
Job aids and performance support: the convergence of learning and work

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Abstract: Performance support is happening where we work and live. Under a tree and at a park bench, in a submarine, at a parent-teacher meeting, in a cubicle, or on the manufacturing floor, people reach beyond themselves for help in doing what needs to be done. The support comes as extensive computer systems, reminders on cellphones, and notes scribbled on old envelopes. Annual studies by ASTD and *Training magazine* confirm the slow, steady trend away from classroom delivery and towards more technological approaches. This shift to knowledge everywhere suggests the beginnings of a revolution in workplace learning, a revolution that brings messages and meaning closer to where it is needed. What is performance support? Where did it come from? And what are the possibilities suggested by planner and sidekick support? Those questions are addressed here.

Keywords: performance; performance support; job aids; on demand learning.

Reference to this paper should be made as follows: Rossett, A. and Schafer, L. (xxxx) 'Job aids and performance support: the convergence of learning and work', *Int. J. Learning Technology*, Vol. X, No. Y, pp.000–000.

Biographical notes: Allison Rossett, a Professor of Educational Technology at San Diego State University, is fascinated by what, in addition to classes and instructional materials, influences performance. This enthusiasm began decades ago with her book, *Handbook of Job Aids*, and continues today. She has been inducted into the *Training magazine* HRD Hall of Fame, recognised by ASTD for a career of contributions to workplace learning and performance, and is currently a member of ASTD's International Board. She has received best book awards for *Training Needs Assessment*, *A Handbook of Job Aids*, *First Things Fast: A Handbook for Performance Analysis*, and *Beyond the Podium: Delivering Training and Performance to a Digital World* (2001). Rossett also edited *The ASTD e-Learning Handbook: Best Practices, Strategies and Case Studies for an Emerging Field*. Rossett's career has taken her many places, including Taipei, Singapore, India, Australia, Brazil, and all over North America. She lives happily and works excessively in San Diego, California.

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This article is adapted from their forthcoming book, *Job Aids and Performance Support in the Workplace: Moving from Knowledge in the Classroom to Knowledge Everywhere*, San Francisco: Pfeiffer/Wiley Inc.

1 Introduction

The forces align. To heightened expectations about performance and results add computers, software, and mobile devices like cellphones, iPods and personal digital assistants. Impatience factors in as well. Where do executives want their sales force, teachers, customer service representatives and assemblers? They want them with customers, students, clients, and equipment – in the context of the workplace.

The message is clear. No longer satisfied to mount a great event, rule a classroom or command curriculum enshrined in 3-ring binders, 'trainers' and 'instructional designer' are growing into workforce learning professionals, performance consultants, and blended and e-learning specialists with responsibility for solution systems and strategic accomplishments. Their work extends beyond moments in time and place to influence, information and even lessons that go where the challenges of work and life are. They must provide support when and where required, by people or by systems that deliver the smarts to those with needs. That's right – via job aids and performance support. Welcome to the era of convergence!

2 Job aids

Job aids are not new. People have relied on job aids since prehistoric times, when the details of fire tending, skinning, and cooking adorned cave walls.

There are good reasons to appreciate job aids. For example, Duncan's (1985) review of military reliance on job aids between 1958 and 1972 documents their significant and positive contributions to military performance. The military's use of systematic approaches in the design of training (then called the Interservice Procedures for Instructional Systems Development) and reliance on job aids influenced civilian business practices in companies like AT&T and GTE.

Harless (1986), often acknowledged as the father of job aids, stated that job aids can be developed in three to five times less time than it takes to develop equivalent training programmes. He also described instances in which the use of job aids diminished the need for training and thus shortened the amount of time that employees were away from their jobs.

Harless was not alone in his certainty that job aids made positive contributions to the bottom line. Duncan (1985) concurred, citing the results of military analyses demonstrating that job aids saved money without jeopardising work performance.

2.1 More than money

Job aids, like their automated siblings, relieve individuals of responsibility for storing information in long-term memory. Consider the value of the shopping list that staves off impulse purchases. Reliance on a job aid shifts the individual's obligation from repetition over time to ensure memory, to searching for external information as it is needed.

That reliance on external resources also creates new responsibilities for the organisation. First, they must build or acquire and then update useful resources and systems. Second, they must invest in developing their people to know how to productively search and find the answers and advice they need.

The third organisational responsibility is to create a culture where reference is encouraged, even honoured. Several years ago, a bank teller said she was going to see if she could find her 'cheat sheet' in order to be able to answer a question. She was not sheepish about her reliance on a job aid, but neither was she proud. Organisations must move to make it a badge of honour when employees endeavour to find what they need.

Schools are beginning to advance that notion. In 1994, Scholastic Aptitude Test (SAT) takers in the USA were permitted to bring along their calculators for the big test. And now, according to Gamerman (2006), some middle and high schools are permitting students to look things up online as they take tests and create papers.

Do you want your teller, auditor, auto repair person, dentist, and accountant to look things up, when in doubt? Do you want your 12-year-old to check out the spelling of a word or the location of a place? Of course.

2.2 Job aids to support procedures and information

In the early 1970s, job aids were influenced by behaviourism. According to Pipe (1986), individuals often turned to job aids to support them in carrying out a *procedure*, such as securing data in a computer, putting in a new printer cartridge, or mixing a Cosmopolitan. A procedure in this context is a prescribed way of doing something. Procedures mandate a particular course of action in a particular sequence. Job aids that support procedures tell and show actions, order, and results. In the old days, job aids helped people to hook up the cables and components of a 1/2-inch videotape system; they assisted people in all kinds of chores, such as changing the oil in a car, loading a dishwasher, and applying makeup.

Job aids also have a role to play in helping people deal with the challenges associated with the information that surrounds them. Carr (1992) wrote of a 1945 article in the *Atlantic Monthly* in which Vannevar Bush, then director of the US Office of Research and Development, noted an ‘information explosion’. His response was to suggest a ‘memex’, an automated desk that would provide information as it was needed.

Everyone experiences ‘information overload’, ‘information dump’, ‘information anxiety’, and even ‘information bulimia’. What these phrases share is recognition of the profusion of information, the negative effects of being awash in information, the complexity of products and options, and the human need to make sense of it all. People and organisations need systems that diminish chaos, provide order, and support results-oriented interactions with data. Yahoo’s attempt to make the blogosphere understandable and accessible is a good example.

Wurman (1989) claimed that data are not information until they have form and enable knowledge and understanding. A job aid that informs is one that supports people at work by diminishing the uncertainty they experience when trying to do something.

Informational job aids make data useful and become useful themselves when they are accessible and:

- form a stable repository for facts and concepts that answers the question of *who*, *what*, *which*, *when*, or *where*
- are organised by user frame of reference, function, or content structure.

2.3 *Thought-provoking job aids*

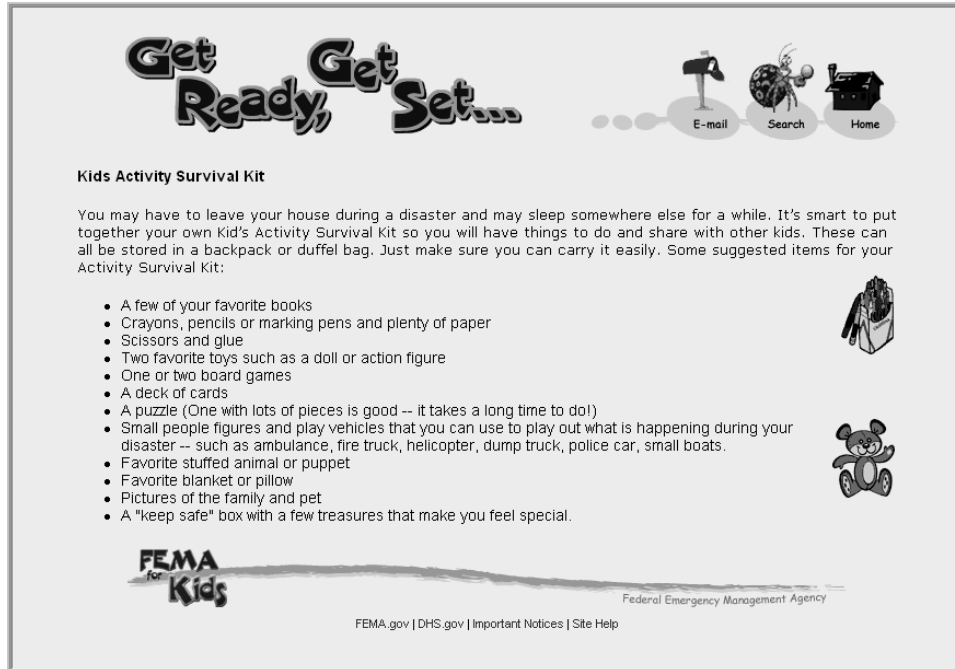
No longer are job aids perceived only as simple stimuli that evoke a response during a task or point to or deliver information. Job aids also have potential to influence the way people think and feel about themselves, their work, their co-workers, their managers, their clients, their products, and their problems. They can be *thought-provoking, as they coach for better performance*. How do we approach an employee who has recently lost a loved one? What about an employee who is chronically tardy? What does the new teacher think about as he reflects on how he taught a language arts lesson?

The combination of cognitive science and information technology thus propel expanded definitions for job aids. These perspectives dominate:

- recognition of the importance of how people think about the work
- concern with the individual’s self-perception, readiness and confidence
- eagerness for the individual to consciously organise information
- belief that performance has roots in thoughts and speech.

Not surprisingly, there is growing interest in using coaching job aids to increase reflection and elevate attention and activity – even for little ones. Figure 1 shows the United States’ Federal Emergency Management Agency’s checklist¹ to coach children in how to prepare to endure the aftermath of a natural disaster.

Figure 1 What children should gather in preparation for a disaster



Source: FEMA

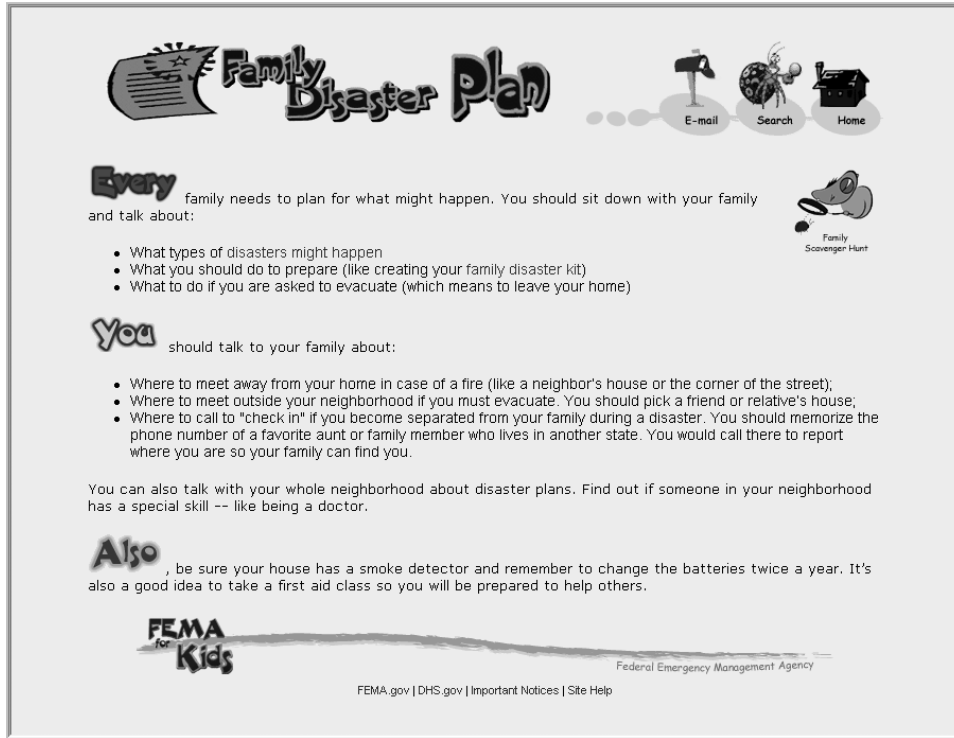
Rossett and Gautier-Downes (1991) called them coaching job aids. Coaching job aids are not limited to deployment at the moment of challenge. An example of this wider window of influence is the job aid that helps managers plan to manifest sensitivity to and congruence with equity guidelines while interviewing potential employees. An hour before the interview, a manager might review company policy, quotes from experts, and a checklist of things to keep in mind during the different phases of the selection interview. Although the planning job aid might not be in sight during the interview, its influence is felt just before and throughout.

Figure 2 provides kids with materials that help them nudge their families to collect provisions in advance of a natural disaster.

Coaching job aids have the following characteristics:

- They answer the question ‘how’, but in a different way than procedural aids do. They tell us ‘How might I think about or approach that?’ They answer the question: what should I keep in mind?
- They also answer the question ‘why’, as in ‘Why would I include those questions in an interview?’
- They articulate quality standards.
- They encourage a dialogue with the user, especially a dialogue about reasons, feelings, and approaches.

Figure 2 A coaching aid to help children urge parents towards preparedness



Source: FEMA

3 Performance support

Performance support is job aids on steroids.

Revisit Figures 1 and 2. Job aids or performance support? They are both. The disaster preparation aids are examples of static, familiar coaching job aids that use technology for distribution and update. They illustrate how job aids are one form of performance support.

There you see just a sliver of what happens when technology is added to job aids. In its most basic form, technology enables desirable, canned information to be readily sought, found, used and tended. And the many people who need it can reach for it simultaneously, across the continent and world. Update can be a snap.

There is, however, much more that technology brings to performance centred approaches. When technology is combined with information, lots of information about the user and the context, guidance can be delivered when and where it is needed in tailored ways. Treasured benefits derive from the ability of the system to deliver instantaneously, to reside within the context and workflow, to sense needs and personalise information and advice, and to give just what is required.

Familiar print job aids must be ‘pulled’ by users, when they worry about how to assemble provisions in preparation for a natural disaster, for example. What technology does is to add a targeted ‘push’. Tailored guidance, directions and advice about wildfires are targeted and delivered to you because you live in California, not Louisiana or The Netherlands, because you are 18 months from retirement, not 18 years.

Meet Gloria Gery

Gery’s classic work sketched possibilities for contemporary performance support. She noted that Computer-Based Training (CBT) could be more than a classroom experience delivered on the computer. Throughout the 1980s, 1990s and into the new decade, Gery (2002, p.4) made a case for performance support as faster and cheaper than training because it delivers support where and when needed, in a real world situation. Her example: “...rather than send a technical support person to a 1-week installation planning course for an upgrade to a mainframe operation system, why not develop a Wizard that guides users through the process?”.

Gery’s (2000; 2002) work encouraged support that is there when it is needed. She touted the use of computer software to activate information and to place it next to and within the task. She described what performance-centred tools can do: conditionally guide performers through a process; calculate answers or transform data into a more usable form; and allow individuals to use the tool in several formats. TurboTax was the example she used, acknowledging two interfaces, one that interviews the user and solicits data; and the other that readies the form for submission.

Integration with the work

Gery, according to Cavanaugh (2004), identified three ways to parse performance support:

- 1 *External support* – requiring that users break away from work to refer to the resource
- 2 *Extrinsic support* – available within the system, although there is a break in the action to get the necessary information
- 3 *Intrinsic support* – support that is insider the software or system and is indistinguishable from the workflow.

Cavanaugh (2004, p.29) acknowledged unresolved questions about the performance support domain and then presented an expanded approach of his own. He called it a spectrum devoted to this goal: “transparency, where there is no distinction between a task and the technological support provided to accomplish that task.” Integration with the task was his top priority.

His ‘spectrum of support’ approach was dubbed *2E3I*: *external*; *extrinsic*; *intrinsic*; *intuitive*; and *intelligent*. The ‘E’ words represent, in his view, a lesser form of support because they are distinct from work, what Raybould (2000) called stand-alone. Cavanaugh (2004) writes in favour of integration.

Table 1 Cavanaugh's 2E3I Spectrum of Performance Support

<i>Thomas Cavanaugh's 2E3I model for performance support</i>	<i>Commentary</i>
<p>External: disconnected and apart from the task.</p> <p>Examples: manuals, documentation, support call centres</p>	<p>In Cavanaugh's view, this is the "lowest level of support".</p> <p>In ours, while it is distinct from the work, it provides opportunity to plan, evaluate, reflect, and prepare to do better next time. Integration is one important variable, but not the only one.</p>
<p>Extrinsic: part of the work context, but necessitating a break from the flow of the effort.</p> <p>Examples: software's traditional HELP function; interactive map kiosk in a mall; hand-washing directions and exhortations on a bathroom wall</p>	<p>Cavanaugh described this support as embedded but not fully integrated because it must be selected and directed by the user.</p> <p>He sniffs at the lack of integration. We see it as different but valuable.</p>
<p>Intrinsic: When needed, the user triggers the support which is provided in a way that is within the flow of work.</p> <p>Examples: Microsoft Word's paper clip assistants, Braille characters on ATM, one-number speed dialing</p>	<p>In Cavanaugh's view, this is "dramatically more useful than extrinsic support".</p> <p>Useful indeed. And we concur with Cavanaugh when he notes that it can be inappropriate and intrusive, as in the paper clip assistant that want to help when help is not needed.</p>
<p>Intuitive: support is more seamlessly integrated into the work and task environment.</p> <p>Example: Microsoft Word automatically corrects 'teh' and turns it into 'the'.</p>	<p>Cavanaugh favours this form because it compensates for human errors and does so in a less obtrusive fashion.</p> <p>We concur. Who would not love it when Microsoft or TiVO make us look smarter than we are?</p>
<p>Intelligent: the support is anticipatory and transparent. It knows when you need it and is there, fully integrated into the task. It does not jump up and down and point to itself.</p> <p>Examples: Self launching and self targeting ordnance, mechanical equipment that will not function unless properly held.</p>	<p>Imagine a physician approaching a patient's bedside. She looks at the chart and chats with the patient, and eventually prescribes a new medication. As she does this, the system responds and reminds her about a possible negative interaction between the new medication and current meds.</p> <p>Who would not like support that is there, knowing it is needed before you know you need it? Great stuff, expensive, definitely a high value application that is particularly appealing as we move to mobile delivery of performance support.</p>

3.1 *Support for planning too*

There is obvious appeal to resources that are integrated into the task, support Cavanaugh dubbed intrinsic, intuitive and intelligent. Surely it is better to know immediately if the medication is contraindicated, rather than later, after the patient has suffered a grave outcome. Surely it is better to have spelling corrected on the fly, rather than returned a week later by an editor or teacher with a red circle.

But integration, though receiving most of the attention in the published literature, is only one worthy criterion.

In fact, value can come from the absence of integration, from an opportunity to pause and reflect, inspired by expert advice and pithy guidance surrounding the task. An anecdote about Albert Einstein (Schramm and Porter, 1982) is appropriate here. When asked a question about the single event most helpful in developing the theory of relativity, Einstein reportedly responded, “Figuring out how to think about the problem”. Performance support can be influential here, as knowledge workers struggle to be, well, more knowledgeable about how to approach the work. And they struggle to do it without committing huge resources to training and memorisation. Performance support can contribute to mindfulness.

Thurow (1992), former Dean of the Massachusetts Institute of Technology’s Sloan School of Management, got it. He noted that standards of living rise not because people work harder but because they work smarter and that economic progress represents the replacement of physical exertion with brain power. Performance support, delivered through print and emergent technologies, redefines the phrase, *brain power*. No longer are workers judged competent because they ‘know it cold’. Now workers may express their competence by knowing where and how to access appropriate external resources, even if they know little by heart. What they know is how to find what they need and how to take advantage of their resources. Gartner’s 2006 article in *The Wall Street Journal* documents increasing respect for students who can do this.

This brings us to an expanded model for performance support that honours both integration and planning. We are positing two kinds of performance support: Planners and Sidekicks. Planner performance support reminds about what to pack for international travel, how to prepare to sell the company’s product at higher levels in the organisation and what to consider as you look back on a presentation in order to deliver a better one next time. Sidekicks, on the other hand, are there at the moment of need, ready to improve our spelling as we write at the computer or fill in a form online.

Let us look at how planner tools provide support in three different situations: state police, teachers in training, and sales professionals.

State police in Pennsylvania are enjoying the benefits of this kind of support. According to a report by Grata (2005), the Motorola Automatic License Plate Reader uses an infrared TV camera to scan passing license plates and compare them to a statewide database where law enforcement agencies post stolen vehicles, fugitives, all-points bulletins, and Amber alerts. Day or night, fog or sunshine, the camera scans passing plates and compares them to the database. Instant information is then delivered to the dashboard – assisting officers in identifying ‘bad guys’ and knowing when back-up is necessary.

A professor of teacher education at San Diego State University described the use of Planners for her aspiring teachers. Their challenge? They want to be able to assess and improve on the practice lesson they just delivered, but they do not know enough to do so. She has developed a checklist of questions for her students to ask themselves. It does not matter if these standards are delivered in print or electronically. What matters is that the novice teachers have access to expert perspectives on quality teaching to refer to as they consider what they did and how they might do it better.

Gordon (2003, p.32) commenced an article in *elearningmag.com* with a story about a pharmaceutical sales rep cooling his heels in a doctor’s waiting room. While waiting, the sales rep reaches for his web-enabled Personal Digital Assistant (PDA) and connects to the internet, “Lo and behold, here is a fresh bulletin from corporate headquarters

explaining that the Food and Drug Administration has just changed the prescribing requirements for a competitor's drug...". The salesman also turns to the PDA to review notes from a recent course about his company's drug. Once in front of the physician, if all went as it should, he will display fluency and certainty. Planner performance support helps him prepare himself for that.

Two IBMers, Rae and O'Driscoll (2004), also wrote about the value of information that helps sales professionals plan their approaches. They told a story of a sales guy who is readying for a meeting with a client. Such a person, they noted, wants real time information, on demand. If the organisation does not provide it, eager sales people will find it as they will, likely by noodling about on the internet. Does the organisation want to shape and authenticate that message or leave each individual to figure it out independently and idiosyncratically, perhaps augmented by Google?

3.2 *Sidekicks are great too*

While Planners support performance *just before or after* the challenge, Sidekicks are right there with us *during* performance. They coax, remind, direct, and inform about what to do at the time of need. The map in the glove box and the GPS are sidekicks that help as we travel. The step-by-step instructions on the sign within the voting booth help cast votes. A salesperson refers to a sticky note with product codes affixed to the side of his computer monitor. An application programmer uses a wizard to upgrade a database.

Just type 'wikipedia' into a Microsoft Word document and experience Sidekick performance support. The dictionary does not know that word. (Not yet. Soon, of course.) The word processing program nudges consideration of an alternative.

3.3 *Front and centre today*

There are many reasons to favour performance support and every reason to recognise their growing presence and influence.

Our purpose is performance and results, not education and training

Have you ever tried to talk to executives about training and development? Mostly, they are not interested. They want to talk about business, results, accomplishments, opportunities, and problems. Their focus is on sales, satisfaction, and operations. Few are riveted by ice breakers, classes, e-learning or even blended learning. You might have a chance to catch their attention with the phrase, performance support, emphasis on the word, performance. Might. Maybe.

In an article in *Training and Development*, Rossett and Mohr (2004) addressed executives who want results, not training:

"Are you willing to send employees to a class so that they can answer customers' detailed questions about insurance policies, cell phone features, or the demographics of Basra or Bimini? *We doubt it.*"

"After a class about numerous cell phone features, for example, will your employees remember them a week or month later, when queried by a customer? *We doubt it.*"

“Are you willing to rely on employee memory when critical, complex, or dangerous actions are involved on an airplane or at a nuclear plant? *We doubt it.*”

“Should the organization do what it takes for employees to learn material by heart--especially when there’s much to learn, the content changes often, a mistake is dangerous, and they could take their expertise with them when they leave? *We doubt it.*”

It is not just executives who favour performance over instruction. Employees, in Levy’s (2004) view, are “knowledge warriors”, too busy for courses, with no need for grades, and with far too much time spent searching for the information they need. Deloitte Consulting executive Van Dam (2005) focused on the nature of what he calls the self-service workplace. He said that a growing need for knowledge and skill is occurring in an impatient context, where organisations are less willing to invest in training and development, with concerns about training delivered too early or too late.

3.4 Support where the work gets done

Remember Gordon’s tale of the pharmaceutical sales rep using his time in the waiting room to bone up for scant minutes with a physician? That support is close to the work, but it can get even closer.

Information Weeks’ 2005 annual survey of 500 innovations revealed a stunning example of information delivered to the worker and workplace, exactly where the work gets done. JM Family Enterprises Toyota Dealership is devoted to cutting the time it takes to repair a vehicle. According to Chabrow (2005), the company is testing a wireless headset with a flip down screen from Microvision, Inc. Using retinal scanning display technology, pages of an auto repair manual are cast onto the working mechanic’s retina. The mechanic searches and changes pages using a belt mounted touchpad. The technology VP admitted that mechanics are not initially keen on the idea, but noted that they adjusted swiftly. He anticipated the performance support will increase technician productivity by more than 30% because they do not have to stop work, put down tools, and search for what they need in a manual.

Harvey Singh’s company, Instancy, develops workflow support and knowledge management applications for web and mobile delivery environments – one example application is Field customer service support.

Field customer service representatives must know about products, problems, services and resources in order to deliver answers while interacting with customers and computers or equipment. No time to return to headquarters for an answer. Reps are expected to solve problems and answer questions where the needs are, in the field. Figure 3 provides an example of PDA-based resources provided to the reps based on Instancy’s knowledge-workflow application.

In addition to support for the field reps, the system does two other things. It provides video based examples that reps can use to educate customers and helps the organisation keep track of performance as reps record their efforts, actions and results.

Figure 3 Support for field customer service representatives



Source: Instancy. Used by permission.

In a personal communication in November, 2005, Gary Dickelman, steward of EPSScentral.info, said that the challenge confronting us is to aggregate three established disciplines in service to performance: (1) business process improvement; (2) knowledge engineering; and (3) human factors. Business process improvement focuses effort on outcomes, standardised processes, customer experience, and a gung-ho commitment to measurement at first, throughout, and continuously. Knowledge

engineering engages us in collecting, organising and distributing the smarts inside an organisation. Finally, when concerned with human factors, we are attentive to how people interact with work, processes, tools, environments and technology.

3.4.1 Mobile support

Just this morning in October 2005, the city of Philadelphia announced that Atlanta-based EarthLink Inc. will fund, build and manage a 135-square-mile network to provide it with wireless access. In addition, they will offer low-income residents service for as little as \$10 a month. Google, Inc. recently submitted a 100-page bid to provide free wireless internet access to the city of San Francisco.

What are these companies doing? What are city leaders thinking? They are responding to opportunity, of course. City and business leaders perceive high-speed and mobile web access as a basic municipal service like water, electricity and trash collection. As they look to differentiating themselves from other cities, high speed mobile access is, they believe, something individuals and organisations cannot and will not live without.

All this produces expanded expectations and possibilities. Road warriors have every reason to believe that information and advice will find them, wherever they are. Now soccer moms, too, want information immediately, on the run. Need an ATM? Your Bluetooth connected PDA knows their location. Want to know which way to Mecca or be reminded of prayer time? That too is available from a mobile phone handset produced by LG of South Korea. Concerned about how the new hardware will synch with a customer's installed base? Connect wirelessly to the company intranet and let it provide more certain answers.

Wildstrom (2005) described what mobile performance support now means to the well-equipped sailor. In the past, boats relied on two-way radio and a depth sounder. Today, the cockpit display integrates several sources of data – radar, sonar, electronic charts, satellite imagery – into an information rich message. Not only does the system provide protection from collisions and guidance in the fog, Google-style satellite images allow boaters to discern what is near the dock, to find petrol or a restaurant and even to make a reservation.

According to eTForcasts (2005), the number of PCs is projected to surpass 1 billion in 2007, and the number of PDAs is anticipated to reach almost 60 million by 2008, with most enjoying wireless e-mail and web-browsing capabilities. MP3 players are omnipresent. Cellphones too, now at a whopping 1.5 billion and counting, most with FLASH available to provide dynamic displays of information. Cellphones now enjoy nearly universal penetration in Asia and Europe, with the United States lagging behind, but certainly not for long.

People around the world have access to wireless performance support and are no longer tethered to walls and desks for their jobs or for their information and guidance. Internet browser capabilities allow employees to access web-based databases or search engines through their cellphones, PDAs, and PCs. Short text messaging (SMS) can be used to send coaching tips and knowledge checks, or to see if any new studies have been published. Video clips can provide short examples of desirable performance in areas such as negotiation, while in a cab speeding to what might be a contentious meeting.

3.4.2 *The career self-reliant employee and the battle for talent*

Brown (1996) put her finger on a significant change in the landscape:

“The emphasis on the self-management and self-development of one’s career is a reflection of the shift in the unspoken employment agreement between employers and employees over the last 3 decades. In the 1960s, the employer-employee relationship was characterized as a parent-child relationship: The organization provided employment in jobs that were narrowly defined, status in the community, and job security in exchange for employee hard work, loyalty, and good performance. Thirty years later, the contract between employer and employee is a partnership. The emphasis in this new contract is on worker employability rather than job security. In this contract, employers provide the opportunities, tools, and support to help employees develop their skills and maintain their employability; the employees have the responsibility of managing their careers, taking advantage of the opportunities they are given. Thus, the employees must be career self-reliant. They must continually update their skills, looking ahead to the future and to market trends as well as to the current demands of the workplace (Collard et al., 1996). They must have a plan for “enhancing their performance and long-term employability” (Waterman, Waterman, and Collard 1994, p.88). The new relationship between employee and employer is described as a contract through which individual needs and those of the organization are balanced.”

Brown (1996) speaks mostly of changing expectations for the individual. McKellar (2005), editor of *KMWorld*, seconded that focus, “KM (knowledge management) is shifting back to individuals, encouraging ‘knowledge-conscious behavior’, improving communication and encouraging enjoyment of the work environment, which we all know improves any organization.”

The organisation must change also. The organisation that expects career self-reliance of employees must do it in a way that is not perceived by employees as abandonment. In a world where organisations are concerned about attracting and retaining great people, and compete aggressively for talent, leading organisations cannot ignore learning and support. Quite the contrary. The successful organisation provides clear expectations for performance, statements about career possibilities, and targeted, diverse resources to enable growth and success.

What kind of resources? Education and training, courses and coaching, are fine options. Performance support is another.

There are reasons for organisations to favour providing performance support over conventional learning opportunities. With learning, the investment is in the capacity of the individual. But an individual may elect to depart with the smarts. With support, more of the investment is in the development and maintenance of organisational assets, accessible by many over time and space. Not surprisingly, as ties between individuals and companies have frayed, with individuals joining several organisations throughout their careers, organisations grow more inclined to invest in creating and tending reusable assets, such as performance support. They do not tire, retire, or move on to another organisation.

3.5 *The need to know more*

While there is some research in this area, more is needed. Intel's Frank Nguyen noted that there are few research studies that practitioners can rely upon to provide data-driven guidelines to determine which performance support systems are most effective and when. Here are Nguyen's thoughts. "It has been almost twenty years since Gloria Gery introduced the concept of performance support systems. Since that time authors and experts have contributed their thoughts, experience, and advice to guide practitioners in the development of these on-the-job support interventions". He points to these *beliefs* about performance support:

- Implementing a performance support system can cut the amount of necessary training for users (Chase, 1998).
- Highly integrated performance support systems (intrinsic, extrinsic) are better than those that are disconnected (external) from the user's work interface (Carroll and Rosson, 1987; Gery, 1995; Raybould, 2000).
- The type and amount of performance support should vary based on the expertise of the user (Nguyen, in press).
- There are many different ways to categorise performance support systems (Gery, 1995; Ladd, 1993; Sleight, 1993).
- We have tools and methods to calculate the return-on-investment for performance support systems (Altalib, 2002; Desmarais *et al.*, 1997).
- The field of performance support will converge with training and knowledge management (Elsenheimer, 2000; Rosenberg, 1995; Sherry and Wilson, 1996).

Then Frank Nguyen presents what his review suggests is in fact known for sure and certain about performance support:

- Implementing any kind of performance support system, whether integrated or non-integrated, can have a significant effect on user performance and attitudes (Duncan, 1985; Fletcher and Johnston, 1995; Hunt *et al.*, 1998; Nguyen *et al.*, 2005).
- There appears to be no significant difference on user performance when implementing a paper-based job aid versus electronic performance support system, particularly certain types of non-integrated EPSS (Morrison and Witmer, 1983).
- Users often struggle using search engines to look for support content, linking to content tends to be better (Bailey, 2003; Spool, 2001).
- We can build performance support systems for many different settings: from software applications to factories to educational settings (Brush *et al.*, 1993; Cole *et al.*, 1997; Dorsey *et al.*, 1993; Gery, 2003; Kasvi and Vartiainen, 2000; McCabe and Leighton, 2002; McManus and Rossett, 2006; Schwen *et al.*, 1993).
- The types of performance support systems corporate employees find useful tend to be extrinsic or external in nature (Nguyen, 2005). In particular, the most highly rated performance support systems are those that are responsive to a user's job role or location in a software system, and then able to deliver appropriate information.

4 Moving forward

Coordinating classes presents one kind of challenge. There is much to be done, of course, but the task is typically within the control of learning and HR people.

With performance support, the order of magnitude is different. The form is new and demands fresh and pervasive choices by employees, managers and executives. Success depends on influencing what is resident on the desktop or, in some cases, the precious real estate on mobile devices. Technology is at the heart of the matter. Costs can be great and extend beyond initial development. And efforts associated with performance support span the white space in organisations. The effort often involves coping with what Gloria Gery called “the law of diminishing astonishment”, as people who originally thought performance support was a nifty idea lose their enthusiasm for it.

That the challenge is great does not mean it should not be undertaken. It must be. Knowledge workers need access to data, information and knowledge all the time and everywhere.

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Note

- 1 http://www.fema.gov/kids/k_srvkit.htm