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Connecting eLearning and Knowledge Management: The Cases of the Air Force and the Defense Acquisition University

Alexa Krezel
SAIC

Edith Brumskill
Defense Information School

Zane L. Berge
University of Maryland System (UMBC campus)

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Abstract

eLearning and knowledge management (KM) have been on a converging path since the 90s. Still, we are trying to define how the two may fit together to create actual learned skills. The point at which we acquire skills or have acquired knowledge is not easily defined. Knowledge is a concept that is made up of several components that include learning, instructional process and managing the acquired knowledge to become either tacit or explicit knowledge.

The purpose of this paper is to define knowledge and specifically tacit and explicit knowledge and to examine it in the context of the relationship between e-learning and knowledge management. The paper will discuss how industries are using e-learning and knowledge management together and will address whether e-learning is part of the larger KM framework or if these are still two separate concepts.

> *I don't know if e-learning is going to wind up being a subset of knowledge management or knowledge management is going to be a subset of elearning in two years, but it will be one or the other" (Aldrich, 2000)*

Knowledge, as defined by Webster's Dictionary, is "the fact or condition of knowing something with familiarity gained through experience or association." Knowledge is composed of data and information. Data represents facts in the form of measurements and information places those facts into context (Stacey, 2000). Igonor (2002), in his study of Gulf Region institutions using the work of Fleming, explained how knowledge is derived from data**.** Fleming maps information, knowledge, and wisdom to answering the questions of who, what, when, where, and why. Information is what gives us description, definition, and perspective. Stated in terms of the 5Ws, information is addressing who, what, when and where. Knowledge comprises the ability to develop a strategy, a method, or an approach (the How). Finally, wisdom is reached in which we have an understanding of principles. The authors of A Revolution of Knowledge Sharing, also address the classification of knowledge in terms of who, what, when, and why. They propose that knowledge can be viewed through "lenses" (Norris, 2003). They use the classification of lenses to discuss what tacit and explicit knowledge is. Knowledge that can be expressed easily and is consciously understood is known as explicit knowledge, whereas, knowledge that is more subconsciously understood and difficult to articulate is defined as tacit knowledge (Stacey, 2000). Explicit knowledge can be further divided into different types:

- Knowledge about something – concepts, categories, descriptors (declarative knowledge)
- Knowledge of how something occurs or is performed (procedural knowledge)
- Knowledge of why something occurs (casual knowledge) (Stacey, 2000)

Where Norris and his associates differ from Stacey is that they suggest knowledge actually flows between tacit and explicit and "often exists in transition between the two states" (Norris, 2003). Knowledge management practitioners are concerned with discovering methods and means of leveraging tacit knowledge.

The concept of knowledge management (KM) has grown as a response to the need to examine all corporate ideas and processes with regards to the constant changes in the marketplace. According to the American Productivity and Quality Centre, "KM

is the broad process of locating, organizing, transferring, and using the information and expertise within an organization" (Igonor, 2002). The goal of KM is to transform information, data, and intellectual assets into useful knowledge for management actions. The information and data which KM seeks to collect deals with tacit knowledge, and that which is transferred through conversations, communities of practice and networks.

Organizations are concerned about capturing knowledge because managing knowledge represents an opportunity for achieving substantial savings, significant improvements in human performance, and competitive advantage. In an article Amy Newman published in the September 2000 issue of Training and Development, she discusses some reasons why organizations use knowledge management. Competitive advantage is one reason. Factors such as increasing competition, globalization, and the new knowledge economy make sustained business growth more difficult than ever. Decreasing product differentiation, more market players, and reduced time to market make it tough to compete. We have moved into an era in which many companies view knowledge as their most competitive advantage.

Another reason is technology. Advances in technology influence our rate of change and require an adaptable, skilled, and educated workforce. Technology has given us opportunities to share information as never before; it is an enabler of learning and has helped training professionals rethink how individuals learn both inside and outside the classroom. Organizational change is also a reason. Most organizations have experienced enormous change in the last decade. Downsizing, mergers and acquisitions, initial public offerings, restructurings, and the like have influenced the way organizations operate. And of course, employment flexibility is a reason. Knowledge is more transient than ever before. Employees make career and job changes more often, and more employees opt to be free agents and take contract or consulting work. In addition, companies that rely on outsourcing are also in danger of losing critical knowledge and becoming too dependent on outside firms. Therefore, the most common goals companies have when they decide to initiate KM are retaining key talent, improving customer service, increasing revenues and profits, capturing and sharing best practices, managing customer relationships, and delivering competitive intelligence (Schneider n.d.).

eLearning

Companies are looking for cost-effective ways to increase the training of their workers and managers. Some are also seeking to provide more training to their customers and suppliers. Standard classroom training can be expensive when employees have to take time off from work and travel, which makes these costs rise even further.

A valid solution is elearning, which primarily covers Computer-Based and Web-based Training. eLearning is a catchall term that covers a wide range of instructional material that can be delivered on a CD-ROM or DVD, over a local area network (LAN), or on the Internet. It not only includes Computer-Based Training (CBT), Web-Based Training (WBT), but also Electronic Performance Support Systems (EPSS), distance or online learning and online tutorials.

Take an elearning course. Chunk it into discrete learning bites. Surround it with technology that assesses a learner's needs and delivers the appropriate learning nuggets. Add collaborative tools that allow learners to share information. What do

you get? Something that looks a whole lot like knowledge management (Barron. 2000).

KM and elearning in most companies are currently two separate entities. One reason for that is strategic planners who want to make the most of the intellectual capital in an enterprise drive knowledge management initiatives. ELearning is usually driven by specific lines of business or by the human resources department. As a result, elearning has not reflected a strategic, enterprise-wide vision, but a tactical and departmental focus (Lamont, 2003).

While elearning and knowledge management are currently viewed from two separate windows, it may soon be necessary to bring these two tools of organizational improvement together for the benefit of all. Technology allows knowledge located throughout a company to be captured and distributed as elearning modules. KM's purpose of collecting, organizing, and transforming organizational data into retrievable, meaningful knowledge can directly impact the design and development of elearning modules. These learning modules can then be recalled on-demand and theoretically joined together in personalized sequences appropriate to the individual learner. While conceptually a powerful idea for training and other "just-in-time" knowledge delivery applications, current implementations of learning content management systems (LCMS) rarely realize this potential. Additionally, the on-demand, available-to-anyone nature of these systems makes them largely ignored by academic institutions. Other key technologies that link elearning and knowledge management are:

- Threaded discussion groups for learners to share information
- Extensible markup language (XML) allows learning content to be labeled in detail, making it possible to customize elearning content based on learners needs.
- Template based authoring tools allow subject-matter-experts to put their knowledge into content format are an important part of the combined elearning and KM Picture.

According to Gaede (2002), the five benefits of elearning to reduce cost, increase effectiveness, increase retention, increase consistency, and increase flexibility and access. These reasons are very similar to the reasons organizations use knowledge management. Table 1 shows some of the ways KM and elearning connect.

Table 1. How knowledge management and elearning connect via LCMS

Learning content creation	Provides templates and storyboarding capabilities that incorporate instructional design principles. This allows an organization to leverage the knowledge assets it has already invested in developing.
Publishing	Provides just in time, just-enough delivery over the web, in both online and offline format, supporting user tracking and multiple assessment types with user feedback. Delivery is based on learners' individual knowledge level.
Content management function	Provides tools to support all management aspects of student records, elearning course, students' progress and learning objects across dispersed, multilingual environments.
Presentation	Provides personalized pages to users in multiple formats such as HTML, PDF, hand-held, and more.
Communication and collaboration function	Learners can email a question to trainers or other learners through the internal email systems and it automatically indicates where the learner is in the course. Trainers can post bulletin board announcements to the class and learners can email and attach files in response.

eLearning, once considered an independent branch of learning and knowledge dissemination, is now being folded into the overall knowledge management structure of organizations. Because organizations are currently faced with a large population of aging workers whose knowledge will soon exit the organization, companies are finding ways to transfer not only new knowledge to new workers but also protect and pass on knowledge for the more experienced workforce. With technologies such as XML, organizations have more capability to classify and repurpose information. eKnowledge, or the fusion of elearning and knowledge management, is being identified as a new discipline for supporting the pervasive and perpetual utilization of knowledge. eKnowledge has created more opportunities to share information that are not only explicit, but also collect more tacit knowledge. Even though the capabilities are there not all organizations are prepared to take advantage of the technology. The following two case studies explore where the military and educational institutions are in terms of developing an eknowledge strategy.

Military Knowledge Management Strategy

Understanding the relationship between knowledge and learning is a key part to developing successful KM systems that not only provide for knowledge sharing but also provide an environment to learn and then create their own knowledge content. The Air Force's Knowledge Now Portal is merging KM and elearning to support the overall employee performance. Through the portal they provide a centralized location for interaction, collaboration, and access to instructional information, procedural documents, policy memos and analytical and scientific reports relevant to

job performance. The documents, reports and course offerings are where the organizations' explicit knowledge assets reside. The tacit knowledge collection is occurring through the portals offerings of community of practices (CoPs) and workspaces.

The benefits achieved through the CoP approach has allowed the Air Force to provide a set of shared tools, knowledge resources, communication links, training opportunities, and other support mechanisms to the membership of the communities. The training opportunities offered in the CoP provide an interactive eLearning experience that simulates real-life situations and scenarios. The learning that occurs makes use of the resources tied to the KM environment. This approach leverages the knowledge of the CoP and increases workforce competencies. It also improves the avenues for learning, and reduces costs of education and training (Carper, 2002).

The Air Force system is driven by the need to have access to just-in time resources. These resources may come in the form of performance support tools, elearning, or CoPs. The overarching theme is to promote a collaborative environment where ideas can be synthesized and the organization can drive innovation. The KM system becomes the vehicle for that synthesis to take place. By providing both elearning as part of a KM tool, the Air Force has developed a way to capture some of the tacit knowledge of the organization and still provides a rich environment whereby explicit knowledge is acquired.

eKnowledge Transforming Campuses

According to Robson et al (2003), educational institutions are waiting until three major drivers of change to evolve before fully implementing eknowledge strategies. These strategies include:

1. Expansion of capacity of the global information/knowledge networks. This expansion includes new technologies, interoperability, standards, and the development of eknowledge repositories and marketplaces.

2. Organizations must develop their enterprise technology infrastructures and their processes for digitizing, atomizing, interacting with, and recombining knowledge to the point that the processes become automated, routine, and substantially less expensive per unit of content. Moreover, they need to change and develop their knowledge cultures and the capabilities of individuals and organizational teams.

3. Organizations must develop best practices, business models, and strategies that assist in reinventing knowledge.

The expansion of information and knowledge networks is largely being driven by the development of standards. Standards such as the Learning Object Meta Data (LOM) are enabling the "versatile application of learning objects in a range of contexts, which may be digital or non-digital" (Robson, 2003). Other standards such as the Sharable Content Object Reference Model (SCORM), which is "designed to allow digital resources to be exchanged among cooperating systems in ways that allow digital resources to be exchanged among cooperating systems" is an area that researchers believe will eventually allow the development of specific learning that is defined by the parameters of the learner (Robson, 2003).

The development of standards, technology infrastructure and organizational processes as presented by Robson, suggests a trend toward a merging of elearning and knowledge management into eknowledge. While this trend will continue for all institutions, the pace may vary based on the understanding and ability of institutions to implement the standards necessary to support the changes.

Corporate University Model in the Military

The goal of organizations today is to provide the maximum opportunities in knowledge sharing. This means not only looking to traditional course delivery or even online course delivery, but taking advantage of tools to share knowledge across the organization from entry level staff to senior manager in the field. The Defense Acquisition University (DAU) has accomplished this goal by modeling itself after other corporate universities.

The Defense Acquisition University provides a full range of basic, intermediate, and advanced certification training, assignment-specific training, performance support, job-relevant applied research, and continuous learning opportunities for 130,000 Acquisition Technology and Logistic (AT& L) personnel. According to Jennifer Salopek's (2004) article in Training and Development Magazine, DAU spends $30-$100 billion per year to support the armed forces of the Army, Navy, and Air Force. DAU does this as part of a forward-looking learning organization that has set its sights firmly on the needs of its 21st century workforce and has attacked those needs methodically, effecting a transformation that permits it to work with utmost speed and agility.

DAU designed and implemented a six step strategic plan designed to replicate a corporate university model and move away from training to build a learning organization. Those steps are:

1. Gain strategic alignment to understand leaders' intent. DAU first had to align itself with the goal of their leaders and policy makers.
2. Understand your customers from their perspective.
3. Build a roadmap. DAU's goal to become a learning organization is guided by a strategic planning process that is both elaborate and agile.
4. Understand your value stream. DAU value is derived from these goals:
    a. Provide customer what they need, when and where they need it.
    b. Operate a premier learning enterprise.
    c. Promote transformation through excellence in acquisition, technology, and logistics practices.
    d. Provide an environment valuing achievement, growth, and career-long learning.
5. Never stop innovating.
6. Have a vision for the future.

DAU's strategic plan, self and supervisor evaluations, annual performance report, and the other measures in their road map show they are constantly evaluating themselves. The many initiatives put in place since 2000 to improve how they serve their customers, shows how they are developing more effective and efficient ways of accomplishing their purpose. The AT& L knowledge sharing system provides a wealth of information not only to students but also to their own staff and faculty. DAU's many transformations show what this organization is willing to go through to ensure they are the best at what they do.

Conclusion

The question of whether KM and elearning are separate and distinct units can only be determined on an individual organization basis directed by their future goals. Still, what we have found is that when organizations combine these two entities, they often develop a powerful tool for improving organizational performance. A successful knowledge management system may include portals, knowledge repositories, just in time systems, data-mining tools, contact software, intranets, and elearning. Those in the elearning and the KM environment are finding that the separation between the two becomes unnecessary and undesirable (Lamont 2003). Many proponents of integrating the two disciplines see elearning migrating to become a part of knowledge management, while others see knowledge management as a tool to be used in elearning. Advances in software are facilitating this integration, although organizational and cultural gaps still remain. Another indicator of this strengthening relationship is the growin phenomenon that companies in the knowledge management market are systematically acquiring elearning companies.

A learning content management system is the closest application to bridge knowledge management and learning management. It is designed to store knowledge/course components at the object level. It supports knowledge management programs by providing content management, learning, expertise tracking, and collaboration (Wan, 2005).

The goal of KM is to transform information, data, and intellectual assets into useful knowledge for management actions. The key to any knowledge management system is its ability to put all of a company's knowledge—whether about products, people, or processes—to work in such a way that the entire organization and its customers can use it to learn and improve. One way to make this knowledge more useful in an organization and improve performance is through elearning initiatives. eLearning products such as just in time, just in case, and learning objects make the concept of knowledge management useful. Given their very similar goals and technological infrastructures, these two pieces of the performance improvement puzzle can be combined in powerful ways.

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