THIS WEEK — DESIGN STRATEGIES

Complex Interventions for Complex Problems: Expanded Context for e-Learning Tools

BY PATTI SHANK

If you're anything like me, you sometimes get asked to design and develop instruction when you know instruction will be minimally helpful — or even when instruction is desirable, but additional interventions are also needed to prevent or solve a performance problem. That's because there are many reasons for performance problems, and instruction, as an intervention, is only meant to solve gaps in knowledge and skills.

Robert Mager and Peter Pipe listed these seven performance problems in *Analyzing Performance Problems, 3rd edition*:
• Gap in knowledge or skills
• Knowledge or skills used rarely
• Obstacles to performance
• Expectations not clear
• Inadequate resources
• Inadequate feedback
• Inappropriate consequences

Here's an example of a performance problem that needed more than an instructional solution. A client asked for online ethics training to be done quickly because they were dealing with PR nightmares. Analysis of the situation showed that many people in the organization didn't know that certain ethical dilemmas, such as accepting gifts from clients, could cause both real and perceived problems inside and outside the organization. The organization had ambiguous expectations about how to handle these situations. Staff and managers, who acted poorly or even egregiously, were rarely chastised. Training was part of the solution, but training alone would not be sufficient to

Our jobs in e-Learning are all about solving performance problems, but most of the time e-Learning is not enough and organizations are nervous about exposing systemic shortcomings. The solution is Human Performance Technology (HPT), based on analysis and tailored solutions. Read this article to find out what is involved in HPT and to get ideas you can use immediately in your work.

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DESIGN *strategies*

prevent these problems in the future.
Clear expectations, adequate conse-
quences, and system redesign were
essential for a real solution.

This situation is actually pretty typical.
Clients often bring desired instructional
projects, but after analysis it becomes
clear that the problem requires more
than instructional intervention. Human
performance technology (HPT) skills pro-
vide a basis for dealing with the natural
complexity of people, jobs, and organiza-
tions. These skills are invaluable in our
work. HPT entails evaluating jobs,
processes, and the organization, to see
what is impeding performance in any
given situation. HPT guides the design of
appropriate interventions, such as
instruction, feedback systems, environ-
mental or system redesign, incentives, or
a combination of these.

Complex performance problems

Analysis often involves watching how
work is done, looking at work inputs and
outputs, talking to stakeholders, and
asking lots of how and why questions.
Data is gathered and then analyzed in
order to determine best solutions. Then
it's time to determine how and when to
implement them. To be honest, organiza-
tions are often somewhat nervous about
uncovering these problems. Selling a
wider solution is often tricky, involving
much negotiation and confidence build-
ing. Over time, however, clients usually
come to see that it is in their best inter-
est to deal with the real system prob-

lems, and that resources spent to pre-
vent and solve the real problems are well
applied.

Let's examine two examples to get a
better handle on the complexity of real
performance problems.

Performance problem 1: A company
greatly needed to solve ongoing data
inaccuracies in their complex, mission-
critical software application. Erroneous
data was causing dire outcomes for the
organization, and for the organization's
external clients. The company wanted
training on how to enter data more accu-
rately. Analysis of the situation showed:
• Most users accurately entered data
  into the most frequently used screens.
• Many of the screens were used rela-
  tively infrequently. As a result, most
  users didn't know what to enter in
  these screens.
• All users could change data in all
  screens.
Because the reasons behind the data
entry inaccuracies were complex, simple
training would not have been adequate
for solving this problem. A number of
interventions were needed.

Performance problem 2: A company
wanted online training for managers on
how to lawfully and consistently apply
certain HR policies, such as family leave.
The company had faced lawsuits be-
cause some managers applied these
policies in problematic ways. Analysis
of the situation showed:
• Some managers didn't understand how
  to apply these policies.

FIGURE 1 *Blackboard job aids for online use*

- The policy manual was unclear.
- There were few consequences when policies were applied incorrectly.
- The process was ambiguous and cumbersome.

In this situation, training was needed for some of the managers, but other interventions were also critically needed.

In both of these cases, simple solutions would have been inadequate, because they wouldn't have addressed the systemic nature of the problems. We often need to look beyond training as a solution when faced with performance problems. Mager and Pipe listed a number of reasons for performance problems, and the typical interventions used to solve them are shown in Table 1, right.

What were the solutions to the data inaccuracies problem? Users needed performance support (help screens, demos, etc.), especially on screens that were used infrequently. In addition, the application needed revision in order to prevent certain kinds of problems. The HR policies problem called for training, clearer documentation, better process, and appropriate consequences... more about these interventions shortly.

Tools and technologies to support performance

A large part of HPT work involves analyzing problems like the ones above, and applying existing tools and technologies for the entire range of performance interventions, not just for building courses and other instructional materials. Let's look again at the list of performance problems and see how tools and technologies have been successfully used in building integrated interventions for these problems.

Technology support for gaps in knowledge and skills

Here's where instructional solutions make greatest sense. Often that means courses, e-Learning applications, or other instructional or performance support materials. However, other tools and technologies that can support knowledge and skills acquisition include:

- Competency tracking
- Mentoring and coaching

Networked applications can keep lists of job competencies and measures for tracking them. This can feed into cours-

es and other instructional interventions such as on-the-job training and mentoring. Social interaction tools such as discussion forums, email, and listservs can support knowledge sharing and help people assess their learning needs. These are potentially powerful uses of technology for learning that many of us don't consider, but should.

Technology support for rarely used knowledge and skills

When knowledge or skills are used rarely, as in the complex software application example, the following tools and technologies are often helpful.

- Help files/Context sensitive help
- Job aids
- Demos
- FAQs

For example, Figure 1 on page 2 is a screenshot of some of the online job

aids we developed for medical school instructors who use Blackboard to support their classroom based courses.

Technology support for obstacles

There are often obstacles to performing as desired. System redesign, including redesign of technology, job processes, and organizational systems, is needed in these cases, but system redesign takes time. In the meantime, someone needs to be aware of the problem and provide workarounds, whenever possible. The following technologies and tools can inform solutions and provide workarounds.

- Problem tickets
- FAQs
- Communities of practice (CoP)
- Help files
- Context sensitive help

There are numerous communities on the Web that help people deal with the

TABLE 1 *Typical performance problem interventions*	
Performance problems	**Typical intervention**
Gap in knowledge or skills	Instruction
Knowledge/skills used rarely	Performance support
Obstacles to performance	Remove obstacles
Expectations not clear	Provide clear expectations
Inadequate resources	Provide resources
Inadequate feedback	Provide feedback
Skewed consequences	Change consequences

FIGURE 2 *Problem ticket for a Web host*

day-to-day challenges of specific types of work. Slashdot.com is a common place for programmers to get help from other programmers. I subscribe to a listserv (World Wide Web Courseware Developers' Listserv: http://www.unb.ca/wwwdev/) that helps instructional developers deal with problems and dilemmas in using authoring tools.

Figure 2 on page 3 is a screenshot of an online problem ticket. My Web host provides this one for its customers to use. Recently, one of my clients implemented a new email system. In addition to courseware on how to use it, we worked with them to develop a problem ticket system. These problem tickets let

the IT department know about needed fixes. The problem tickets also build content for the Frequently Asked Questions file (FAQ). The solution was much more effective than training alone would have been. And, because users saw that this was a work in progress that they could affect, the implementation had more buy-in. We often forget that lack of buy-in can be another reason for performance problems.

Technology support for unclear expectations

When analyzing performance problems, I often find that people don't know exactly what is expected of them.

Sometimes they think they are doing what's expected... but they aren't. Tools and technologies that can be used to communicate expectations include:
- Competency listings
- Job descriptions

Figure 3, left, is a screen shot showing a listing of job descriptions for the Idaho Division of Human Resources. A similar database describing skills and knowledge could be extraordinarily helpful to people doing a job or preparing themselves for other jobs. This intervention often needs to be combined with effective feedback so people know how well they are meeting listed expectations.

Technology support for lack of resources

People may have a hard time finding resources when they need help, or they may not know how best to solve problems they face. A recent client needed an integrated system to help users determine what resources were available, how to access them, and how to use them. The following tools and technologies can provide resources to help people perform better:
- Documentation
- Knowledge bases/searchable help archives
- Webliography
- Ask the expert

Microsoft's online Knowledge Base is a good example of easily searchable help files. I occasionally have problems with not being able to see the source code for Web pages in Internet Explorer 6. When I look that problem up in Microsoft's Knowledge Base, the same fix always appears and the solution always works.

Figure 4, left, shows an example of a resource webliography we developed so online instructors can add recommended resources and search through ones already added. A client is considering using it for internal mentors and job coaches to share recommended resources.

Technology support for inadequate feedback

Lack of feedback is another very common theme in analysis work. People often don't know if they are doing things correctly because co-workers and sys-

FIGURE 3 *State of Idaho job descriptions* (http://www.dhr.state.id.us/Classifications.asp)
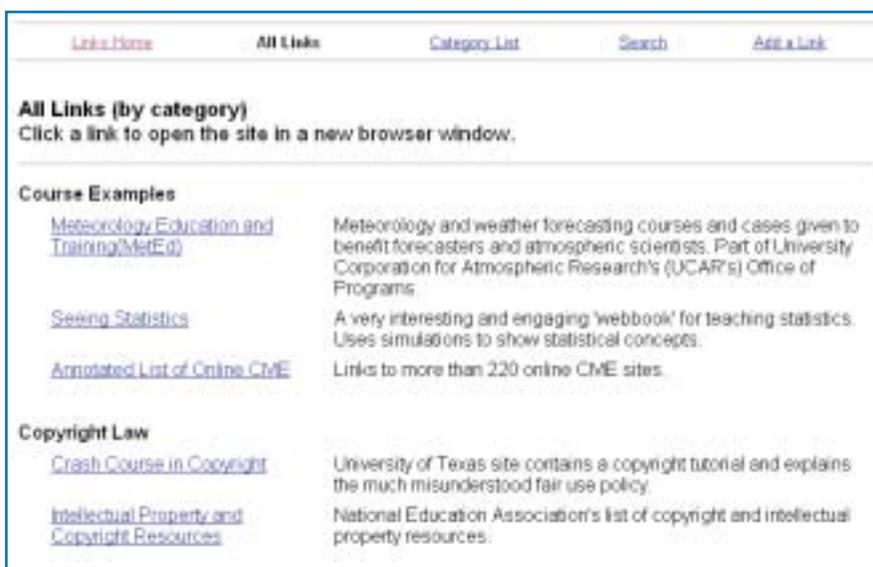
FIGURE 4 *Webliography for online instructors*

tems don't provide adequate feedback. The following tools and technologies can provide needed feedback.
- System redesign
- Team work spaces
- Document sharing and revision systems

Human and computer systems can be

There are often

obstacles to performing as desired. System redesign, including redesign of technology, job processes, and organizational systems, is needed in these cases, but system redesign takes time. In the meantime, someone needs to be aware of the problem and provide workarounds, whenever possible.

designed (or redesigned) to provide feedback and to not allow errors. Team workspaces can be used so that teams can provide feedback and help. Figure 5 on page 6 shows a discussion forum used as a team work space for the board of the International Society for Performance Improvement, Front Range Chapter (ISPI-FRC) in Denver. It is used to communicate work done between board meetings and to provide feedback to other board members.

Technology support for lack of consequences

Incorrect consequences for inadequate performance usually require organizational development work. Systems must be in place for finding problems, and people must be willing and able to provide feedback and manage undesired outcomes. One way that tools and technologies can be used as part of this intervention is to

FIGURE 5 *Online team workspace for ISPI-FRC board*

make performance more visible so it can be seen and addressed more easily. Team workspaces such as the one already shown in Figure 5 can be used to document work so it is more visible.

Complex solutions

We've discussed how performance problems are often complex. We've shown how online learning and other tools and technologies can be used as part and parcel of interventions for preventing or solving them. What happened to the inaccurate data and inconsistent application of HR policies problems that I mentioned at the start?

Table 2, left, shows the problems that analysis uncovered, the solutions put into place, and the tools and technologies used to implement these solutions. Some of the solutions were technology oriented, some were not.

Both of these situations required a willingness to seek real solutions, to undergo in-depth analysis, and to endure multi-

TABLE 2 *Analysis and correction of two performance problems*			
Major issues	**Analysis**	**Interventions**	**Tools & technologies**
Inaccurate data	Most users accurately entered data into the most frequently used screens	• Training for *new* users in most commonly used tasks	• Asynchronous instructional materials
	Many of the screens were used relatively infrequently. As a result, most users didn't know what to enter in these screens.	• System help • Mentors • Online mentoring and feedback for mentors • Ask the expert • FAQs	• Context sensitive help • Classroom courses for mentors • Online mentoring and feedback for mentors • Discussion forums • Web pages • Searchable FAQs
	All users could change data in all screens	• Add user levels • System redesign to make errors less likely	• Programming
Inconsistent application of HR policies	Some managers didn't understand how to apply these policies	• Training on application of policies • Ask the expert	• Asynchronous and synchronous instructional materials • Discussion forums
	The policy manual was unclear	• Develop better documentation	• Searchable documentation
	There were few consequences when policies were applied incorrectly	• Process redesign • Changed consequences • Feedback systems	• Organizational development • Searchable documentation
	The process was ambiguous and cumbersome	• Redesign tracking systems	• System redesign • Problem tickets • Programming

SIDEBAR *Additional Resources*

International Society for Performance Improvement (http://www.ispi.org). International organization dedicated to improving human and organizational performance.

Performance Support Source Readings (http://cpt.fsu.edu/PIQContents/Gery2.pdf). Gloria Gery's list of recommended performance support readings

Supporting Human Performance Across Disciplines: A Converging of Roles and Tools (http://www.pcd-innovations.com/what_is_epss.htm). This article looks at trends in human performance technology, electronic performance support, technical communications, and instructional design.

G.A. Rummler & A. Brache. (1995). *Improving Performance: How to Manage the White Space in the Organizational Chart.* This is one of the best books out there on analyzing performance problems and crafting adequate solutions.

ple interventions. In my experience, unless we deal with the system as a whole, we are not likely to solve the problem (sometimes we make it worse). Training is often not the only solution needed, and sometimes it is the wrong solution entirely.

Tools and technologies used for online learning, such as Web sites, databases, team workspaces, and discussion forums can be effectively used as part the solution to a wide range of performance problems. Combine these with system redesign and organizational development, and real change is possible.

However, a word of caution! Performance solutions like these should be integrated and then tested for ease of use, so that we aren't creating new performance problems with a mass of unrelated new tools and technologies! Books on designing electronic performance support systems can be helpful in learning what's needed to make these kinds of systems work best.

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Additional information on the topics covered in this article is also listed in the Guild Resource Directory.

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