitated focus groups with real knowledge workers work well for this. This will also serve as the beginning of your community building approach.
- Usability studies with real target audience members are essential. To be successful, a PCL approach must represent the knowledge worker's world view. You will never get this right the first time. The website shown above has already completely changed its design three times based on usability data, and we are far from finished.
- Continually entice, excite and engage your community of knowledge workers. Its their participation and direction that will make your site a success or failure.
- Use small "chunks" of information written for the web that can be related versus large documents. People engaged in work usually browse, and are generally looking for golf-ball sized chunks of information, not dissertations.

## References

- Choi, J., and J. Hannifin. 1995. Situated Cognition and Learning Environments: Roles, Structures and Implications for Design. *Educational Technology Research and Development*. 34(2).
- Clark, R. E., and F. Estes. 2000. A Proposal for the Collaborative Development of Authentic Performance Technology. *Performance Improvement*. 39(4).
- Druckman, D. and R.A Bjork. 1994. *Learning, Remembering and Believing*. Washington D.C., National Academy Press.
- Druckman, D., Singer, J.E., & H. Van Cott. (Eds). 1997. *Enhancing Organizational Performance*. Washington, D.C., National Academy Press.
- Hemmes, K., Long, C., and G. Rowland,. 1998. Situated Learning of Human Performance Technology. *Performance Improvement Quarterly*. 11(3).
- Lesser, E. L., Fontaine, M. A., and J. A. Slusher. (Eds). 1999. *Knowledge and Communities*. Boston: Butterworth-Heinemann.
- Mager, R. and P. Pipe. 1997. *Analyzing Performance Problems*. Atlanta, GA: Center for Effective Performance.
- Raybould, B. 2000. *Performance Support Engineering Part One: Key Concepts*. Ariel PSE Technology.
- Revans, R. 1983. *ABC of Action Learning*. Kent, England: Chartwell-Bratt, Ltd.
- Revans, R. 1998. Sketches in Action Learning. *Performance Improvement Quarterly*. 11(1).
- Schon, D. A.1983. *The Reflective Practitioner*. New York: Basic Books.
- Wilson, B. G. 1999. Evolution of Learning Technologies: From Instructional Design to Performance Support to Network Systems. *Educational Technology*. 39(2).

## About the Author

Noel T. Dickover is a human performance technology consultant. He currently supports the Department of the Navy OASN (RD&A) Acquisition Reform Office as the Risk Management Community co-lead for the Program Management Community of Practice (<http://www.pmcop.dau.mil>). Contact him at [dickover@perform-learn.com](mailto:dickover@perform-learn.com) (now at [noel@communibuild.com](mailto:noel@communibuild.com)).