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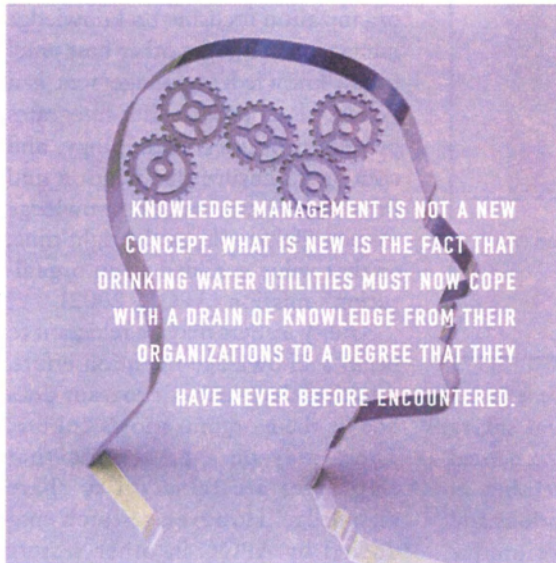
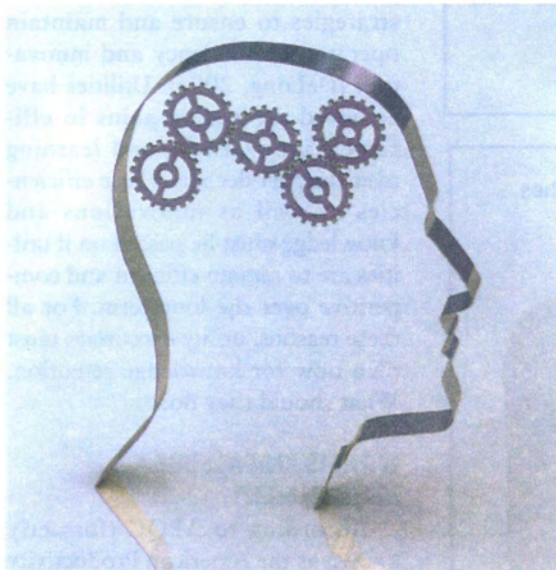
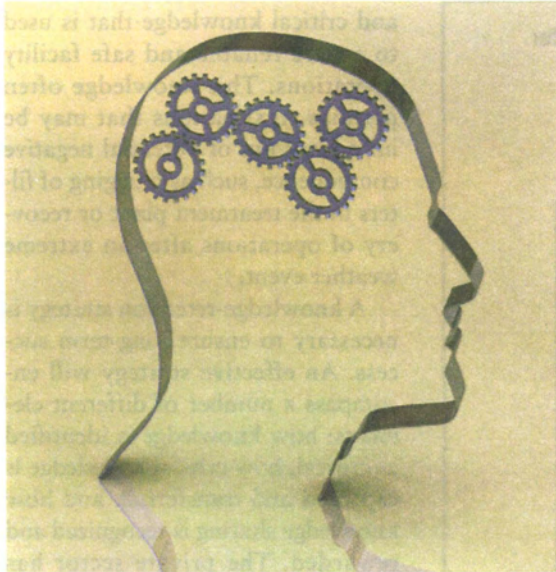
Retaining experienced workers

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BY LINDA BLANKENSHIP
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Planning for knowledge retention now saves valuable organizational resources later

Researchers have documented the departure of drinking water utility workers, as large numbers of employees retire or leave to seek opportunities elsewhere. An Awwa Research Foundation (AwwaRF) study, published in 2005 using 2002 and 2003 survey data, documented that half of water utility workers were older than 44 (Olstein et al, 2005). Given that five years have elapsed since the survey data were collected, the average age is likely to be closer to 49. The average retirement age for utility employees was determined to be 56. However, for some utilities that age is much younger, depending on the utility's type of retirement program. Some utilities' parent local governments offer early retirement incentive programs that allow workers to retire several years before reaching "normal" retirement age, sometimes with very little notice. Further exacerbating the situation, several layers of mature workers may be retiring at nearly the same time. Many utilities will lose 30–50% of their current workforce within the next 5–7 years, an unprecedented drain of knowledge from any organization (Figure 1).

FIGURE 1 Most utilities have a window of three to five years to transfer knowledge

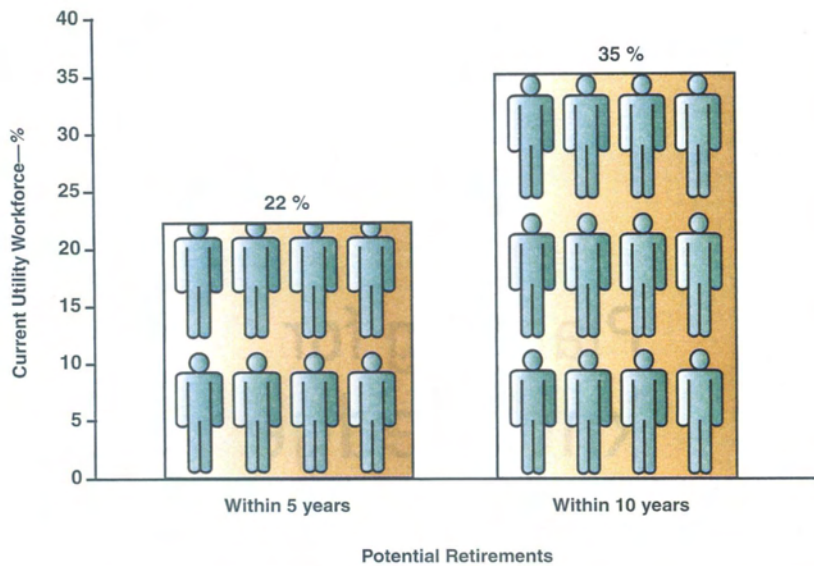
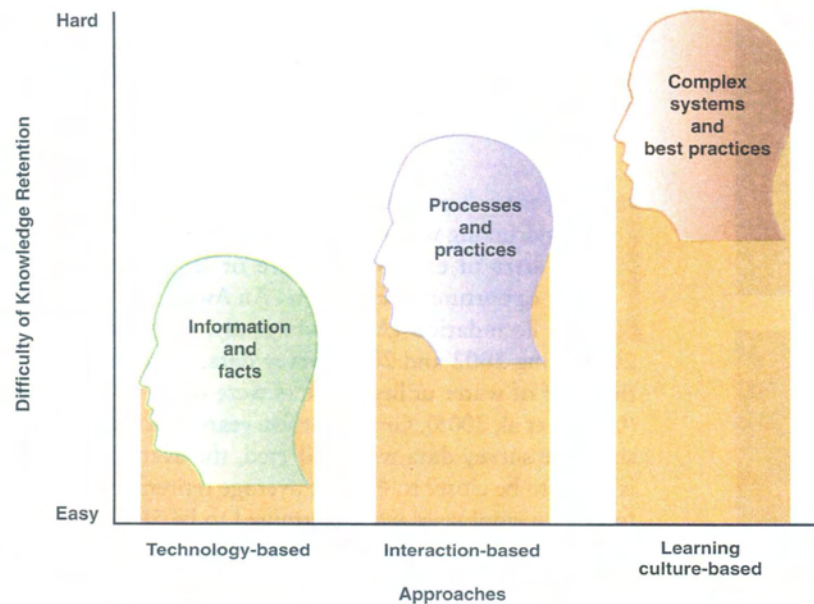


FIGURE 2 Difficulty of retaining knowledge leads to different approaches for retention



Source: Blankenship et al. ©2008 by AwwaRF. Reprinted with permission.

At the same time, water treatment technologies are becoming increasingly sophisticated (Runge & Mann, 2006). Although precise costs are not available, it can be estimated that the cost to replace the average

certified operator is equivalent to 1.5 times the operator's annual salary and benefits based on training needed to achieve and maintain licensing. In addition, experienced operations and maintenance workers have unique

and critical knowledge that is used to ensure reliable and safe facility operations. This knowledge often pertains to situations that may be infrequent but of potential negative consequence, such as plugging of filters in the treatment plant or recovery of operations after an extreme weather event.

A knowledge-retention strategy is necessary to ensure long-term success. An effective strategy will encompass a number of different elements: how knowledge is identified as critical, how critical knowledge is captured and transferred, and how knowledge sharing is recognized and rewarded. The private sector has widely adopted knowledge-retention strategies to ensure and maintain operational efficiency and innovation (DeLong, 2004). Utilities have achieved significant gains in efficiency, innovations, and learning over the past decade. These efficiencies as well as innovations and knowledge must be passed on if utilities are to remain efficient and competitive over the long term. For all these reasons, utility executives must plan now for knowledge retention. What should they do?

WHAT IS KNOWLEDGE MANAGEMENT?

According to APQC (formerly known as the American Productivity & Quality Council, a nonprofit organization focusing on knowledge management among other best practices), knowledge management is a systematic approach that integrates people, processes, technology, and content to ensure the creation and flow of information and knowledge to the right people, at the right time, so that value is added to an organization's mission (APQC, 2002).

Utility leaders may be reluctant to begin a knowledge-retention effort, thinking that such a program does not fit their organization's culture. There may be a perception that employees are reluctant to share knowledge. However, research conducted by APQC in other sectors

indicates that people hoard their time and energy, not knowledge per se. Given the right resources and incentives—and the utility worker's reputation as a dedicated public employee—employees will participate in knowledge transfer.

Figure 2 illustrates the degree of difficulty in retaining knowledge compared with the different methods that can be used for knowledge retention. Simple document- or technology-based methods, such as expert locators and the Yellow Pages, capture information and facts, i.e., they capture knowledge that is easy to write down. Simple systems or more complex content-management systems can form a document repository. Information (and facts) that resides near the beginning of the knowledge value chain (Figure 3) can be captured in these technology-based systems.

Some utility managers may be tempted to solve the problem of knowledge retention by having departing workers “write it all down.” However, most critical knowledge cannot be captured this way, and, even more important, it cannot be learned this way. More complex interaction-based and learning culture-based methods are needed to effectively retain knowledge that is not easily written down. Interaction-based knowledge, which consists of processes and practices (Figure 2), typically forms the core competencies of a drinking water utility and can be difficult to capture. Examples include use of after-action reviews and project milestone reviews. Complex systems and best practices comprise learning culture-based knowledge. This is tacit knowledge, often referred to as “know-how” and even “know who,” that is difficult to capture yet represents the highest-value knowledge.

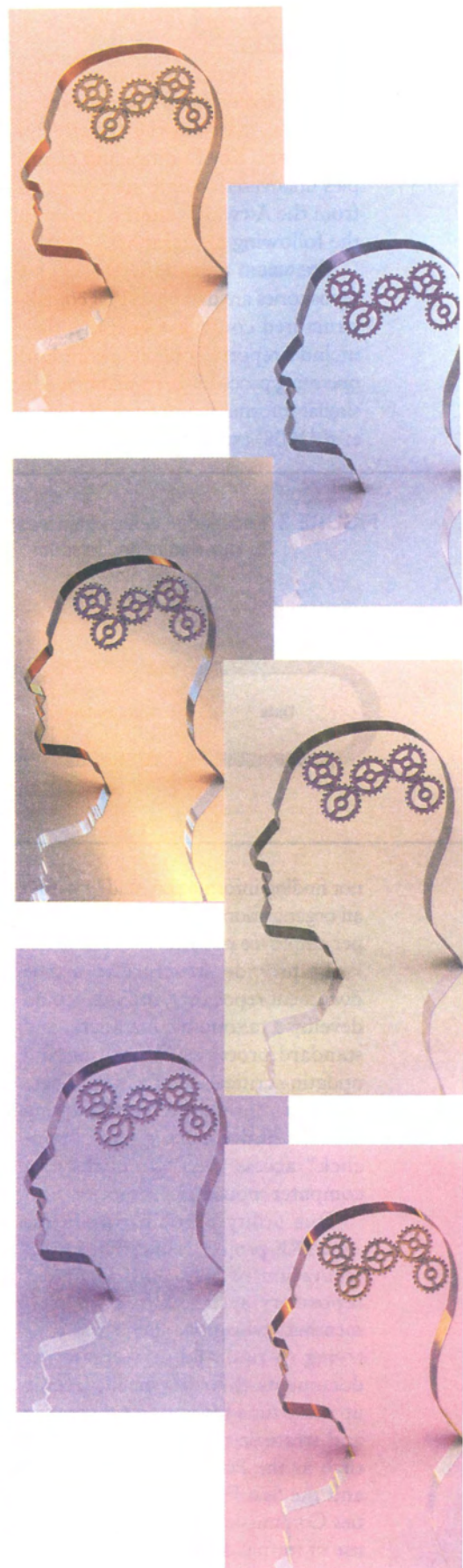
IMPORTANT RESEARCH ON KNOWLEDGE RETENTION

An AwwaRF research project—Strategies to Help Drinking Water

Utilities Ensure Effective Retention of Knowledge—was implemented to define effective strategies, tools, and techniques that will enable utilities to implement knowledge-retention and reuse projects based on an understanding of the key drivers, critical success factors, barriers, costs, and benefits for utilities. This research project began in November 2005; the final report was published this summer (Blankenship, 2008).

The project began with a review of the literature relating to the knowledge-retention challenge. Because the water industry is not the only industry experiencing this demographic wave and resulting “brain drain,” extensive information is available on effective knowledge-retention tools used in other industries. After completing the literature review, a utility survey and interview process were implemented to identify important trends including drivers and barriers. Not surprisingly, the key driver is actual or pending retirements; fortunately, the majority of utilities have recognized this as a strategically important issue. The biggest barriers to retaining knowledge are time, other competing priorities, and expertise, i.e., a lack of understanding of how to actually retain knowledge. This project will assist utility leaders who are dealing with these issues.

Researchers developed a “top five” list of approaches to knowledge retention to be validated by utility participants. This list includes use of social network analysis as one approach to identify critical “hubs” of knowledge, essentially the people that others go to in order to get information. To capture and transfer various types of knowledge, four tools, or approaches, were studied: using a document repository, incorporating retirees, mentoring, and organizational learning and training. These methods were validated by utility participants in order to determine the best ways for utilities to use them (Blankenship et al, 2008).



INFORMATION RETENTION STRATEGIES

Utility leaders can implement many different knowledge-retention activities, many in the (relatively) short term. Key findings and examples uncovered to date are excerpted from the AwwaRF interim report in the following paragraphs.

Document repository. Document repositories are databases that contain structured content. Generally, they include reports, policies, standard operating procedures, regulations, and similar information. A study by Gantz et al (2008) estimated that the cost of

procedural manuals, standardized record-keeping formats, archiving, and data retrieval helps to more effectively facilitate the knowledge transfer process.

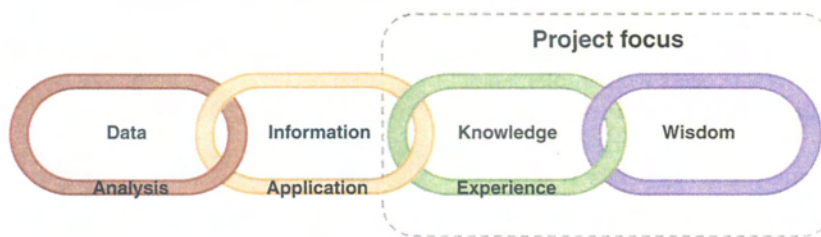
Incorporating retirees. Some utility leaders may think that rehiring retired workers will be sufficient to ensure that valuable knowledge is retained. The AwwaRF study recognizes that simply rehiring retired workers is a stop-gap, temporary measure. Proactive utilities use retirees selectively and proactively to train new workers, document critical knowledge, and assist with the transfer of knowledge

Another simple step that utility leaders can take is to ask their employees to volunteer information on when they plan to retire. The Tennessee Valley Authority (TVA) surveys its employees annually to request this information, and approximately 80% of its workforce responds. Properly communicated and appropriately applied, this information can be used to build a culture in which planning for knowledge sharing is the norm. TVA also evaluates knowledge that is at risk of being lost and identifies whether to document this knowledge, replace it through training, redesign it (by eliminating the need for it, such as through replacing outdated equipment), or outsource it.

Mentoring. Relatively few utilities have formal mentoring programs, but mentoring has an important role to play, not only in leadership development but also in transferring tacit knowledge. In particular, mentoring can help transfer technical and operational knowledge as well as important cultural knowledge and organizational “norms.” Seattle Public Utilities (Washington) and Colorado Springs Utilities have designed and implemented mentoring programs to (among other goals) transfer tacit knowledge. The utilities experience many benefits from these programs. Mentoring can also be valuable in transferring “know-who” knowledge. In fact, a mentoring program can be one of the most important programs that a utility develops for both knowledge transfer and leadership development.

Organizational learning and training. Organizational learning and training encompasses the transfer of best practices using a structured, facilitated approach. It can also incorporate blended training approaches that include classroom, online, and on-the-job training. It may focus on delivering training in a “just-in-time” format to ensure that trainees receive training during “teachable” moments, i.e., when knowledge is needed and can be applied by the employee.

FIGURE 3 Knowledge value chain illustrates progression from data to knowledge and wisdom



not finding information readily within an organization is, on average, \$5,300 per employee per year.

To provide structure to a true document repository, utilities should develop a taxonomy, metadata, and standard processes for storing and updating critical information. These processes should include updating content and ensuring easy “two-click” access (i.e., two clicks of a computer mouse).

One utility participating in the AwwaRF project found that implementation of a formal document repository system benefited staff members who now spend less time trying to find and/or recreate the documents that they need, freeing up more time for important creative and strategic work. Other utilities, such as the Portland Water Bureau and the San Francisco Public Utilities Commission, are making greater use of formal documentation. Use of

to more permanent replacements. Retired workers should be rehired with a specific strategy in mind. Utilities may want to consider defining the specific outcomes expected as part of the rehiring process.

To ensure successful use of retirees, a utility might consider programs in which retirees work together with their future replacements. For example, the East Bay Municipal Utility District (California) has developed a program to transfer retiring workers to a general manager’s pool one year before retirement. This enables the utility to hire a replacement employee who can work side-by-side with the retiring employee and gain valuable skills and knowledge before the retiree leaves. Orange Water and Sewer Authority (North Carolina) has an early hire program through which new employees work side-by-side with current employees to effectively transfer knowledge.

Although these approaches may seem like individual approaches, researchers found that it may be difficult to consider and plan approaches separately. Consider the City of Portland (Oregon) Water Bureau where workers are videotaped doing their work and are documenting their collective experience to capture tacit knowledge. Retired workers are being rehired on a part-time basis to train new employees. Recognizing that a large portion of its labor force will be retiring in the not-too-distant future, the utility has developed a formal, 4,000-hour, state-approved apprentice program that uses training and mentoring to bring unskilled employees up to speed.

Blending approaches and other techniques. Remember that one size does not fit all; a blend of approaches to retain knowledge is usually needed. Document repositories and standard operating procedures can capture knowledge that is easily written down. Structured formats, such as project milestone reviews and after-action reviews, help retain and transfer ongoing knowledge gained at the utility. People-to-people methods, such as mentoring and organizational learning and training, are needed to transfer tacit knowledge. Keep in mind that knowledge has a “shelf life” and should be used in advance of its “best before” expiration date.

Of course, knowledge is not lost because of retirements alone. Although many retiring utility workers have spent nearly their entire careers with the same organization, that is not likely to be the case for their replacements. Some utilities are finding that new staff members who join the utility are considerably older, perhaps having retired once or been laid off from their previous job. Many come to utilities because they find the stability and benefits of a public sector position attractive. Younger staff members who are new to the workforce (so-called millennials or nexters) are also expected to have shorter tenures, on average, as they seek addi-

tional responsibility and are willing to change jobs when the opportunity is right. It will be important to leverage and transfer knowledge from these workers as well.

The past decade or more of “right-sizing” efforts by many utilities has limited the employee development pipeline. Utilities may have lost their “ability” to hire and train new workers. As a result, it is important that knowledge retention not be performed as an isolated, stand-alone effort but rather as part of an overall workforce planning approach. Hiring practices, staffing levels, compensation, rewards, recognition, evaluations, and promotions all must support knowledge retention.

Utilities that successfully deal with the effect of knowledge retention will be better equipped to cope with the challenges ahead—increasingly sophisticated technology, stringent regulations, higher customer expectations, aging infrastructure, technology pressures, security concerns, economic constraints, and more. Above all, this research has determined that leadership support and buy-in are the most critical factors in successfully achieving knowledge retention. With all of the other initiatives, special projects, and day-to-day issues facing utility leaders, a program with long-term and sometimes hidden payback like knowledge retention is a key area that utility leaders must focus on. After all,

today’s utility employees really are “knowledge workers.”

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If you have a comment about this article, please contact us at journal@awwa.org.

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