Teaching Knowledge Management (KM) in Criminal Justice Education: The Influence of Information Systems

Samuel S. Conn
ssconn@vt.edu
Virginia Polytechnic and State University
Blacksburg, Virginia 24061 USA

Charles N. Thies
charles.thies@du.edu
University of Denver
Denver, Colorado 80208 USA

Abstract

Knowledge management (KM) is emerging as an important topic among criminal justice agencies. The growing use of information management systems and the use of mobile technologies to rapidly share large amounts of information among law enforcement agencies now require that law enforcement officers become efficient at managing their intellectual capital. As movement occurs from the information age to the knowledge age, modern law enforcement agencies are frequently using a community policing approach to their law enforcement activities. Community policing is a law enforcement approach to policing where tacit knowledge is often developed and should be captured and preserved. In this paper the authors apply a literature review to KM concepts and investigate how KM can be applied to modern law enforcement organizations. The audience for this investigation is any law enforcement administrator interested in introducing KM concepts in their organization.

1. INTRODUCTION AND CONTEXT

Knowledge management (KM) is emerging as an important topic among criminal justice agencies. This is noted in the original work of Goldstein (1990) who discussed the far-reaching significance of knowledge in the law enforcement profession and problem-oriented policing. Goldstein references the prominence of knowledge several times throughout his work; he understood the significance of knowledge sharing among law enforcement agencies and community members for effective problem solving. He states, "Although much of the important information on the substantive problems of policing is stored in the minds of rank-and-file police officers rather than books, in re-

ports, and on computer tapes, tapping that information and processing it in ways that make it useful are not easy" (Goldstein, 1990, p. 93).

Technology is a critical component in an effective KM strategy. Since Goldstein's (1990) work, new technologies have been developed that enable an organization to manage knowledge more effectively. The ability to capture tacit knowledge from "rank-and-file" police officers is closer to reality. Pliant (1999) noted that as much as 70 percent of police departments nationwide were using laptops. Technology is increasing at a faster rate and making KM more affordable for organizations. This evidence provides that KM is much more than a new business fad, considering that in 1996 United States (U.S.) businesses spent $1.5 billion for KM consulting services and would spend more than $5 billion annually by 2001 (Newcombe, 1999).

Meyer (1999) suggested KM will work only if it is mapped to process improvement and action strategies. Similarly police problem solving techniques could be classified as action strategies. Organizations want to capture explicit knowledge stored in electronic reports and databases, and tacit knowledge which is held in the mind of the worker; capturing knowledge and distributing it to people who need it to facilitate creativity and innovation (Newcombe, 1999). An interesting contrast to consider at this point is that if one is new to the discussion of KM, the distinctions between data, information, and knowledge should be noted.

Data can be defined as raw facts. Data can be stored in an information system, an example of this would be data entered into a transaction system. Data values have little meaning without further processing. Data is essential to organizations because it leads to the creation of useful information. Data becomes information when it is organized to provide meaning and application. Crime mapping is a good example of the transformation of data into information. A crime map can show the number of crimes in a specific area. A single event will give little value, but several incidents of the same type (when organized) provide the police administrator with valuable information for targeting strategies.   Knowledge is much more

complex and robust than data or information (Davenport & Prusak, 1992). According to Davenport and Prusak (1992, p.5), "Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the mind of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms. These definitions provide a foundation for concepts applied applied in this study. In the law enforcement community, knowledge can be found in reports, databases, field notes, and people. The use of a community-based, problem oriented approach to law enforcement activities combined with the use of KM processes become a powerful tool to spur innovation and capture knowledge.   Chen and Edgington (2005), suggest that KM activities benefit short term tasks. Similarly, agencies that utilize a community-based, problem solving policing approach many times tackle community projects with short term tasks in mind (Chavez, Pendleton, & Bueerman, 2005).

Problem-oriented policing involves a systematic approach to solving community problems. Police initially identify problems by collecting information and analyzing the situation. Police officers possess much of the knowledge required to categorize the incidents they handle. The knowledge these police officers have adds value to the effectiveness of handling problems, while at the same time they may not have adequate information to reach a valid conclusion (Goldstein, 1990). Problem-oriented policing requires effective knowledge exchange to succeed. Police officers deal with the exchange of massive amounts of knowledge on a daily basis that require police officers to become proficient knowledge workers (Luen, 2001).

2. TOWARD A KNOWLEDGE-CENTERED CULTURE

Police knowledge traditionally has been passed in law enforcement circles by word of mouth. Police knowledge is difficult to capture since law enforcement personnel do not

generally share personal knowledge in writing (Scott, 2000). Critical knowledge is stored in the mind of "rank-and file" officers (Goldstein, 1990). Goldstein referred to tacit knowledge that is stored in the mind of the knower. Police officers are generally unwilling to openly share this type of knowledge. As a result, the first step toward a knowledge-centric organization is to teach police knowledge workers the importance of collaboration and sharing of knowledge (Luen, 2001). Historically, law enforcement personnel have tightly held tacit knowledge, operating in a closed system where the knowers hold on to experiential knowledge for empowerment. Knowledge normally is passed down using story telling techniques (Chavez et al., 2005). Davenport and Prusak, (1998) suggested that a story or narrative is the most effective way of communicating knowledge and helping a listener understand a complex event. One problem with the current police culture is that many times the narratives are given selectively to individuals and the organization does not benefit from the knowledge. Successful implementation of a KM strategy involves convincing law enforcement officers and administrators to recognize the value of knowledge sharing. The inability to educate administrators and line officers on the value of knowledge leads to an insufficient effort toward the implementation of an effective KM initiative (Luen, 2001). Luen also suggests that agencies should place more emphasis on higher education and development for officers to enable personnel to better understand the advantages of KM principles.

The culture of an organization is the most significant factor in the success of a KM strategy and organizational learning. The organization's culture determines to what extent personnel are willing to share information. Organizational culture can impede learning and knowledge creation (Janz & Prasarnphanich, 2003). "A learning organization is an organization skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights" (Garvin, 1998, p. 51). Moreover, Garvin suggests that successful learning organizations are adept at problem solving, learning from history and experiences and transferring knowledge throughout the organization. Similarly, agencies that have adopted a community-

oriented policing philosophy required great organizational cultural change, which takes time to implement. Creating a knowledge-centric organization will take significant time to create. Knowledge strategies need to be explained and accepted before employees can benefit from the new strategy. Police departments are highly structured, uniformed services with several supervisory middle management levels. Drucker (1998) suggests that the most successful information based organizations are those with no middle management because each specialist has the information he/she needs to do there job. The authors are not suggesting the abolishment of middle management agencies since in a uniformed service there is an established rank system that works. Police officers operate independently without direct supervision through the majority of their shifts. The authors do find that an environment of trust must be established. Officers should feel free to express ideas. KM requires a new mindset for many law enforcement agencies; cultural change is the first step towards an effective KM strategy. As evident from Goldstein's (1990) seminal work, he understood knowledge would play a critical role in the development of problem–oriented policing. A KM strategy is just the next evolutionary process from a problem-oriented policing model toward a knowledge-oriented policing model. As a result, agencies that have applied a successful community-oriented policing philosophy and use problem-oriented policing to resolve community problems now should guide toward a knowledge based strategy to increase efficiency and performance. An agency that is not practicing a community-oriented policing philosophy, but interested in doing so, should approach there strategy using a knowledge-oriented policing model.

3. CREATING AN ORGANIZATIONAL KNOWLEDGE MAP

Understanding *who knows what* in an organization involves more than creating an organizational intranet where employees can search through organizational policies. Although an intranet is a nice tool, the first step toward a knowledge-centric agency is creating an inventory of knowledge for the organization. Law enforcement agencies have vast amounts of knowledge, some of it

explicit, which is easier to obtain, and much of it is found embedded deep in personal experiences of police officers (Luen, 2001). An example of the latter would be a previous violent encounter where loss of life was experienced but a seasoned police officer is known to have survived. These experiences are extremely important to capture for newer officers with less experience. Earlier in the study the authors discussed how within the law enforcement culture knowledge is passed down using narratives or story telling. One problem with story telling is that stories change when they are retold. Chavez (1998) suggests that little data exists to show that law enforcement agencies are using a systematic approach to identify knowledge within the organization. As Davenport and Prusak (1998) suggest, the information for creating a knowledge map or inventory usually already exists in an organization. A knowledge inventory's purpose is to show members of an organization where they can locate expertise. A knowledge map does not necessarily show knowledge; just were to find it. Large law enforcement agencies generally have training academies that conduct video reenactments of past incidents within their agency as a training aid. A knowledge inventory database should indicate where this piece of knowledge can be found. Even though the knowledge is available, everyone may not know where to find it.

4. CAPTURING POLICE TACIT KNOWLEDGE

Knowledge can be either tacit or explicit in nature. In police work explicit knowledge is easy to acquire and easily can be recognized. As noted, explicit knowledge can be found in police reports, databases, field notes, and computer aided dispatch systems. Many organizations begin the capture of tacit knowledge using a manual process. The main process for knowledge gathering is the use of interviews with the subject matter experts (Becerra-Fernandez, Gonzalez, & Sabherwal, 2004). Interviews will not succeed unless the administrators have been developing the organizations culture to establish an environment of trust. Knowledge exchange occurrs everyday in police agencies. A police officer receives a call for service indicating a fraud has occurred, however

he/she has never handled a call like this and is most likely inexperienced on the matter. The officer may use some other means of communication and ask a senior officer "subject matter expert" for advice on how to handle the incident. The exchange of knowledge in police departments is exchanged daily in this same manner. Tacit knowledge consists partly of technical skills but also has a cognitive dimension that consists of perspectives, beliefs, and mental models (Nonaka, 1998). Conducting interviews with subject matter experts should be conducted several times using different methods. The initial meeting should be used to establish a good rapport with the subject matter expert (Becerra-Fernandez et al., 2004). An interview will be more successful if the interviewer is part of the same work culture (Davenport et al., 1998). The Redlands police department in California utilizes a form to capture expert knowledge from its officers. Interviews are conducted by supervisors; this data is then entered into a searchable database that provides information when a specific need for knowledge or expertise arises (Chavez et al., 2005).

An additional method of knowledge elicitation is the use of "observational elicitation". Observational elicitation involves the interviewer observing the expert conducting work duties to gain knowledge of the expert's problem solving methods (Becerra-Fernandez et al., 2004). In police work, application of this technique could involve the interviewer patroling with the officer several times as an observer to document the expert's law enforcement activities, followed by discussions to determine what solution processes were taken by the expert. Another form of knowledge elicitation that can have a efficacious application to law enforcement is the use of team interviewing. Team interviewing, as suggested by Becerra-Fernandez et al. (2004), uses the one to many approach (i.e., one knowledge elicitor to several knowledge experts). Law enforcement officers generally receive a shift briefing at the beginning of the shift. These briefings are usually short, but knowledge exchange can be observed in these meetings. Although usually short, these briefings can provide an additional place to acquire *who knows what* knowledge. The goal of knowledge elicitations is to transfer knowledge that will add value to the organization

and efficiency to its processes. Once knowledge elicitors have completed the process of finding out *who knows what*, a process that can take several months, then an agency can proceed to create a knowledge map.

5. KNOWLEDGE ORIENTED POLICING MODEL

A knowledge-oriented policing model is the logical next-step in the evolution of police work. Since the 1990's, the law enforcement profession has gone through a rapid set of evolutionary steps; community-oriented policing and problem-oriented policing have been adopted and changed the way law enforcement agencies react to problems in the community (Chavez et al., 2004) An effective KM strategy can have a great effect on the organization. Community-oriented policing philosophy cannot work without problem-oriented policing, but can operate dependently without community-policing. Community-policing is successful when there is an effective way to exchange theory and ideas. Community-policing promotes the sharing of knowledge and promotes the decentralization of the organization. Similar to problem-oriented policing, community-policing uses a problem-solving Scanning, Analysis, Response, and Assessment (SARA) model (Oliver, 2004). Garvin (1998) suggested that successful learning organizations excel at systematic problem-solving, which is also an element of problem-oriented policing using the SARA model. Experimentation is the process of systematically searching and testing new knowledge, and can be associated with the assessment portion of the SARA model. Police departments, during the assessment stage, can use information from community members, crime analysis, and officers working affected sectors in the city to solve community problems. Research (Chavez, 2005) on police KM indicates that participants quickly identified efforts agencies were conducting that would qualify as KM activities. Moreover, this research indicated that in similar responses to surveys conducted during community-oriented policing philosophy implementation efforts in the 1990's, participants indicated KM was common practice. Chavez (2005) also notes that there is little evidence law enforcement personnel are aware of KM concepts.

Moreover, Garvin (1998) identified learning from past experience as another activity prominent in successful learning organizations. Chavez et al. (2005) also say that law enforcement agencies participate in after action reviews involving critical incidents to review or learn from mistakes. Garvin (1998) suggested learning from others. This notion correlates to the exchange of knowledge between the community to develop a response to a problem; having an openness to learn from your citizens. Garvin finally suggested transferring of knowledge as a final activity prevalent in successful learning organizations. Chen et al. (2002) reveal a critical issue in law enforcement concerning the access to information. Law enforcement officers require data that is spread across several systems. Law enforcement personnel must be proficient in the use of several systems and know how to access the required information. Transfer of knowledge also requires that police organizations change the way they represent data, making it easier for officers to access the knowledge they need to perform their duties.

6. ROLE OF KNOWLEDGE ORIENTED POLICE OFFICER

Implementing a knowledge-oriented policing strategy requires law enforcement officers to recognize the value of knowledge as an intellectual asset. Recognition of knowledge as an important asset enables police officers to become more willing to learn and collaborate (Luen, 2005). Davenport and Prusak (1998) suggested that a KM strategy will not succeed in an organization if it is left to a small group of people for implementation. KM must involve the entire organization to ensure a successful implementation. As much as community-oriented policing philosophy requires all employees to become part of the process, moving toward a knowledge-oriented policing approach requires the same level of effort. The knowledge-oriented officer in the current knowledge age must be able to create, share, and use knowledge in daily routines (Davenport & Prusak, 1998). Luen (2005) suggested that police officers must perform as *proficient knowledge workers* to manage large volumes of knowledge. Davenport and Prusak, (1998) suggested knowledge workers must have a combination of technical skill, know-

ledge, and experience to be successful. The responsibility to acquire knowledge is the responsibility of police officers and everyone who works for the organization. Knowledge-oriented police officers and organizational civilians all are part of the KM strategy. Knowledge workers develop knowledge which helps fuel the learning organization. Organizational learning is enabled when individual expertise is utilized in the development of new innovations (Gottschalk, 2007). Learning organizations constantly challenge employees to discover what has caused a current event and what can be done to change the situation (Chen & Edgington, 2005). Similarly, police officers should be able to utilize a knowledge repository to locate learning histories on similar events to correct a new similar problem.

Davenport and Prusak (1998) assert that many organizations throughout the world have selected a chief knowledge officers (CKO) and/or chief learning officer (CLO) to lead knowledge initiatives. Such leaders act as sustained advocates of knowledge and learning. CIOs and CKOs manage the value of knowledge and deal with the codification process. In police departments there can be obstacles in creating a CKO position. In a decentralized organization, CKO positions can be assigned to different managers (Davenport & Prusak, 1998). Chavez et al. (2005) suggested that in the law enforcement community a knowledge champion should be used for the initiation and implementation phases of a knowledge strategy. The senior knowledge manager, as Davenport and Prusak (1998) suggested, has three major responsibilities: (a) developing the knowledge culture, (b) designing the infrastructure, and (c) developing a reasonable financial plan.

7. LAW ENFORCEMENT KNOWLEDGE MANAGEMENT SYSTEMS

Information technology plays a vital role in the implementation of KM initiatives. An information technology infrastructure supports the creation of data repositories, exchange of knowledge between organizations, knowledge creation and capture (Gottschalk, 2007). Information technology can be used to capture tacit knowledge and explicit knowledge and made available to the entire organization. A most common form of technology is the use of knowledge repositories to store documents that contain structured data (Davenport & Prusak, 1998). Knowledge sharing systems, as presented by Becerra-Fernandez et al. (2004), include incident report databases, alert systems, best practice databases, lessons learned, and expertise-locater systems. Knowledge application systems are systems that use intelligent design also called case based systems (CBR). CBR or expert systems are designed to be used by people without knowledge of a problem area. Expert systems apply knowledge of a domain expert and produce the decision result of the expert. According to Gottschalk (2007), technologies at the expert level will probably develop at a slow pace.

The Charlotte-Mecklenburg Police Department (CMPD) is viewed as a pioneer in KM. CMPD appears to be progressing toward a knowledge-oriented policing approach. The police department issues laptops to every law enforcement officer. The information management database includes a module called KB-COPS (Knowledge Based Community Oriented Policing System) that conducts advanced queries and reports. Administrators at CMPD believe officers need the ability to do more than check vehicle registrations. They believe officers should perform crime analysis and crime mapping from their vehicle (Pilant, 1999). Another example of a KM system is the effort at the Tucson Police Department (TPD) to improve information sharing within the organization and outside the organization. COPLINK Connect initially was designed as a data warehousing project, but evolved into a knowledge-based system that merges multiple databases to include mug shots, incident reports, and crime information and provide interagency access (Chen et al., 2002). Crime analysis and mapping technologies appear to be powerful tools that can be used in a knowledge-oriented policing strategy. Crime mapping uses Geographic Information Systems (GIS) technologies for crime analysis. Crime analysis is critical to the problem-solving process identified early on as the SARA problem-solving process. Crime analysis and GIS mapping technologies assist with knowledge representation, visualization, and the application of knowledge to solve crime (Boba, 2001). Becerra-Fernandez et al. (2004)

suggested there are *gold mines* of knowledge stored in databases. Accessing and applying this knowledge can be of great benefit to an organization. Chen et al. (2002) also suggested that large amounts of unstructured text are buried deep in police record systems. New data mining efforts are underway to develop methods to gather rich information previously unavailable that can be of great value to solving crime problems.

8. CHALLENGES FOR A KNOWLEDGE ORIENTED POLICING MODEL

Davenport and Prusak, (1998) suggested that a knowledge initiative always start with a problem related to knowledge. Many organizations invest heavily in technology in an attempt to begin an effective KM strategy. Heavy technology investments can be a mistake because the knowledge culture desired from workers can take substantial time to evolve. Starting a KM strategy with a learning organization in mind is a solid approach. Organizational learning is an important component to KM. Garvin (1998) argued that the first step to implementing a KM strategy through organizational learning is to develop an attitude conducive to learning. Other mistakes during the implementation of a KM strategy, according to Davenport and Prusak (1998), include company managers who attempt knowledge initiatives but name it something such as *best practices* because they do not subscribe to KM as a formal discipline. The greatest challenge toward a KM strategy in police work, as suggested by Luen (2005), is to overcome the organizational culture. Introduction of KM principles can help start a process of collaboration and knowledge sharing among police personnel. Other elements in the organization will require change, including training and operational work flows.

9. SUMMARY AND CONCLUSIONS

Law enforcement has evolved in the last several decades through team policing, neighborhood policing, community-oriented policing and problem-oriented policing (Scott, 2000). The evolution process now moves law enforcement into the knowledge age; KM strategies give law enforcement agencies new tools to capture tacit and elicit knowledge. In this study the authors conclude that law enforcement should progress towards a knowledge-oriented policing strategy. A knowledge-oriented policing strategy requires that police organizations build on to community-oriented philosophies and problem-oriented strategies. Police officers possess much of the knowledge required to categorize the incidents they resolve. The knowledge police officers possess adds value to the effectiveness of handling other problems while at the same time, they may not have adequate information to come to a valid conclusion due to lack of knowledge in other required areas (Goldstein, 1990). Evidence exists that police officers participate in many KM activities daily, yet most law enforcement officers are unaware of KM concepts and applications (Chavez et al., 2005). Moreover, the authors find that the next step in the evolutionary process for the law enforcement field is to build toward a knowledge based strategy to capture knowledge and apply it as a catalyst for innovation. The advancement of mobile technology, the implementation of the U.S. Department of Justice Global Justice XML (eXtensible Markup Language) exchange will change the mechanisms law enforcement uses to share knowledge (U.S Department of Justice – Office of Justice Programs, 2005).

10. REFERENCES

Becerra-Fernandez, Irma, Avelino Gonzalez, and Rajiv Sabherwal. (2004). *Knowledge management: challenges, solutions, and technologies*. New Jersey: Pearson Education, Inc.

Boba, Rachel. (2001). *Introductory guide to crime analysis and mapping.* Washington D.C.: U.S. Department of Justice, Office of Community Policing Services.

Chavez, T. Dave, Michael R. Pendleton, and Chief Jim Bueerman. (2005). Knowledge management in policing. Washington D.C.: U.S. Department of Justice, Office of Community Policing Services.

Chen, A.N.K. and Edgington, T.M. (2005). *Assessing value in organizational knowledge creation: considerations for knowledge workers.* MIS Quarterly. June

Davenport, T. H. and Prusak, L. (1998). *Working knowledge*: *how organizations manage what they know.* Harvard Business School Press.

Garvin, David A. (1998). *Building a learning organization.* Harvard Business School Press.

Goldstein, Herman. (1990). *Problem-oriented policing*. New York: McGraw-Hill, Inc.

Gottschalk, Petter. (2007). *Knowledge management systems in law enforcement: technologies and techniques*. Hershey: Idea Group Publishing*.*

Hsinchun, Chen, Jenny Scroeder, Roslin V. Hauch, Linda Ridgeway, Homa Atabakhsh, Harsh Gupta, Chris Boarman, Kevin Rasmussen, & Andy W. Clemments (2002). *Coplink: information and knowledge management for law enforcement*. Decision support systems 34, pp. 271-285

Janz, B.D. and Prasarnphanich, P. (2003) *Understanding the antecedents of effective knowledge management: the importance of a knowledge centered culture.* Decision Sciences, 34[2], pp. 351-384.

Luen, Tan W. and Suliman Al-Hawamdeh. (2001). *Knowledge management in the public sector: principles and practices in police work*. Journal of Information Science,   27[5], pp. 311-318

Meyer, J. M. (1999). *Knowledge Management: Fad or Analysis Model*. DM Review. Retrieved Feb 20, 2007 from the World Wide   Web: http://www.dmreview.com/article_sub.cfm?articleId=886

Newcombe, Tod. (1999). *Knowledge Management: New Wisdom or Passing Fad?* Government Technology. Retrieved Jan 12, 2007 from the World Wide Web: http://www.govtech.net/magazine/gt/1999/june/magastory/feature.phtml

Nonaka, Ikujiro. (1998). *The knowledge-creating company.* Harvard Business School Press.

Oliver, Willard M. (2001). *Community-oriented policing: A systemic approach to policing.* New Jersey: Prentice Hall.

Pilant, Lois. (1999). *Going mobile in law enforcement technology*. National Institute of Justice Journal. January.

Scott, Micheal S. (2000). *Problem oriented policing: reflections on the first 20 years.* Washington D.C.: U.S. Department of Justice, Office of Community Policing Services.

U.S Department of Justice – Office of Justice Programs. (2005). Building exchange content using the global justice xml data model: user guide for practitioners and developers.   Retrieved1/22/2007 http://it.ojp.gov/topic.jsp?topic_id=201