TRANSFERRING KNOWLEDGE AND EXPERIENCE

Executive Leadership

Just Passing Through: Transferring Senior Member Knowledge and Experience to Future Leaders

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Abstract

The problem was a number of retirements with no process to capture the knowledge of those retiring. The purpose was to discover methods useful in retaining employee knowledge. Descriptive methods were used to research how business, military, government, and fire departments address the loss of knowledge and experience when employees retire.

The research asked how these entities use formal and informal methods to transfer knowledge among employees. The results showed business relies heavily on formal methods while fire departments rely on informal. However fire departments using formal methods do a better job overall. The recommendations included development of formal programs of mentoring and job shadowing, creating a supportive culture for knowledge sharing, and involving employees at all levels in projects.
CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed: ______________________________
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Just Passing Through: Transferring Senior Member Knowledge and Experience to Future Leaders

The problem is that the fire department has failed to capture the knowledge and experience of retiring members and make this information useful to current and future employees. Within two months in early 2006 three senior level assistant chiefs retired from the Dubuque Fire Department. They walked out the door with a combined 110 years of experience with the department.

The purpose of this applied research project is to determine what methods may be useful to current staff in capturing the knowledge and experience of members soon to retire. The research method will be descriptive in nature and will answer these questions:

1. What methods are used by the business world to assure knowledge of senior employees is not lost upon their retirement?
2. What policies are used by military organizations to assure the transfer of experience form one generation of commander to the next?
3. What programs are in use in state and local governments to allow for senior employee knowledge transfer?
4. What steps are other fire departments taking to address the loss of institutional knowledge in their organizations?

Background and Significance

The Dubuque Fire Department is experiencing a high rate of turnover among employees due to retirement of many long term members. Many of these
personnel held high ranking positions within the department. While the recent retirement wave is past, another will be coming soon. Because of this retirement wave the loss of these employees has been felt more than if only one or two retired sporadically as had always happened in the past. This sudden loss of senior members has unearthed the realization that they knew a lot about the department operations, policies, and processes. These people created many of the current policies and knew the history involved in past decisions. The personnel taking over in those positions do not have that background knowledge and are now in a catch up mode, trying to understand the decisions made previously. These new senior level managers struggle to gain the experience in positions that those who retired seemed to do almost effortlessly.

This problem has been around for years, however in the past the number and frequency of retirements was minimal. Although the knowledge and experience of retiring members was not captured in the past, the impact of this failure did not occur to department management.

Presently the impact of the retirement of a substantial number of long time employees in rapid succession is hitting home. Although competent personnel are filling the positions, access to the knowledge of their predecessors would be very helpful. The probable future impact is that this trend will continue. Just as the recent retirements where predictable, so to are those coming in a few years. Because of improvements in the pension system it is very likely that a considerable number of management personnel will be retiring within the next 3 to 7 years. If the department is not prepared to capture the experience and
knowledge of these members the momentum created in moving the department forward will be lost again.

The problem is serious and even members working at entry level positions are concerned about their supervisor's experience. This applied research project will be significant to the department by providing ideas and guidance on how to reduce the effects of knowledge and experience loss due to retirement. This effort will give the fire department tools it needs to allow outgoing personnel to give a leg up to their successors, rather than set them back during a start up period in their new jobs.

This applied research project relates to the following specific elements of the Executive Fire Officer Program course Executive Leadership, specifically unit 7 terminal objective, use experience and models from industry to develop an appreciation for workforce planning, development, and succession planning (National Fire Academy, 2005). Additionally the project relates to the operational objective of the United States Fire Administration (USFA) to respond in a timely manner to emergent issues (M. Grundy, personal communication, December 28, 2006).

**Literature Review**

A literature review was conducted using the resources of the Learning Resource Center at the National Fire Academy in Emmitsburg, Maryland, internet sources, and the Carnegie-Stout Public Library reference materials in Dubuque, Iowa. The focus of this literature review was to determine what material was available on the subject of knowledge and experience transfer in business,
military, government, and fire department organizations. Information was
gathered concerning the importance and benefit of such knowledge transfer as
well as recommended practices and obstacles to knowledge and experience
transfer.

When speaking on knowledge management for business Beazley,
Boenish, and Hayden (2002) believe an employee’s knowledge is intellectual
capital, which has value and should be treated as any other asset. Businesses
routinely claim a loss for physical capital such as a vehicle; however the loss of a
veteran employee (and their knowledge) is often not seen as the same loss of
capital (Beazley, et al.). Several programs have been developed to deal with the
transfer of knowledge from senior employees to new managers. McCauley and
Van Velsor (2004) propose the use of learning forums in which all groups are
gathered together to use storytelling as a way to communicate leadership
lessons. A similar method is espoused by Carter, Giber, and Goldsmith (2001)
using the example of MediaOne Group. This company used an exercise called
the exchange, consisting of a small group discussion format involving the junior
executives and company vice presidents and the chief executive officer.

Beazley, et al. (2002) suggests that knowledge resides in an employee’s
mind and the organization only borrows that knowledge. They go on to state that
the only way the organization can own the knowledge is by harvesting and
storing it for future use. Encouraging employees to use a journal to note
observations and critical events may be one way to use this information in the
future (McCauley, and Van Velsor, 2004).
Beazley, et al. (2002) describes two types of knowledge asset management, knowledge transfer within an employee generation and knowledge transfer between employee generations. They suggest that businesses traditionally emphasize the former rather than the latter. Blanehard, and Tager (1985) bring up a possible reason for this imbalance. It seems many managers hoard knowledge because they see it as power. Therefore a manager will share just enough to allow the subordinate to do his or her job, but no more (Blanehard, and Tager, 1985).

In contrast to this, many successful companies make as much information as possible available to as many people as they can. This stimulates creativity and helps prevent mistakes (Blanehard, and Tager, 1985). In a study of United States Air Force organizations Ladd and Ward (2002) also found that in cultures where individuals are concerned with advancement solely for personal gain, knowledge transfer was stifled because people are reluctant to share their knowledge.

McCauley and Van Velsor (2004) believed in groups using storytelling to transfer knowledge. The air force study also noted that encouraging interpersonal communication and human to human contact helps foster knowledge transfer (Ladd, and Ward, 2002). Additionally Ladd and Ward showed that the effectiveness of knowledge transfer was dependent on organizational culture. They found that cultures open to change and innovation were most conducive to knowledge transfer, while cultures of confrontation and competition were not (Ladd, and Ward, 2002).
In a study concerned with knowledge transfer between researchers and practitioners in the field of natural disaster management, social and interpersonal contact along with good communication between groups was found to be critical to information transfer (Fothergill, 2000). Friend (2004) speaks of culture as well when encouraging young public service managers. He says developing and fostering future leaders requires current managers to be passionate about the profession. Fothergill (2000) took the cultural underpinning of knowledge transfer a step farther, finding that an important component of knowledge transfer was to find links such as people, projects, or programs that served as connectors between groups. The United States Fish and Wildlife Service pairs new members for two years with mentors using a personality test to match compatibility (Borzik, 2004).

The dilemma created by failure to appropriately transfer knowledge is revealed in research done at a public safety communications center. Rohr (2001) concluded that dispatcher vacancies alone were not a severe problem, as there were always applicants. The real problem was the loss of qualified and tenured personnel. As the author said, “There is no good substitution for experience” (Rohr, 2001, p. 21).

Much fire service literature concerning knowledge transfer relates to mentoring. Martinette (2004) regards mentoring as essentially being about passing deeply held values from generation to generation. Several other authors share this conceptual belief in mentoring or knowledge transfer. Williams (2002) stated that ensuring a strong future for an organization should include creating
new, capable leaders from promising employees. Mentoring programs assist new officers by fostering insight, and expanding career horizons (Borzik, 2004). Lasky (2002) believes that fire department members should share the wealth and knowledge, and make every attempt to help develop others. Speaking on leadership, Tracy (2004) suggests that how well our future leaders are trained and prepared is our legacy. He also stated that leadership is not an aspect of character but is developed and handed down in an organization through tradition (Tracy, 2004).

Lombardo (2000) found that senior level managers in the California Forestry Division (CDF) were concerned about the abilities of those who would replace them in managing major incidents. This thought is echoed by James (2003) who stated that in order to continue to deliver professionalism the fire service needs to transfer critical intellectual capital to remaining employees. James acknowledges that knowledge management has not received the same attention in the fire service that it has in other public sector areas (2003).

In his study of the CDF Lombardo (2000) reported that senior employee retirements resulted in a loss of competent leadership among new replacements. This finding is tempered by Martinette’s statement that among the measurement of a skillful leader’s success will be their ability to establish mechanisms to transfer knowledge, skills and abilities from senior members to less experienced members (2004).

The benefits of a system to transfer knowledge, or having a formal mentoring program, are shared by several authors. Lasky (2002) sees a concept
of positional line of sight mentoring, or training for the next level of promotion.

This line of thinking fits with Williams’ idea that ambitious employees often move into management positions without having prepared for them beyond the minimal promotional requirement (2002). Tracy (2004) mirrors this thought in his presumption that participating in a mentoring program will enhance the duties and operations of future generations. Hammond (2006) found there is a need to fully inform newly promoted employees of what the job entails.

Useful perspectives can be derived from listening to the experiences, successes, and failures of other members according to Tracy (2004). Compton says current managers may also benefit from knowledge transfer (2000). Transfer of knowledge is a good way to reduce the occurrence of employees coasting into retirement by helping them feel a sense of importance in sharing their experience (Compton, 2000).

Several authors suggest methods for assuring knowledge transfer. Martinette (2004) recommends approaching senior staff on a personal level as the best way to tap into their knowledge. Preceptorships are another way of transferring knowledge and experience strongly purported by Lytle (2001). In his extensive work with company officer mentoring, Lytle focused heavily on certifying mentors who are true leaders, to work with young officer candidates (2001). Landreville (2003) agrees with Lytle that selection of mentors is one of the most important components in a mentoring program.

Hammond (2006) recommended job shadowing in his research as a way to transfer organizational knowledge. This concept is also reflected in a concept
espoused by Lasky (2002). Suggesting that captains in most fire departments are the ideal candidates to do job shadowing of chief officers. Lasky points out this is a manageable size program with the most impact on a fire department’s future (2002). The heart of Lasky’s program has captains riding with battalion chiefs for several shifts, eventually switching roles with the battalion chief, who then acts as a coach. Martinette (2004) uses a variation of job shadowing by teaming senior employees with younger ones to work on developmental projects together. Tracy suggests a similar mentoring method using a team of experienced and inexperienced personnel to answer specific questions or solve problems assigned by the organization executive (2004).

While Lasky (2002) purports use of a questionnaire to get information from veteran members, putting their responses about specific experiences, knowledge, or tricks of the trade into a mentor book. Several other authors have identified problems with mentoring programs and knowledge transfer methods. Lasky himself does caution that a complicated and cumbersome mentoring program will keep members form participating (2002). One reason he states is that senior members are fearful that newer members will know as much as they do (Lasky, 2002). Bayouth (2004) found that exit interviews similar to Lasky’s questionnaire were often done without a face-to-face meeting, and usually on the last day of the member’s employment. Additionally his research showed that the information obtained in these interviews was seldom used to any extent (Bayouth, 2004).
Martinette (2004) believes many senior personnel are angry at the time of retirement because they perceive leaders have failed to demonstrate that the retiring member has value. However Bayouth sees exit interviews as a way for retiring members to vent frustrations or concerns, the problem is these are after the fact, as the employee is now gone (2004). Most companies only use this information to detect a trend among exit interview responses according to Bayouth (2004).

Formal mentoring matches people together; however mentoring is more likely done informally without the use of match ups or programs according to Williams (2002). Landreville wrote that mentoring done on an informal basis only gives a new employee a false notion that they are in a learning environment. The reality he says is they often are just tagging along and doing the dirty work (2003). Finally, James (2003) offers that tacit knowledge, found in the minds of employees consists of experiences, perceptions, instincts, and values that are hard to transfer by speaking, writing down, or recording in some way.

Summary

In reviewing various works, proper knowledge transfer appears to be a concern of many authors. Business and fire service authors both supported formal programs of knowledge transfer. Methods using mentoring and job shadowing were described as useful, while exit interviews were found by some to be problematic. Lasky (2002) and Lytle (2001) rely heavily on formal mentoring in fire service applications. Because of this influence the research will work to
compare use of formal and informal knowledge transfer methods among the research subjects.

**Procedures**

Research question one:

What methods are used by the business world to assure knowledge of senior employees is not lost upon their retirement? For answers to this question the following steps were taken:

1. Contacted local Chamber of Commerce to acquire contacts from local businesses that were part of large companies.

2. Approached human resources director group, based on information from step one to gain insight into methods of knowledge transfer used by businesses locally.

3. Developed a questionnaire asking:
   a. How well the organization does knowledge transfer?
   b. List methods of knowledge transfer used currently.
   c. At what employee levels is knowledge transfer addressed?
   d. Share additional comments regarding the subject.

For specific questions see Appendix A.

Research question two:

What policies are used by military organizations to assure the transfer of experience from one generation of commander to the next? Research consisted of an internet search of United States military agencies and programs addressing
knowledge transfer among generations of soldiers. Programs specifically targeting the use of senior and junior personnel were examined.

Research question three:

What programs are in use in state and local governments to allow for senior employee knowledge transfer? In developing answers to this question the research steps were:

1. Attempted to discuss transfer of the Iowa Governor’s Office from one administration to another.
2. Interviewed two recent employees in upper-level positions within the city government who had recently taken over from a predecessor.
3. Determined from the interviews what issues of knowledge transfer were used in the transition to new jobs.

Research question four:

What steps are other fire departments taking to address the loss of institutional knowledge in their organizations? Research included:

1. Developed a questionnaire which was sent to other fire departments asking:
   a. How well they addressed knowledge transfer.
   b. What methods of knowledge transfer they currently used?
   c. At what employee level knowledge transfer was addressed?
   d. Provide additional comments.

For specific questions see Appendix B.
2. The population of fire departments receiving a questionnaire was determined using:

a. The membership list of the Missouri Valley Division of the International Association of Fire Chiefs. These questionnaires were sent by facsimile.

b. The researcher’s class roster from the Executive Leadership course. These were sent by email.

c. Selected fire departments in Iowa having paid fire personnel and populations over 15,000. These were also sent by email.

In total 92 questionnaires were sent out.

For a detailed listing of fire departments returning a questionnaire see Appendix C.

Limitations

Limiting factors in this research project included the difficulty in contacting personnel at the Iowa Governor’s Office. This originally seemed like a great research contact; unfortunately the timing was probably bad. The new administration was still preparing to take over office at the time of this project, and no reply was received after numerous requests.

Another limitation was the choice of wording in the questionnaires. One fire chief responded that he really did not know what one of my questions was asking. Some ambiguity in the formation of the questionnaires may have limited the results they produced.
Military sources of information concerning specific training issues were hard to find. Use of the internet was a limiting factor. However no local contacts seemed to provide specific information on knowledge transfer.

**Key Terms**

Knowledge Transfer – the conveyance from one person to another of any body of facts, information, understanding, or know how accumulated over time.

**Results**

**Research Question one:** What methods are used by the business world to assure knowledge of senior employees is not lost upon their retirement? Research involved analysis of a questionnaire administered to a group of human resources directors. Twenty-four people offered responses, the results of which determined what methods of knowledge transfer are currently being used by business.

The researcher attended a meeting of the Tri-State Human Resource Director’s Society. This group consists of human resource personnel from many private and publicly held companies operating in the local area (J. Robbins, personal communication, January 25, 2007). The group was asked to respond to the questionnaire and add comments as well.

The first question asked was if their respective organization was doing a satisfactory job of knowledge transfer when employees retire? Of the 24 people present at the meeting 16 responded that their organization did a satisfactory job of transferring knowledge while six believed their organization did an
unsatisfactory job. Additionally two responses indicated that they did not address knowledge transfer when employees retired.

Based on the responses to question one, two categories were created; those who do a satisfactory job of knowledge transfer and those who address knowledge transfer unsatisfactorily. Question two asked respondents to choose from a list any methods of knowledge transfer currently used in their organization, or to add any not listed. The results are shown in Table 1.

<table>
<thead>
<tr>
<th>TABLE 1 Methods of Knowledge Transfer Used in Business</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Formal Mentoring or Job Shadow</strong></td>
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<tr>
<td>-------------------------------------</td>
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<tr>
<td></td>
</tr>
<tr>
<td><strong>Exit Interviews</strong></td>
</tr>
<tr>
<td><strong>Structured Groups</strong></td>
</tr>
<tr>
<td><strong>Partnering on Projects</strong></td>
</tr>
<tr>
<td><strong>Informal Water Cooler Interaction</strong></td>
</tr>
<tr>
<td><strong>Storytelling</strong></td>
</tr>
<tr>
<td><strong>Journals</strong></td>
</tr>
<tr>
<td><strong>Other</strong></td>
</tr>
</tbody>
</table>

Question two revealed that businesses tend to use exit interviews quite often. In fact it was the most noted response for both satisfactory (75%) and unsatisfactory (83%) response groups. The satisfactory group also uses a formal mentoring or job shadow program more often (50%) than businesses doing unsatisfactorily in knowledge transfer (33%). While the unsatisfactory response
group had no responses indicating the use of structured groups, the satisfactory group had three (19%). Journals completed by senior employees were only used in one business (6%). Comparing informal water cooler interaction, the satisfactory group (44%) used it much less than the unsatisfactory group (83%). The two (12%) responses under other included use of standard operating procedures and succession planning/talent development.

Question three asked at what level employees were targeted for knowledge transfer methods? Three levels, entry, middle management, and executive were offered along with none as a choice. The information derived is illustrated in Table 2.

<table>
<thead>
<tr>
<th>Employee Level</th>
<th>Satisfactory Response</th>
<th>Unsatisfactory Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry Only</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Middle Manager Only</td>
<td>7 (44%)</td>
<td>2 (33%)</td>
</tr>
<tr>
<td>Executive Only</td>
<td>None</td>
<td>2 (33%)</td>
</tr>
<tr>
<td>All Levels</td>
<td>3 (19%)</td>
<td>1 (17%)</td>
</tr>
<tr>
<td>Entry &amp; Middle</td>
<td>5 (31%)</td>
<td>None</td>
</tr>
<tr>
<td>Entry &amp; Executive</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Middle &amp; Executive</td>
<td>1 (6%)</td>
<td>1 (17%)</td>
</tr>
</tbody>
</table>

While knowledge transfer is most often addressed at the middle management level, the satisfactory response group used it 44% of the time while only 33% of the unsatisfactory group used it. Both groups tended to address knowledge transfer at all levels about equally with satisfactory reporting 19% and
unsatisfactory reporting 17%. The satisfactory response group also used a combination of entry level and middle management to address knowledge transfer far beyond that of the unsatisfactory response group, 31% compared to none. In fact those responding that their organization did a satisfactory job of knowledge transfer were the only ones to address it at the entry level.

Several comments were also received in the process. Three respondents used the term cross training as a way to transfer knowledge either between employee levels or subdivisions of the company. One respondent indicated that talent planning and development along with succession planning was critical and added value to the organization. Another offered that job sharing, or filling a position before the current employee retires so that both can work at the job for several months is valuable. One other added that keeping a journal of all important details is of assistance to the next person filling the position.

**Research Question Two:** What policies are used by military organizations to assure the transfer of experience from one generation of commander to the next? Research was done using internet sources to determine what the military may be doing to transfer knowledge to the next generation of soldiers entering service. The military sources researched provided three basic methods used to transfer knowledge.

In the case of the United States Army, their Department of Military Instruction at West Point uses structured group sessions. These sessions involve third class cadets and retired officers. The retired army officers share lunch with the cadets and then discuss their own military experiences with the
junior officers. The interaction is used as a means for the Army to reinforce the importance of leadership and character. A reported side benefit of the program is the pride the veterans take in being asked to join the program (Jastrzemska, 2006).

A similar method was found to be used in the Army's Senior Leader Program. Group sessions of senior and junior military officers discuss current topics. However in this program the retired and active senior officers sit on a panel and take questions from students. Also in this panel are some less - tenured officers with only a few years out of the academy. This is done on purpose to mix fresh views with the experiences of seasoned leaders (Gruver, 2004).

The United States Air Force was found to use a job shadow, or apprentice-type program for highly specialized technical training. In the program researched, active-duty aircraft maintenance personnel will spend up to three years working with Air National Guard maintenance personnel. The seasoned National Guard members will share their knowledge with the new Air Force personnel. The program is designed to transfer years of experience to young airmen (Desjarlais, 2005). Another Air Force program using this concept is meant to create faster mission readiness among fighter squadrons. Pilots and maintenance personnel from Alaska are job shadowing experienced personnel at a base in Virginia. The new personnel from Alaska are assigned to the Virginia unit during the course of the training program. The intent is for the Alaska squadrons to operate as if they were permanently assigned to the Virginia
squadrons. The expectation is that the experience gained from working with the veteran unit will minimize the time it takes to achieve mission readiness (VanNierop, 2006).

A third method of knowledge transfer used by the military is the use of case studies. In a program developed by the United States Army’s Department of Military Instruction case studies of historic battles such as Gettysburg are used to transfer knowledge. The course *Battle Command* includes interactive use of several case studies in which cadets act as tactical commanders. The purpose is to allow cadets to make tactical decisions, and enforce conscious and skillful command decision-making, and leadership, all under the watchful eye of veteran commanders (Department of Military Instruction, n. d.).

**Research Question Three:** What programs are in use in local governments to allow for senior employee knowledge transfer? In order to research an answer this researcher attempted to acquire information from the newly elected state administration in Iowa. Contact with the Governor’s office resulted in no return correspondence, and no information was found in regard to knowledge transfer using state internet sources. However the research did turn up two instances of employee knowledge transfer within the City of Dubuque organization.

During the course of the research two important jobs in the city administration experienced a change in personnel. One was the budget director position, and the other the assistant city clerk. Contact with each of the people recently filling the positions did result in valuable information.
The first position studied was that of budget director. This position oversees the development of the entire city budget and works with various departments to manage their respective budgets throughout the year. The former budget director had been in place for about three years and was moving out of state. The city chose in this case to hire a replacement almost six months before the scheduled departure of the current office holder. An interview was done with the new budget director shortly after the transfer was completed to determine the results of this process. The information that follows was collected as a result of that interview (J. Larson, personal communication, February 5, 2007). The newly appointed budget director stated that the job shadow/sharing was of great benefit in allowing her to step into the new position. Ms. Larson was hired from outside the city organization and therefore did not have intimate knowledge of the city budget even though she did have the qualifications and background for the job. Because the position involves much work with technical aspects of each department’s budget, being able to get information from the current director was valuable. During this transition period budget amendments were made and an entire new fiscal year budget was developed with both people working hand-in-hand. Ms. Larson also noted that for her, relationships with others in the city organization were much easier to establish because of background information and introductions given by her predecessor. Finally she indicated that although she was qualified for the job, it would have been a harder transition, and taken longer to get up to speed without the job shadowing program.
The second position studied was that of Assistant City Clerk. A new assistant clerk was appointed after the retirement of the former assistant with over 25 years of service. The research included an interview with the newly appointed person and the information presented was derived from this interview (K. Firnstahl, personal communication February 16, 2007).

The assistant city clerk position involves handling many important details related to official city documents, bids, and city council information. The position was filled by a person already familiar with city hall, having worked in the city manager’s office for several years. No job shadowing transition period was arranged for this position. Mr. Firnstahl stated that although he had some knowledge of the position, he was forced to start into the work immediately and could really only focus on the immediate tasks that needed to be done. He needed time to observe how things were handled, and acknowledged that a job shadowing period would have been a plus. He confirmed that currently he was working on small tasks and priorities hoping to build up to major tasks such as taking over for the city clerk at council meetings. Although he already had working relationships with others at city hall and knew the basics of the place (such as location of supplies, restrooms, etc.) he did state that his boss was spending extra time showing him the details of the job.

Mr. Firnstahl estimated that his learning period would take about four months before he was able to do all the tasks the former assistant did. He shared that his predecessor had a vast amount of historical background concerning items like city council resolutions, which he would not have. He did
offer that although a job shadow would have benefits, the draw back may be that he would learn bad habits or antiquated ways of handling the work. He believed there was some value in learning directly from his superior how the task should be done.

**Research Question Four:** What steps are other fire departments taking to address the loss of institutional knowledge in their organizations?

Researching this answer involved analysis of a questionnaire sent to 92 fire departments. Questionnaires were returned by 44 departments, and determined the methods of knowledge transfer currently being used.

Several questions were asked, the first being how well their organization was addressing knowledge transfer when senior employees retired. Of the 44 responses 20 departments reported they are doing a satisfactory job of knowledge transfer, while 20 others stated they were unsatisfactorily transferring knowledge. The remaining four respondents stated their organization did not address knowledge transfer at all.

Departments were also asked to identify ways they formally and informally transfer knowledge in their organization. Respondents could choose any of the items listed, or add their own. Based on the responses to the first question, two categories were created; those who reported doing a satisfactory job of knowledge transfer and those who reported doing unsatisfactory. The remaining four responses were not used as they provided no data except for comments, which are reported later. Table 3 shows the methods chosen by each category of respondent.
TABLE 3 Knowledge Transfer Methods used by Fire Departments

<table>
<thead>
<tr>
<th>Method</th>
<th>Satisfactory Response</th>
<th>Unsatisfactory Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal Mentoring or Job Shadow</td>
<td>14 (70%)</td>
<td>5 (25%)</td>
</tr>
<tr>
<td>Exit Interviews</td>
<td>12 (60%)</td>
<td>8 (40%)</td>
</tr>
<tr>
<td>Structured Groups</td>
<td>5 (25%)</td>
<td>3 (15%)</td>
</tr>
<tr>
<td>Partnering on Projects</td>
<td>13 (65%)</td>
<td>9 (45%)</td>
</tr>
<tr>
<td>Informal Kitchen Table</td>
<td>13 (65%)</td>
<td>17 (85%)</td>
</tr>
<tr>
<td>Storytelling</td>
<td>12 (60%)</td>
<td>10 (50%)</td>
</tr>
<tr>
<td>Journals</td>
<td>1 (5%)</td>
<td>None</td>
</tr>
</tbody>
</table>

Among responders from the satisfactory knowledge transfer group most (70%) used some type of formal program, either mentoring or job shadowing. Comparatively respondents in the unsatisfactory category use these methods less often (25%). The satisfactory response group also tends to use several other methods of knowledge transfer including: 1. Partnering senior and junior members on projects (65%). 2. Informal kitchen table interaction (65%). 3. Exit interviews (60%). 4. Storytelling (60%). Those in the unsatisfactory response group use the informal kitchen table interaction the most (85%). This same group uses the other methods less often as follows: 1. Partnering (45%). 2. Exit interviews (40%). 3. Storytelling (50%).

Question three asked the respondents at what level in their organizations knowledge transfer was addressed. Table 4 uses the satisfactory and unsatisfactory knowledge transfer response groups to show this information.
TABLE 4 Level Knowledge Transfer is Addressed in Fire Departments

<table>
<thead>
<tr>
<th>Employee Level</th>
<th>Satisfactory Response</th>
<th>Un satisfactory Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry Only</td>
<td>1 (5%)</td>
<td>None</td>
</tr>
<tr>
<td>Company Officer Only</td>
<td>2 (10%)</td>
<td>2 (10%)</td>
</tr>
<tr>
<td>Chief Officer Only</td>
<td>1 (5%)</td>
<td>1 (5%)</td>
</tr>
<tr>
<td>All Levels</td>
<td>10 (50%)</td>
<td>10 (50%)</td>
</tr>
<tr>
<td>Entry &amp; Company Officer</td>
<td>2 (10%)</td>
<td>1 (5%)</td>
</tr>
<tr>
<td>Entry &amp; Chief</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Company Officer &amp; Chief</td>
<td>4 (20%)</td>
<td>4 (20%)</td>
</tr>
<tr>
<td>No Level</td>
<td>None</td>
<td>2 (10%)</td>
</tr>
</tbody>
</table>

The results from this question show that both groups are very similar in the employee level at which their organization addresses knowledge transfer. In both groups the most common answer was that knowledge transfer was addressed at all levels of personnel (50%). Both groups also had identical numbers for company officer (10%), chief officer (5%), and company officer and chief combined (20%). The rest of the position choices were also quite close having a very small difference.

Respondents were offered an opportunity to add additional comments as well. Among those reporting their department did not currently address knowledge transfer at all, the comments included: 1. We are completely lacking in this area. People are promoted without training, orientation, or preparation. 2.
We have people who work 30 plus years and are never asked what worked or didn’t work.

Comments received from departments reporting unsatisfactory knowledge transfer included: 1. Knowledge transfer is a concern, we are expecting 30% turnover in the next few years. 2. Succession planning has not been a strong suit of this department. 3. We do no formal knowledge transfer, but we are small enough to anticipate retirements. 4. The sharing of knowledge and experience is poor. Most new officers learn by experiencing challenges on their own. 5. This is badly needed in the fire service. 6. We have not addressed knowledge transfer, but realize the importance and are working on ways to improve.

Among the departments reporting a satisfactory job of knowledge transfer being done, some comments were: 1. When senior members attend meetings they issue a report to staff. 2. We have found that teaming people together on projects helps share information among more members. We use shadowing to great extent. 3. Those with experience usually find a way to share it. 4. Mentoring at all levels has been beneficial. 5. We assign the new person to work with the departing member for a variable period based on the job. 6. Chief officers accumulate a notebook of information over time; this is given to their successor. 7. New battalion chiefs work with retiring chiefs for 30 days. 8. We try to give junior people a chance to experience the bigger vision of what takes place.

When looking at demographic information supplied from the respondents it becomes apparent that there is a difference among the two groups (satisfactory
and unsatisfactory) addressing the quality of knowledge transfer. Table 5 shows the population served and number of fire department members reported by the respondents in both groups.

TABLE 5 Population Served and Number of Members

<table>
<thead>
<tr>
<th></th>
<th>Satisfactory Group</th>
<th>Unsatisfactory Group</th>
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</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>1,049,300</td>
<td>2,445,500</td>
</tr>
<tr>
<td>Average Population</td>
<td>52,465</td>
<td>122,275</td>
</tr>
<tr>
<td>Total Number of Members</td>
<td>1386</td>
<td>2983</td>
</tr>
<tr>
<td>Average Members</td>
<td>69</td>
<td>149</td>
</tr>
</tbody>
</table>

Although both groups consist of an equal number of respondents (20), the group answering question one as doing a satisfactory job of knowledge transfer differed from the group answering unsatisfactory. Total populations of each group of 20 fire departments, along with totals for the number of fire department members shows that in general, smaller departments believe they are doing a better job of knowledge transfer. These departments tend to have roughly half the firefighters of the group that answered they did an unsatisfactory job of knowledge transfer.

Discussion

The research project revealed several relationships between the literature reviewed and the results. While the research often supports the literature there are several points of disagreement, as well as some ideas expanded on by the research.
The literature revealed that knowledge transfer is a valuable component in any organization but is not always given the attention it should have (Beazley, Boenish, and Hayden, 2002). The importance of transferring intellectual capital in order to maintain professionalism in the fire service was purported by James (2003). This thought is shared by several fire departments as well. Especially those who believe they need to do a better job of knowledge transfer. Some departments commented that promotions are made without training, or orientation. Others said sharing knowledge was poorly done, was not a strong suit, or was badly needed.

The process of knowledge transfer also seems to be affected by organizational culture and interaction. Ladd and Ward (2002) showed that effective knowledge transfer was dependent on a positive culture open to change and innovation rather than competition. Likewise Blanehard and Tager (1985) found that some managers hoard knowledge, thereby blocking its transfer. Fire service authors agree, Lasky (2002) asserted that fire department members should share the wealth of knowledge. Organizational culture plays a part in knowledge transfer in programs used in business; Friend (2004) encourages current managers to be passionate about their profession in order to encourage young managers. McCauley and Van Velsor (2004) proposed the use of groups gathered for storytelling while the use of a similar group, but with a structured format was recommended by Carter, Giber, and Goldsmith (2001).

The research shows that these aspects of knowledge transfer, although mostly informal, are strengths within fire departments. High percentages of all
fire departments responding to the questionnaire showed use of storytelling and informal gatherings, such as talk around the kitchen table. The difference among the departments reporting satisfactory knowledge transfer versus unsatisfactory may be in the underlying organizational culture of the respective departments. Even though both groups use these methods with frequency the end results varied.

Among all groups there seems to be consensus that partnering employees to work on a project is a good way to transfer knowledge. This is supported in the literature by Fothergill (2000) when he found linking people and projects was an important component of knowledge transfer. Martinette (2004) also suggested teaming senior employees with young members to work on projects. Tracy (2004) wrote that specific problems should be solved by experienced and inexperienced members together. Research results also show that project partnering is used successfully by fire departments, were 65% of those doing satisfactorily in knowledge transfer reported using this method.

Several literature sources expressed the importance of formal programs for knowledge transfer. Lasky (2002) insists on positional line-of-sight mentoring in a formal program. Lytle (2001) agrees and uses a formal system of mentor certification and evaluation. Job shadowing programs were popular among many literature sources, being suggested by Lasky (2002) and Hammond (2006) when they recommended formal programs to transfer knowledge.

The research showed agreement with the literature regarding the use of formal methods of knowledge transfer. Among businesses researched, formal
mentoring, job shadowing, exit interviews, and partnering were the top responses from organizations doing a satisfactory job of knowledge transfer. The military also has incorporated formal job shadowing into its programs on knowledge transfer. One example is the reassignment of young pilots to a veteran unit for training (VanNierop, 2006).

Although some fire service authors recommended formal programs the research regarding fire departments showed that it is not as prevalent as in business. Formal programs are used more often among the satisfactory knowledge transfer response group of fire departments. These points support the use of such formal methods to improve knowledge transfer in an organization.

Another issue concerning knowledge transfer is its acknowledged need by fire service members. Lombardo (2000) reported that the loss of veteran leaders resulted in concern of competent leadership among the replacements. Comments included with the research questionnaire suggest this is a widespread concern. Several respondents indicated that knowledge transfer was a concern to them, is not necessarily being done well, and is a growing problem.

The fire service may not be doing a good job of using the simplest knowledge transfer method; asking senior employees to share their knowledge and experience. Several authors noted that it usually falls on the employer to ask employees to share knowledge. Beazley, Boenish, and Hayden (2002) said the only way an organization can own the knowledge of employees is by harvesting and storing it for future use. Again a culture of positive social,
interpersonal and communication among employees is critical to information
transfer (Fothergill, 2000). Fire service authors discussed the need for the
organization to do a better job of asking. Martinette (2004) stated that a skillful
leader is successful when they establish mechanisms to transfer knowledge. He
also recommended approaching senior employees on a personal level.
Hammond (2006) found that there is a need to fully inform newly promoted
personnel what the job entails. Martinette (2004) also stated that senior
personnel are often angry near retirement because they perceive themselves as
lacking value to the organization. Compton (2000) says asking employees to
share their experiences is a good way to reduce coasting into retirement. Lasky
(2002) uses formal questionnaires to capture this senior knowledge. Bayouth
(2004) however found general flaws in the use of such methods, especially when
administered on the last day of service.

Research indicated that asking retiring employees for input by use of exit
interviews was much more prevalent among business than in fire departments.
However while formal asking such as exit interviews and journals are used more
in business, fire departments use informal methods more. Information from fire
departments revealed that informal asking, like allowing storytelling and
discussion at the kitchen table was used extensively among fire departments.
More than 75% of all fire departments questioned use informal discussion and
storytelling to transfer knowledge. Once again this is a strong point among the
fire service as the culture of most fire departments and the family atmosphere
lends itself easily to these forms of knowledge transfer.
This researcher believes the results show that businesses have, and use more formal methods of knowledge transfer. From questionnaire responses this seems a very common approach in business. The military however mixes job shadowing (formal) with storytelling and group discussions (semi-formal). Their use blends the formal business-like aspects of the military with less formal methods consistent with the close-knit combat unit culture. In some ways fire departments are similar to the military, both having small groups working and living together for extended periods.

Even though many authors recommended the formal methods of knowledge transfer there are departments showing success with mostly informal methods. This likely is happening in departments that support and direct these informal methods with a positive culture of sharing ideas. Even so, formal programs appear to have merit and should not be dismissed as the primary system to transfer knowledge.

As with any knowledge transfer system there are pluses and minuses. Formal methods require time and commitment as well as buy-in from participants. They also inherit the problems expressed in the literature – that is unwieldy size, and reluctance among top managers to share. Lasky (2002) stated these problems while discussing mentoring programs.

However, left with only informal methods the research shows that roughly half the fire departments will be unsuccessful. To date the fire service has gotten by with mostly informal methods dependent on the willingness of senior people to
share, junior people to ask, and the organization to provide a culture that encourages both.

Along these lines the research also showed some concerns regarding knowledge transfer and the size of an organization. While the research revealed that in general small fire departments are better at knowledge transfer than their large counterparts, this may be a function of culture. Because of their large size, big departments will naturally have some hurdles to jump in regard to a positive culture of sharing knowledge. Informal methods that seem to be best used in fire departments become less effective when members don’t know each other well, and may perceive increased competition for promotion, etc. These organizations may benefit from more formal methods of knowledge transfer; the caveat is that any formal program will be harder to manage in a large department. This may be another reason why these big fire departments don’t do knowledge transfer as well. Perhaps a formal program is just too complicated?

Smaller departments on the other hand are incubators for sharing ideas and stories. However formal programs are shown to be beneficial, and should not be unwieldy or costly in a small organization. Therefore it seems that small departments should not overlook formal programs of knowledge transfer. At the same time large organizations may benefit from informal methods as a way to overcome the largeness of the department.

The implications of the research to the Dubuque Fire Department revolve around not if, but how knowledge transfer can be enhanced. The size of our department is just above the average for those reporting satisfactorily in the
questionnaire. So it should be relatively easy for Dubuque Fire to develop
methods of formal knowledge transfer that are not too costly, time consuming, or
cumbersome. At the same time we also are at a good size to enhance the
informal methods of knowledge transfer as well. Maintaining the proper
organizational culture to allow these methods to blossom will be important.

The need for knowledge transfer to be adequately addressed has been
established through both the literature and research. The next step will be to
map out a path to knowledge transfer improvements. Time is of the essence as
more senior employees will continue to retire. With them will go experiences
many newer members will either not have, or will have fewer of. For instance as
large fires in certain occupancies become fewer the new officers will have to rely
more on theory than practice. Good knowledge transfer from senior employees
before retirement will build on the theory and help new officers better prepare for
the next event.

**Recommendations**

Based on the research completed a program to assist with knowledge
transfer within the fire department is recommended. In order to establish not only
a policy concerning knowledge and experience transfer, but also a culture that
supports the process, the focus should address these issues:

1. Supporting a culture of sharing ideas and experiences should be
   continued. Use of informal storytelling and interaction should be
   encouraged among all members. Senior firefighters and drivers should be
   asked to play a greater role in the training of probationary firefighters.
This involvement should include an informal story sharing element incorporated into the initial orientation training of new employees.

2. A formal program of mentoring and job shadowing should be developed for captain and assistant chief levels. Results showed that this formal use of common knowledge transfer methods is valuable. Targeting the captain to assistant chief, and assistant chief to chief transitions is a priority for continuity and capture of critical organizational knowledge. These levels should use a program with a formal set of benchmarked criteria. Members enrolled in such a program should include members seeking promotion to the new level. Working at this level in the organization will maintain a workable program in size and scope.

3. Formal exit interview procedures should be implemented as soon as possible. Retiring members have never been asked to provide input. The short-range future will see substantial numbers of retirements and this experience must be captured if possible.

4. Partnering employees on projects should be considered as much as possible. Special projects should include junior or less experienced people rather than just the veteran experts on the subject matter. This process will build knowledge among more members.

5. Budgets should be established to allow for dual positions when command staff personnel are scheduled to retire. The ability to have the successor in place before a retirement takes place has been shown to be very
beneficial. These dual position job shadows should extend to 30 days as a minimum for these high level jobs.
REFERENCES


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practitioners. *Natural Hazards Review*, 91-98.


Hammond, G. (2006). *Succession planning with the transfer of organizational knowledge for the EMS coordinator position at meridian township fire department* (Call number 38813). Emmitsburg, MD. National Fire Academy.


Lombardo, S. (2000). *What would be the impact of a deferred retirement option plan on CDF’s ability to retain experienced fire officers* (Call number 22743). Emmitsburg, MD. National Fire Academy.


APPENDIX A

Business Questionnaire

Organization ____________________   Your Name (optional) ___________________

Number of Personnel__________

1. How well do you believe your organization reduces the loss of knowledge and experience when a senior employee retires?
   □ Satisfactory
   □ Unsatisfactory
   □ Not at all

2. Transferring knowledge and experience from senior employees can be done in various ways. Check any of those used in your organization.
   □ Formal program of mentoring or job shadowing
   □ Use of Exit Interviews or questionnaires
   □ Structured group settings
   □ Partnering senior and junior people on projects
   □ Informal “water cooler” interaction
   □ Use of storytelling to share experiences
   □ Senior employees maintain journals
   □ Other, please explain____________________________________

3. At what organizational level do you address knowledge and experience transfer from senior to junior employees? Check any that apply.
   □ Entry Level
   □ Middle Management
   □ Executive
   □ None

4. Please share your additional comments on methods to save and use the knowledge and experience of departing members.

   □ Please send a copy of your research to me at the following email address
   ________________________________________________________________
APPENDIX B

Fire Department Questionnaire

Name of Department _______________________ City_______________ State_____

Population Served____________________ Number of Personnel___________

1. How well do you believe your organization reduces the loss of knowledge and experience when a senior member retires?

   □ Satisfactory
   □ Unsatisfactory
   □ Not at all

2. Transferring knowledge and experience from senior members can be done in various ways. Check any of those used in your organization.

   □ Formal program of mentoring or job shadowing
   □ Use of Exit Interviews or questionnaires
   □ Structured group settings
   □ Partnering senior and junior people on projects
   □ Informal “kitchen table” interaction
   □ Use of storytelling to share experiences
   □ Senior member journals
   □ Other, please explain______________________________________

3. At what organizational level do you address knowledge and experience transfer from senior to junior members? Check any that apply.

   □ Entry Level
   □ Company Officer
   □ Chief Officer
   □ None

4. Please share your additional comments on methods to save and use the knowledge and experience of departing members.
# APPENDIX C

## Fire Departments Returning Questionnaires

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Dear Chief,

I am finishing my final research paper for the National Fire Academy’s Executive Fire Officer Program and I need your assistance. I am researching the methods available for capturing the knowledge and experience of members soon-to-retire. In order to accomplish this task I am asking if you could please take a few minutes to answer the attached questionnaire.

Your help would be greatly appreciated, and if you would like a copy of my research please indicate that on the form, along with your email address and I will be happy to send it to you upon completion. You may fax the form back to me if you wish, or email me with your responses at the following contacts.

FAX: 563-589-4209

Email: rsteines@cityofdubuque.org

I thank you in advance for your assistance.

Best Regards,

Rick Steines
Assistant Fire Chief
Dubuque (IA) Fire