Personal KM: How Our Tools Fit Our World

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What follows is a summary of ideas presented at Knowledge Management London, England, on 16th April 2002.

Introduction

Do you take any of your knowledge-supporting tools home with you? I expect most people now answer yes to that question. Do you use them for things other than your work activities? I expect this answer is also yes. My speed-dial settings are for friends and family, even though my mobile phone is a major facilitator of my professional practice. I don't own separate computers for client work, articles, and browsing the web for a restaurant.

This article explores various ideas and insights on the way we gain and apply knowledge, and an evolution in our personal relationship with the technology that surrounds us. I will touch on:

1. The role of experience and context
2. Reflections on events of 2001 and the role of personal technology
3. What happens when the rules change rapidly
4. How individual experience eclipses organizational knowledge
5. Ways that patients are increasingly challenged when seeking medical treatment
6. Subject experts and the way they share personal knowledge

The Role of Experience and Context

Our knowledge of ourselves and the world around us informs our actions. We, and others, recognize that we know something by looking at the way that we apply our knowledge to achieve outcomes. Our experience and the context of a particular situation are the key parts of the equation. To be successful, we can use technology to help us gain insights and reduce the information "noise" that surrounds us. This competition of forces strikes at the heart of our *personal* knowledge management.
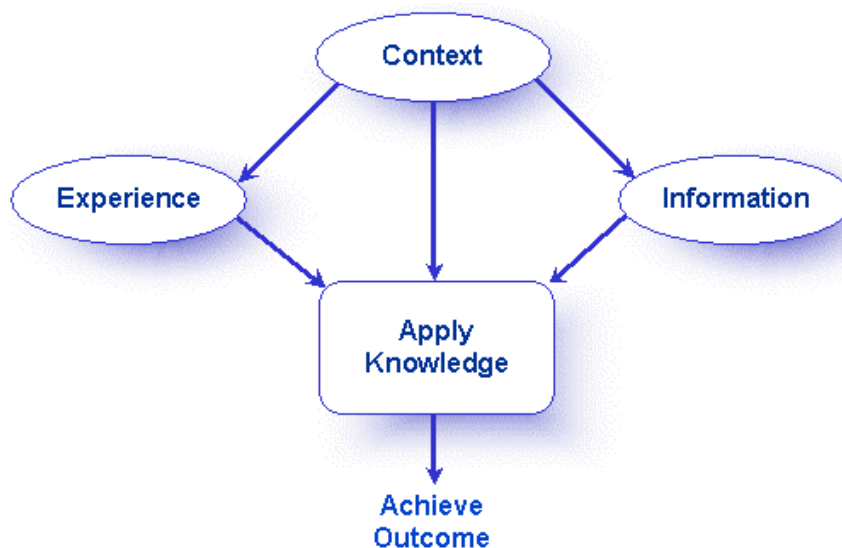
Elements of applied knowledge, from "The Challenge of Context"

For more detail on the relationship between experience, context and information, refer to a previously written article: [Knowledge Management in Pursuit of Performance: the Challenge of Context](#).

The Technology Is Personal: Reflections on 2001

I started thinking more actively about this subject after the attacks of September 11th. I was intrigued by the stories of people who, because of technology, had important and immediate information when it was needed. The crew and passengers of the plane that they forced down in central Pennsylvania, who were alerted to the unimaginable intentions of the hijackers by mobile telephone calls to loved ones. Knowledge of intended actions and escape strategies from the World Trade Center towers and the Pentagon arrived by e-mail sent hurriedly by people inside before they left their desks. Individual camcorders provided vital information in the most unplanned circumstances. Personal technologies influenced the participants' knowledge and the outcomes – in real time – which may be unprecedented in the history of major disasters.

We also learned things quickly from personal use of technology. I was in Washington, D.C. It was probably not more than a few minutes after the first plane crashed in New York that I had spoken to each family member on my mobile phone. Throughout the day I heard from people close to the disasters, which helped me know what little I could learn about the tragedy. I also heard from people far away, who wanted to connect with me and share rumors – because that's most of what we had for many hours. I spent time watching television and checking the Internet for information.

I recalled some major disasters that I had been near to years before. I heard about the London Kings Cross underground station fire in 1987 from CNN. I was in a hotel room in Barcelona, having traveled through the station a very few hours before. My family in the US didn't know where I was and I didn't know they were trying to reach me. No e-mail, no mobile phones. Information was not available on the web or a PDA.

A year later in 1988, I was visiting the US from London when Pan Am flight 103 was destroyed over Lockerbie. One year before, to the day, I was on that flight. Just a few weeks before the disaster, I was also on that flight. It took me a few days to get information about friends and colleagues in Europe and the US who might have been affected.

It is important to reflect on how much our communication and knowledge tools are in fact woven into all aspects of our lives. When we look beyond early, narrow definitions of knowledge management as an explicit corporate storage activity, we can't easily separate it from every part of life – personal, professional, organizational, educational, and on and on.

One other thing I found interesting. There were a number of news stories in the US following the attacks about the use of different media. It appears that a majority of people relied on television rather than the Internet for information. Why? Certainly there were some site availability problems. But I also think that in such a dramatic – and traumatic – event, what people may have been looking for was not information, but connection. They wanted to be there, and be engaged with people who were more directly involved… even if that engagement was via the television. However, after the initial shock and for many days after the attacks, there was a huge traffic on e-mail and web sites as people shared stories, requests for assistance, and donations – a cry for help that was greatly facilitated by the Internet, and an evolving knowledge base that was extremely dynamic.

This is Not a (Memory) Test

Imagine a government agency responding to the crisis last September. Imagine over 100 emergency instructions sent out to tens of thousands of field staff in less than 24 hours. Throw out huge chunks of the rule book! Throw out what had been valid just a few hours before. Take in all this new information while the crisis is unfolding, and see how you need to apply it. A distinct organizational challenge, relying on personal experience, interpretation and initiative.

First, let's assume that you are focused on reading messages (which was not necessarily the case in the first 48 hours following the attack). Think of the sequence of events for each message:

- Read the subject line to see if it touches on your area of work (if you are a front-line representative, it probably does)

- Read the message (anywhere from one to ten paragraphs of technical information)

- Think about whether the content affects your immediate or future dealings with the public

- Decide what to do with the instruction – whether to leave the message in your inbox, move the e-mail message to a separate folder, copy the text of the message to another application, print the message and file it somewhere, or simply remember it.

Sometimes, keeping up just takes too long

How long would that process take? 5 minutes? So for 100 messages, that's more than a full 8-hour day just managing the changes to your working knowledge instead of doing your work. And of course, you have to remember the content. If you don't need it soon, you have to remember where to look for it.

Even if someone read them all, there is no way that so many instructions could be digested and incorporated into daily work. They would be filed away. Since much of the job includes interacting directly with the public, you are not likely to spend time looking something up when you need it later.

If it isn't embedded in your working tools, it's not working for you! Information and instructions that alter what you know and what you experience need to be simple, and need to be communicated in the context in which such instructions are needed. In the case of front-line workers who increasingly use computers to enter information, the changes to instructions should be able to be implemented quickly and accurately in the working tools. If a data entry field changes or is added, that should be immediately apparent without the person having to remember what they need to do differently.

Those of you who've been involved in computer system development roll your eyes at these thoughts. Can you see the scenario? Put in a change request, set up a project team, and 6 months or a year later the field in the application is changed. Not very responsive, is it? What do the front-line staff do in the meantime? Make notes in an electronic "margin"? Print the form out, then attach a PostIt note? Applications need to be designed to more fluidly and dynamically support people in dramatic changing circumstances. It can be done! Such flexible design reduces information quantity, increases relevance, and allows for more rapid changes in the business rules.

In a Crisis, Individual Experience Eclipses Organizational Knowledge

So when the rule book goes, what do people fall back on? What if their personal experience isn't sufficient for the circumstances they find themselves in?
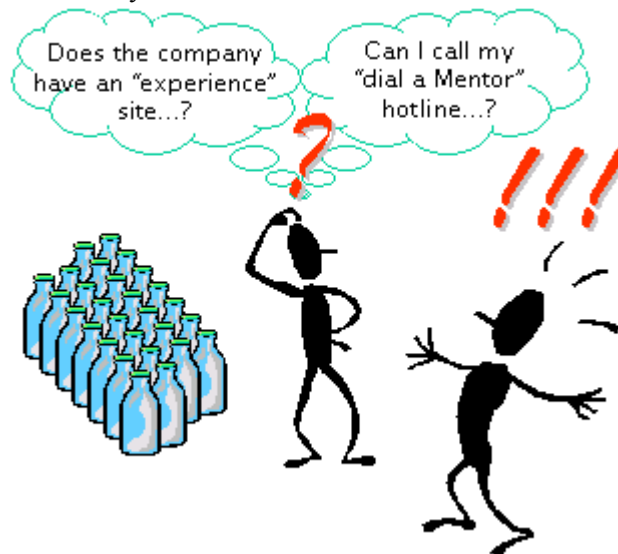
What supports the inexperienced employee when facing the unexpected?

I recall walking into a Starbucks a few weeks after the September 11th attacks. There were a number of notices displayed in the shop apologizing for the actions of an employee in New York during the attack (the individual apparently sold, rather than gave, water to rescue workers), an unfortunate incident that has been told in many news stories. Let's imagine the circumstances – a young person confronted with a completely unprecedented situation. Certainly it is hard to image someone who would feel confident going outside the box of formal authority, or taking what was seen as a "risk." I can sympathize. When I think back to my working teens, I can't imagine what I would have done!

Is this simply a personal failing of that individual? Or is it more systemic? What are the organizational and knowledge implications when supporting younger, more inexperienced people, or even people who have not been in a job very long (which is increasingly common everywhere)? I'm not talking about what Starbucks may or may not have done, but more generally about how we manage. We don't hear the phrase "empowerment" much these days, but we need to think further about the opportunities for management's proactive communication of tacit empowerment, where any employee knows with confidence that they will be backed by company managers when they go outside the rules in unprecedented situations, whether the decisions themselves are appropriate or not.

What is the role of management in helping every employee apply their personal knowledge, and facilitating support when personal knowledge or confidence is insufficient? How can organizations go about building a culture that supports personal judgment, bending the rules or giving "permission" at the right time? How do you empower people and still *know what people are doing?* What technological and human support systems could be put in place so an inexperienced person can quickly get advice, and someone with more experience can notify others about a situation?

Imagine a code on the cash register that flags a transaction as an exceptional situation, providing a pro-active alert to someone who can follow it up. Instead of posting apologies weeks later, maybe such an alert could have prompted Starbucks to communicate with one of their local warehouses that day, trucking water to the scene and achieving a public relations success at the same time. I can't criticize all the good work that was done during and following the attacks, however I also look forward to reading stories of how companies learn from the tragedy, and address in new and innovative ways the knowledge issues that arose.

Sara Swords from Oxfam spoke here last year (KM London 2001) about some of the knowledge issues that arise in urgent, dynamic aid environments. One powerful aspect of the talk was the challenge of assessing the reliability of information received. The need for individual judgment to constantly evaluate the source and credibility of information was paramount to responding effectively in a crisis. Various strategies are used to evaluate information, including the personal experience of each person handling the information. She said:

> *Now we have many sources but it is unprocessed information. Often the information is difficult to check or is information that has been processed for other purposes, some of them incompatible with the standards of objectivity and impartiality, for example, that we require. Thus we often have to go back a level from knowledge to information, or from information to data to test the reliability of the data. The kind of questions to do this:*
> - *Who is producing the raw information?*
> - *What do we know? What do we need to know?*
> - *What information is hard to access? Why?*
> - *What knowledge do we need to decide not to intervene?*
> - *Who is critical/peripheral to speak to as we build up the picture of what is happening?*

I loosely interpreted some of what Sara said, in order to illustrate the personal element.
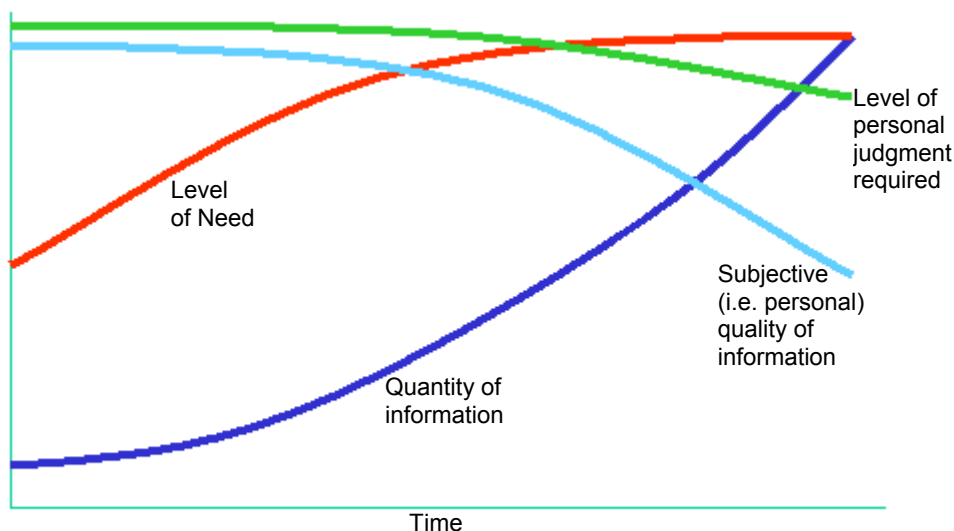

An impression of cycles of information and events in relief environments

You have to cope with the volume of information increasing rapidly, and also how you personally interpret the sources of the information over time. Even when the subjectivity (and thus potential unreliability) of the information goes down, there is always that need for personal interpretation and comparison between information sources. We rely on people to do this every day, but do not always know how to fold that personal component into the tools that we supply to people when they view information and do their work.

There is still a need for better information about information itself. When thinking about this subject over the years, I typically return to the idea that the goal is not to limit the flow of information or create bottle-necks of "approval," but to clearly signpost the nature of the information and the validation that it may have gone through prior to reaching you.
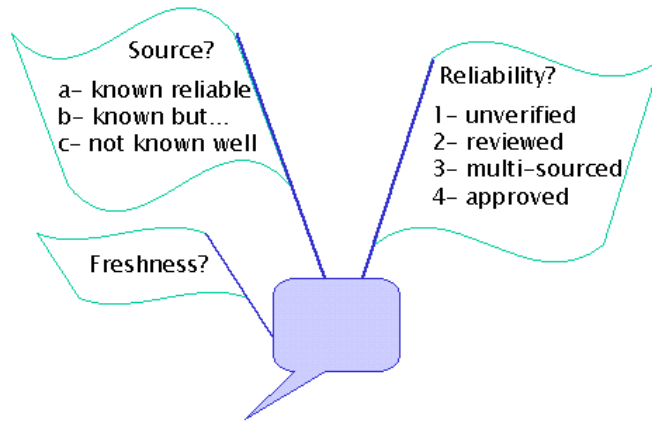

Some things that would be valuable to know about information you receive

Patient, Heal Thyself

Let's turn to a different topic: a patient (me) and his perspective on knowledge management in the doctor/patient relationship.

Patients increasingly visit multiple practitioners who span many disciplines. The assessment of my needs and possible treatment options is simple and direct.

However, the communication implications overall are far more complex, particularly as I move outside of the orthodox medical infrastructure and across different practitioners.
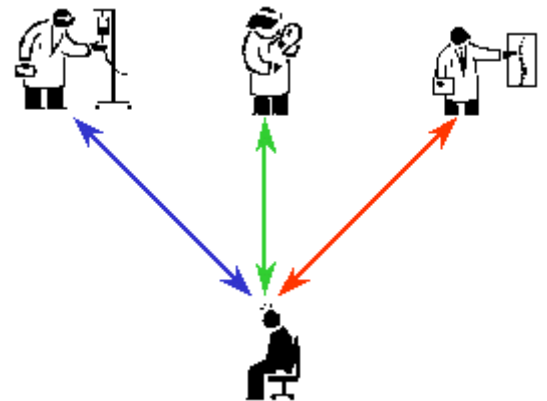
The doctor/patient treatment relationships
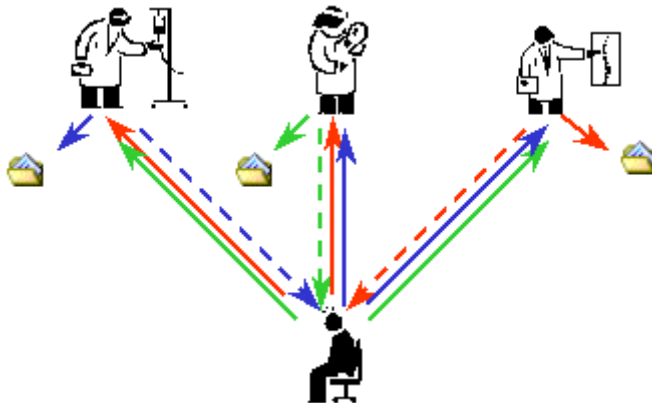
The doctor/patient communication relationships

Each uses somewhat different diagnostic models and interpretive techniques. Rarely can they easily share information (or in some cases be allowed to). So it is up to the patient to communicate the complete perspective of his/her health to all the practitioners. This is a significant knowledge burden, and seems like an opportunity for error, even among intelligent patients.

***Has the burden of collating and sharing information fallen to the least qualified person?***

The reliability of information has the potential to get riskier, given a growing desire among insurance companies and government agencies to receive all information electronically. But there is rarely any single source that accurately reflects the patient's multi-practitioner experience. The information model (and in fact the practice model) is not easily keeping pace with the patient's chosen experiences.

Do As I Do, Not As I Say

I have been involved in a lot of system development and business process work that relies on subject expert focus groups. From these experiences, I've recognized a problem: people tell you an idealized or abbreviated view of reality, based often on their immediate preoccupations. This phenomenon isn't new or novel. Every teacher or trainer recognizes the old adage "I relearn what I know when I have to teach it." And yet, focus groups and "Joint Application Development" (JAD) activities still rely on gathering people together outside their working environment to *describe* what they do.

Watch people in action, and often you learn that the real display of knowledge – the execution of a task – is rather different. The withholding of information about a task is rarely malicious or even conscious. It arises because some aspects of a task have become so second nature that the subject expert forgets it is an explicit step in a task. For example, if experts would regularly check the pressure level of a particular machine, they might not explicitly include that as the first step when making an adjustment. They know the machine is in the proper state for the adjustment. They may even be able to tell by more subtle signs, such as the sound or feel of the machine. It is second nature. However, someone who is not experienced could begin making the adjustment without making that vital check first.
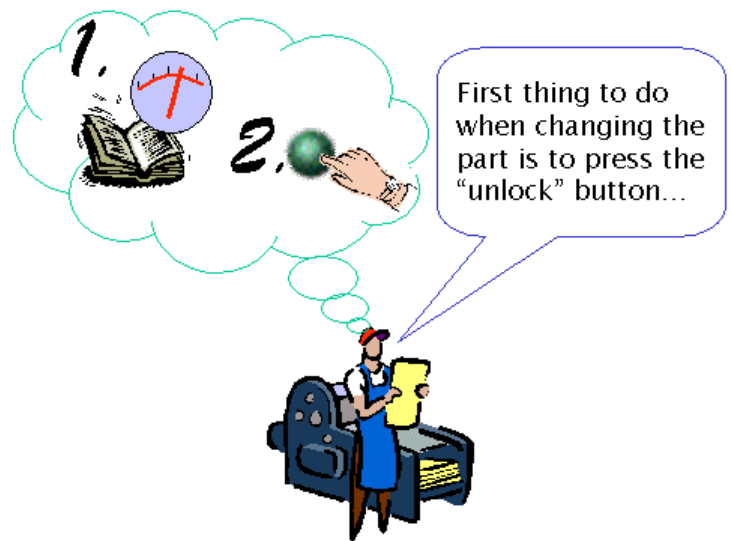
Subject experts can sometimes leave out key steps

The same is true of computer users. There are many aspects of computer task work that may happen automatically, or that experts may perform outside the computer (on paper or in their head). Certainly the more knowledge-oriented tasks like interpreting, assessing, and deciding are likely to not be done explicitly in the computer. So it is important to be able to watch subject experts work and ask questions based on observations, in order to gain a truer picture of how they apply their personal knowledge to working tasks.

Techniques have been developed to gain insights about knowledge from observation. They are regularly used in the user-centered design community to aid analysis and design. They include:

- Contextual inquiry
- Think-aloud protocols
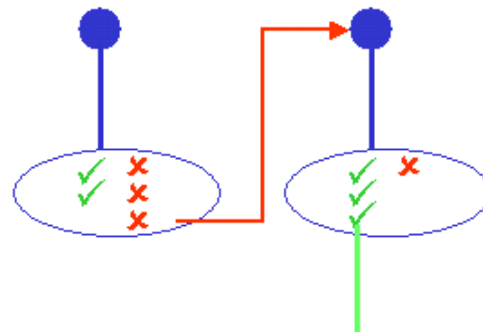- Prototyping and usability testing

This situation may also be a useful application of Stealth Knowledge Management, which I have written about in other papers. The goal behind stealth knowledge management is to design applications in such a way that they learn from the behavior of experienced users, and assemble an understanding of patterns of use that can then be applied to help deliver pro-active support based on the usage patterns of a novice user. Stealth KM is not a cure-all for understanding task performance among knowledge workers, but it does enhance our overall awareness of user behavior.
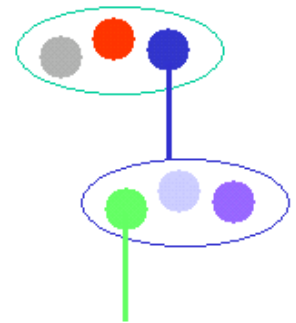
There's one more thought about experts that I want to explore. Gary Klein's book "Sources of Power" supports the idea that under pressure we aren't as methodical as we might choose to believe. We do not gather options and then select among them – i.e. systematically solve a problem.

We are more likely to follow our experience, insight, and intuition in identifying a "gut feeling" viable solution, and then use what limited time we have available to assess it against our experience in order to find flaws. It is only when the flaws outweigh the benefits that we seek an alternative strategy.

A traditional view of expert problem solving

Contextual information is extremely valuable in these circumstances, because context provides the clues and patterns. We then subconsciously and consciously use the patterns to map our experiences to our immediate circumstances, and thus identify what we feel to be a useful course of action. This solution is then tested in light of our experience, in order to find flaws. If circumstances allow, we might find out what other people we trust think about the solution, in order to draw on their experience in the flaw-finding process.

*Possibly a more realistic view of expert problem solving?*

How well do our current knowledge management systems support rapid "what if" analysis of possible courses of action, based on a very specific context? How effectively could someone articulate the variables that would affect that analysis, and how long would it take? Whether working in a collaborative community or exploring information repositories for historic information, there is a limit to how valuable our current tools would be.

Conclusion: Look to the Small, Not to the Large

I'm convinced that the future of knowledge management – and its relationship to the applications, interfaces, and personal tools we use every day – will rarely be found in large repositories and big, complex applications. The tools people turn to in times of uncertainty and dramatic change are more likely to be the tools that allow us to connect with people quickly and simply. The people that we communicate with are often personal contacts, as well as professional associates who may be outside our immediate organization.

If we think of some of the most influential technologies in recent social and political contexts, they are mainly small, personal technologies used in direct, personal ways. Mobile phones and e-mail surrounding the attacks of September 11th, 2001, text messaging from mobile phones used to rapidly organize political rallies in the far east, even the use of fax machines during the uprising in Russia in the early '90s. There are many more examples.

Thus the great challenge for organizations is to learn these lessons, and think about how to change their thinking about tools and information, understanding the blurring of the boundaries between personal, professional, organizational, and many other types of information and tools.

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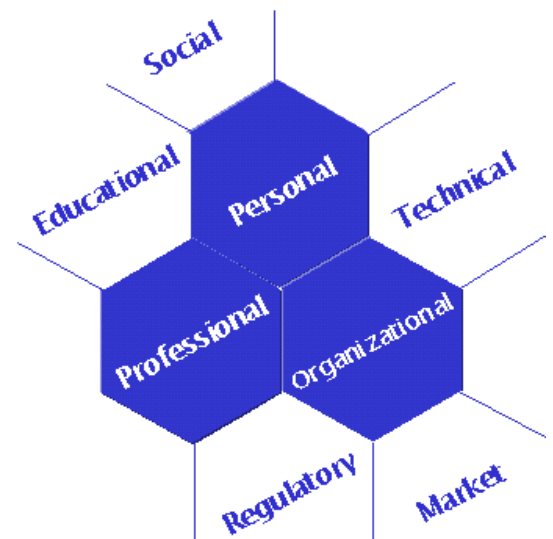
Footnote on the field of Personal Knowledge Management:
This article explores a somewhat different context than what is commonly becoming known as the field of "Personal Knowledge Management." That field encompasses the use of personal productivity and learning techniques, supported by knowing more about technology. That aspect of personal knowledge management is akin to "how to be better at your work," and not surprisingly is gaining some attention in universities because of the challenges faced by students due to the increasingly technological nature of education, research and academia. It is also focused on the increasingly mobile and independent "knowledge worker."

That subject is covered by other people in other places, such as Jason Frand and Carol Hixon at UCLA, David Gurteen, Steve Barth, and people at Millikin University.

About the Author

Duane Degler has over fifteen years' experience in organizational performance improvement, including information and knowledge strategy, interaction design and usability, training, system development and multimedia. He has won three US design awards in 2000 and 2001 for interface/application design. He has managed pioneering multimedia projects in the '80s and spent much of the '90s in the UK involved in knowledge management research and consulting, contributing to his multi-disciplinary approach to design. Project work includes business administration systems, government applications and policy content management systems, medical information sites, learning management, and launching a non-profit Internet site. Duane has lived and worked in Europe and the United States, and is involved in projects on both sides of the Atlantic. He is a member of the International Society for Performance Improvement (ISPI), the Usability Professional's Association (UPA) and the British HCI Group. He regularly writes and presents at professional conferences.