KNOWLEDGE MANAGEMENT

A Practical Guide for Librarians

JENNIFER A. BARTLETT

PRACTICAL GUIDES FOR LIBRARIANS, NO. 73

Knowledge Management

PRACTICAL GUIDES FOR LIBRARIANS

About the Series

This innovative series written and edited for librarians by librarians provides authoritative, practical information and guidance on a wide spectrum of library processes and operations.

Books in the series are focused, describing practical and innovative solutions to a problem facing today's librarian and delivering step-by-step guidance for planning, creating, implementing, managing, and evaluating a wide range of services and programs.

The books are aimed at beginning and intermediate librarians needing basic instruction/guidance in a specific subject and at experienced librarians who need to gain knowledge in a new area or guidance in implementing a new program/service.

About the Series Editor

The **Practical Guides for Librarians** series was conceived and edited by M. Sandra Wood, MLS, MBA, AHIP, FMLA, Librarian Emerita, Penn State University Libraries from 2014 to 2017.

M. Sandra Wood was a librarian at the George T. Harrell Library, the Milton S. Hershey Medical Center, College of Medicine, Pennsylvania State University, Hershey, PA, for over thirty-five years, specializing in reference, educational, and database services. Ms. Wood received an MLS from Indiana University and an MBA from the University of Maryland. She is a fellow of the Medical Library Association and served as a member of MLA's Board of Directors from 1991 to 1995.

Ellyssa Kroski assumed editorial responsibilities for the series beginning in 2017. She is the director of Information Technology at the New York Law Institute as well as an award-winning editor and author of thirty-six books including *Law Librarianship in the Digital Age* for which she won the AALL's 2014 Joseph L. Andrews Legal Literature Award. Her 10-book technology series, *The Tech Set*, won the ALA's Best Book in Library Literature Award in 2011. Ms. Kroski is a librarian, an adjunct faculty member at Drexel and San Jose State Universities, and an international conference speaker. She was named the winner of the 2017 Library Hi Tech Award from the ALA/LITA for her long-term contributions in the area of Library and Information Science technology and its application.

Recent books in the series include:

50. *Gaming Programs for All Ages in the Library: A Practical Guide for Librarians* by Tom Bruno
51. *Intentional Marketing: A Practical Guide for Librarians* by Carol Ottolenghi

52. *Electronic Resources Librarianship: A Practical Guide for Librarians* by Holly Talbott and Ashley Zmau
53. *Citation Management Tools: A Practical Guide for Librarians* by Nancy R. Glassman
54. *Embedded and Empowered: A Practical Guide for Librarians* by Courtney Mlinar
55. *Creating a Learning Commons: A Practical Guide for Librarians* by Lynn D. Lampert and Coleen Meyers-Martin
56. *Graphic Design: A Practical Guide for Librarians* by Valerie Colston
57. *Creating a Tween Collection: A Practical Guide for Librarians* by Karen M. Smith
58. *Teaching First-Year College Students: A Practical Guide for Librarians* by Maggie Murphy with Adrienne Button
59. *Reaching Diverse Audiences with Virtual Reference and Instruction: A Practical Guide for Librarians* by Meredith Powers and Laura Costello
60. *How to Write and Get Published: A Practical Guide for Librarians* by Tammy Ivins and Anne Pemberton
61. *Library Programming Made Easy: A Practical Guide for Librarians* by Michelle Demeter and Haley Holmes
62. *Library Volunteers: A Practical Guide for Librarians* by Allison Renner
63. *Developing a Residency Program: A Practical Guide for Librarians* by Lorelei Rutledge, Jay L. Colbert, Anastasia Chiu, and Jason Alston
64. *Yoga and Meditation at the Library: A Practical Guide for Librarians* by Jenn Carson
65. *Fundraising for Academic Libraries: A Practical Guide for Librarians* by Karlene Noel Jennings and Joyce Garczynski
66. *Developing a Library Accessibility Plan: A Practical Guide for Librarians* by Rebecca M. Marrall
67. *Terrific Makerspace Projects: A Practical Guide for Librarians* by Juan Denzer and Sharona Ginsberg
68. *Systems Librarianship: A Practical Guide for Librarians* by Brighid M. Gonzales
69. *E-Textiles in Libraries: A Practical Guide for Librarians* by Helen Lane and Carli Spina
70. *Anime Clubs for Public Libraries: A Practical Guide for Librarians* by Chantale Pard
71. *Digitization and Digital Archiving: A Practical Guide for Librarians, Second Edition* by Elizabeth R. Leggett
72. *Exhibits and Displays: A Practical Guide for Librarians* by Carol Ng-He and Patti Gibbons
73. *Knowledge Management: A Practical Guide for Librarians* by Jennifer Bartlett
74. *Podcasting: A Practical Guide for Librarians* by Junior Tidal
75. *Senior Services Today: A Practical Guide for Librarians* by Ashley Brooks
76. *Liaison Engagement: A Practical Guide for Librarians* by Ellen Hampton Filgo and Sha Towers

Knowledge Management

A Practical Guide for Librarians

Jennifer A. Bartlett

PRACTICAL GUIDES FOR LIBRARIANS, NO. 73

ROWMAN & LITTLEFIELD
Lanham • Boulder • New York • London

Published by Rowman & Littlefield
An imprint of The Rowman & Littlefield Publishing Group, Inc.
4501 Forbes Boulevard, Suite 200, Lanham, Maryland 20706
www.rowman.com

6 Tinworth Street, London SE11 5AL, United Kingdom

Figures and tables created by author.

British Library Cataloguing in Publication Information Available

Library of Congress Cataloging-in-Publication Data

Names: Bartlett, Jennifer A., author.
Title: Knowledge management : a practical guide for librarians / Jennifer A Bartlett.
Description: Lanham : Rowman & Littlefield, [2021] | Series: Practical guides for librarians ; 73 | Includes bibliographical references and index. | Summary: "Knowledge Management: A Practical Guide for Librarians will help information professionals recognize, organize, communicate, and leverage both the tacit and explicit knowledge already in the organization for the benefit of themselves and their users"—Provided by publisher.
Identifiers: LCCN 2020052293 (print) | LCCN 2020052294 (ebook) | ISBN 9781538144572 (paperback) | ISBN 9781538144589 (epub)
Subjects: LCSH: Libraries—Information technology. | Knowledge management. | Libraries—Information resources management | Libraries—Technological innovations. | Libraries—Communication systems. | Librarians—Effect of technological innovations on. | Communication in library administration.
Classification: LCC Z678.9 .B36 2021 (print) | LCC Z678.9 (ebook) | DDC 025.1—dc23
LC record available at https://lccn.loc.gov/2020052293
LC ebook record available at https://lccn.loc.gov/2020052294

The paper used in this publication meets the minimum requirements of American National Standard for Information Sciences—Permanence of Paper for Printed Library Materials, ANSI/NISO Z39.48-1992.

Contents

List of Figures

Preface

Early in my career as a reference librarian I became the manager of a very busy public branch library in a major metropolitan library system. Up to that point, keeping up with the many responsibilities, tasks, projects, and assignments associated with working my way through graduate school, keeping up a writing schedule, moving halfway across the country, and juggling regular day-to-day responsibilities hadn't been a problem. But managing a branch library with eight to ten staff, volunteers, a friends group, and quite a few community organizations needing attention was a whole other level of work for which I was completely unprepared. Librarians in general tend to be fairly organized people, but to suddenly be responsible for running the day-to-day operations of a branch library, dealing with staff issues, handling patron requests, networking with people in your community, and keeping everything organized at the same time can be more than a little overwhelming.

Twenty-some years later, as someone who has served in various management roles in both public and academic libraries, juggling all the information needed to keep things running smoothly and efficiently can still be a daunting challenge. Too many times, critical work information—work procedures, statistics, historical records, reports—disappear unexpectedly and require dozens of hours to reconstruct. Key staff retire or leave for other positions, taking their accumulated knowledge of years with them. Files are stored on local hard drives and servers and not shared with staff who need them. If these systems are not backed up, hundreds or thousands of files and documents can be lost. Policies and procedures aren't updated regularly in a central location, leading to confusion and poor service to our patrons. How can we as librarians and managers handle these situations?

Librarians and information professionals have been familiar with the phrase "information overload" for some time. Even before the term was coined by futurist Alvin Toffler in 1970, librarians have been accustomed to navigating vast amounts of information and framing it in a way that their patrons and clients can understand and use. The processes of acquiring, organizing, and making information resources available is not intimidating to an experienced librarian who has been trained for such work in a library and information science program and has some on-the-job experience. However, after working in libraries for any length of time a common exclamation from many librarians is "they never taught me this in library school," generally spoken in an exasperated tone when faced with a new assignment. What is needed is a general understanding of the importance of managing internal organizational knowledge.

The goal of *Knowledge Management* is to provide an overall framework for librarians, library staff, and managers to harness, preserve, disseminate, and evaluate the information and knowledge existing in a library organization for the benefit of the organization and its users. This guide provides basic procedures and techniques to help recognize, organize, communicate, and leverage both tacit and explicit knowledge and to identify gaps and inefficiencies.

It's more than a little ironic that we, as librarians and information professionals, are trained to be experts at providing resources to users, yet managing internal working knowledge and information can be a challenge. What we need are real-world guidelines to help harness all these pieces of valuable information so that they don't get lost and can be used to improve our organizations. There are a number of excellent introductions to knowledge management in libraries beginning to appear in the literature, but step-by-step handbooks for practical applications of knowledge management are scarce. Adding to the confusion about how to proceed are all the technological platforms that individuals and organizations can choose, from a basic knowledge base in Microsoft Excel to a comprehensive content management system such as HubSpot or Guru.

Most of us don't have the time or the resources to become certified knowledge management professionals, but we do have a strong need to manage our institutional and professional information in the service of our libraries and our own career development.

Scope

Knowledge Management covers information of use for professionals working in many types of libraries and library organizations, including public, academic, school, and special, and is designed to be interactive. It is strongly encouraged that readers keep their own knowledge management problems and issues in mind when reading through each chapter. The overall goal of the book is not only to offer basic background information and context, but also to involve readers with useful, targeted exercises and examples to help develop and implement a knowledge management program in their own institutions.

As knowledge management by its very definition involves technological tools, any book about knowledge management will fall out of date to a certain extent very quickly. Although examples throughout the book will use current knowledge management software and platforms, they are meant to illustrate broad knowledge management concepts and practices rather than serve as a recommendation for use of a particular product. Software and apps are introduced and disappear with some regularity; of more importance is the need to learn to identify key features and functionality of these tools (including portability) so that the best decisions can be made regardless of their continuing availability.

Organization

Knowledge Management is divided into three parts: "Introduction to Knowledge Management," "The Knowledge Management Lifecycle," and "Next Steps in Knowledge Management." In part I, chapter 1 provides an introduction to the concept of knowledge management and traces its history from the beginning of professional organizations to the present day. It also defines basic terms used in knowledge management and discusses how the field has evolved over time, including why knowledge management has become important in libraries and information organizations.

Chapter 2, "Types of Knowledge and the Knowledge Management Lifecycle," discusses types of organizational knowledge assets and the differences between explicit and tacit knowledge. Readers will be introduced to several influential knowledge management models as well as how the knowledge management lifecycle operates in the context of a learning organization. Although there are several ways to structure a knowledge management system, the one outlined in this book is comprised of five iterative stages: acquisition and creation, structure and compilation, integration and stability, learning and dissemination, and assessment and evaluation; this framework is introduced in this chapter.

Reasons for implementing a knowledge management program, conducting an initial assessment, and goal setting are the focus of chapter 3, "Goals and the Knowledge Management Framework." This chapter discusses the three basic pillars on which the knowledge management program rests—people, process, and technology—and beginning to develop an organizational knowledge management plan given specific problems, staffing, clientele, budget, and support. It asks the reader to consider some introductory, "who-what-when-where-why" questions about their own organizational situations and how basic knowledge management practices and techniques may apply locally. It also touches on the importance of developing an individual, personal knowledge management system as a basis for not only individual work but also participation in the organizational knowledge management program. Chapter 4 emphasizes an important point made throughout the book, namely that people are at the center of any knowledge management plan. "People at the Center: Creating a Culture of Knowledge Management" talks about the importance of cultivating an open, collaborative organizational culture, building knowledge-sharing teams, convincing library staff of the importance and value of implementing a knowledge management program, and advocating for administrative resources. Creating a "culture" of knowledge management in which a majority of staff and administrators are on board is essential to developing and implementing a successful plan.

The main part of the book, part II, "The Knowledge Management Lifecycle," discusses each stage of the cycle in turn, providing context for how to tailor each step to best meet the needs of an individual library. There is no one "cookie cutter" knowledge management plan that will work in every situation; rather, each organization should consider carefully how to best allocate existing knowledge, staff, and budget resources to best facilitate transfer and use of organizational knowledge and expertise in a local setting. Chapter 5, "Capturing Knowledge: Acquisition and Creation," introduces the process by defining explicit and tacit knowledge capture methods, introducing the SECI (socialization, externalization, combination, internalization) knowledge capture model, and suggesting some models for knowledge capture.

Chapter 6 addresses what to do with all the documents, files, procedures, and other materials that will surface in the capture and creation phase. After a brief introduction to various knowledge organization approaches, this chapter talks about the advantages of developing a knowledge map, discusses process-based and competency models, and offers a summary of knowledge classification systems such as ontologies and folksonomies. Chapter 7, "Storing Knowledge: Integration and Stability," focuses on technologies needed to safely store, search, and retrieve knowledge for use, as well as some challenges that may arise when choosing and implementing new technologies. Topics in this chapter include the organization's intranet, content and document management systems, collaboration software, and knowledge portals.

Chapter 8, "Sharing Knowledge: Learning and Dissemination," returns to the importance of the library as a learning organization and knowledge management's role in

cultivating that atmosphere. Topics in this chapter include a brief overview of organizational learning and dissemination and diffusion of knowledge. Supporting organizational learning includes reviewing best practices for using established communication methods such as meetings, email, and wikis. Knowledge communities such as communities of practice, purpose, and interest are also effective ways to nurture organizational learning, and other activities including knowledge cafés, peer assists, after action reviews, lessons learned exercises, and systems of rewards and incentives can spark productive discussions and the creation of new knowledge. Chapter 9, "Updating Knowledge: Assessment and Evaluation," closes the loop by suggesting best practices for evaluating procedures and projects and the operation of the knowledge management system itself. This chapter lists several key metrics that can work in many assessment situations and suggests ways to address concerns that may come up during this phase or at other points in the lifecycle.

Finally, part III's chapter 10, "Future Directions for Knowledge Management in Libraries," will address how current and approaching technological and social trends may affect knowledge management at large and in libraries. Certainly the coronavirus pandemic will have a lasting impact on how we live and work, and technologies such as videoconferencing, artificial intelligence, and machine learning will impact how knowledge management continues to grow and develop as a discipline. This chapter ends with some suggestions of further resources for you to keep up to date with trends in knowledge management so that you can continue to grow and develop your own knowledge management plan for your staff and patrons.

Part I

INTRODUCTION TO KNOWLEDGE MANAGEMENT

CHAPTER 1

Introducing Knowledge Management

IN THIS CHAPTER

- ▷ What is Knowledge Management?
- ▷ Benefits of Knowledge Management Systems
- ▷ A Brief History of Knowledge Management
- ▷ Knowledge Management Enters Libraries

"Scientia potentia est."
— KNOWLEDGE IS POWER.

LIBRARIES HAVE LONG BEEN CENTERS OF LEARNING and exploration, places where readers and researchers come together to explore vast collections of information, whether in print or online. Libraries are no longer dependent on print materials to serve their users, instead providing a connection to a vast ecosystem of knowledge through technology and professional expertise. With increased resources, however, comes the increasingly crucial need to better organize and manage the library's internal information assets through developing methods of information collection, efficient dissemination, and leverage of employee expertise. Libraries are now called upon to shift their focus from storing and providing information to establishing networks supporting collaboration, creation, and knowledge sharing. Building a "knowledge management" (KM) organizational culture speeds up access to information, improves decision-making and efficiency, promotes innovation, and helps librarians connect their patrons with the knowledge and resources they need more quickly and effectively. As the volume and flow of information continues to increase, organizational KM plays an integral role in the important work libraries continue to provide.

Imagine that you are a library director and encounter these situations:

- Debra has been a senior legal researcher in your firm for well over thirty years and announces her retirement. One month later she is vacationing in Hawaii and you realize you don't have access to some of her key files and documentation.
- Many of the student workers at your circulation desk are relatively new and inexperienced. They are unsure how to handle any situation other than basic book checkout, including registration of new borrowers, directing visitors to faculty offices, and responding quickly to building emergencies.
- You are interested in building a popular reading collection in Russian in your public library to serve the local community, so you hire a translator to help select titles. You discover after the initial phases of the project have begun that a librarian in one of your branch libraries grew up in a multilingual household and is fluent in Russian.
- A high school librarian develops a library materials database to help teachers with their lesson plans and emphasize basic information literacy skills for incoming freshmen. Another librarian in the same school system is working on a similar, but separate project.

At their core, these are all information-related problems with real consequences for you as a manager. You don't have access to the accumulated information gathered over years by a veteran employee, and so lose time trying to reconstruct it on the fly. Training of a student workforce that rotates in and out relatively often is difficult, time-consuming, and disorganized. Scarce budget dollars go toward hiring someone with a skill set when that expertise was already available on staff. Professionals operating in silos duplicate their efforts when they could have been combined. The information is all there, but it's not organized or coordinated. Managers and frontline employees waste precious time and resources trying to find and organize the information that already exists.

Professionals in library and information science are skilled at gathering, creating, preserving, storing, and disseminating information, so it's more than a little ironic to find ourselves in a position information disorganization, if not chaos. However, libraries are just as susceptible to the breakdown of internal information and knowledge channels as any other profession—banking, law, information technology, and many others. Regardless of industry, the need for deliberate and efficient methods to handle internal knowledge is essential.

Organizing institutional information is a crucial and growing problem. Nearly forty years ago, John Naisbitt wrote in his bestselling book *Megatrends* that the new and evolving American society emerging from the end of the industrial era in the late 1950s faced restructuring in ten critical areas. First among these was the "megashift" from an industrial to an information society. In the new information economy, power would move away from economic assets owned by few to information assets shared by many:

> Unlike other forces in the universe, however, knowledge is not subject to the law of conservation: It can be created, it can be destroyed, and most importantly it is synergetic—that is, the whole is usually greater than the sum of the parts. Notes Peter Drucker, "The productivity of knowledge has already become the key to productivity, competitive strength, and economic achievement. Knowledge has already become the primary industry, the industry that supplies the economy the essential and central resources of production." (Naisbitt 1982, 16–17)

If knowledge was a "primary industry" several decades ago, how much more crucial has it become with the explosion of information technologies and trends such as the Internet of Things, smart phones, artificial intelligence, Big Data, and digital media? Recent advancements in technology and social media have made a vast amount of information more available more quickly, but does that necessarily translate into useful and actionable knowledge for organizations? What are the implications of artificial intelligence tools that may allow employees to extract targeted data in seconds to assist with decision-making? How can knowledge possibly be managed in this rapidly changing, fluid information environment?

What Is Knowledge Management?

Around the same time that *Megatrends* appeared, the term KM began appearing in business and management literature, most notably by influential management consultant and author Peter Drucker. Driven by massive and rapid economic, social, and technological change beginning in the latter half of the twentieth century, businesses sought new ways to retain employee knowledge and be more responsive to the information needs of a global economy. Although capturing information to become more competitive and successful was certainly desirable in theory, the practice of KM proved to be difficult. KM was often seen as just another new management fad, and how it operated in different industries and work environments only added to the confusion.

But regardless of industry, the need remained to give employees the tools they needed to access, store, and share information in order to serve their customers, clients, and patrons. In essence, KM connects information and people in an organized way. It refers to the general process of creating, sharing, and managing the information and knowledge within an organization to achieve the goals of the organization. KM, then, is an organizational initiative that aims to gather, create, organize, and replicate information and knowledge to minimize situations involving loss of vital business data, disorganized training, and replication of effort.

When thinking about KM, librarians and information professionals would seem to be at an advantage. We deal with the collection, identification, and dissemination of knowledge in the daily work of assisting patrons and clients every day. This outward-facing work, however, does not address the very real need to attend to the internal

Figure 1.1. DIKW Pyramid.

knowledge and information needed to run our organizations, which is what KM purports to address.

But what do we actually mean when we say "knowledge management"? Any working definition needs to begin with a discussion of the nature of "knowledge" itself, and this also involves attempting to define the closely related concepts of data, information, and wisdom. One useful theoretical model exploring all four concepts is the DIKW pyramid or "wisdom hierarchy," which visualizes data at the base and wisdom at the top.

This hierarchical relationship among information, knowledge, and wisdom is famously expressed in T.S. Eliot's 1934 play *The Rock*, in which he writes:

> Where is the Life we have lost in living?
> Where is the wisdom we have lost in knowledge?
> Where is the knowledge we have lost in information?

In a 2007 *Journal of Information Science* article, Jennifer Rowley examines fundamental relationships and definitions of each element in the DIKW model in several information systems and KM textbooks. In most discussions, separate bits of data (discrete facts, symbols, statistics, etc.) are collected and analyzed to produce coherent pieces of information (facts organized into a particular arrangement or sequence), which can then be combined with other information sets and analyzed to produce "knowledge" (awareness of a situation acquired through experience and education). The final concept, "wisdom," is less discussed in the literature, but implies another level of processing that enables the individual or group to act on accumulated knowledge in a thoughtful way.

Each element builds on the one beneath it, implying that knowledge, for example, cannot exist with the foundation of information, which then depends on separate pieces of data. However, the processes by which elements lower in the DIKW hierarchy transforms into those higher in the structure are less clear (Rowley 2007, 164). Regardless, all four elements in the DIKW model—data, information, knowledge, and wisdom—need a place in an effective, comprehensive KM environment.

KIM: KNOWLEDGE AND INFORMATION MANAGEMENT

Although the two terms are often combined, it is important to note the distinction between KM and information management. Strictly defined, KM refers specifically to the capture of tacit knowledge, the experiential knowledge held by employees. Information management, on the other hand, deals with the storage and dissemination of recorded knowledge within an organization. In other words, once tacit knowledge is recorded, it becomes information. For simplicity, the term "knowledge management" in this volume encompasses the range of practices involved in "knowledge and information management."

The classic one-line definition of KM comes from Tom Davenport, a key figure in the field of KM and author of *Working Knowledge: How Organizations Manage What They Know* (Davenport, 1998): "Knowledge Management is the process of capturing, distributing, and effectively using knowledge." A few years after the Davenport definition, the

information technology research firm Gartner Group created a more complete and now widely cited definition of KM:

> Knowledge management is a discipline that promotes an integrated approach to identifying, capturing, evaluating, retrieving, and sharing all of an enterprise's information assets. These assets may include databases, documents, policies, procedures, and previously un-captured expertise and experience in individual workers. (Duhon 1998)

A broad, workable definition of KM needs to incorporate the various sources of tangible and intangible information from a wide range of sources, as well as capture how the information will be preserved, used, and updated. KM will thus look different for each industry and institution. At its heart, however, KM refers to finding ways to record and share information and knowledge so that it can benefit an organization's employees and its users. Thus, while there are many definitions, we may think of KM as "a range of systematic processes designed to gather, document, store, communicate, and evaluate knowledge and expertise to enable organizations to achieve success."

KNOWLEDGE MANAGEMENT DEFINITIONS

- Data: observable and verifiable facts, symbols, statistics, etc.
- DIKW or Wisdom Pyramid: also known as the wisdom hierarchy, knowledge hierarchy, and information hierarchy, the DIKW is a representation of the functional relationships among data, information, knowledge, and wisdom.
- Information: data processed and analyzed into a particular arrangement or sequence.
- Knowledge: awareness of a situation acquired through experience and education; judgment based on information.
- KM: a range of systematic processes designed to gather, document, store, communicate, and evaluate knowledge and expertise to enable organizations to achieve success.
- Wisdom: the body of knowledge and experience that enables sound decision-making.

Benefits of Knowledge Management Systems

Regardless of industry, all organizations can benefit from having their internal, operational information collected, organized, and maintained in a central information infrastructure. A well-structured KM system serves as an invaluable information hub that grows and develops along with the organization. Although KM systems require an ongoing investment of personnel and budget resources, the benefits to the health and viability of the organization are many. The goals of the KM program are not so different from those of the outward-facing work that libraries engage in to serve their patrons.

Facilitating easy retrieval of information and resources. A central knowledge base that is logically organized and easily searchable facilitates information flow when staff are tasked

with activities such as analyzing current trends, benchmarking against peer institutions, generating reports, creating new programs, and writing annual reviews.

Ensuring information accuracy and consistency. In order to be useful and relevant, users must be able to depend on its accuracy, completeness, timeliness, and consistency. Centralizing information in a trusted repository is a good first step toward this goal, as it enables the organization to establish a system of expert fact-checking and verification.

Taking advantage of organizational and individual expertise. Being able to draw on skills and knowledge of teams and their members through a central knowledge repository or directory gives organizations a big advantage. Individual skills and experience are not always apparent in day-to-day work, and people often bring unique qualifications to the organization that have little to do with their current job description. For example, a librarian may be fluent in a foreign language, which could be helpful when communicating with specific patron groups or acquiring new foreign language materials. A library assistant may have previous leadership experience in a company or nonprofit with skills that they could use to head up a new initiative. Although these "hidden" skills may be well-known to others in smaller libraries, as the number of employees in an organization increases it becomes much more difficult for colleagues and managers to know about and tap into these individual skills.

Avoiding replication of effort. In particular in larger library organizations, staff in one department may spend time working on a project or issue that another department has already dealt with. Avoiding the frustration of realizing that someone else has already done the work helps morale and saves time. For example, perhaps a branch children's department wants to seek outside funding for programming from a local civic organization. Being able to consult a central internal information hub listing current community contact information as well as projects under consideration can help staff with guidance on the best way to proceed with a funding proposal.

Standardizing common tasks and workflows. Many library processes, such as patron registration, book acquisitions and processing, and annual inventories, for instance, follow a standard set of steps. Agreed-upon processes and procedures should be followed on a regular basis to maintain predictable, consistent results. Once an effective process workflow is developed, it should be easy to follow the same workflow each time rather than try to recreate steps. When staff create a document or presentation that details these workflows, they can be stored in a common location for easy access and communicated at point of need. Reusing this information rather than starting from scratch saves time, increases efficiency, and ensures the process is done correctly each time.

Communicating information throughout the organization more efficiently. No one who works in libraries can reasonably say they don't get enough information on a daily basis; the sheer number of emails, blog posts, social media posts, newspaper and magazine articles, and radio and television segments put everyone at risk for information overload. A KM system can help winnow down that flood of information to the most useful and timely items needing attention, rather than force staff to wade through hundreds of emails or printed materials. In addition to providing regular updates, the system can curate information flow through RSS feeds, personalized information portals, listserv subscriptions, and other opt-in methods.

Enabling better and faster decision-making. Rather than spend hours searching through archived email and files stored on separate computers to find needed information, library staff can immediately pull the most current, updated status reports, data, and historical materials needed to make the best decision. Staff can have confidence knowing that the

most pertinent materials needed to make decisions are ready at hand. Also, effective KM systems allow library management to keep track of what happened with previous projects: what worked and what didn't. As library personnel come and go from the organization, being able to consult an archive of lessons learned is essential for solid decision-making.

A Brief History of Knowledge Management

The history of KM, while not specifically called KM, and the history of libraries are deeply intertwined. The earliest civilizations, which had long relied on oral traditions to preserve histories of local communities and their experience, later established official archives and repositories to help ensure that records of government business and commercial transactions were preserved and passed to future generations. Collections of clay tablets in ancient Sumer and Ninevah, temple records on papyrus in ancient Egypt, and scrolls stored in European monastery libraries are examples of early knowledge transmission in physical formats.

The passing of professional knowledge from one generation to the next was also seen in the apprenticeship tradition, first developed in medieval craft guilds, which was a system of long-term training in which master craftsmen could pass the secrets of their trades to the next generation of goldsmiths, tanners, masons, apothecaries, and so on. The invention of the printing press in the fifteenth century facilitated the recording and dissemination of not only religious and literary works, but also trade, scientific, business, and educational manuals.

The explosion of available knowledge made possible by the printing press, no longer confined to private libraries and archives or apprenticeships, is not so dissimilar to the technology revolution of the 1960s. The transition from vacuum tube computer technology to the integrated circuit eventually gave rise to more affordable microcomputers, which put vast amounts of knowledge in the hands of more people. It is therefore no accident that KM, in its modern sense, began with this expansion in information technology.

As early as 1959, American management consultant Peter Drucker coined the term "knowledge worker" to describe professionals who generate value with information rather than through the production of goods. Certainly this includes software engineers, programmers, data analysts, and others in information technology, but also encompasses professionals such as lawyers, accountants, educators, architects, and anyone who deals with information and data as an integral part of their jobs. Regardless of professional emphasis, however, the concept of treating knowledge as an organizational asset did not begin to appear in the literature until the 1980s and early 1990s.

The first step on the evolutionary chain of modern KM begins, unsurprisingly, with information and communications technology or information management. The vast processing power of computers was used to establish knowledge-based systems, meant to collect and harness the intellectual capital already present in business and organizations.

In the late 1990s, KM took on a more human face when its focus shifted from technology to the human or personal aspect of knowledge. Knowledge was based on an individual's education and experience, and there was more of an emphasis on training, effective evaluations, and goal setting. Intellectual capital (although the idea had been discussed since the 1950s) became seen as even more of a competitive advantage, and organizations began to seriously concentrate on core competencies and communities of practice.

More recently, KM has adopted a more holistic framework involving knowledge ecosystems, a network of people interacting in an environment, such as within a company, a network, or a community with their customers or clients and with the support of information and communications technology and other tools.

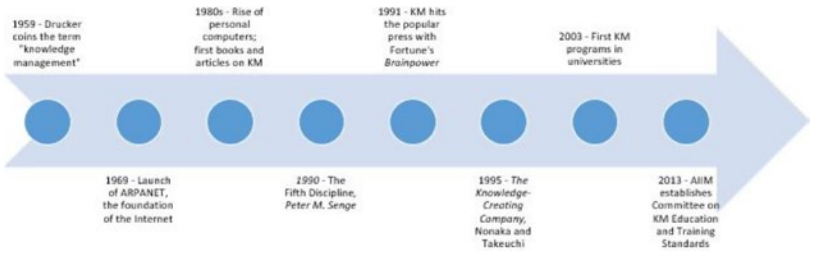

Figure 1.2. Knowledge Management History Timeline.

Knowledge Management Enters Libraries

So, what is KM in the library setting? Although KM as a field may have emerged in the literature relatively recently, it has not necessarily taken hold as a topic of study in library and information science until the past few years. A 2009 literature review by Roknuzzaman and Umemoto notes the wide divergence of opinions among library researchers and practitioners about KM dating back to the late 1990s. Among these early library information science authors, some have considered KM in libraries to be a fad or oxymoron, whereas many others see a close relationship between KM and librarianship. Another fairly recent trend is personal KM, differentiated from KM in that it involves some of the same concepts as organizational KM, but focuses more on the skills, workflow, and development of the individual professional.

Certainly, librarians are more than familiar with "information assets," including but not limited to databases, documents, manuals, white papers, dissertations, and all other forms of intellectual output. A definition of KM in libraries and information organizations can be problematic, as the acquisition, organization, classification, and dissemination of information itself is a librarian's primary focus. In that sense, librarians "manage knowledge" every day in the course of their professional activities. The question becomes one of orientation: KM in libraries does not specifically deal with the information that librarians make available to their patrons; rather, it involves the processes and procedures implemented to effectively manage a library's knowledge. Another characteristic of libraries in general to consider is that most public and academic libraries (as well as some special libraries) are learning organizations, rather than serving profit-making companies and thus motivated by competitive advantage (although the need for adequate funding is always a goal!). Thus, any definition of KM in libraries needs to take its unique educational orientation into account.

The components of a definition for KM in libraries can perhaps best be approached through determining how it can further the goals of our organizations. Having a KM system for its own sake will be unproductive and eventually unsuccessful. It's important to consider what answers KM can provide that help us as information professionals to fulfill our library's missions and to expand our user's knowledge. As we explore the possibilities of implementing KM in a library setting, we will consider the following questions:

- Where does our organizational knowledge exist, and how do we gather, organize, and store it?
- If there are gaps in our institutional knowledge, what do we need to learn and create?
- How do we encourage and promote a culture open to this institutional learning and knowledge creation?
- What tools do we need to collect, store, and disseminate organizational knowledge?
- How do we best manage and use the entire KM process?

Careful consideration of these and other questions will help us as librarians focus our professional skills on how we can best leverage our already existing intellectual and cultural assets, create the best conditions for innovation, and serve our patrons with the highest standard of effectiveness and efficiency.

Key Points

- The failure to regularly organize and coordinate institutional information in a systematic way often results in the loss of time and resources.
- Data, information, knowledge, and wisdom build on each other and can be visualized as a pyramid with data serving as the foundation.
- KM can be defined as a range of systematic processes designed to gather, document, store, communicate, and evaluate knowledge and expertise to enable organizations to achieve success.
- Benefits of organizational KM include easy retrieval of internal information, consistency and accuracy of information, tapping into group and individual expertise, decreasing replication of effort, standardization of common workflows, more efficient group communication, and better decision-making.

References

Dalkir, Kimiz. *Knowledge Management in Theory and Practice*. Third edition. Cambridge, MA: MIT Press, 2017.

Davenport, Thomas H., and Laurence Prusak. *Working Knowledge: How Organizations Manage What They Know*. Boston, MA: Harvard Business School Press, 1998.

Drucker, Peter. *Landmarks of Tomorrow*. New York: Harper, 1959.

Duhon, Bryant. "It's all in our heads." *Inform* 12, no. 8 (1998): 8–13.

Garfield, Stan. "15 knowledge management benefits." LinkedIn, August 11, 2014. https://www.linkedin.com/pulse/20140811204044-2500783-15-knowledge-management-benefits.

Koenig, Michael E.D. "What is KM? Knowledge management explained." *KM World*, January 15, 2018. https://www.kmworld.com/About/What_is_Knowledge_Management.

Naisbitt, John. *Megatrends: Ten New Directions Transforming Our Lives*. New York: Warner Books, 1982.

Roknuzzaman, Md, and Katsuhiro Umemoto. "How library practitioners view knowledge management in libraries: A qualitative study." *Library Management* 30, no. 8/9 (2009): 643–56.

Rowley, Jennifer E. "The wisdom hierarchy: Representations of the DIKW hierarchy." *Journal of Information Science* 33, no. 2 (April 2007): 163–80.

Schopflin, Katherine, and Matt Walsh. *Practical Knowledge and Information Management*. London: Facet Publishing, 2019.

CHAPTER 2

Types of Knowledge and the Knowledge Management Lifecycle

IN THIS CHAPTER

- ▷ Organizational Assets
- ▷ Explicit and Tacit Knowledge
- ▷ Knowledge Management Lifecycle Frameworks
- ▷ The Knowledge Management Lifecycle in a Learning Organization

"We can know more than we can tell."
— MICHAEL POLANYI

LIBRARIES ARE INFORMATION-RICH organizations offering many different types of physical and virtual resources to their users, including books, journals, newspapers, databases, audiovisual materials, programming, community outreach, and librarian expertise. When we consider the knowledge infrastructure that supports libraries from an organizational standpoint, understanding the different types of business assets at a library's disposal is an essential first step for knowledge management (KM). We can define organizational assets as any resource of value owned, controlled by, or available to an organization that can be used to further its business goals. These assets are the building blocks supporting the mission, daily work, and future plans of the library organization.

Organizational Assets

In general, organizational assets fall into two categories: tangible and intangible. Tangible assets are physical in nature and include resources such as facilities, computer equipment,

and the library budget. Intangible assets deal with items of a nonphysical nature, such as policies and procedures; relationships with various community groups, volunteers, and other constituencies; and employee knowledge and expertise.

Definitions

- Organizational Asset: a resource of value owned, controlled by, or available to an organization that can be used to further its business goals
- Tangible Asset: an asset, usually in physical form, that can typically be transacted for a monetary value
- Intangible Asset: an asset that is not physical in nature, which has a theorized value rather than a transactional monetary value

Table 2.1. Knowledge Management Exercise: Take Stock of Your Assets

Financial Assets *Budgets, investments, fundraising . . .*	
Materials and Equipment *Collections, furniture, computers . . .*	
Facilities and Space *Buildings, meeting and performance spaces . . .*	
Personnel *Staff and volunteer expertise and experience, policies and procedures . . .*	
Constituents *Patron groups such as teachers, senior citizens, students . . .*	
Community Connections *Outreach and marketing programs, government organizations, boards of directors, friends groups . . .*	
Other Assets *What are other tangible or intangible assets that don't fall into a category?*	

What are some of the tangible and intangible assets you can identify in your organization?

Identifying tangible assets such as buildings, book collections, supplies, and other physical objects tends to be relatively straightforward given the nature of these assets. Taking stock of intangible assets including staff expertise, community experiences, and institutional business records is more difficult. Being able to identify different types of intangible resources in your organization is essential when developing your KM plan.

Explicit and Tacit Knowledge

Two basic types of knowledge are usually identified, namely explicit and tacit knowledge. Explicit knowledge refers to recorded knowledge, such as that found in documents,

whereas tacit or implicit knowledge refers to personal and experience-based knowledge. Much of KM can be understood as an interplay between individual or tacit knowledge and group or explicit knowledge. The distinction between tacit and explicit knowledge is often equated with the difference between "know-how" and "know-what."

Knowledge creation is not a sequential process; rather, it depends on a continuous interaction between tacit and explicit knowledge. Organizations articulate, organize, and systematize individual tacit knowledge, and produce and develop tools, structures, and models to accumulate and share it. Through conversations and observations, tacit knowledge can also be observed and passed on. Further, simply being able to do something can be intuitive and difficult to explain, whereas actually having an explicit knowledge and knowing what is known can be more easily transferrable to others. It can be archived in KM systems and described as routines and procedures.

Tacit Knowledge

Tacit or "personal" knowledge is the knowledge that we possess that is accumulated from personal experience and context. It's the information that, if asked, would be the most difficult to write down, articulate, or present in a tangible form. Personal or "tacit" knowledge refers to the human resources component of organizational knowledge that accumulated by employees and its users over time. This type of intrinsic knowledge, also called "informal" knowledge, is the most difficult to capture for an organization's KM system, but it is potentially the most useful.

Expertise, best practices, and general observations and suggestions are intellectual assets and should be collected, organized, shared, and updated regularly. Personal knowledge is unique for each person and difficult to explain. It is an accumulation of years of experience, personal hands-on knowledge, and developing specific techniques of doing things that are unique to that individual. Every person has written, unspoken, and hidden knowledge based on their emotions, experiences, insights, intuition, observations, and internalized information. Tacit knowledge is integral to the entirety of a person's consciousness, is acquired largely through association with other people, and requires joint or shared activities to be imparted from one to another. Tacit knowledge contains the bulk of what one knows and forms the underlying framework that makes explicit knowledge possible. Examples of tacit knowledge include:

- Knowing a foreign language
- Leadership skills
- Body language
- Facial recognition
- Intuition and emotional intelligence

Explicit Knowledge

Each year sees the generation of countless memos, reports, meeting minutes, white papers, policies, and other printed and digital artifacts needing to be stored in an easily searchable and accessible system. These are "explicit" items, extrinsic knowledge that is fixed in a tangible form, whether in paper, microforms, or virtual. Explicit knowledge is the most straightforward type of knowledge—it can be articulated and can be the subject

of conversation. It's easy to pass along because it's recorded and accessible. Examples of explicit knowledge are:

- Documents including memos, notes, and correspondence
- Operating procedures
- Codes of conduct
- Databases
- Textbooks

Table 2.2. Knowledge Management Exercise: Tacit and Explicit Knowledge

ASSET	TYPE OF KNOWLEDGE	TACIT (T) OR EXPLICIT (E)?
Example: Public computers	*Inventory spreadsheet including age of equipment, serial numbers, and cost*	*E*
Example: Active senior citizens group	*Deep knowledge of local community; extensive connections throughout the area*	*T*

Look at some of the assets, tangible or intangible, you identified in the previous exercise. For each asset, can you identify the type of knowledge associated with it? Is the knowledge tacit or explicit?

These two exercises, although relatively simple, can actually be seen as the first step toward developing a KM system for your organization. Taking an inventory of what kinds of knowledge an organization has at its disposal is the foundation on which the KM initiative rests. Building the rest of your KM plan depends on having a logical, consistent framework in which the knowledge can be gathered, processed, organized, and distributed. From the beginnings of modern KM in the 1980s and 1990s, several theoretical frameworks provide a starting point for developing your own KM plan.

Knowledge Management Lifecycle Frameworks

Planning and implementing a KM program can seem overwhelming in its initial stages. There are a significant number of inputs to the system, and organization of this information is rarely straightforward. It is helpful in initial planning stages to keep in mind the basic components of a KM framework: an identification of needs, an inventory of information resources, a process through which to compile and create resources and systems, and a method to retrieve, share, and evaluate knowledge.

None of these components exist in a vacuum; each are interdependent and rely on a number of environmental factors. Thus there are a number of KM frameworks or models, each very different. One common factor in these models, however, is the idea of a KM

lifecycle. Although each lifecycle differs in specific steps, the foundational iterative steps are knowledge creation, knowledge sharing, knowledge structuring (organization and preservation), and knowledge auditing (updating and assessment).

There are dozens of KM lifecycle models, each with its own theoretical approach and focus. The four well-known models presented here are particularly useful in that they clearly define and integrate key elements of any KM plan: people, processes, and content.

- **Wiig Model (1997):** This model relies on the principle that in order for information to be useful, it must be organized. Therefore, this model is primarily concerned with organizing all data once it is codified, but also outlines how knowledge is built, stored, pooled (with other stored knowledge), and then extended into the organization. Some essential dimensions in the Wiig KM model are:
  - Completeness: It describes how much relevant knowledge is available from a given source. Sources vary from human minds to knowledge bases (tactic or explicit knowledge). First of all, we have to make sure that the knowledge is complete if all the information available on the subject is there but if no one knows of its existence, they cannot make use of this knowledge.
  - Connectedness: It briefs about the well-understood and well-defined relations between the different knowledge objects. Most knowledge objects are connected to each other; the more connected a knowledge base is then the more consistent the content and the greater its value.
  - Congruency: A knowledge base is congruent when all the facts, concepts, perspectives, values, judgments, and relational links and connections between the objects are consistent. Most knowledge content does not meet such ideals.
  - Perspective and Purpose: It is a technique through which we know something but from a particular point of view for a specific purpose. We organize much of our knowledge applying to the dual dimensions of perspective and purpose.
- **Meyer and Zack Model (1999):** Although the phases here are similar to the Wiig model, the Zack model prioritizes a logical, standardized process when advancing to each new stage. The Zack KM cycle is derived from work on the design and development of information products. Information products are broadly defined as information "sold" to internal or external customers such as databases, news synopses, and customer profiles. Research and knowledge about the design of physical products can be extended into the intellectual realms to serve as the basis of the KM cycle. The Meyer and Zack model is viewed as a repository comprised of information content and structure. Content is unique; structure can easily identify, extract, and manage different knowledge—labeling, indexing, linking, cross-referencing; and the repository is the foundation for the organization to create the framework of information and knowledge. The phases of the Zack model are acquisition, refinement, storage/retrieval, distribution, and use:
  - Acquisition: breadth, depth, scope, credibility, accuracy, timelines, relevance, cost, exclusivity, quality
  - Refinement: migrating, restructuring, relabeling, integrating, cleaning up, sifting, interpret, standardizing, creating readily useable knowledge
  - Storage/retrieval: a bridge between upstream acquisition, refinement, and downstream stages
  - Distribution: how to deliver product to end user; medium of delivery, timing, frequency, form
  - Use: how the product supports the work of the end user

- **Bukowitz and Williams Model (1999):** This model builds upon Wiig and Meyer and Zack by expanding the definition of knowledge storage to include the infrastructure that supports this learning community (such as communication, hierarchy, and working relationships). Bukowitz and Williams also emphasize the need for not only maintaining your knowledge repository, but also building it over time. The phases here are get, use, learn, contribute, and assess. Bukowitz and Williams portray a KM process framework that outlines "how organizations generate, maintain and expand a strategically correct stock of knowledge to create value." In this framework, knowledge includes knowledge repositories, relationships, information technologies, communications infrastructure, functional skill sets, process know-how, environmental responsiveness, organizational intelligence, and external sources. These stages aim on more long-range processes of matching intellectual capital to strategic needs.
  - The Get Stage is the first stage; it consists of seeking out information required in order to make decisions, solve problems, or innovate.
  - The Use Stage is the next stage, and it deals with how to combine information in new and interesting ways in order to foster organizational innovation. The spotlight is primarily on individuals and then on groups.
  - The Learn Stage points to the formal process of learning from experiences as a means of creating competitive gain. Learning in enterprises is important because it serves the transition step between the application of ideas and the generation of new ones.
  - The Contribute Stage deals with encouraging employees to post what they have learnt to the communal knowledge base (like a repository). Only in this way can individual knowledge be made visible and available to the entire organization, where and when appropriate.
- **McElroy Model (1999):** This model consists of two broad phases: knowledge production and knowledge integration. Knowledge production includes four processes: individual and group learning, knowledge claim formulation, information acquisition, and knowledge validation. Knowledge integration process deals with the transformation and integration of the produced or acquired knowledge. He also has an approach to creating a KM lifecycle model that is quite different from the previous models. He refers to the "Complex Adaptive System Model" theory, which holds that people self-organize and continuously fit themselves individually and collectively to ever-changing conditions in their environment.
  - Individual and group learning
  - Knowledge claim validation at an organizational level
  - Formal procedure for the receipt and codification of individual and group innovations
  - Information addition: the process by which an organization deliberately or serendipitously acquires knowledge claims or information produced by others, usually external to the company
  - Knowledge integration: the process by which an organization announces new knowledge claims to its operating environment and retires old ones

Although the sequence of steps in the various models differ, synthesizing the overall components necessary to the KM process illustrates some common themes and brings us closer to a general, working KM lifecycle model.

Table 2.3. Knowledge Management Lifecycle Models Overview

THEMES	WIIG (1997)	MEYER AND ZACK (1999)	BUKOWITZ AND WILLIAMS (1999)	MCELROY (1999)
CAPTURE Designing, formation, capturing, constructing, acquiring, gathering	Creation	Acquisition	Get	Learning
ORGANIZING Refining, validating, supporting, justifying, substantiating, confirming, codifying	Sourcing	Refinement	Use	Validation
STORING Storing, archiving, selecting, acquiring, learning, collating, systematizing	Compilation	Store	Learn	Acquisition
SHARING Distributing, contributing, integrating, issuing, dispensing	Transformation	Distribution	Contribute	Integration
UPDATING Applying, presenting, implementing, utilizing, practicing	Application	Presentation	Assess	Completion

Each phase of the KM cycle differs in significant ways from the others, and each carries its own inputs, outputs, and workflows. Further, the process is iterative and should be viewed as an ongoing, continuously updated organizational initiative. Woven throughout the KM process is the emphasis on continuous learning at each stage at a personal and organizational level.

The Knowledge Management Lifecycle in a Learning Organization

In the book *The Fifth Discipline: The Art and Practice of the Learning Organization*, Peter Senge describes the "learning organization" as a company or institution that actively facilitates the learning of its employees and continuously transforms itself. According to Senge, these organizations should be places where "people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together." Senge's learning organization depends upon the mastery of five dimensions:

- **Systems thinking:** This is the basis of Senge's approach, and it deals with the idea of visualizing the organization as a complex system composed of smaller (although often complex) systems. It is the interconnection among all these systems that comprises the whole organization, not unlike the way in which a physician understands the human body by being able to conceptualize how various systems work together. Managers in the learning organization should have the physician-level, systems view in which they keep in mind the complexity of the organization and maintain a long-term focus. One tool that Senge recommends is the use of system maps to show how disparate systems connect and interact.

- **Personal mastery:** Senge describes this as a process in which an individual continuously clarifies and deepens a personal vision. The goal is to focus energy, develop a deep sense of patience, and attempt to see reality how it actually exists. The individual needs to be in a constant state of personal learning, without which organizational learning cannot take place. Creativity should be the focus of learning rather than a reactive perspective, and each individual should constantly attempt to pursue continuous learning to bridge the gap between individual vision and reality.
- **Mental models:** According to Senge, mental models are "deeply ingrained assumptions, generalizations, or even pictures and images that influence how we understand the world and how we take action." Each individual has mental models that enable them to compare new ideas with their personal vision. These models must be recognized and challenged so as to allow for new ideas and changes. For this reason, it is important for organizations to encourage constant learning openness and to provide direction so that individuals' mental models do not limit organizational growth.
- **Building shared vision:** Shared vision is a power-motivating force that refers to a group's capacity to share a common vision of a future toward which the group needs to work. It is important that the group has the vision in common, rather than following a leader's vision that is not necessarily shared by those below them. The goal with building shared vision is to pass on a vision of the future by using dialogue, commitment, and enthusiasm, rather than to try to dictate.
- **Team learning:** Although building personal mastery and a shared vision are important factors in building a learning organization, people need to be able to learn together so that they can act together to achieve common goals. Building on a shared vision contributes to the spirit of collaboration.

For any learning to take place in organizations, there needs to be active diffusion of knowledge through promotion and facilitations of collective learning. Although this is not necessarily an easy or straightforward process, the benefits are many, including increased innovation, an energized workforce, being better placed to respond to external pressures, and increasing the pace of change. KM is an ideal fit for this kind of organization in that it is designed to coordinate and facilitate useful information that can be productively combined and used by employees in their pursuit of personal and organizational learning.

The role of the leader is important in Senge's visualization, but not in its traditional sense. Rather than serving as a top-down administrator issuing directives, the leader of a learning organization serves in three key capacities that help transform the organization: "leader as designer," "leader as teacher," and "leader as steward."

Leader as designer: It is difficult to lead an organization that is badly designed; rather, there needs to be a foundation of purpose and core values inherent in the organization. Senge explains the designer role in three ways: to create a common vision with shared values and purpose, to determine the "policies, strategies, and structures that translate guiding ideas into business decisions," and create effective learning processes that will allow for continuous improvement of the policies, strategies, and structures.

Leader as teacher: The leader here is seen as a coach that works with the mental models present in the organization. Leaders need to be able to communicate current views of reality and restructure these views "to see beyond the superficial conditions and events [and] into the underlying causes of the problems." Leaders help people see beyond

superficial conditions to the underlying causes of problems, and thus to also see other, new possibilities for the future.

Leader as steward: This concept refers to the idea of servant leadership in two senses: stewardship for the people being led and stewardship for the purpose and mission of the organizations. Rather than lead for money, prestige, and power, steward leaders are driven by a strong conviction that they can move the organization toward higher levels of meaning and purpose through motivating and supporting others.

Developing a KM framework in light of the tenets of a learning organization results in an iterative cycle of knowledge capture, organization, storage, sharing, and updating built on a foundation of people, technology, and process:

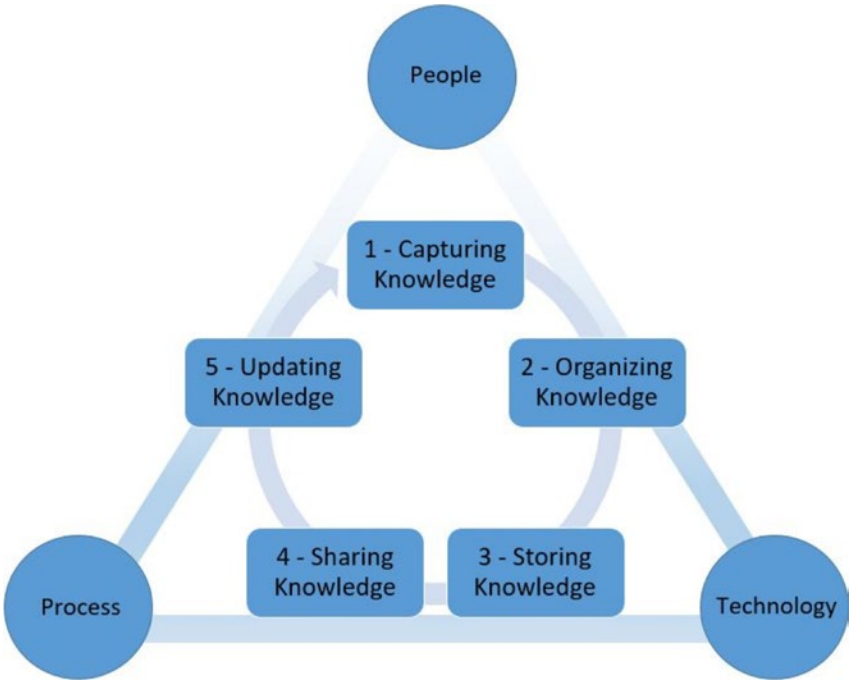

Figure 2.1. Knowledge Management Lifecycle.

In subsequent chapters, we will discuss developing a roadmap that integrates the three foundational elements of people, technology, and process as well as delving more deeply into each of the five steps of the KM workflow.

Key Points

- Tangible assets are physical in nature, such as equipment. Intangible assets deal with items of a nonphysical nature, such as policies and procedures and employee knowledge and expertise.
- Explicit knowledge refers to recorded knowledge ("know-what"), whereas tacit or implicit knowledge refers to personal and experience-based knowledge ("know-how").
- A KM lifecycle or framework includes an identification of needs, an inventory of information resources, and a process through which to compile and create resources

and systems, and a method to retrieve, share, and evaluate knowledge. Although there are dozens of KM models, key elements are people, processes, and content.
- The KM plan is a key component in developing and maintaining a "learning organization," or an institution that actively facilitates the collaborative learning of its members and continuously improves and transforms itself.

References

Evans, M. Max, Kimiz Dalkir, and Catalin Bidian. "A holistic view of the knowledge life cycle: the Knowledge Management Cycle (KMC) model." *Electronic Journal of Knowledge Management* 12, no. 2 (2014): 85–97.

Luan, Jing, and Andreea M. Serban. *Knowledge Management: Building a Competitive Advantage in Higher Education*. San Francisco: Jossey-Bass, 2002.

McAdam, Rodney, and McCreedy, Sandra. "A critical review of knowledge management models." *The Learning Organization* 6, no. 3 (1999): 91–101.

Mohajan, Haradhan. "A comprehensive analysis of knowledge management cycles." *Journal of Environmental Treatment Techniques* 4, no. 4 (2016): 121–29. http://jett.dormaj.com/Volume4_Issue4.html.

Nonaka, Ikujirō, and Hirotaka Takeuchi. *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. New York: Oxford University Press, 1995.

Polanyi, Michael. *The Tacit Dimension*. Chicago: University of Chicago Press, 2009.

Senge, Peter M. *The Fifth Discipline: The Art and Practice of the Learning Organization*. New York: Doubleday, 2006.

CHAPTER 3

Goals and the Knowledge Management Framework

IN THIS CHAPTER

- ▷ Reasons for the Knowledge Management Program
- ▷ The Knowledge Management Assessment
- ▷ Setting Goals for the Knowledge Management Program
- ▷ The Basis of the Framework: People, Process, and Technology
- ▷ Personal Knowledge Management

"A goal without a plan is just a wish."
— ANTOINE DE SAINT-EXUPERY

KNOWLEDGE MANAGEMENT (KM) IS A COMPLEX activity that cannot deliver the necessary impact without a concrete plan. Depending on the industry, a robust KM plan can typically include elements such as a knowledge audit, analysis of the available information technology infrastructure, business strategy, SWOT analysis, and so on. These elements are tied together by a "KM roadmap," which is primarily a tool used to provide strategic guidance for mileposts and goals that a particular organization wants to reach. Although strategizing, designing, developing, and implementing a KM initiative can be complex, its ultimate goal is to provide a highly customizable environment in which the organization's problems can be solved. There is no "cookie cutter" KM plan for specific industries, including libraries—they are as individual as an organization's strategic plan. Although library leaders should consult other strategic and KM plans as examples, in the end a KM system and KM strategy will be unique to the organization. The first

step toward developing the roadmap is to consider the underlying reasons behind developing a KM initiative.

Reasons for the Knowledge Management Program

The starting point of the KM program involves a deep understanding of the organizational vision, mission, direction, and strategic plan. This is the foundation on which the organization will identify core competencies and skills it already has, as well as those it needs to develop. Where is the organization in terms of its perceived success and fulfillment of its mission, and where does it want and need to be? It is critical to identify the reasons the organization wants to implement a KM program, and they need to be meaningful reasons with significant buy-in throughout the organization. Too often the KM process is driven by outside influences, for example:

- Management hires an outside consultant, who advises leaders to adopt KM practices such as beginning to formally share knowledge, put together community of practice groups, implement a technology system such as an enterprise social network, and try a new initiative that other organizations have adopted. Management accepts the proposal and delegates the project to an internal KM program manager who is then instructed to work with the consultant.
- Someone on the senior leadership team read an article, saw a social media post, or attended a presentation on KM and decides that the organization needs to implement a program right away. Someone within the organization is assigned the task of investigating the program, overseeing implementation, and making it work.
- An organization has some existing knowledge sharing tools or processes in place and want to coordinate them into a coherent program. An internal staffer either volunteers to coordinate the process or is asked to take the lead by management.
- Peers or competitors have become known for their own KM programs, and there is pressure from the organization's leadership to keep up with them and follow suit. Senior management tasks an individual or team to investigate the existing KM programs and develop an in-house system as good as or better than what the competition is doing.
- Members of the organization have complained that lack of knowledge flow is getting in the way of their work, that it is difficult to find existing information and content, share what they know, innovate, collaborate with colleagues, and learn from others. Someone in the organization who is passionate about improving the situation volunteers to take on the challenge of implementing a program (Garfield 2020).

More compelling reasons for beginning a KM program have to do with how people in the organization, not only managers and administrators, view the inner workings of the organization and how they feel that internal knowledge needs to be used and shared. There should be a general commitment to the idea that the organization needs to prioritize sharing existing knowledge assets in an organized, deliberate way. Taking what has been already created and proven to work allows others to learn from the experience of the organization, which not only saves time and money but also helps to minimize risk of failure and to be more effective. Increased knowledge flow sparks innovation by exposing

more people to the creativity and invention of others. Ideally this leads to collaboration with others to yield better results, benefit from diverse perspectives, and tap the experience and expertise of many other people. Knowledge flows at the time of need, creates communities and learning opportunities, and takes advantage of opportunities for improvement. In short, the organizational imperative to share, innovate, reuse, collaborate, and learn from others all contributes to a more compelling reason than outside forces to develop a KM system that will support organizational objectives and priorities.

KM PROGRAM QUICK SELF-ASSESSMENT

What is the general condition of KM awareness and practice in your organization? Answer "yes" or "no" to each of these 15 questions:

1. Is your library involved in a program it calls KM?
2. Is there a consensus about what KM means?
3. Is your library doing anything that could be considered a KM activity, even if it's not called KM?
4. Has library administration identified a business need for implementing KM?
5. Does library administration understand and support a KM program?
6. Are specific people assigned to manage KM activities in the library?
7. Does the organization know what knowledge assets it already has?
8. Do library employees who need information know how to access it?
9. Is work knowledge systematically transferred throughout the library?
10. Is knowledge consistently gathered from outside the library to be used internally?
11. Is technology used effectively for internal knowledge sharing activities?
12. Are library employees used to sharing knowledge via internal networks?
13. Does the library's organizational culture encourage knowledge sharing?
14. Does the library take full advantage of knowledge to improve services?
15. Does the library measure the impact and success of KM efforts?

Tally the "yes" responses to determine your library's KM starting point.

0–5 = Beginner—there is a recognition of the benefits of KM, but little has been implemented.

6–10 = Intermediate—a KM initiative has been started, if only informally, but areas of improvement need to be identified.

11–15 = Advanced—the KM program is well-established, but there is always room for improvement; "no" answers indicate areas in which the library needs to improve.

Adapted from "Where Are You Now? A Knowledge Management Program Self-Assessment," APQC (2011), https://toolkits.knowledgesuccess.org/toolkits/km/where-are-you-now-knowledge-management-program-self-assessment

The Knowledge Management Assessment

At the beginning of the KM planning process, institutions should take stock of how well internal knowledge is being used to further organizational goals, if at all. Whether conducted in-house or by outside consultants, the goals of the preliminary KM assessment, also called a knowledge audit, should address areas of concern focused on the organization's current state, its aspirational situation, and the interim phase, that is, how it gets from here to there.

- How well is the organization placed to leverage its existing tacit and explicit knowledge to support its mission, enhance collaboration among its employees, and develop new knowledge for innovation? What knowledge assets or resources does the organization own and where do they live? How does knowledge flow around the organization, and what blockages exist? This is the assessment or the "as is" stage.
- What is the organization's desired KM environment, taking into account their strategic goals and best practices in similar organizations? What are the organization's knowledge needs?
- What is the best way to get from the current KM situation to the desired environment? What gaps exist in the organization's available knowledge? What additional resources are needed?

All three areas comprising the KM assessment need to make use of the collective knowledge of the organization, especially in the early stages of the process. A basic assumption of KM is that most of the organization's knowledge resides in the minds of those who are currently engaged in the work. Therefore, an internal team of those people whose work and performance expectations may change—managers, staff, and key stakeholders—should be involved in the investigative process, either working with outside consultants or running the process in-house. This team should have wide representation from across the organization. Conducting the assessment through an internal team also ensures that strategic knowledge gained during the assessment process remains in the organization, and members of the team gain a deeper understanding of the reasoning behind the KM project and can thus encourage buy-in with others.

The planning team will need to develop a set of research activities for data collection and analysis which may include interviews, direct on-the-job observations, surveys, questionnaires, town halls, document and resource reviews, and more. Some specific research to undertake includes:

- Talk to stakeholders including library management, staff, patrons, and others in the appropriate community to find out what is working well, what is not, and what suggestions and ideas they have to improve the organization's knowledge assets.
- Review annual reports, strategic plans, and other documentation to get a sense of the library's current projects, constituencies, and priorities.
- Evaluate the current set of evaluation metrics and statistics to determine not only performance, but primarily any gaps between the information currently collected and that which is needed to move forward on key goals.

Analysis of the knowledge gaps between the current situation from Question 1 versus the desired situation in Question 2 will lead development of practices, strategies, and processes for a "knowledge management framework," in other words, a roadmap to get from where the organization is to where it wants to be.

Setting Goals for the Knowledge Management Program

The KM process can be intimidating, especially at first. In order to avoid being overwhelmed it is best to focus on only a few initiatives, set simple goals, and not try to tackle everything at once. One useful approach is for the organization to choose three simple goals with the intention of having them completed at the end of the year or another specified review period. Goals should be easy to understand and articulate, and should follow SMART guidelines (**S**pecific, **M**easurable, **A**chievable, **R**elevant, and **T**imebound). Goals should be geared towards solving a work challenge or moving towards implementation of a new program or service, and discussions should involve as many people in the organization as possible to gather the most workable ideas.

A useful exercise to get the goal setting discussion started is an opportunities survey, which is a general list of questions designed to collect employee perceptions about what is working well and not well in their day-to-day work. Ideally the survey is sent to staff for completion prior to a meeting or videoconference during which the results are discussed and further comments can be collected. If the opportunities survey is developed in-house rather than by an outside consultant, questions can certainly be tailored to issues and needs that have been self-identified by the institution. KM thought leader Stan Garfield provides a useful starting point for general questions that could appear in a representative survey; some of the questions include the following:

1. It's hard to find relevant information and resources at the time of need.
2. We repeat the same mistakes over and over.
3. It's difficult to find out if anyone else has solved a similar problem before or already done similar work.
4. Information is poorly communicated to me, and I am unaware of what has been done, what is happening, and where the organization is heading.
5. I can't find standard processes, procedures, methods, tools, templates, techniques, and examples.
6. List any other challenges you regularly experience with sharing, innovating, reusing, collaborating, learning, and searching for knowledge, and rank the three most important.
7. What examples can you provide where sharing, innovating, reusing, collaborating, learning, and searching for knowledge are working well today?
8. What examples can you provide where sharing, innovating, reusing, collaborating, learning, and searching for knowledge worked well in the past?
9. What examples can you provide where sharing, innovating, reusing, collaborating, learning, and searching for knowledge worked well in the past or are working well today in other organizations?
10. What suggestions do you have for dealing with any of the challenges you identified?
11. What other needs do you have for sharing, innovating, reusing, collaborating, learning, and searching for knowledge? (Garfield 2017)

After survey results and subsequent comments and suggestions are compiled, common patterns may emerge. These can include problems with decision-making processes, finding needed information quickly, reinventing the wheel when information goes missing, making the same mistakes again and again, failing to set standards and best practices for commonly performed tasks, being unaware of what is happening elsewhere in the organization, and more. On the other hand, however, people may also suggest ideas for better workflows, increased effectiveness and efficiency, increased learning opportunities, and new programs and services.

If conversations become stalled at any point in the goal-setting process and people are having difficulties coming up with measurable goals, a simple interrogative technique called "Five Whys" can help uncover root causes of common work problems. Developed by Toyota in the 1930s, this technique is still used in industry and can be helpful when troubleshooting most kinds of personal and professional dilemmas.

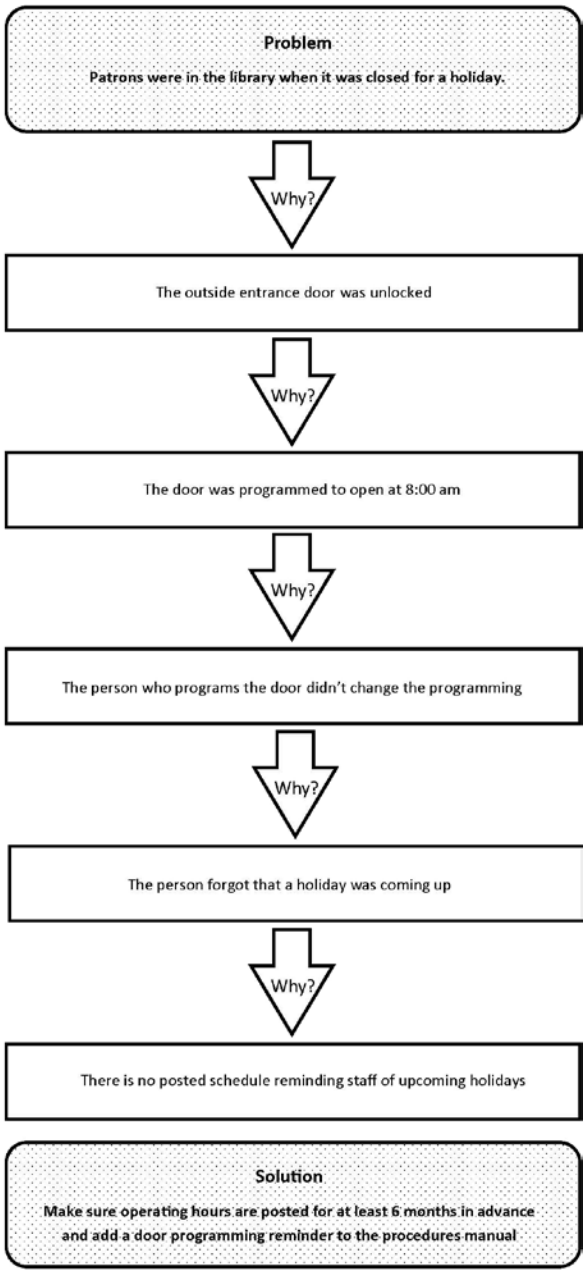

Figure 3.1. Five Whys Exercise.

The diagram illustrates a "one lane" method of questioning, but the method can accommodate multiple lanes/problems as well, which can be instructive during KM brainstorming sessions. In short, Five Whys is useful for quickly uncovering a straightforward root cause of a problem, but will not necessarily uncover multiple causes of complex problems. Of course, the process is not limited to five questions; participants can ask "why?" multiple times, but extending the conversation for too long may result in an unwieldy number of suggestions and complaints unrelated to the root cause.

The end result of this process will theoretically consist of three to five mission-critical objectives that will be the primary focus of the KM program for the review period. If appropriate, current and aspirational metrics should be assigned to the objective to measure progress at the end of the KM cycle. Examples of objectives include:

- Increase interlibrary loan fill rates by 5 percent by building out department capacity and investigating additional consortial relationships
- Increase scope of the outreach program to ten additional community organizations through reallocation of staff and volunteer responsibilities
- Build out diversity and inclusion in library collections by reviewing internal collection management policies, procedures, and funding structure

The Basis of the Framework: People, Process, and Technology

Setting specific, relevant goals that the KM program should address is only the first step of the process, and these goals may change and adapt as the organizational climate or outside conditions change. Important factors to consider next are the raw materials available to the organization to support the KM program as it works through these goals. The three underlying elements of the KM infrastructure involve people, process, and technology.

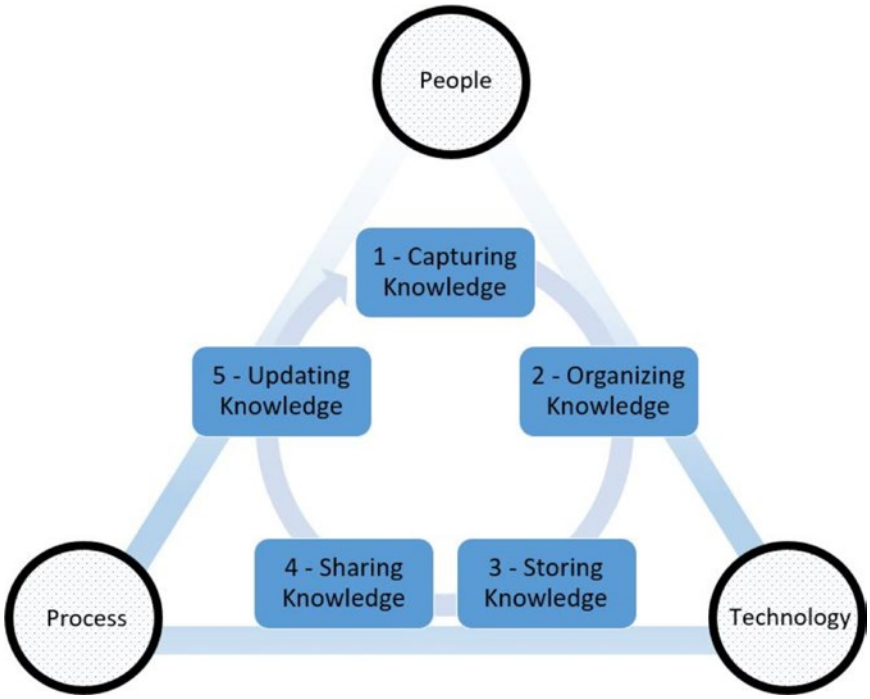

Figure 3.2. Knowledge Management Lifecycle: People, Process, Technology.

Each element needs to be balanced, preferably with a project leader for each category, and one category should not dominate the other two. A common inclination when beginning the KM program is to let the technology drive the process; certainly there are hundreds of information technology programs and knowledge platforms that can be used for KM activities, but each works differently in different situations and not all are appropriate for meeting specific business needs. Immediately diving into choosing and implementing technology is not the correct first step. While technology is important, it must support people and processes and not be an end in itself.

People

Individuals are at the heart of KM program and need to be integrally involved at each step of the process. KM is everyone's responsibility, but the internal team responsible for the knowledge assessment/audit can take the lead as the nucleus of the group responsible for KM program implementation. At this point in the process several people from different units or departments have been involved in at least one or more activities in the assessment and can thus communicate the value of KM to others to influence participation. It is important to avoid involving people on the team who project a negative attitude and find it hard to work collaboratively. Having one underperforming person on a small KM team can cause delays in program implementation or even damage the project entirely.

At least one person in the organization should be appointed to serve as the KM program leader. The KM leader has a very important two-way role in that they represent the needs of various constituencies to the rest of the KM team/committee and library administration and they also communicate the direction and progress of the KM program to various groups. This individual will spend a large part of their time keeping the program on track: engaging senior library leadership, managing the infrastructure, raising awareness, answering questions, and ensuring that the program supports the overall goals of the organization. In order to be effective in the important task of advocating for the KM program, this person should be an experienced employee, well-respected, adaptable, responsive to change, helpful to others, and with strong communication and project management skills. In his comments about the many hats that KM managers must wear, Stan Garfield quotes Malcolm Gladwell's terms from *The Tipping Point: How Little Things Can Make a Big Difference*:

- "Connectors" are those with wide social circles. They are the hubs of the human social network and are responsible for the small world phenomenon. They connect people to each other.
- "Mavens" are knowledgeable people. While most consumers wouldn't know if a product were priced above the market rate by, say, 10 percent, mavens would. Bloggers who detect false claims in the media could also be considered mavens. They help people through sharing knowledge.
- "Salesmen" are charismatic people with powerful negotiation skills. They exert soft influence rather than forceful power. Their source of influence may be the tendency of others, subconsciously, to imitate them rather than techniques of conscious persuasion. They use knowledge to engage and persuade. (Garfield 2017)

GETTING A SENSE OF THE FRAMEWORK: PEOPLE

It is crucial to understand the general characteristics of an organization's staff, especially their information needs and communication preferences. Some questions to think about include:

- What are the demographics of the staff, and where do they fall in the organizational structure?
- Are there any staff who tend to be more innovative in their approach to their work and propose new methods to complete common tasks?
- What information do staff need to do their work? In what format do they prefer to receive information?
- How do staff tend to communicate with each other? Are conversations limited to those in their immediate units, or do they feel comfortable reaching outside of their functional silos?
- Do staff like sharing their expertise with each other, or is there resistance? If so, why?

Process

In order to make expectations clear throughout the steps of the KM lifecycle, the KM team should establish procedural and collaborative processes to engage all relevant groups within the organization (e.g., library departments, branch libraries, etc.) and to establish conduits of regular communication. Major unit liaisons to the main KM team can be appointed as appropriate; they should continue to report directly to their home units but serve virtually or remotely on the main KM team. By engaging all constituent groups in the organization, the KM program will not be seen as something happening only in the C-suite and not being relevant to the rank and file. Having an "us versus them" mentality can cripple the program quickly.

The KM program should not be an initiative that is remote from the people who will need to be involved in it. It is crucial, especially at the early stages of the program, for employees to view KM as something for which everyone is responsible, not just library management and the KM team. While each stage of the KM lifecycle will have its own workflow, deadlines, and deliverables, certain process tasks need to be completed on a regular basis.

Timely Communication. Each stage of the process should integrate regular, dependable communication and updates. The KM implementation plan should be housed on an easily accessible website, wiki, or other location so that staff can refer to it as needed. A regular schedule of communication through meeting announcements, emails, newsletters, and website updates will keep the idea of KM fresh in employees' minds. Success stories should be solicited from staff and published using multiple channels.

Regular Meetings. Periodic face-to-face meetings or videoconferences will help keep staff informed and energized. Rather than meet only for sake of meeting, the KM leader should carefully plan meetings with the intention of establishing trust about employees; continuing to communicate the vision, mission, and expectations of the KM plan; solicit questions, feedback, and suggestions; and provide opportunities for conversation. While

presentations and panel discussions can be helpful, involving meeting participants in activities including workshops, interactive discussions, book or article discussions, and storytelling tends to be more memorable and can help people internalize the message. By the end of each meeting, participants should have a clear idea of the program's status and direction and feel motivated to continue participating. Above all, meetings are an opportunity for people to ask questions and raise problems in a safe, supportive environment.

Advocating with Administration. Obtaining and keeping approval from senior leadership is essential for the existence of the KM program, especially given the staff time and technology commitment involved. KM initiatives will be closely scrutinized to make sure they are directly contributing to expanding library services. After getting the go-ahead, the KM leader should regularly follow up to make sure that all expectations are being met. KM program metrics including key statistics, qualitative comments, program surveys, and other information should be gathered into monthly or quarterly progress reports and submitted to the senior library leadership team. The reports should also be posted on an internal website or wiki for all staff to access as well. Library administrators can be invited to attend part or all of KM meetings to present their perspective on the program, answer questions, and network.

Encouraging KM Skillbuilding. Learning about the field of KM is not the sole territory of the KM manager. Rather, it is a useful way to motivate employees to understand more about the process, learn what other library institutions are doing, and network with others. Chapter 10 contains a number of good resources to consider, including the books, periodicals, websites, blogs, conferences, training, and other professional development opportunities.

GETTING A SENSE OF THE FRAMEWORK: PROCESS

Regardless of how small a library may be, its daily work is governed by various processes involving the flow of information into and out of the organization. Getting a sense of how efficient and effective those processes are considering the library's mission feeds directly into the strategy underlying the KM plan. When analyzing organizational processes, good places to start are:

- What are the primary, overarching library processes performed by each department or unit?
- How are these processes codified, monitored, updated, and explained? Are there gaps that need to be addressed? Are there processes that have gone undocumented?
- What staff are assigned to each process? Is there adequate staffing, and do staff have the appropriate qualifications and experience to perform tasks adequately?
- Are the processes followed as specified in written documentation, or do staff generally use workarounds? If so, why?

Technology

As mentioned earlier, while technology does not drive the KM process, it plays a crucial role in supporting KM processes. The lack of appropriate tools, technology, and infrastructure can lead to speedy failure for even the most well-planned KM initiative. Choosing and implementing a particular technology before evaluating program needs is a serious mistake, as the focus is on the tools. Technology should serve the KM initiative and not the other way around. Some factors to consider when contemplating technology adoption involves the number of dedicated IT staff available and their skillsets (server maintenance, programming, website design, app development, etc.). Also, there may be an overwhelmingly positive or negative perception of a specific technology among some staff due to past or present experience. This perception can interfere with the willingness to consider other options or to pursue a particular project at all.

Depending on library size, technology infrastructure can be quite small with minimal staff support or very complex and supported by a team of IT professionals. The latter can present its own challenges in that there may be overlapping, competing systems administered by different units, which can lead to confusion among staff when they are looking for information. In many smaller libraries, there may be little need to implement an expensive technology solution as most organizations already have access to low-cost or free options. These include email, videoconferencing, chat systems, blogs, wikis, and a wide variety of social media platforms such as Facebook, Twitter, and Pinterest.

GETTING A SENSE OF THE FRAMEWORK: TECHNOLOGY

Getting an overview of the organization's technical ecosystem, if only general, is a necessary step when planning KM strategy. Key questions to ask include:

- Are there existing KM tools currently being used in the organization, for example, an intranet, content management systems, user profile management, etc.? How well are these systems integrated, if at all?
- Is the library's technical infrastructure managed by a larger organization, (i.e., a university or consortium)? If so, are there opportunities to provide input to IT decision-makers if additional software or tools are needed?
- What is the age of existing equipment? Are key pieces of the infrastructure due to be replaced and is there ongoing funding to support new purchases?
- Is there a security or access control plan for each piece of the technical ecosystem?

Personal Knowledge Management

KM as a discipline focuses on "getting the knowledge to the right people at the right time," and generally focuses on that process at the organizational level. However, the tools and techniques that are integral to organizational KM can also be profitably used at the individual level as well. Personal KM (PKM) deals with processes that people use to gather, classify, find, process, and share knowledge in both their personal and professional

lives. Especially as people begin spending more time working from home, personal and professional responsibilities are overlapping and managing time and resources becomes more problematic. People who work more than one job or are self-employed also have a level of complexity in their work lives that require the imposition of organization and structure. In essence, PKM involves the process of individuals taking responsibility for their own personal and professional development. "While the traditional view of KM focuses on managing organizational knowledge—including the knowledge that individuals possess—through combinations of technology and management processes, the core focus of PKM is 'personal enquiry': the quest to find, connect, learn and explore" (Pauleen and Gorman, 2011, p. 2).

From a practical perspective, assembling a PKM toolkit and procedures is an individual process and usually takes a certain amount of experimentation to find the system that works best. Setting up a PKM system generally involves analog and digital tools and workflows to help gather, process, and integrate the constant flow of data, information, tasks, ideas, and knowledge into a comprehensive personal system that makes sense. One popular and well-known system is the Getting Things Done (GTD) methodology from productivity consultant David Allen. GTD structures the management of information flow into five steps:

- Capture: Collect every piece of information (ideas, recommendations, phone calls, tasks, appointments, text messages, etc.) into a centralized default inbox. Everything needs to be dumped into the inbox, and does not need to be processed right away. The goal is to have one trusted location where all information can be found so that the individual does not need to spend time and energy remembering it.
- Process/Clarify: Process the items in the inbox into different action categories. If it can be completed in less than two minutes, complete it. Delegate the tasks that can be passed to someone else. File reference items that may be needed later. Schedule tasks that need to be done on a specific date/time in a calendar. Create projects to organize multi-step tasks and identify a next action needed to move the project forward. If an item is no longer needed or actionable, delete it.
- Organize: Using the clarification process, place all items into a trusted system for processing. The system will generally include a calendar, to-do or project list, and document management system.
- Review: Information in the system should be reviewed on a regular basis to avoid items becoming overdue or obsolete, as well as to keep everything under control.
- Engage: Having everything in a trusted system clarifies priorities for action and enables people to complete tasks based on context, available time, available energy, and priority.

A thriving industry has sprung up around PKM tools and solutions (some designed specifically for the GTD method), including calendars (Google Calendar, Calendly, Fantastical, etc.) and task/project management systems (Todoist, Remember the Milk, OmniFocus, Things, Asana, etc.). Regardless of the platform or tools used, people will see benefits including less stress, better time management, and higher levels of productivity by developing and following a personal KM system. Moreover, all organizations benefit through having employees that take their own organizational and learning commitments seriously, which puts them in a better position to fully participate in overall KM efforts.

Key Points

- A KM plan is a comprehensive overview of how people, technology, processes, and organizational knowledge combine and move throughout the organization to help it reach its goals.
- The first step of developing a KM plan is to take a knowledge audit, an inventory of how well current internal knowledge is being used for further organizational goals.
- Involving everyone in the organization in setting goals for the KM plan will provide focus for planning and assessment and will increase program buy-in by staff.
- The three main areas of focus underlying the KM program are people, processes, and technology.
- Personal KM (PKM) involves organization, processing, and learning of knowledge at the individual level, and is an important foundational aspect influencing the success of the organizational KM program.

References

Alon, Lilach. "How Knowledge Workers Manage Their Personal Information Spaces: Perceptions, Challenges and High-Level Strategies." *Interacting with Computers* 31, no. 3 (2019): 303–16.

Appleton, Maggie. "Building a Second Brain: The Illustrated Notes." *Digital Garden*, last modified January 6, 2020, https://maggieappleton.com/basb.

Barnes, Stephanie. *Designing a Successful KM Strategy: A Guide for the Knowledge Management Professional*. Medford, NJ: Information Today, 2015.

Bukowitz, Wendi R. and Ruth L. Williams. *The Knowledge Management Fieldbook*. Harlow: Pearson Education, 1999.

Garfield, Stan. "Five Reasons for Starting a KM Program," originally published June 11 2020, https://stangarfield.medium.com/5-reasons-for-starting-a-km-program-8742683250f0

Garfield, Stan. "Knowledge Managers and KM Leaders," originally published September 26, 2016, https://www.linkedin.com/pulse/knowledge-managers-km-leaders-stan-garfield

Garfield, Stan. *Proven Practices for Promoting a Knowledge Management Program*. Richmond, B.C.: LUCIDEA Press, 2017.

Milton, Nick and Patrick Lambe. *The Knowledge Manager's Handbook: A Step-by-Step Guide to Embedding Effective Knowledge Management in your Organization*. London: Kogan Page Publishers, 2019.

Pauleen, David., and G. E. Gorman. *Personal Knowledge Management Individual, Organizational and Social Perspectives*. Burlington, VT: Gower, 2011.

Serrat, Olivier. "The Five Whys Technique" (Knowledge Solutions Guides). Manila: Asian Development Bank, February 2009, https://www.adb.org/sites/default/files/publication/27641/five-whys-technique.pdf

Shpakova, Agnessa, Viktor Dörfler, and Jillian MacBryde. "The organic roadmap of knowledge management in innovative companies." *EURAM 2017* (2017), https://strathprints.strath.ac.uk/61072.

CHAPTER 4

People at the Center: Creating a Culture of Knowledge Management

IN THIS CHAPTER

- The Importance of Organizational Culture
- Building a Knowledge-Sharing Team
- Making the Case with Library Staff
- Advocating for Administrative Support

"The only thing of real importance that leaders do is to create and manage culture. If you do not manage culture, it manages you, and you may not even be aware of the extent to which this is happening."

— EDGAR SCHEIN

AT THE TOP OF THE KNOWLEDGE MANAGEMENT (KM) model is people, namely, the employees in your organization and the patrons you serve. Every employee on a library team can have a direct impact or at least an influence over the satisfaction of library patrons. The enthusiasm (or unhappiness) that employees bring to their daily work spreads energy not only throughout the organization itself but also out into the community, impacting a library's reputation and credibility. Indeed, employees are the main drivers behind a library's productivity, innovation, creativity, and overall success. Their level of fulfillment and job satisfaction is directly related to the culture of the library organization itself, in that they are influenced by the culture and directly contribute to it as well. We return to the KM lifecycle to focus on the most important foundational element of KM projects: people.

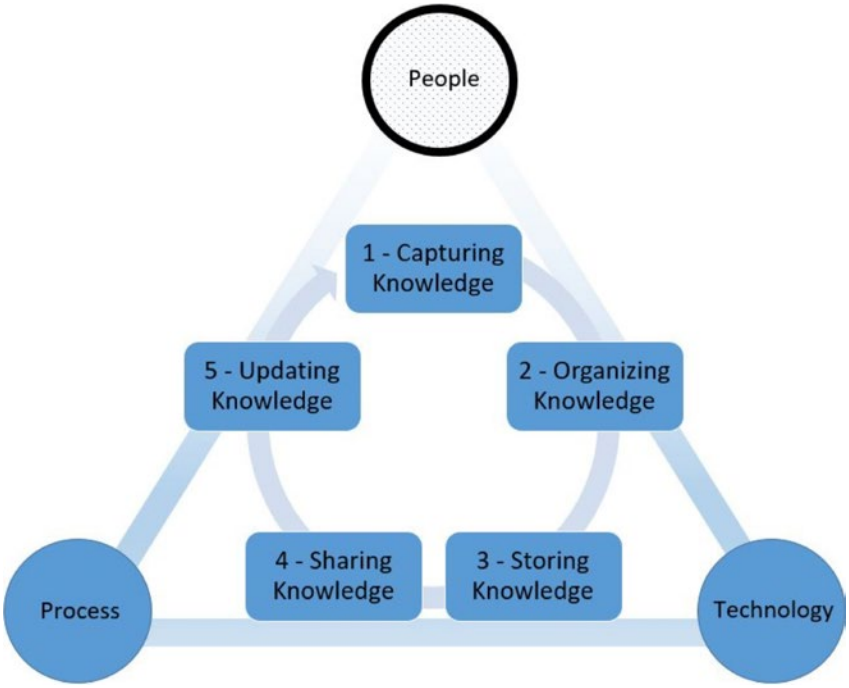

Figure 4.1. Knowledge Management Lifecycle: People.

The type of employee culture present in any organization has a direct and substantial impact on its overall strength and viability. In the 2011 book *Diagnosing and Changing Organizational Culture*, University of Michigan business professors Kim Cameron and Robert Quinn state:

> Although strategy, market presence, and technology are clearly important, highly successful firms have capitalized on the power that resides in developing and managing a unique corporate culture. This power abides in the ability of a strong, unique culture to reduce collective uncertainties (that is, facilitate a common interpretation system for members), create social order (make clear to members what is expected), create continuity (perpetuate key values and norms across generations of members), create a collective identity and commitment (bind members together), and elucidate a vision of the future (energize forward movement). (6)

The factors that make for a successful business organization, and by extension organizations such as libraries, are the same as those that are needed for the success of its KM program: stability, clear expectations, continuity, collective identity, and vision. For instance, library leaders who encourage creativity and demonstrate an open, supportive, collaborative style motivate employees to do productive and forward-thinking work. Expecting personal responsibility and accountability at all levels of the organization mitigates finger pointing, denial, and excuses that lead to interpersonal conflict. Rewarding employees for a high standard of performance reduces shortcuts and mediocre work. Encouraging teams to share information in a safe, supportive environment and to be comfortable admitting when they have made mistakes is a necessary component in building a strong knowledge culture. Even a failed initiative carries its own lessons and can have unexpected benefits later.

The Importance of Organizational Culture

A thriving organizational culture is essential to the success of your library. It not only defines and communicates your mission and vision to employees and patrons, but also serves to drive innovation, increase employee buy-in and engagement for the library's services, and helps you keep your best people. A strong workplace culture is the long-term foundation on which an organization succeeds or falters.

While there are many definitions of organizational culture, it can be described in general as the value, norms, behaviors, assumptions, and physical artifacts shared by an organization's members. In short, it can be seen as the "personality" of the organization. It consists of a group's shared values and beliefs and directly impacts not only how employees interact with each other, but also how they serve a library's patrons. A library with a healthy organizational culture will usually be immediately apparent to patrons through their experiences in the facility, through collections and services, and with library employees.

Although no two organizational cultures are the same, they are often a mix of a few categories. Looking from the perspective of staffing strategies, researchers Jeffrey A. Sonnenfeld and Maury A. Peiperl identify four general types of workplace cultures: Academy, Team, Club, and Fortress.

- Academy Culture ("Analyzers"): Employees are actively recruited by management and enter the organization through a competitive process early in their careers in Academy organizations. They tend to stay in one place rather than look for other opportunities, working their way up through the organization until retirement. Individual contributions are prized, and an internal, competitive process drives advancement. This is a stable environment in which employees go through constant retraining and resemble medieval trade guilds in which people began as apprentices and worked their way to mastery through experience and additional training. Examples are universities, hospitals, and large corporations.
- Team Culture ("Prospectors"): Team employees are in high demand and are seen as celebrities or "free agents" who have highly prized skills and could easily get jobs elsewhere. Recruitment for these employees is competitive and fierce. Individual contributions are prized, and there is frequent employee turnover due to outside opportunities and poor individual performance. Loyalty to an individual organization is low, and very little training is emphasized due to the portability of skills. This type of culture is prevalent in fast-paced, high-risk organizations, such as investment banking, some law firms, and advertising.
- Club Culture ("Defenders"): There is an emphasis in Club organizations on entering the organization early in the employee's career, starting at the bottom and retiring from the same organization. Service and group contributions are valued and the most important requirement for employees is to "fit in" with others, as in a private social club. Opportunities for special assignments, relocation, and general enrichment training are common, and the organization usually promotes from within. It values seniority and loyalty over other advancement criteria. Examples include the military and some law firms.
- Fortress Culture ("Reactors"): Employee hiring in Fortress organizations is generally limited to recruitment of inexpensive, easily replaced labor. These organizations are struggling to remain in business (hence the image of a fortress surrounded by enemies) and are prone to rapid, massive reorganizations, so employees are unsure

of their job stability. Employees need to demonstrate flexibility, the ability to handle multiple responsibilities, and the willingness to handle constant change and stress. Although there are some opportunities for advancement for those with specialized skills, little to no training is available due to budget constraints and high turnover. Examples are savings and loans firms, telemarketing, large car companies, and retail.

Another related, useful framework used to describe organizational cultures is that proposed by Robert Quinn and Kim Cameron based on the Competing Values Framework. The Framework is a well-known business model that can be used in several organizational and individual work situations, including leadership competencies, financial strategy, organizational quality, and in this case, organizational culture. The model classifies workplace cultures based on their relative position on a continuum of their perceived flexibility versus their stability and control, as well as their internal or external focus and integrations. Where organizations fall on these two axes help predict their performance. Each of the four culture classifications has a corresponding orientation, leader type, value drivers, and theory of effectiveness.

- Clan Culture ("Collaborate"): Employees in a Clan culture consider themselves to be part of a family or team that actively works together to drive the success of an organization. Leaders are facilitators and mentors, and there is a high degree of individuality and flexibility. The main values of the organization are commitment, good communication, teamwork, consensus, and human development.
- Adhocracy Culture ("Create"): Adhocracies are based on innovation, freedom, energy, and creativity. Leaders tend to be entrepreneurs and visionaries, and employees are encouraged to take risks and experiment with new ideas, products, and services. Organizational transformation and agility are a hallmark of this culture.
- Market Culture ("Compete"): This culture revolves around aggressive competition and achieving results. Leaders tend to be hard-driving, tough, and demanding, and cultural drivers involve measurable results such as profitability and concrete goal achievement. Employees work together with a drive to beat the organization's rivals.
- Hierarchy Culture ("Control"): Hierarchies are top-down bureaucratic cultures based on a formal structure and administrative control from the top. The focus is on efficiency, timely work performance, consistency, and uniformity. Leaders exhibit skills for coordination, monitoring, and organizing, and organizational effectiveness is determined through the establishment of controlled and efficient processes.

YOUR ORGANIZATIONAL CULTURE

Write down five attributes that best describe your library's culture, for example, "lots of socializing," "traditional," "efficient," "top-down," etc. Comparing your list to the various types of organizational culture, which group or combination of groups do you think most closely describes the culture in your workplace? Are there elements of more than one culture? Would others in your organization see the prevailing work culture similarly?

Regardless of an organization's orientation, how positively its employees view the culture in their workplaces has a direct impact on how comfortable and even enthusiastic they will be when presented with a new KM program. For example, staff in a hierarchical culture who do not feel comfortable sharing information with coworkers on a regular basis are unlikely to share it in the context of a library-wide KM initiative. Library managers who expect staff to participate in these projects without discussing underlying reasons for projects and who do not offer incentives are likely to be faced with inertia and disinterest.

There are several questions regarding organizational culture to help you start thinking about your current library culture and how it might impact the reception of your KM project. For example, consider how your own institution might be improving or taking away from a positive culture that supports its employees:

- What does your mission, vision, and strategic plan say about your library culture?
- How does information flow through your organization? What are the mechanisms for communication? How do employees communicate with each other?
- How much freedom is allowed to staff in decision-making? Is most decision-making authority limited to upper-level managers?
- What is the layout of the physical office, and how do people interact with each other in it?
- Do employees have the flexibility to change their hours of work if necessary?
- Do you offer regular employee-focused events and awards? How are promotions and other incentives handled?
- Do the people working in your library feel safe to bring up new ideas and to be creative and collaborative? Can they fail at a new initiative without being censured? Is there adequate space for taking chances and coming up with innovative ways to solve problems?

This last question dealing with safety is at the core of building a collaborative, knowledge-centric organizational environment. Employees must feel safe to share ideas, be transparent, try new things, give constructive criticism without fear of reprisals, volunteer, and be responsive. If people feel that they need to hoard their ideas and knowledge, make excuses, blame others, and hesitate to make suggestions out of fear, the organization can never build and grow knowledge necessary to the organization's survival. The situation will stay enmeshed in the status quo, the "we've always done things that way" model. Top-down hierarchical structures where people feel that everything must be run through several people up and down the organizational chart before decisions can be discussed result in poor knowledge flow.

Building a Knowledge-Sharing Team

How then can library managers and administrators work toward improving the organizational culture to build a team that is comfortable sharing knowledge? KM researcher Stan Garfield mentions five dominant organizational values (CLASS) that can help facilitate the implementation of KM projects (2017, 120):

- Caring: requires empathy, trust; needed to enable sharing and individual push of knowledge

- Learning: required for individual pull of knowledge
- Achieving: high performance requires resourcefulness and heavy reliance on knowledge
- Sharing: active cooperation; requires fair process, openness, transparency
- Social Responsibility: an outward extension of all of these values

Positive values such as these should be encouraged and fostered by senior library leadership through attending to various aspects of employees' working conditions and experiences and direct communication. Endorsing a values statement or credo as an internal or external component of the library's mission, purpose, and vision statements is a good first step toward establishing clear expectations of the standards of the organization, not only for staff but for library leaders as well. For example:

- We care about the health and well-being of our colleagues and strive to nurture and foster social and work connections.
- We seek out and support continuous learning opportunities and professional development for everyone, regardless of job title.
- We motivate and engage colleagues by forming clear expectations and goals, and reward and reinforce hard work and achievement.
- We are committed to open and honest communication and support the nonjudgmental sharing of new ideas.
- We value individual differences and work to make everyone feel valued and accepted.

While establishing a clear institutional values statement is a good first step, there are several concrete ways to position staff for success in a knowledge-rich environment. Some of the most useful include new employee onboarding, establishing and maintaining a flexible organizational structure, encouraging collaborative communication, providing incentives, and improving in-person and virtual workspaces. We will examine each of these organizational culture components in turn and suggest techniques for improvement.

Onboarding New Employees

The first twelve to eighteen months are an intense period of learning and adjustment for new library employees as they seek to establish themselves in a new organization and develop good working relationships with their colleagues. Introducing new employees to the organization in a thoughtful way is the first opportunity for managers to demonstrate their commitment to an open, collaborative working environment. Effective onboarding should begin well before the first day of work with providing the information and equipment needed to ensure the new employee will hit the ground running.

- Common pre-arrival tasks include provision of access keys or swipe cards; a dedicated workstation and supplies; technology including a computer, peripherals, and passwords; and nametags.
- Get as much paperwork out of the way before arrival or in the first day or so, such as employment contracts, payroll and tax forms, visa and other work requirements, and policies regarding confirmation and signature.

- Assigning mentors or a "peer buddy" to incoming employees allows for a speedier process of becoming familiar with workplace people and customs. The more quickly new employees learn about the organization, the greater their confidence grows and the more comfortable they feel sharing the knowledge they bring with them. That, in turn, can spark greater information flow with their new colleagues.
- Another key element in onboarding is an early introduction to documented and up-to-date processes and procedures, which will be an invaluable source of information for new employees in that they will not experience undue uncertainty to the basics of the organization.

Certainly, the orientation of new employees is a key driver behind onboarding programs, but they are also an invaluable opportunity to explore the unique skills and experiences that new employees bring to the organization, as well as what they themselves seek from the experience. Onboarding programs should therefore integrate opportunities over the first few months for continuing exploratory dialogue between new employees and their supervisors. A 2016 study about onboarding experiences in academic libraries found four main areas of high importance among new hires (Kiesling and Laning, 388–89):

- Alliances: Who has the influence, knowledge, and capacity to help new employees interpret the organizational climate and become successfully integrated?
- Efficacy: How does a new employee navigate the system and get things done?
- Expectations: What are the standards for routine performance and advancement? What are the criteria for success?
- Reflection: How do my abilities and preferred work styles translate to this new environment, and how do I establish my professional identity?

CASE STUDY: ONBOARDING AT A LARGE ACADEMIC LIBRARY

One orientation program for new library faculty at The Ohio State University Libraries focused on the "Four C's": Compliance (basic legal and policy rules), Clarification (employee understanding of their jobs and expectations), Culture (formal and informal organizational norms), and Connection (helping employees form relationships). The onboarding process begins before the new employee arrives on campus with completion of an onboarding checklist, the assignment of an onboarding colleague, workspace and systems setup, and documentation gathering. The process then proceeds through a first orientation, initial onboarding, and ongoing onboarding that continues for a few months.

For the full "University Libraries Onboarding Guide for Faculty" (last updated in 2014), see https://library.osu.edu/documents/human-resources/NEO/Libraries_Onboarding_Guide_for_Faculty.pdf.

Establishing and Maintaining a Flexible Organizational Structure

Although organizational structure is often assumed to consist solely of the hierarchical "org chart," in reality decisions are usually influenced or made through an ecosystem of

committees, working groups, and ad hoc task forces. These groups are no less important than the library's formal management structure, and how well they function directly impacts how deeply employees can contribute to daily operations, strategic projects, and key initiatives. Effective structures focus staff on doing the "right" things in an environment that supports and improves the methods by which they accomplish these things.

Like snowflakes, no two library organizational structures will be the same. A one- or two-person library will generally rely on a simple structure in which tasks are divided informally according to skill set and need. Larger libraries are generally organized by function (access services, acquisitions, information technology, etc.). Regardless of an institution's size, parent organization, and patron base, some key factors to keep in mind when developing an organizational structure that supports open knowledge flow are communication of the goal for restructuring, involvement of staff, and the flexibility to allow for both formal and informal work teams.

- Communication of the reason for restructuring. The leadership team needs to clearly define the end goal for the restructuring initiative to employees early in the process. Communicating the reasons for major change gives employees a broader context and helps them prepare for the changes ahead. Helping employees understand the vision for the future of the organization contributes to group cohesiveness and buy-in.
- Involvement of staff. Restructuring is an inherently disruptive, stressful, and possibly counterproductive process if not handled openly. Many cases of restructuring involve downsizing, and it is important to provide timely information rather than let the rumor mill create staff anxiety. Rather than impose a final decision on staff from the top, it's advisable to first discuss potential changes with the employees who are likely to be the most affected by structural change so that they have a sense of trust in their supervisors and in the process.
- Incorporation of both formal and informal teams. Any organization will need a well-defined management structure so that reporting lines are clear. However, staff should be encouraged and empowered to easily connect with others in the organization who share similar work problems. Limiting access to key staff across strict division or department lines impedes information flow and can slow effective decision-making.

Encouraging an Open Knowledge Flow

Sending the message that knowledge sharing is supported and encouraged is a daily process but can also consist of small but regular actions and practices. Many existing aspects of work life can be re-envisioned to create the right environment and mindset for open knowledge sharing. Some key ways to motivate employees to feel safe and supported when sharing information include considering best practices for running effective meetings, improving the physical space to encourage knowledge sharing, and leading by example.

Meetings are sometimes seen as a necessary evil in the workplace, especially when they are perceived as unnecessary. Having a regular meeting without a clear agenda and goal can leave employees feeling drained and that their time is not valued. The topics of some meetings could be more efficiently communicated or discussed via email or a conference call. Each meeting should have an agenda that is sent to participants ahead of time, a recorder for meeting notes, and action items to be accomplished before the next

meeting. Objectives of the meeting should be clear and any materials that will be needed sent in plenty of time to be reviewed. Meetings should start on time, but don't need to run for a full hour if business is accomplished ahead of time. However, the meeting doesn't have to be all business; beginning a meeting with a few minutes of casual conversation allows employees to appreciate the non-work side of their coworkers and can increase their comfort level and openness. Meeting conveners should also consider setting aside time on the agenda to recognize recent internal accomplishments or milestones to help boost morale.

Speaking of openness, open office design has often been touted as a trendy way for employees to gather for quick, impromptu meetings in common spaces, engage in walk-by conversations, and learn more about the daily operations of the organizations through proximity to people not in their immediate area. Further, open offices are more cost-effective and flexible than traditional private offices. However, completely open offices with short dividers and no doors can be immensely distracting in that they interfere with employees' capacity to concentrate on projects and have confidential conversations. Working in an open office or cubicle space can be more stressful, and germs are more likely to spread from person to person. The perceived "class division" between employees and supervisors is emphasized if management have private offices and others do not. Thus, rather than limit employees to only one type of office layout, creating flexible desk groupings and the availability of some private spaces can provide a workable balance to accommodate different working styles and needs.

Leading by Example

Administrators and managers are always under scrutiny by their staffs, not only when big decisions are made but also in day-to-day interactions. Actions definitely speak louder than words; one small misstep or offhand comment can be mentioned months or years later as an example of ineffective leadership. One of the best ways to build trust with employees and model desired behavior is to lead by example; in other words, "do as I do, and not only as I say." It's not always easy, but leading by example should be practiced on a regular basis to build a sense of security and trust with employees.

- Work alongside the team, but don't micromanage. Staff need to know that managers understand work processes and are willing to step in and help as necessary. Working a shift on a busy circulation desk to help with a staff shortage demonstrates teamwork and management support. On the other hand, managers should respect the chain of command and not go around their direct reports. This causes confusion and decreased morale.
- Communicate respectfully. Supervisors should listen to all voices and consider responses and feedback carefully. All employees should be given the opportunity to have their voices heard. Further, any corrective action or reprimand should always take place behind closed doors, not in the presence of others not in the chain of command.
- Listen frequently to everyone. It may be easier to provide direction and give orders, but no one person knows everything about the inner workings of the organization and so it's vital for administration to ask the opinions and advice of those who are closest to a work situation in order to get a bigger picture and also to let the employee know that their knowledge is valued.

- Take responsibility for decisions and problems. The buck stops at the top. Accepting when mistakes have been made and taking responsibility for them is one of the marks of a good leader, regardless of who in the organization was responsible for the mistake.

EXERCISE: YOUR BUILDING KNOWLEDGE SHARING TO-DO LIST

Regardless of where you fall in the organizational chart you can always take actions, large or small, to encourage the free and open flow of information and knowledge in your library. Consider the following suggestions and choose two or three you can implement immediately.

- Draft a values statement for your organization (if it doesn't already have one), or a professional values statement for yourself.
- Identify a professional development webinar or class you would like to attend and ask management for financial support. Consider requesting an onsite viewing license so that others in your organization can attend as well.
- Ask a newly hired colleague if they would be interested meeting over coffee or lunch to learn about the work you both do.
- Make a list of questions you would like answered if you were a new employee in your organization. Who has the knowledge and authority to answer these questions?
- Examine your library's organizational chart to see if it includes formal and informal committees and working groups. If not, consider adding this information to the chart to more efficiently represent how information is communicated and decisions are made.
- For your next meeting, send an agenda and supplementary materials to participants a day or so ahead of time; ask someone to take minutes and send them no later than a day after the meeting.
- Think of a problem you are currently experiencing at your workplace. Is everyone with knowledge of the situation, regardless of job title, involved in helping to solve the problem? If not, why not?

Making the Case with Library Staff

Having the support of library staff in implementing any new initiative is crucial. Employees in the organization can choose to support, ignore, or stall new projects. As discussed earlier, when encouraging library staff to share their knowledge in a KM project, library leaders must set the example by being as transparent as possible and by creating a solid plan and infrastructure to facilitate and support knowledge transfer.

However, even with a solid plan and inclusive communication, there are some common reasons why employees might hesitate. Some of these reasons have to do with the massive changes in workplace information creation over the past three decades. No longer is information created and stored through secretaries or executive assistants; rather, most employees are responsible for organizing and preserving their own email messages,

documents on personal computers and shared drives, various databases and spreadsheets, social media posts, and more. Trying to impose a standardized structure on each employee's work products and communication can be seen by employee and managers alike as intrusive and time-wasting (Schopflin 2019, 33).

Another problem involves the reluctance to ask for help or advice in public. Employees may fear looking uninformed or saying the wrong thing, especially if they have previously seen colleagues embarrassed or reprimanded in a similar situation. Although newer employees are generally more likely to speak up (being in the "honeymoon period" on the job) others who have more seniority may tend to "suffer in silence" rather than appear ignorant and possibly damage their reputation. One way to mitigate this problem is to provide an unobtrusive way to find information without requiring public conversation such as an online FAQ or community discussion boards where questions can be posted anonymously. Other issues include general confusion as to why knowledge sharing is necessary or worthwhile, as well as the lack of positive consequences or incentives for knowledge sharing. Alternately, the reward for refusing to share valuable knowledge lies in the employee's perception that they will be indispensable to the institution if they are the only ones for needed information and others have to approach them for help.

Some employees may seek to oppose or stall knowledge-sharing activities, in particular those who are typically negative, pessimistic, change-averse, and who routinely complain about new initiatives. These people are generally easy to identify in any organization, and their potential impact on long-term initiatives such as KM programs can be serious. It is important to acknowledge these employees' negativity and involve them in the solution. Asking to hear their concerns, preferably in a one-on-one rather than group situation, can help the employee feel heard and mitigate some of their complaints. Another strategy is for the supervisor to ask the employee to offer one positive comment for each negative observation they have for a situation, project, or person.

Dealing with staff negativity, resistance, and concerns lays the necessary groundwork for developing and strengthening a knowledge-sharing culture in the organization. Library managers and KM project leaders will be well served by having considered answers to these questions ahead of time and developing strategies and best practices to encourage staff support and buy-in.

Question/Concern: "The request for everyone to participate in knowledge sharing is vague. It's not clear why this is needed and how it's supposed to work. What exactly do you need us to do?" Answer: Communicate a clear explanation of what KM can offer to the organization. Provide examples of existing projects or tasks for which knowledge sharing might be useful, such as having a list of commonly asked reference or directional questions or standard financial procedures for taking fines. Ask staff to consider knowledge deficits they encounter frequently; in other words, "how can knowledge sharing best benefit me?"

Question/Concern: "Where will I find the time?" Answer: Knowledge-sharing activities will be integrated into basic procedures so that they become an expected part of the workflow. Specific times to share content can be added to group work schedules.

Question/Concern: "What's my incentive for sharing my hard-won, valuable knowledge? How do I know that someone else won't take credit for it?" Answer: Recognitions and incentives for participating in knowledge-sharing activities will be established to ensure that employees receive credit for participation, for example, social media shout-outs, appreciation notes, and "fan mail" that can be used during promotion processes. Inversely, those who hoard knowledge may find themselves "out of the loop" and will not be included in team projects or considered for other assignments.

Question/Concern: "I think working on my own or with a small group of people is better. Why should I share information outside my circle?" Answer: Provide pertinent examples and stories of how sharing knowledge outside the immediate group of colleagues can benefit the employee, for example, with less time spent on tasks, increased efficiency, and better results.

Question/Concern: "I don't feel comfortable speaking up in meetings or asking questions." Answer: Arrange for volunteers to begin Q&A sessions in meetings by asking questions or offering suggestions, thereby setting the stage for others to feel more comfortable participating. Offer positive reinforcement to those who speak up in meetings or on discussion boards. Provide a private chat option so that people can participate anonymously.

Advocating for Administrative Support

How can library managers encourage their senior leadership (administrators, boards of directors, and so on) to provide funding and demonstrate support for KM initiatives? Although top leadership may make generalized statements about the usefulness and desirability of a more robust knowledge flow, they may not fully understand the critical need to support KM and thus fail to allocate the necessary funding and other support. A 2009 qualitative study on KM in international library practice found that some library leaders do not have a clear perception of KM: "KM is usually misinterpreted as information management or content management activities of a library. For this lack of understanding on KM, library authorities or decision-makers often do not show any interest in KM" (Roknuzzaman and Umemoto, 652–53).

Although initial implementation of a KM program is certainly possible without the support of top leadership, having top-level advocacy and budget monies can tip the scales toward the project's success. Securing administrative support early on not only helps avoid problems with resources as the initiative progresses but is also an essential component in any project involving significant organizational change. Integrating a KM initiative into the strategic plan is also helpful as it keeps KM at the forefront of budget discussions. Further, enlisting leadership from all levels in the organization, not only from the top executive level, is a vital part of the initiative's success. In his seminal book *Leading Change*, John P. Kotter lists "failing to create a sufficiently powerful guiding coalition" as one of the major errors that can derail any change effort. Even the most powerful administrators or executive committees will not have the clout to move significant organizational change; rather, critical stakeholders need to be distributed across the organization, at the middle and bottom as well. The right coalition will have a mix of people with positional power, expertise, credibility, and leadership.

How do library managers and frontline employees seeking support for their KM project gain the backing of library administrators, boards of trustees, and other decision-makers? While there is no magic formula for getting senior leadership on board, KM author Stan Garfield suggests obtaining leadership commitment through storytelling and making a strong business case.

Telling Stories

Capturing the attention of busy leaders of a library organization can be challenging with any proposal. One technique to immediately gain interest is telling a compelling story

that illustrates how a KM initiative addresses or can be used to solve a situation or business problem. Creating a "springboard story" is an excellent persuasive technique that captures the value and potential of the initiative in a compelling narrative. In the words of Steve Denning, who coined the term, a springboard story is a narrative that prompts a leap in understanding in its listeners of how a particular organization or community can implement change, especially when other methods of communication have not seemed to take hold. Storytelling can help to catalyze change. "I found that a certain sort of story enables change by providing direct access to the living part of the organization," Denning writes. "It communicates complicated change ideas while generating momentum toward rapid implementation. It helps an organization reinvent itself" (2001, xiv).

KM advocates should start by looking within the library organization for successful stories of how KM has helped units share, learn, collaborate, reuse, and innovate. The springboard story typically includes a "moral" or central change idea, and is based on an actual real-world example. The single protagonist of the story should be representative of the audience and the problem faced should be understandable and relatable.

Making the Business Case

Getting library administrators to invest staff time and a reasonable budget for any new initiative can be a tough sell, especially when the initiative is focused internally and it is unclear how it will directly help the patron base and community. It is important to emphasize that instituting a new or expanding an existing KM program solves a business problem. For example, improved knowledge sharing can help librarians and staff serve patrons better and more efficiently, and new opportunities for collections and services may be possible due to better institutional KM. It is important to be as specific as possible when communicating bottom-line value and what support is needed. Being able to calculate a specific return on investment may be difficult. However, estimating staff time saved, program metrics, employee testimonials, and success stories can help make the case.

In brief, selling the benefits of the KM program involves being able to effectively articulate to administration and other key stakeholders why they should support the program. A solid KM program overview presentation will cover topics including the program's benefits, how it will help the library achieve its key objectives and goals, how the library is likely to improve with KM support, and how it will assist the organization's employees to deal with need and challenges. Assuming approval of library leadership is gained, KM advocates should continue to encourage their support through providing regular updates and status reports, offering to give presentations on KM projects and tools, and communicating the impact of KM in the organization.

Key Points

- An organization's employees are the most important part of any KM plan.
- Organizational culture can be described as the value, norms, behaviors, assumptions, and physical artifacts shared by an organization's members, in other words, the "personality" of the organization.
- An organizational culture characterized by positive values such as learning, caring, achievement, sharing, and social responsibility provides work conditions conducive to successful knowledge sharing.

- Developing effective employee onboarding, establishing a flexible organizational structure, encouraging open knowledge flow, and leading by example are ways to cultivate a knowledge-sharing organization.
- Cultivating the support of library staff at all levels and advocating for top administrative support are foundational aspects of a KM program's success.

References

Cameron, Kim. "An introduction to the competing values framework." Organizational Culture White Paper. Holland, MI: Haworth (2009). https://www.thercfgroup.com/files/resources/an_introduction_to_the_competing_values_framework.pdf.

Cameron, Kim S., and Robert E. Quinn. *Diagnosing and Changing Organizational Culture Based on the Competing Values Framework*, third edition. San Francisco, CA: Jossey-Bass, 2011.

Denning, Stephen. *The Springboard: How Storytelling Ignites Action in Knowledge-era Organizations*. Boston: Butterworth-Heinemann, 2001.

Farrell, Maggie. "Leadership reflections: Organizational culture." *Journal of Library Administration* 58, no. 8 (2018): 861–72.

Garfield, Stan. *Proven Practices for Promoting a Knowledge Management Program*. Richmond, BC: LUCIDEA Press, 2017, pp. 120–21.

Kiesling, Bruce, and Melissa Laning. "We are happy to be here: The onboarding experience in academic libraries." *Journal of Library Administration* 56, no. 4 (2016): 381–94.

Kotter, John P. *Leading Change*. Boston, MA: Harvard Business Review Press, 2012.

Roknuzzaman, Md, and Katsuhiro Umemoto. "How library practitioners view knowledge management in libraries: A qualitative study." *Library Management* 30, no. 8/9 (2009): 643–56.

Schopflin, Katharine. "Practical knowledge and information management." *Online Searcher* 43, no. 6 (Nov/Dec 2019): 32–35.

Sonnenfeld, Jeffrey A., and Maury A. Peiperl. "Staffing policy as a strategic response: A typology of career systems." *The Academy of Management Review* 13, no. 4 (1988): 588–600.

Vela, Sarah. "Knowledge management, diversity, and professional hierarchies in libraries." *Journal of Library Administration* 58, no. 8 (2018): 835–60.

Part II

THE KNOWLEDGE MANAGEMENT LIFECYCLE

CHAPTER 5

Capturing Knowledge: Acquisition and Creation

IN THIS CHAPTER

- Defining Knowledge Capture
- The SECI Knowledge Capture Model
- Processes for Knowledge Documentation
- Tools and Techniques for Knowledge Creation

"To create new knowledge means quite literally to re-create the company and everyone in it in a nonstop process of personal and organizational self-renewal. In the knowledge-creating company, inventing new knowledge is not a specialized activity—the province of the R&D department or marketing or strategic planning. It is a way of behaving, indeed a way of being, in which everyone is a knowledge worker—that is to say, an entrepreneur."

— IKUJIRO NONAKA

Defining Knowledge Capture

THE ESSENTIAL FIRST STEP IN DEVELOPING a knowledge management (KM) initiative is taking stock of the tacit and explicit knowledge already available in the organization. Every library organization, regardless of size, already has the raw materials that will serve as the foundation of a KM program in the form of existing explicit and tacit knowledge. As mentioned earlier, explicit knowledge consists of information that is already stored in a retrievable format, such as documents, spreadsheets, manuals, recordings, software, images, audiovisual materials, and other files that can be readily transmitted to others for use. The knowledge being captured might also reside outside organizational boundaries, for example, with patrons, vendors, other libraries, consortia,

and so forth. Capture also refers to making tacit knowledge explicit, in other words, collecting the skills, ideas, and experiences residing within people and codifying them into an explicit format available to the organization that can then enter the knowledge workflow. The process of making tacit knowledge explicit can also result in the identification of an information need and thus the creation of new working knowledge that didn't previously exist or was not recorded in physical format. Acquisition and creation of both explicit and tacit knowledge (capturing) is the first of the five main activities of the knowledge lifecycle.

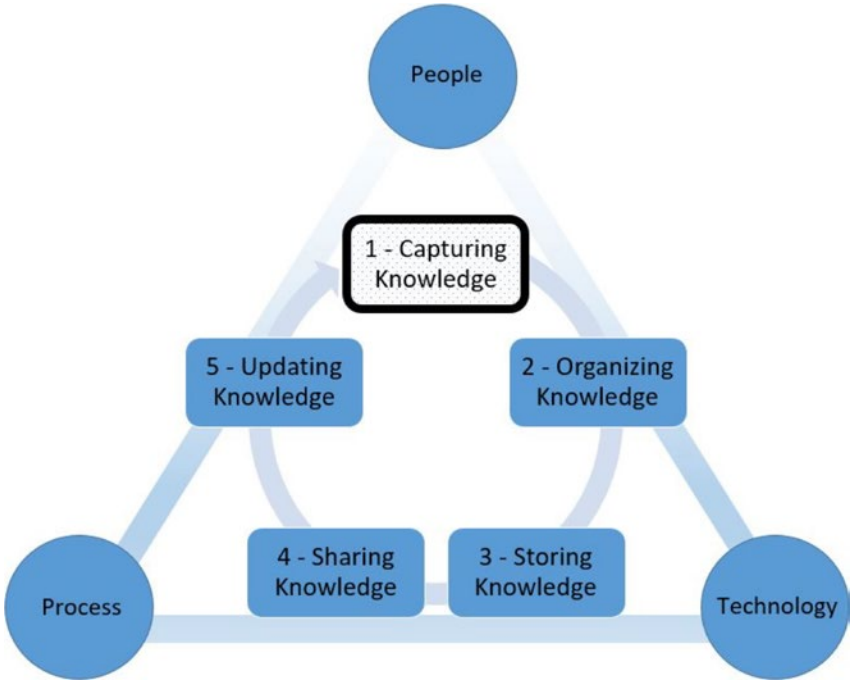

Figure 5.1. Knowledge Management Lifecycle: Capturing Knowledge.

Collecting both explicit and tacit information can be a difficult process. Tacit knowledge, being internal to the employee and often the product of years of experience, can be difficult to articulate. Further, it can take a significant amount of time to record the steps and exceptions that might occur in a particular work process. What is automatic and routine for one employee requires a fair amount of explanation and training for another, and usually it's much easier to take care of a task rather than try to teach someone else to do it. This can be particularly true with infrequent tasks, such as writing an annual report or renewing a technology license. Encouraging people to volunteer work information because it might be needed in the future (say, when they retire) doesn't provide enough of an incentive for them to provide it. Documenting workflows in advance of when they might be needed is not at the top of the staff to-do list given the significant energy involved and other, more immediate work priorities. Further, there can be an existing discrepancy between the way things are supposed to be done according to library policies and procedures as opposed to the way employees actually get the task done. No one wants to go on record that they haven't been following correct procedures for an assigned task.

Regardless of these challenges, establishing processes for knowledge capture is worth the time and investment of energy. There is no need to capture all explicit and tacit knowledge, merely the materials that have the most applicability to the library's mission,

contain hard-to-replicate content, and are most likely to be heavily used in the future. Further, as an iterative process, knowledge capture provides a fertile environment for the creation of new knowledge that grows at the intersection of tacit and explicit knowledge. The very act of knowledge capture reveals areas of knowledge need, therefore prompting further exploration and creativity in coming up with solutions. In this way, libraries become internal knowledge-creating entities. The dynamics between tacit and explicit knowledge conversion and innovation are interesting and worth exploring in the context of the KM model.

The SECI Knowledge Capture Model

The relationship between tacit and explicit knowledge is sometimes considered to be primarily one way: people amass best practices, techniques, intuition, and ways of doing tasks during their careers that they then communicate or record in a format which can be shared with others in an explicit format. Once recorded, the knowledge is no longer only tacit. In reality, these two types of knowledge actively influence and build on each other over time. One influential model that explains how tacit and explicit knowledge can inform each other is the SECI model proposed by Japanese business researchers Ikujiro Nonaka and Hirotaka Takeuchi.

The influence of Nonaka and Takeuchi on KM theory cannot be overstated. Their 1986 *Harvard Business Review* article "The New New Product Development Game" was a seminal reading in the development of the Scrum framework for managing complex projects, first used in software design. Another *HBR* article, 1991's "The Knowledge-Creating Company," and the 1995 book *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation* lay out a theory for developing collective knowledge in organizations. Their well-known SECI model (Socialization, Externalization, Combination, Internalization), which is also described as the "spiral of knowledge," illustrates how tacit and explicit knowledge are converted into organizational knowledge.

The Nonaka/Takeuchi model presents the transfer of knowledge as a continuous learning process or re-creation of knowledge as it moves between tacit and explicit. Organizational learning and understanding are deepened as knowledge is translated and transformed through a cycle or spiral of conversions. Each type of knowledge can be converted through four basic processes: socialization, externalization, combination, and internalization.

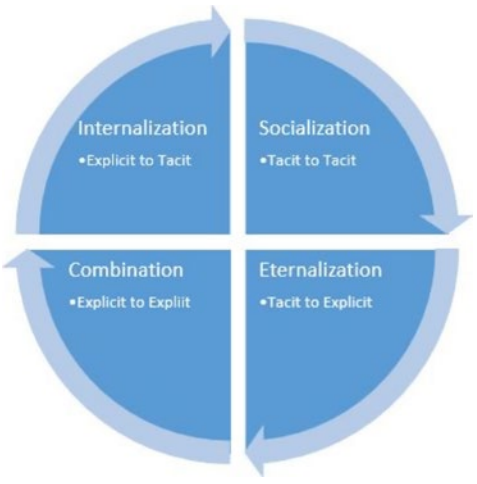

Figure 5.2. Nonaka and Takeuchi SECI Model.

- Socialization (Tacit to Tacit)—Tacit knowledge is shared through observation, imitation, practice, and participation in formal and informal communities in a physical or virtual space. This transfer is highly experiential and involves direct shared experiences with staff, patrons, and individuals both inside and outside the organization. Apprenticeships and internships are good examples of tacit-to-tacit knowledge transfer.
- Externalization (Tacit to Explicit)—This is the expression or translation of tacit knowledge into explicit concepts that can be integrated into the system and shared. An employee can articulate their own tacit knowledge, whether ideas, images, analogies, metaphors, and so forth. Also, others can elicit and translate the tacit knowledge of individuals including staff and patrons into a readily understandable form through dialogue. A "quality circle" or similar group in which practitioners discuss their experiences and guidance to help improve process-related problems is a good example of externalization.
- Combination (Explicit to Explicit)—Knowledge and concepts expressed in explicit form are integrated into a usable knowledge system, for example, in documents, databases, and meeting minutes. Relevant internal and external knowledge is collected, edited, and combined into a usable form. Information technology systems are particularly helpful in this method for information storage, organization, and dissemination. For example, quarterly unit reports from each department in a library are combined with benchmark information and usage statistics into an annual consolidated performance report.
- Internalization (Explicit to Tacit)—This is learning and integrating explicit knowledge into tacit knowledge held by an individual. This process transfers organizational and group-owned explicit knowledge to the individual and is largely experiential, as it requires hands-on practice or simulations to actualize methods, procedures, and concepts. One relevant example would be training programs that utilize training manuals, videos, and other physical materials to help employees get up to speed with on-the-job responsibilities.

Another interesting idea related to the SECI model is the Japanese concept of "*ba*," which roughly translates as the English term "place." *Ba* refers to the shared space or environments that serve the platform in which knowledge is created; these can include physical spaces such as offices and meeting rooms, virtual spaces including teleconferences and social media, and even mental spaces such as emotions, ideals, and experiences. First proposed by Japanese philosopher Kitaro Nishida, the concept of *ba* was integrated by Ikujiro Nonaka into the SECI model. In short, organizations create new knowledge via the SECI process in the context of different *ba* environments. There are four types of *ba*, each one corresponding to one of the conversion processes in the four stages of the SECI model:

- Originating *ba* = Socialization (Tacit to Tacit)—Knowledge creation starts with individual interactions between people. In the Originating *ba*, tacit knowledge is shared with an emphasis on perceiving reality as it is and empathizing with others and the environment. These interactions can happen face to face, but in the digital environment, sharing can also take place through phone calls, email, blogs, chat conversations, and other virtual channels.

- Interacting *ba* = Externalization (Tacit to Explicit)—As the name implies, individuals and groups interact in this *ba* to translate tacit knowledge to explicit knowledge through dialogue. Dialogue is an indispensable tool through which individual experience and mental models are converted into easily understandable and transferable concepts. Organizations can support this *ba* through the creation of project teams, ad hoc committees, task forces, and other formal and informal groups designed to elicit free and open communication among individuals at all levels of the organization.
- Cyber *ba* = Combination (Explicit to Explicit)—This is perhaps the *ba* with the least individual-to-individual involvement, as it primarily involves the combination of new explicit knowledge with existing resources to create new knowledge. The emphasis here is on providing an information technology environment conducive to creation of new explicit knowledge objects, for instance through online networks, wikis, databases, intranets, and so on.
- Exercising *ba* = Internalization (Explicit to Tacit)—Learning is the focus of this *ba*, as it facilitates the internalization of explicit knowledge by individuals. The learning process can be facilitated through formal and informal conversations, workshops, training programs, on-the-job observation, and other learning experiences.

The SECI knowledge conversion model and corresponding *ba* environment theory construct fit well into the KM mission of creating and maintaining an open and collaborative organizational culture. Organizations need to consider their knowledge-sharing and learning environments with careful intention to maximize KM efforts; the goal is to create and continue to support safe spaces, whether physical or virtual, in which people feel supported as they share and learn.

Processes for Knowledge Documentation

Collecting tacit and explicit knowledge is the first step in a continual cycle of knowledge creation, which relies on combinations and conversion of many different kinds of knowledge. As employees gather and work with new and existing organizational knowledge assets, new ideas and knowledge are generated and enter the KM cycle. Thus, organizational knowledge creation can be thought of as the interaction between explicit and tacit knowledge. In his article "A Dynamic Theory of Organizational Knowledge Creation," Ikujiro Nonaka states, "Although ideas are formed in the minds of individuals, interaction between individuals typically plays a critical role in developing these ideas . . . that is to say, 'communities of interaction' contribute to the amplification and development of new knowledge."

Although individual knowledge drives the knowledge creation process, central coordination is essential. As discussed in chapter 3, the organization's KM manager must take an active role in assessing where to begin, how to elicit knowledge from individuals and teams, and how to best preserve and store the knowledge products. In larger institutions, there may be a KM team in which several people take on the roles of knowledge engineer/manager, facilitators, knowledge archivists/historians, and information technology professionals. In other situations these roles may be filled by one or two people. At the

minimum there needs to be one coordinator who advocates for and drives the KM process, helping to determine which tools and techniques work best in particular situations and how to store the resulting explicit knowledge products in a system. We turn now to several strategies to begin the knowledge capture and creation process.

Tools and Techniques for Knowledge Creation

Beginning a knowledge capture and creation process can seem overwhelming. The organization may already have multiple repositories of documents on a legacy physical or virtual filing system, training manuals, archived reports, and archived email messages. The staff may have never been asked to record their workflows, and managers don't know how and where to begin collecting their tacit knowledge. It is important to realize that there is no need to capture every document or piece of information at first, just the material that can be reused for day-to-day operations and future planning.

Capturing tacit and explicit knowledge can be facilitated using information technology–based tools or in face-to-face settings. Non–information technology methods and tools will ideally result in an end product or artifact that can be added to the KM workflow. Agarwal and Islam (2014) offer useful lists of both types of tools. Non–information technology techniques include ad hoc sessions (formed to address a particular issue), after-action reviews (evaluating and capturing lessons learned after a project is completed), knowledge cafés (identifying what people need to know and providing a group setting for knowledge sharing), and peer assists (direct knowledge transfer between individuals). Examples of technology-based tools are collaborative writing (written works are created by multiple people), co-browsing/screen sharing (two or more people helping solve or discuss issues remotely), knowledge community and profile capturing (websites for profiling based on expertise), and video recording (recording and editing interviews and presentations).

Each organization will need to develop its own ways to gather information at the outset depending on staffing, time available, technologies, and other factors. Experimenting with a variety of knowledge capture and creation activities is recommended to find what works best in particular situations. The following are additional tools and techniques to help KM managers get started with this phase.

Project File Repositories

One example of a simple explicit-to-explicit knowledge capture process is the creation of a basic clearinghouse for gathering information on past projects undertaken by a library organization. Each project has a separate section containing a project report, staff responsible, list of contacts, correspondence, supplementary documents, lessons learned, and any other information relevant to the project. Of course, most employees will have these documents individually accessible stored on hard drives and in the cloud, but organizing them on a commonly accessible platform allows others in the organization to easily see this information as well. It's common for staff who have led previous initiatives to be approached again and again by others seeking the benefit of their experience. Distilling much of this information into a central repository saves everyone's time and effort.

Project summaries can be used in multiple ways. In addition to reviewing what went well and what didn't when planning future projects, staff can use this information when

training a new or transferred employee. Being able to re-use and easily adapt previous documents such as project proposals, budgets, and correspondence saves time when replicating the project. Having a list of the former project team members is useful if follow-up is needed for other relevant documents, not to mention gathering advice and suggestions. These summaries can also be used to help write quarterly and annual reports.

A project file repository can have a fairly simple one-page summary form for information about the project, including the project name and date, key personnel, summary, supplies and equipment needed, timeline, and post-project observations. The summary form can also contain links to supplementary materials stored in the same location.

Job Aids

A good technique for recording tacit knowledge quickly is the one-page knowledge capture, which can generally be completed in a couple of hours or an afternoon. Also called job aids, these documents include the basics of a procedure, process, or project needing to be translated from tacit to explicit knowledge.

Job aids can be defined as "a repository for information, processes, or perspectives that is external to the individual and that supports work and activity by directing, guidance, and enlightening performance" (Rossett and Gautier-Downs 1991, 4). They are an excellent and practical tacit-to-explicit KM tool that easily provide staff with point-of-need information and guidance in a simple format. However, job aids do not substitute for instruction, which happens before the need arises; they are used as the need arises. They are most effective with those tasks that involve following step-by-step procedures or simple decision-making, and help employees with tasks that are complex, new or changed, performed somewhat infrequently, and involve multiple people and processes.

Job aids are usually printed documents that are one page or less, although they can be virtual as well. Common formats for job aids include checklists or templates for processes and procedures, flowcharts, floorplans, decision trees, concept maps, infographics, and multimedia artifacts such as tutorials. When thinking about developing job aids, it's helpful to ask the following questions:

- Is a job aid appropriate for this process? If so, what type will best support employee performance? Examples include forms, flowcharts, step-by-step guides, or checklists.
- Who are the target employees for the job aid? Can a basic level of expertise be assumed?
- Identify the content. What is the purpose of the job aid?
- Who will need to create the job aid? Who will need to provide feedback?
- How will the job aid be stored and disseminated? Who needs to access the aid, and how often?
- What will be a reasonable schedule for updates to the job aid? How often does this work process change, and who needs to provide updates?

When designing the job aid, it's important to include only the necessary steps or information required to do the task for simplicity. Bullets help the reader easily follow along, and critical information should be placed in the first and last parts of sentences or sections. The job aid should use common language, including verbs and action words at the beginning of sentences, when possible. Include clear visualizations that help to clarify

information or provide more detail, and be consistent with the type of visuals that are used.

A similar but more comprehensive process is the routine standard operating procedure (SOP) audit. SOPs are also step-by-step directions and instructions, but they involve more complex, system-wide procedures and are not necessarily meant for point-of-need use, but for occasional reference. Information needed for the SOP usually includes an overall purpose or rationale, roles and responsibilities of employees and stakeholders, and resources needed. The most typical formats include step-by-step lists, hierarchical lists, and flowcharts.

Think of a workplace or personal task that involves a series of sequential steps. Considering your audience, how might you present these steps most effectively in a job aid?

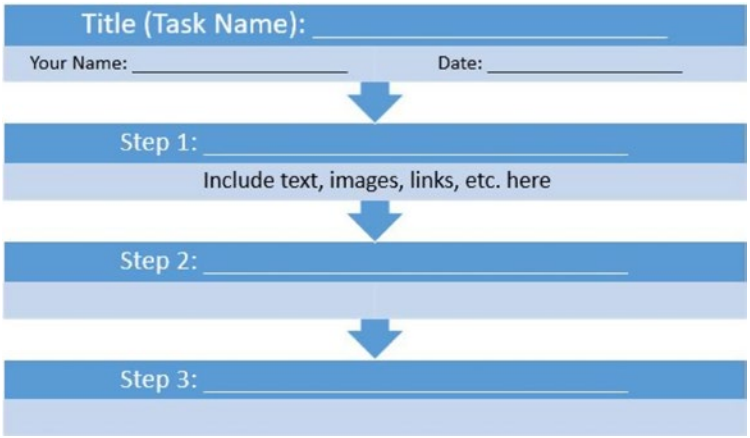

Figure 5.3. Exercise: Creating a Simple Job Aid.

Relationship Maps

Something like a family tree, relationship maps are visual schematics that show relationships among individuals and groups; they are another useful way to document both tacit and explicit knowledge. Although they can chart the relationships between library departments and staff as well as between the library and other organizational departments and units, relationship maps are not the same as an organizational chart. The knowledge imparted by relationship maps has to do with connections and influence, which may or may not exist within the organization. The relationship map can also chart connections between the library and outside constituencies such as community groups, government agencies, associations, vendors, and key stakeholders. In addition to serving as useful references for existing staff, they can also be used for onboarding of employees as they are a quick and clear way to list the go-to people for specific information, guidance, and resources. They are also a good way to identify the relationships that are missing in the organization and need to be cultivated.

Construction of a relationship map usually happens after a group brainstorming or information-sharing exercise, although it can also be drawn up by individual employees. The format is generally very simple, consisting of a flowchart with the employee or group at the center with lines radiating to other individuals and groups to indicate a direct relationship. Solid lines indicate strong relationships, dotted lines a relationship that needs to be cultivated or strengthened, and no line indicating an aspirational relationship that

does not yet exist or needs to be rekindled. Influence relationships can be indicated by drawing an arrow from the node that influences to the one being influenced.

Real-Time Storytelling

Storytelling is an age-old way to transmit information, to entertain, and to make sense of the world. Survival narratives featuring hunters and animals have been found drawn on cave walls dating back thirty thousand years, and Egyptian hieroglyphs date back at least five thousand years. Storytelling through oral traditions used songs and poetry to pass tales from generation to generation; they were then preserved in written form on paper, stone, and clay, and later were more widely disseminated through the introduction of the printing press and now the internet. Technologies change from century to century, but the power of storytelling remains the same.

From the KM perspective, storytelling is still regarded as one of the most effective and influential techniques of tacit knowledge capture and creation, and its usefulness has been documented extensively in numerous fields. Sole and Wilson (2002) identify the role of storytelling as follows:

- **Share norms and values:** Stories act as a medium for passing on organizational values that not only describe the organization's past, but also help create a vision for its future.
- **Develop trust and commitment:** Personal stories communicate one's own abilities, skills, and commitment, as well as convey openness and trust by sharing something personal. Organizational stories influence the perceived trustworthiness of the firm and its management, whether positive or negative.
- **Share tacit knowledge:** Storytelling enables employees to articulate tacit knowledge and communicate in a way they couldn't using other, more formal means; this mode of person-to-person communication helps them convey more than they realize that they know.
- **Facilitate unlearning:** Unlearning, or rethinking and reimagining ways activities are accomplished, sometimes requires more persuasion than rational arguments can provide. Stories can be more effective in communicating an intuitive or emotional rationale or why change is needed.
- **Generate emotional connection:** People tend to connect with stories emotionally and thus are able to relate to their lessons better, as well as recall them more readily. A story that has had an impact on employees will be more easily recalled in the future.

Storytelling can be a meaningful way to capture context, history, tradition, and personal knowledge in the organization, but presents some issues from a practical KM perspective. On the one hand, storytelling is immediate and direct. It can be very practical in nature, yet can also reveal insights that might not be organically shared through other means. However, it can be difficult to codify knowledge contained within stories, and organizations need to create a knowledge environment (or an Interacting *ba*) that supports this method of knowledge capture.

In chapter 4, we discussed the concept of a "springboard story" to make the KM case to administrators and other key stakeholders. Different types of stories can be used for different situations. Steve Denning in *The Leader's Guide to Storytelling* lists eight narrative

patterns that are most effective in the workplace depending on the storyteller's goal: motivate others to action, build trust, using narrative to build your brand, transmit your values, get others working together, share knowledge, tame the grapevine, and create and share your vision. In order to make knowledge-sharing stories compelling and interesting, Denning suggests including "details that bring the story within the listeners' frame of reference. . . . If the situation is one the listeners have already faced in the past or may face in the future, it becomes personally relevant—and the more personally relevant the story becomes, the more likely it is to be indexed in memory, and the more likely they are to draw from it in future situations" (Denning 2011, 190).

An important element of relevance involves timeliness. Recording lessons learned and capturing knowledge immediately can have a powerful effect on knowledge capture and transfer. Indeed, memory recall works much more effectively when something is fresh in employees' minds; people are able to recall more specific details shortly after the event or procedure occurs compared to days or even hours later. Therefore, it is critical to capture lessons learned as soon as possible. In addition, taking a moment to record the information right away alleviates the necessity of yet another to-do item. With a simple knowledge-capturing document, it can take less than five minutes to record the lesson learned, which could literally save people hours of time or prevent catastrophes, assuming the knowledge is effectively shared. Stories can be written, videoed, or recorded through other means and help to capture the wisdom used to handle specific projects, situations, and processes.

STORYTELLING EXERCISE

- Tell a "lessons learned" story. Describe a project that did not go as planned or desired, and reflect on what could have been changed to improve the "end" of that story.
- Think about a recent situation you experienced with a library patron, either positive or negative. What was the situation? How was it handled or resolved? What was the aftermath? Now think about the story from the patron's perspective. How might they have told the same story?
- Choose one step-by-step business process that you do frequently and record yourself telling a story about that process. What's the purpose for doing the process? What resources do you need and how do you start? What are the steps? What problems have you encountered in the past when doing this process? What does a successful resolution look like, and how can it be improved?

Individual and Group Interviewing

What happens when a staff member with years of knowledge and experience walks out the door due to retirement or a job change? Without prior planning, all that departing expertise can be lost to the organization. Some libraries, especially larger public and academic libraries, conduct exit interviews but these are usually focused primarily on human resources observations, rather than on the employee's work-related knowledge. Inter-

viewing (sometimes called knowledge harvesting) is a good way to address this problem: a systematic technique for capturing tacit knowledge and making it available to others. Interviewing is an effective KM strategy that can be used in a variety of situations, and not only to capture knowledge from employees who are leaving the organization:

- To conduct an inventory of what general information assets are available in the library as part of a knowledge audit
- To begin a KM program within the library organization by quickly gathering together a body of expert knowledge
- To capture knowledge and information for a specific, clearly defined purpose
- To systematically gather knowledge to move forward with needed changes and improvements within the organization, for example, during a strategic planning process
- To update and supplement an existing knowledge base as part of an ongoing KM program

Interviewing can take place in a wide variety of places, in various formats, and at different intervals. Although there is no set formula for organizational interviewing, some general guidelines should be considered. As with most KM initiatives, the primary focus needs to be on people: those who will be interviewed and those doing the interviewing.

A first step is to identify the "experts" to be interviewed, those employees or other key people who have the necessary knowledge and experience that the institution is seeking to capture. Good places to begin are the staff directory or organizational chart, as well as any staff resumes or curriculum vitae that may be on file. The latter is especially useful as these documents have additional information regarding people's skills and knowledge. Other resources include reports and key documents on particular topics, conversations with managers and departmental staff, and general calls for information across email or via meetings. It is important to remember that experts on a particular topic are not necessarily the people at the top of the departmental organizational chart.

Another key group of people to consider are the interviewers who will conduct systematic conversations with the experts. Not everyone can conduct an effective interview; it is crucial to select interviewers who are skilled at listening, eliciting the right knowledge, and not making assumptions about the topic at hand. Expressing tacit knowledge can be difficult, as people don't always "know what they know" and can skip key steps or concepts. Recruiting an interviewer unfamiliar with the topic of conversation can be helpful in that the interviewer may be more likely to ask basic questions that otherwise could be overlooked.

Second, the specific focus of the interviews should be carefully considered. The time frame for gathering information for departing employees will largely dictate what topics are covered; in these cases, just-in-time information about the employee's direct responsibilities and projects in progress is essential. However, given more time the organization can consider what benefits will result from focusing on specific knowledge and expertise, and the target audience who will be using that knowledge. Examples of key areas of knowledge needing to be harvested include:

- Knowledge about operational workflows and processes
- Knowledge about projects accomplished and suggestions for improvements

- Knowledge about particular patrons, categories of patron, vendors, community groups, donors, and so forth
- Knowledge about the internal infrastructure and organizational culture, or how things work

Effective interviewing takes careful planning and preparation. The best way to capture tacit knowledge is by conducting one-to-one, face-to-face interviews with employees in a quiet, comfortable environment. Interviewers should prepare a "script" or list of questions, well in advance, focused on asking staff what they do and describing specific situations in which they have applied specific skills and expertise. Examples of questions might include:

- What do you know how to do that you feel is particularly important to the library?
- Describe a time when a process went well, and when it went badly.
- When performing [particular work process], what is the first thing you do? Why do you handle it that way? What do you do next, and why?
- Who needs to be involved in [work process] and what resources are needed?
- What would make [work process] easier to understand and achieve?
- What are some common mistakes or misconceptions that other employees have about your job?
- Describe how you currently help others learn how to perform specific work tasks. What are the main obstacles that may prevent them from achieving the same results as you?
- What support materials, documentation, procedures, manuals, research evidence, or checklists do you find helpful, and are they up to date?

In order to effectively capture the interviewee responses, the interviewer should use a digital recorder (available on most cellphones) or video recorder if the interviewee is comfortable with being recorded. A second person can be present to take notes if necessary. The recording or notes should be transcribed as soon as possible after the interview in case follow-up questions are needed or if there needs to be a second round of expert interviewing. The expert may not be available to share further information if they are leaving the organization, so clarifying information such as usernames and passwords for key systems, names and contact information, and other hard-to-reconstruct information is crucial.

Key Points

- An essential first step in developing a KM initiative is taking stock of the tacit and explicit knowledge already available in the organization.
- The SECI model (Socialization, Externalization, Combination, Internalization) is a useful framework that describes how tacit and explicit knowledge are converted into organizational knowledge and serves as a foundation for deeper knowledge creation.
- The organization's KM manager needs to take a central role in the coordination of knowledge capture and creation.

- Commonly used tools and techniques for knowledge capture and creation include project file repositories, job aids, relationship maps, stories, and interviews.

References

Agarwal, N. K., and M. A. Islam. "Knowledge management implementation in a library: Mapping tools and technologies to phases of the KM cycle." *VINE: The Journal of Information and Knowledge Management Systems* 44, no. 3 (2014): 322–44.

Brown, John Seely, Stephen Denning, Katalina Groh, and Laurence Prusak, *Storytelling in Organizations: Why Storytelling is Transforming 21st Century Organizations and Management*. Burlington, MA: Butterworth-Heinemann, 2004.

Brown, John Seely, and Paul Duguid. "Balancing act: How to capture knowledge without killing it." *Harvard Business Review*, May-June 2000, https://hbr.org/2000/05/balancing-act-how-to-capture-knowledge-without-killing-it.

Denning, Stephen. *The Leader's Guide to Storytelling: Mastering the Art and Discipline of Business Narrative*, second edition. San Francisco: Jossey-Bass, 2011.

Holloway, Pam. "The know-how of knowledge interviews: Capturing key knowledge in exit interviews." AboutPeople and Knowledge Harvesting Inc., 2006. http://knowledgetransferalliance.pbworks.com/f/The+Knowledge+Interview+Guide.pdf.

Koloniari, Maria, Eftichia Vraimaki, and Kostas Fassoulis. "Factors affecting knowledge creation in academic libraries." *Journal of Librarianship and Information Science* 51, no. 1 (2019): 20–33.

Nonaka, Ikujiro, and Hirotaka Takeuchi. *The Knowledge-creating Company: How Japanese Companies Create the Dynamics of Innovation*. London: Oxford University Press, 1995.

Nonaka, Ikujio, and Noboru Konno. "The concept of '*ba*': Building a foundation for knowledge creation." *California Management Review* 40, no. 3 (1998): 40–54.

Rossett, Allison, and Jeannette Gautier-Downes. *A Handbook of Job Aids*. San Francisco: Jossey-Bass/Pfeiffer, 1991.

Roughen, Patrick F., and Deborah E. Swain. "Building innovative brands: Cases of tacit and explicit knowledge conversions in children's libraries." *Public Library Quarterly* (2019): 1–21.

Sole, Deborah, and Daniel Gray Wilson. *Storytelling in Organizations: The Power and Traps of Using Stories to Share Knowledge in Organizations*. Cambridge, MA: LILA, Harvard University Graduate School of Education, 2002.

Takeuchi, Hirotaka, and Ikujiro Nonaka. "The Knowledge-creating company." *Harvard Business Review* 85, no. 7/8 (2007): 162–71.

Takeuchi, Hirotaka, and Ikujiro Nonaka. "The New New Product Development Game." *Harvard Business Review* 64, no. 1 (1986): 137–46.

Willmore, Joe. *Job Aids Basics*, second edition. Alexandria, VA: Association for Talent Development Press, 2018.

CHAPTER 6

Organizing Knowledge: Structure and Compilation

IN THIS CHAPTER

- Approaches to Institutional Knowledge Organization
- The Knowledge Map
- Process-Based and Competency Modeling
- Knowledge Classification Systems

"You ask what is the use of classification, arrangement, and systemization? I answer you: order and simplification are the first steps toward the mastery of a subject—the actual enemy is the unknown."

— THOMAS MANN

THE KNOWLEDGE CAPTURE AND CREATION phase will result in a significant number of documents including job aids, lists of procedures, interview transcripts, archival documents, photographs, videos, white papers, and other documents and artifacts that serve as the raw materials of the library's knowledge management (KM) system. The next step in the organizational KM cycle is determining how this fragmented information should best be organized given the needs of the organization. The goal of the "organizing knowledge" phase of the KM process is to develop an underlying knowledge structure into which the library's knowledge assets will fall.

Approaches to Institutional Knowledge Organization

At this point in the KM process, there may be two perspectives at work. One involves looking at the KM program from an information system perspective, in which the main

Figure 6.1. Knowledge Management Lifecycle: Organizing Knowledge.

focus is creating a database for organizing and retrieving data. An information technology approach is generally encouraged when dealing with explicit knowledge organization; given how many physical documents and artifacts there may be to organize, having a straightforward system of categories may indeed be the most logical solution. Many organizations tend to organize existing knowledge assets based on the technology already available—the physical systems where the information is stored.

A second viewpoint emphasizes the KM system as primarily a curated system designed to help end users locate the library's tacit knowledge as well as the explicit as intuitively as possible. While some tacit knowledge can be converted to explicit, much will remain highly context-dependent and difficult to classify. Further, the knowledge capture and creation process will have uncovered types of "embedded" knowledge that contain elements of both tacit and explicit, in other words, unarticulated cultures and routines in which the rationale or benefit is not immediately apparent. Embedded knowledge is generally found in rules, manuals, routines, and procedures, but its benefit to the organization is not immediately apparent. For example, the library's dress code may prevent the wearing of jeans (explicit knowledge), but no one can remember why this requirement is necessary (tacit knowledge). Another example involves automated library systems that are set up to perform a certain function independent of staff intervention, as when library doors automatically open at 8:00 am, even on holidays. Successful KM programs will attempt to convert both tacit and embedded knowledge into explicit knowledge as much as possible. In these examples, managers would need to review the dress code requirement and either strike it from the formal code and allow the wearing of jeans, or clarify to staff why the requirement needs to remain in place. The building access system would need to be reviewed to determine why the doors are programmed to operate the way they do, and record the decision and rationale in the library security manual.

Organizing knowledge from both the information technology and curated/tacit perspectives is certainly important, but the focus should remain on organizing knowledge assets with the end goal of making them easy to access and use among all employees, regardless of their level of technical competence. Some KM systems may be easily acces-

sible to experienced technical staff or other users familiar with the underlying technical infrastructure, but not as helpful for nontechnical staff who do not work with the systems on a daily basis. The organizational structure must keep the information needs of less experienced staff firmly in mind. An effective KM system helps organize captured and created knowledge by helping employees visualize where the knowledge might best be used in the organization.

Standard organizational activities already familiar to librarians such as document description, indexing, cataloging, and other similar processes are a useful starting point when considering the organization of internal knowledge as well. These activities fall under the general category of "knowledge organization," which can be thought of as a range of tools and techniques (i.e., thesauri, subject headings, ontologies, and other classification schemes) designed to support the organization of knowledge and information for more efficient management and access (Mazzocchi, 54). Knowledge organization has grown over the years into a well-defined field of research, teaching, and practice most closely affiliated with library and information science, although it does have applicability in other disciplines as well. Although the goals of a library's KM program are different from that of the library's services to its patrons (i.e., internal information flow rather than external), general principles of information classification will apply to a large proportion of the organization's institutional knowledge as well, in particular its extrinsic knowledge.

One good strategy for beginning the visualization of a KM organizational structure is using a visual aid that shows what knowledge assets and expertise can be found in an organization, often called a knowledge map. In addition to organizing the knowledge assets already on hand, such a map can also be instrumental in helping to identify gaps in organizational knowledge that need to be addressed.

The Knowledge Map

Also called a concept map, mind map, or "inventory of knowledge," a knowledge map is a powerful and intuitive way for libraries and other knowledge-intensive institutions to graphically chart where collective and individual knowledge falls within the organization as well as track how knowledge flows throughout the organization. Much like a geographical map, knowledge maps are designed to help employees locate internal knowledge. Designed to be easy to create and follow, these maps help employees easily navigate different branches of the map to access groups of knowledge assets and new maps. Further, a well-designed knowledge map will allow employees to access different information through more than one path, as individuals may follow different thought processes or may be approaching a work situation from varying perspectives.

Basically, a knowledge map represents relationships among ideas, topics, concepts, and images in order to make those connections clearer. Just as a road map communicates the geographic relationship between towns and areas of interest or an electrical circuit diagram charts the inner workings of a small appliance, the knowledge map clarifies connections between seemingly unrelated people, units, projects, and workflows within an organization. Although the process of knowledge mapping is continuous (or should be), maps themselves are static, giving organizations a "picture in time" of what knowledge is available, where it is located, how it flows throughout the organization, and why it is important.

Knowledge maps can be used for any number of individual and group projects, and can be as simple or complex as needed depending on the situation. In addition to being used for an organization's underlying KM structure, knowledge maps can also be used to brainstorm ideas in creative meetings, help students organize information when writing papers or studying for tests, stimulate new ideas by seeing possible connections among people and organizations, plan library events and programs, develop procedural flowcharts, organize components of strategic plans and reports, and so on.

POPULAR KNOWLEDGE MAPPING AND MIND MAPPING TOOLS

The easiest way to create a simple knowledge map is to use pen and paper or a whiteboard, but for collaborative organizational work, KM teams should look for portable, digital tools that offer features such as unlimited nodes, the ability to insert images and files, real-time group editing, and the capacity to save and export.

Mindmeister: https://www.mindmeister.com (web, iOS, Android)—A popular application for working with teams. Real-time collaboration, customizable designs, support for attached files, slideshows, integrates with task management app MeisterTask (free for up to three mind maps).

LucidChart: https://www.lucidchart.com (web, iOS, Android)—Primarily known as an app for making flowcharts; can import mind maps from other similar applications (free for up to three documents).

Coggle: https://coggle.it—Easy for beginners, real-time collaborative editing, allows formatting in Markdown (free up to three private diagrams).

Mindmup: https://www.mindmup.com (web)—Easy to use and good for quick mind mapping. Allows creation and posting of mind maps without an account (free for public maps up to 100 KB).

MindNode: (iOS, macOS)—Native Mac, iPhone, and iPad app; integrates with other Apple-friendly apps including Watch, Apple Pencil Things, Omnifocus (free with limited features).

Diagrams.net: https://www.diagrams.net—Formerly diagrams.io. Not designed to be a mind mapping tool, but can be used for this. Open source, web-based app with desktop version available. Shareable diagrams, integrates with GSuite, Sharepoint, OneDrive, Git, Dropbox, etc. No templates, but features library of standard shapes and connectors (free).

Knowledge maps begin with a central idea or theme which then radiates out to related ideas contained in "nodes," each representing a particular topic or concept. These nodes can be in various colors and shapes representing different types of information and are then connected to other nodes with a system of lines until a network of knowledge is formed. Knowledge maps can be simple or complex, but common elements include a central or core topic, subtopics radiating out from the main topic, relationship lines, boundaries between various topic areas, and supplementary material including visual materials, notes, hyperlinks, and attachments.

For example, the following figure is a simple knowledge map illustrating the main concepts of the SECI model discussed in chapter 5.

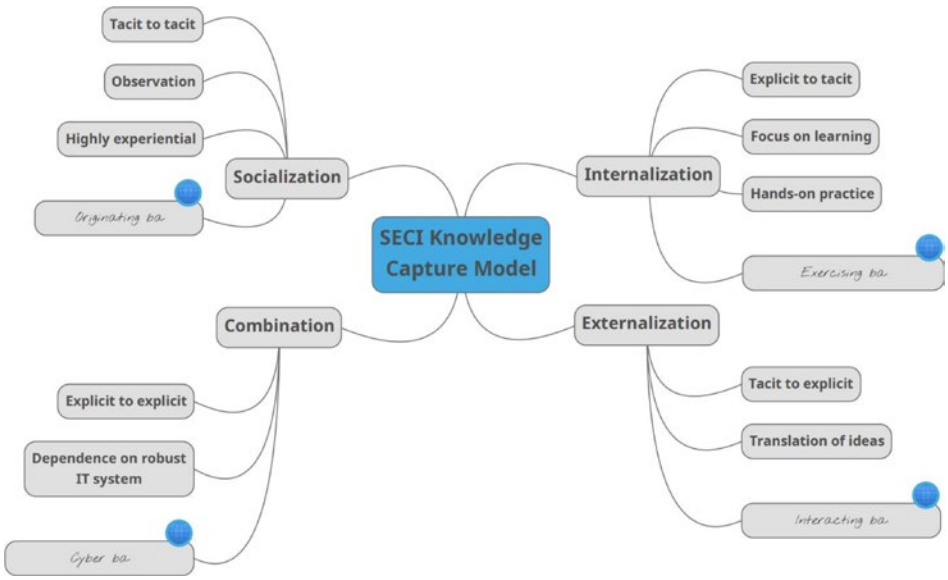

Figure 6.2. SECI Knowledge Capture Model.

In this basic schematic, the center node is the main concept of the map from which the "child" topics branch out (socialization, combination, internalization, and externalization). The child topics then have child topics that give more information. The child topics describing *ba* are delineated by a different type and include an identifying icon for emphasis.

Using knowledge maps, individuals and groups can identify more about the sometimes hidden workings or unseen connections of an organization than is obvious from a linear list or simple directory. Images are often more effective and faster at conveying how knowledge content flows throughout an organization than narrative. Links between strategically important knowledge, key personnel, individual departments, and other factors are clearly indicated and knowledge flows on maps are an indication of how efficiently work is actually performed in the organization.

EXERCISE: INDIVIDUAL/GROUP KNOWLEDGE MAPPING

Knowledge maps can be an effective exercise for groups to make connections between existing institutional knowledge and the library's mission. Working individually or in groups of three or four employees, construct a map showing the current workflow in one key function of the organization and identify the people, knowledge, and resources needed to accomplish the function. What knowledge is missing? Are the correct people involved in the process? What problems are encountered? How can the process be improved?

Process-Based and Competency Modeling

Knowledge mapping is a flexible tool that can be used to structure and organize all kinds of captured and created knowledge, whether explicit or tacit. Two common, basic qualitative models to consider when mapping organizational knowledge are process-based and competency models. Each model lends itself to different types of knowledge and uses various sets of tools, approaches, objectives, and specific characteristics. The overall intentions with both process-based and competency modeling remain standardized understanding among employees, improvement of efficiency, enforcing and standardizing best practices, and increased transparency and accountability.

Process Models

Process models (sometimes called business process models) describe the flow of work in particular library functions—from acquisitions to cataloging to circulation, for example—and are generally used to represent a series of steps needed to achieve a particular goal. As such, they have a clear beginning and end, a specific order of activities, milestones, and anticipated outcomes depending on the steps taken in the process. The overall goal of the process model is to provide a replicable representation of a process that can then be used to identify the knowledge needed to support the library process and identify any knowledge gaps.

Using a process model, libraries can identify not only individual organizational processes and their steps, but also the position of the person performing the step, the skills and training which the person should have in a specific position, and needed resources for the procedures. Although certainly lists of steps (as in a job aid) are useful in communicating how a process works, translating the process into a graphical format can be easier to understand. Using process models is particularly helpful in two situations: when staff need to have a shared understanding of a particular workflow (the "as-is" state), and when a new process needs to be developed or an existing process needs to be improved and a starting point is required for discussion (the "to-be" state). There are several types of process models that accommodate high-level and low-level mapping:

- Process Flowcharts—the most basic process modeling technique, the flowchart maps workflow processes step-by-step.
- Business Process Model and Notation (BPMN)—this is a standardized method for flowchart mapping and incorporates standardized graphical elements including flow objects, connecting objects, and swim lanes and artifacts. BPMN is currently maintained by the Object Management Group (more information about BPMN may be found at http://www.bpmn.org).
- Data Flow Diagrams—rather than represent steps in a process, the data flow diagram focuses on how information flows within the process; the emphasis is on data and not all stakeholders are included.
- Program Evaluation and Review Technique (PERT) Chart—this process model provides a graphical representation of a project timeline, breaking down each stage of the project and determining task dependencies for clearer analysis and to estimate how much time is needed for the project.

- Gantt Charts—another project management tool, the Gantt chart is a horizontal bar chart showing start and end dates, dependencies, milestones, project phases, and deadlines.

Competency Models

The competency model charts where individual and departmental skills, knowledge, and capacities reside within an organization. Similar to process knowledge mapping, competency knowledge mapping delineates the knowledge, skills, and abilities needed to successfully perform various functions and tasks, and although they are most commonly used by human resources departments, they can be profitably used by anyone in an organization to identify where additional resources are needed. These models can match desired competencies with existing individual skills, roles, and social contacts. They can be loosely based on an organizational chart but serve to give deeper information about employees with skills, experience, academic credentials, and other resources that can also be applicable in other areas. Therefore, competency knowledge mapping creates a deep organizational directory of skills, knowledge, individual relationships, and resources. Some questions that the competency model can address include: How does information flow in an organization? To whom do people turn for advice? Have ad hoc groups emerged that are sharing what they know as effectively as they should?

For example, one knowledge artifact that might be incorporated in a competency model is a "yellow pages" document, otherwise known as an expertise locator system. The organizational yellow pages is not the same as the organizational chart; rather, it is a structural collection of documents about people in an organization, and typically includes employee resumes and an employee self-identified list of areas of expertise. For instance, libraries that display online lists of subject liaisons linking to their research guides, institutional repository documents, and other resources displaying librarian expertise are employing a yellow pages method to communicate employee expertise and skills with both internal and external constituents.

The competency model has much in common with social network analysis (SNA), which is a relationship mapping technique that maps and measures relationships and flows between people, groups, organizations, computers, or other information or knowledge processing entities. The nodes in the SNA network represent individuals and groups, and include links demonstrating both formal and informal relationships and information flows between the nodes. People and groups can be connected to one another by degree (the number of direct connections), "betweenness" (people and groups which link to different constituencies), and closeness (strength and frequency of connection). SNA modeling can be used for the analysis of many social structures in not only sociology, but also economics, political science, education, public health, computer science, and other fields. From a KM perspective, SNA models attempt to understand how tacit knowledge is broadcasted within an organization and how it can be improved.

Process-based and competency models are only two methods to chart and organize institutional knowledge. Both are visualization techniques that serve to highlight different types of information and relationships and have their own unique characteristics. Certainly, other situations will arise depending on the institution's existing knowledge assets and goals for the KM initiative. Any mapping techniques chosen should reflect

the institution's expectations, involve all relevant stakeholders, and seek to address some common knowledge areas. The following are some things to keep in mind:

- Knowledge maps do not contain the knowledge itself; their various components only serve to help the organization visualize the knowledge assets they represent and identify possible gaps in that knowledge.
- Knowledge maps should be people-centric. Include the members of the organization who need to access and use this knowledge in their daily work, but also library patrons and any other external individuals that may contribute to the knowledge that is made accessible through a particular map.
- Knowledge maps can take either a top-down or bottom-up. Top-down map processes generally involve people at the top of an organizational hierarchy advocating for a particular project or process. Bottom-up knowledge maps, although not necessarily initiated by library administration, should be actively encouraged and worked into the overall KM infrastructure.
- Knowledge maps can be static or dynamic. Dynamic maps illustrate concepts, processes, and workflows that are subject to change, whereas static maps focus on basic organizational attributes not subject to change.

Knowledge Classification Systems

As mentioned earlier in this chapter, librarians and information professionals deal with knowledge organization activities on a daily basis. A number of classification systems have arisen over the years, including authority files that list variant names for specific terms, dictionaries and glossaries, controlled subject heading terms, thesauri, gazetteers, and more. Such systems serve to standardize a way of looking at disparate items in a particular context. Regardless of the system used, the goal is the same: to organize materials in such a way so that the end user can easily discover them without necessarily having prior knowledge of their existence.

Classification systems used to organize institutional knowledge operate under the same principles. Although these systems are geared to provide access to an internal, professional specialized audience, it cannot be assumed that all individuals in that audience have the same knowledge of specific terminology and concepts. Hence, both specialized subject-based controlled vocabularies as well as user-created vocabularies should be developed and made available to address the different knowledge objects available in a system, but in such a way that they are easily understood and translatable to different environments and situations. Part of the knowledge organization process involves creating or adopting relevant thesauri, taxonomies, ontologies, folksonomies, and other knowledge classification systems.

Taxonomies and Ontologies

A "taxonomy" in the historical sense refers to the branch of biological science dealing with the orderly description, identification, and classification of organisms according to their natural relationships. More generally, taxonomies are a type of metadata used to classify things and concepts in a wide number of fields including computer science,

education, business, and so forth. A taxonomy contains terms specific to a particular field or organization and arranges these terms in a hierarchical classification system that can then be applied to topics, documents, or other elements. The taxonomy helps users to find objects by describing where particular topics fall in relationship to each other. For example, "Bloom's taxonomy" refers to a hierarchy of six educational objectives (knowledge, comprehension, application, analysis, evaluation, and synthesis). The North American Industry Classification System classifies businesses using a numeric system of industry sectors and subsectors, resulting in a five- or six-digit code.

Using a basic taxonomy as a classification scheme in the KM schema can present a problem for the end user in that they must search using precisely the right term. These systems provide very limited information about terms that are synonymous with each other as well as relationships among different terms. In order to make these tools more useful, a thesaurus showing not only the hierarchical relationships, but also related and equivalent terms should be embedded in the taxonomy.

Bruno and Richmond (2003) suggest the following types of taxonomies well suited to represent institutional information:

- Functional—organized around administrative and operational functions
  - Pros: Supports organizational goals well, reduces silos and duplication of information, shows information flow
  - Cons: Needs buy-in, requires oversight and departmental liaison, more training needed
- Department—follows an organizational chart
  - Pros: Easy to build and understand, preserves the chain of command
  - Cons: Headings need to change as departments change, can split information on one project or topic if multiple people are involved, can be difficult for new employees to navigate
- Subject—based on topics commonly dealt with by an organization
  - Pros: Good for classifying discrete bodies of knowledge, allows for greater depth and detail
  - Cons: Limited to one body of knowledge, selection of terminology can be difficult to accommodate both expert and novice users
- Product/Services—organized around the organization's products and services
  - Pros: Ideal for specific details regarding outputs
  - Cons: Standalone, does not represent the entire organization
- Location—based on geographic locations

Although ontologies are often mentioned in the same breath as taxonomies, they differ in that ontologies identify and describe concepts and their relationships rather than focus on their hierarchical relationships. An ontology allows for a deeper level of complexity in that it connects concepts across taxonomies, in effect creating multidimensional structures of information. Parts of an ontology include classes and subclasses, attributes of classes and subclasses, restrictions on attributes, and instances.

Although formal ontologies gained in prominence in information science circles beginning in the 1990s as the internet expanded, the difference between these knowledge organization systems and more traditional methods familiar to libraries was not always well defined:

> Classification has long been used in library and information systems to provide guidance to the user in clarifying her information need and to structure search results for browsing, functions largely ignored by the text retrieval community but now receiving increasing attention in the context of helping users to cope with the vast amount of information on the Web. Fairly recently, other fields, such as AI, natural language processing, and software engineering, have discovered the need for classification, leading to the rise of what these fields call ontologies. . . . But a classification by any other name is still a classification. (Soergel 1999, 1119–20)

Folksonomies

Sometimes called collaborative tagging, social indexing, or social classification, a folksonomy refers to a taxonomy that is developed by a broad community of people ("folks") in order to categorize various types of knowledge content including documents, webpages, images, and audiovisual content by creating labels or tags to enable others to find content based on their information needs and interests. Folksonomy systems typically allow individual users to see the identity of other users who have created and applied tags to various content items, enabling connections between people with similar interests. In short, folksonomies can be described as an ad hoc labeling and tagging system.

The term "folksonomy" was coined in 2007 by information architect Thomas Vander Wal, who describes the idea as follows:

> Folksonomy is the result of personal free tagging of information and objects (anything with a URL) for one's own retrieval. The tagging is done in a social environment (usually shared and open to others). Folksonomy is created from the act of tagging by the person consuming the information.
>
> The value in this external tagging is derived from people using their own vocabulary and adding explicit meaning, which may come from inferred understanding of the information/object. People are not so much categorizing, as providing a means to connect items (placing hooks) to provide their meaning in their own understanding.

Common examples of folksonomies in practice include hashtags on social media platforms such as Pinterest, Twitter, and Instagram and academic social tagging in systems including Diigo and WorldCat.org, which allow researchers to organize and share their personal collections of online references with keywords. One interesting example of social tagging in library settings is LibraryThing (https://www.librarything.com), a free online service that offers tools for cataloging and tracking personal libraries. Users can organize their collections using controlled subject headings as well as tags they create and from other users.

Folksonomies provide an alternative to top-down, hierarchical classification systems that do not easily accommodate modification, as well as to search engines that may not retrieve embedded knowledge specific to a particular user group.

Key Points

- After knowledge capture, organizations should consider a structure within which available knowledge will best fit and provide for future growth and development.

- A knowledge map is a useful technique to visualize where collective and individual knowledge falls and flows throughout the organization.
- Process-based knowledge modeling describes the workflow needing to be accomplished in certain tasks and projects.
- Competency models chart where individual and departmental skills and capacity live within the organization.
- Common knowledge classification systems include taxonomies, ontologies, and folksonomies.

References

Bruno, Denise, and Heather Richmond. "The truth about taxonomies." *Information Management Journal* 37, no. 2 (2003): 44.

Eppler, Martin J. "Making knowledge visible through knowledge maps: Concepts, elements, cases." In *Handbook on Knowledge Management 1*, pp. 189–205. Berlin: Springer, 2004.

Hedden, Heather. *The Accidental Taxonomist*, second edition. Medford, NJ: Information Today, Inc., 2016.

Hjørland, Birger. 2016. "Knowledge organization." *Knowledge Organization* 43, no. 6: 475–84. Also available in Hjørland, Birger, ed. *ISKO Encyclopedia of Knowledge Organization*, http://www.isko.org/cyclo/knowledge_organization.

Hodge, Gail. "Knowledge organization systems: An overview." In *Systems of Knowledge Organization for Digital Libraries: Beyond Traditional Authority Files*, pp. 4–9. Washington, DC: Digital Library Federation, 2000. https://www.clir.org/pubs/reports/pub91/1knowledge.

Joudrey, Daniel N., and Arlene G. Taylor. *The Organization of Information*, fourth edition. Santa Barbara, CA: Libraries Unlimited, 2018.

Ornat, Natalie, and Renee Moorefield. "Process mapping as an academic library tool: Five steps to improve your workflow." *College & Research Libraries News* 79, no. 6 (June 5, 2018): 302.

Powell, James, and Matthew Hopkins. *A Librarian's Guide to Graphs, Data and the Semantic Web*. Waltham, MA: Chandos Publishing, 2015.

Soergel, Dagobert. "The rise of ontologies or the reinvention of classification." *Journal of the American Society for Information Science* 50, no. 12 (October 1999): 1119–20.

Vander Wal, Thomas. "Folksonomy coinage and definition," February 2, 2007, http://vanderwal.net/folksonomy.html.

CHAPTER 7

Storing Knowledge: Integration and Stability

IN THIS CHAPTER

- Knowledge Management Systems and Tools
- The Organizational Intranet
- Content Management Systems
- Document Management Systems
- Collaboration Software/Groupware
- Knowledge Portals
- Technology Adoption and Challenges

"Too often people look to technology to solve the hard questions, when in fact the tools are the easiest part. A Stradivarius violin sounds just as terrible as a dimestore fiddle in the hands of a novice. The key is putting the right tools in the hands of people who know how to use them."

— RUDY L. RUGGLES

AS MENTIONED EARLIER IN THIS BOOK, knowledge management (KM) is primarily about people—whether staff, patrons, or other stakeholders—and not about particular tools or technology. KM tools act as support for the processes, policies, and procedures adopted to best serve stakeholders in the organization in order to meet the mission and goals of the library. Different tools and technologies are used at each phase of the KM cycle. For instance, knowledge capture and creation are facilitated by word processing programs, spreadsheets, email, phone and videoconferencing conversations, blogs, wikis, digital video and audio, and traditional pen and paper. Knowledge

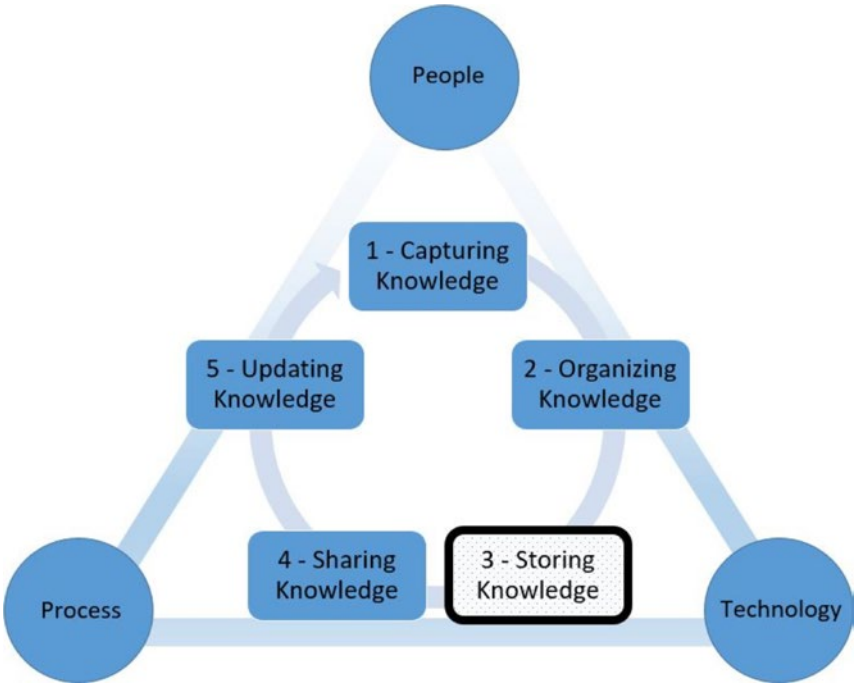

Figure 7.1. Knowledge Management Lifecycle: Storing Knowledge.

organization involves all these technologies plus electronic systems that support catalogs and metadata. As libraries amass a critical body of institutional knowledge needing to be stored, tools and technologies are needed to support knowledge space needs.

The cultivation of shared space of all kinds is important throughout the entire KM cycle. Organizations need to create and support shared spaces for individuals and teams to work through various stages of the KM process from knowledge creation and capture to knowledge evaluation and updating. These spaces can be physical and virtual; they can exist in offices, classrooms, and meeting rooms in which library employees meet to work on knowledge maps or tell stories. Certainly, a vast array of recorded knowledge can be found in storage spaces: file cabinets, records offices, and individual hard drives. Virtual spaces in which employees share information include email conversations, social media posts, and chat sessions. At some point in the KM process, however, attention needs to turn to a space in which all organizational knowledge is stored. Although capture/creation and organization activities will certainly continue throughout the KM process, a well-designed knowledge storage system is a necessity not only as a publishing medium for explicit knowledge, but also as infrastructure for organizational communication and collaboration as well, facilitating information access and retrieval and the accomplishment of cooperative work across the organization.

One of the challenges in KM implementation in libraries can be a lack of agreement as to how to implement the technical infrastructure underlying a robust KM system. The adoption of the perfect institutional repository system or wiki for the KM project sometimes happens before the project itself begins, and then there is pressure to build the initiative around the technology rather than the reverse. Too many KM projects begin with the technology in mind. However, as suggested by our KM model, technology is only one of the three underlying foundations of the KM cycle. All three areas—people, technology, and process—should be considered in tandem as the KM initiative grows and adapts to

new situations. Each stage of the KM process utilizes different technological tools, and each organization should come up with its own system for what is best suited to its needs.

Knowledge Management Systems and Tools

In general, KM systems are any combination of information technologies that serve to support and enhance the KM process. They store knowledge for efficient capture and retrieval, improve knowledge generation, facilitate collaboration, support the performance of activities and projects, and support the institution's fulfillment of its key mission. There is no consensus of what constitutes a KM system; rather, they are designed based on the requirements of the focus, initiatives, and environment of the institution. What works well for a global shipping business will not necessarily meet the needs of a small regional library consortium.

To save costs and time, existing computer and information technology (IT) infrastructure should be considered as an initial foundation for the KM system before new systems are purchased. Existing intranets and software platforms may accommodate upgrading to facilitate capture, analysis, organization, storage, and sharing of internal information resources. Hosting overlapping in-house systems that replicate functions result in waste of financial and human resources to support and maintain them. Further, it is vital to consider the technical programming and IT design capacity present in the institution. An out-of-the-box system that requires minimal programming may be a better solution for a small organization with limited IT staff, as opposed to a large university library with a large, separate IT department.

Another key consideration for KM planning is to identify systems that people will want to use. KM researcher Stan Garfield suggests that organizations find a "killer application," shortened to "killer app," a term that refers to a computer program, software, application, or feature that is seen as extremely valuable, one that will motivate people to sign up, enter their personal information, and expand their networks. A killer app in marketing terms is software that is seen as so valuable that it drives sales of the larger technology on which it runs. Consumers will purchase the technology just to get the killer app. For instance, sales of Nintendo video game consoles continue to be driven by Mario, The Legend of Zelda, and Pokémon—all three series are killer app franchises. Similarly, a KM killer app can motivate employees to participate in the overall KM program. Examples of KM-related killer apps include email, Google Search, Facebook, Twitter, YouTube, and others. Killer apps change over time as they are retired and superseded by other applications (Garfield 2017, 91). For example, the collaboration platform Slack has been touted as one up-and-coming killer app that will eventually replace email.

To sum up, information and knowledge retrieval systems are independent technology-based systems that store and retrieve knowledge to support institutional goals including increased communication, understanding of business processes, and progress toward institutional goals. A truly useful KM system facilitates the continuing KM cycle involving creation, organization, sharing, and updating an organization's knowledge assets. These systems are aimed at better searching and retrieval through knowledge and information repositories (e.g., search engines, specialized search software, digital libraries, etc., or they can be built into intranet systems, content management systems [CMSs], etc.). Although many different types of platforms can be integrated into an overall KM

system, common categories are groupware (also known as collaboration software), intranets, CMSs, and document management systems (DMSs).

The Organizational Intranet

An intranet is essentially similar to the internet and functions similarly; it is smaller in scale and privately owned. Intranets are a small-scale version of the internet but operate solely within the organization and are not accessible to people not affiliated with the organization. They use standard network technologies such as transmission control protocol/internet protocol and allow for the use of standard internet applications that communicate across the network, even if they use different operating systems. Institutional intranets are usually linked to the internet but are located behind firewalls and other security measures.

Intranets need to support a variety of institutional knowledge, including specific workflows and key work documents needed in the performance of those workflows. They are also a venue for communication of key information and need to include efficient navigation tools. The objectives and overall structure of the intranet will vary depending on the individual library and may focus more on certain functions than others. Common uses of intranets by employees are information searching, cross-organizational communication, and workflow management; the most important function of the intranet is knowledge sharing and collaboration. Common intranet functions supporting the KM program include:

- Providing a platform for internal communications
- Publishing homepages, newsletters
- Storing documents such as administrative manuals, procedures, employee directories, FAQs, and other materials
- Searching and browsing through search engines, taxonomies, and other systems of categorization
- Serving as a training portal with job aids, instructional videos, interactive courses, and quizzes
- Reporting facility and equipment problems, IT issues, etc.

Intranets should be understood as a part of organizational information context, and their usefulness is influenced by culture, values, and principles concerning strategic information management. This explains why, despite the wide and varied set of features made possible by intranets, they have been used in most organizations primarily for basic information access, that is, the retrieval of basic library organizational documents.

When planning intranet design, a number of factors need to be considered to encourage employees to use the system, including a well-designed interface, quality of content, customizable template, straightforward site navigation, and frequent maintenance and updates.

Examples of intranets include Microsoft Sharepoint, Jive, and Yammer.

Content Management Systems

CMSs are platforms that help organizations build a website for the creation, updating, and distribution of content without the need for specialized technical knowledge such as programming and coding. At its most basic, a CMS is a system that manages content from an internal user dashboard. Because most end users are non-technical, it is important to assess the ease of use of the end user content editing interface, the template-building interface, and the content approval system. A CMS may have the following functions:

- Intuitive indexing, search, and retrieval
- Publishing templates, extensions, and plug-ins for increased functionality
- Tagging content with metadata (allowing users to classify content by keyword so that it can be searched for and retrieved)
- Tracking version changes to pages and allowing previous versions to be accessed
- Allowing for collaborative, parallel content editing
- Integrated DMSs

CMSs come with a wide variety of options and pricing levels, and a library can generally customize the features needed depending on institutional needs. Some factors for consideration include technical features such as dynamic versus static publishing, security measures, and search engine ranking; total cost of maintenance and ownership for the life of the system; and level of cross platform support.

Examples of CMSs are WordPress, Joomla, Drupal, Squarespace, and Wix.

Document Management Systems

DMSs, as opposed to CMSs, are electronic filing cabinets that aid in the publishing, storage, indexing, and retrieval of digital and paper documents; these systems deal almost exclusively with explicit knowledge. The volume of internal documents that an organization must deal with makes them an essential component of the KM infrastructure, and often they are a part of CMSs. Most DMSs today are paid, cloud-based solutions, although there are free and open-source options as well.

Some organizations use the term "file management system" interchangeably with DMS. As the use of digital assets has grown, organizations have moved to creating and using more born-digital files that are images, emails, or videos and other formats. Libraries need a system that can accommodate both traditional documents (Word, PDF, Excel, PowerPoint, etc.) and other file formats, especially if they are publishing their content on the web and on mobile platforms. Further, robust DMSs for an organization, whether large or small, should not require any awkward, time-consuming workarounds, such as having to email files to individual users for rounds of feedback. There should be easy methods to scan and upload copies of print documents directly into the library's DMS so that all editing can take place within the system.

Usually, a DMS will include the following features:

- Storage of a variety of document types including word processing files, PDFs, spreadsheets, emails, and images

- Secure permissioned access to viewing and editing specific documents so that only the appropriate personnel have access; monitoring tools can track when specific users have accessed individual documents
- Manual or automated document classification using metadata
- Built-in keyword searching and retrieval, including the capacity to search item metadata or the actual document for keywords and phrases
- Versioning tools that track editing, storing, and deleting previous versions of documents, which is particularly useful for documents that require frequent updating
- Integrated workflow modules that notify employees of upcoming tasks and deadlines to help keep projects on track
- Mobile device support

Other features to consider include multiple platform support, customizable interfaces, the capacity to integrate with other IT systems, electronic signatures and approvals, frequency of file backups, multifactor authentication, and availability of workflow modules.

Document management isn't just for business organizations. Individuals can also create a formal or informal DMS by filing documents and files they create on their PC, Mac, or mobile device. Some smaller companies use their own proprietary or legacy DMSs, but increasingly, these options have distinct drawbacks because they are not sharable with outside contributors and are limited in their ability to integrate with other tools.

Examples of popular DMSs are Sharepoint, Google Drive, Dropbox, Microsoft OneDrive, OpenKM, Box, Smartsheet, and Ademero Content Central.

Collaboration Software/Groupware

Collaboration software, also known as "groupware," refers to technologies that are designed to facilitate and handle multiple users located onsite and in remote locations to communicate and work collaboratively on projects and initiatives, both individually and in groups. Collaboration software builds on the capacity to merely access documents through a CMS by providing a platform for individuals and teams to coordinate their work using those documents within a single application. The platform generally includes document sharing, meeting and appointment scheduling and calendars, contact lists, task management, email, audiovisual conferencing, and more.

Real-time collaborative editing platforms allow users to participate in live, simultaneous editing of files, whereas version control platforms permit users to work on documents separately with all edits archived. Groupware also includes remote access storage systems used to house frequently used data and other documents. Benefits of using groupware include:

- Easier, clearer communication among team members
- Minimization of travel costs and allowing for telecommuting
- Supporting the formation of groups with common interests that would be difficult to convene otherwise
- Coordinating group problem-solving

Collaboration software generally supports three areas of group work: communication, collaboration, and coordination. Communication relates to the ability to exchange messages regardless of time and place, collaboration creates a virtual space in which individual users and groups can work on projects independently and together, and coordination re-

fers to how work activities are managed within that virtual space. Collaboration technologies generally integrate two types of communication modalities: asynchronous or non-real-time collaboration software, and synchronous or real-time collaboration software.

- Asynchronous Tools
  - Although email has been in use for decades, it is still the most common and popular collaboration tool. In comparison with older email systems, common features today include address books, automatic replying to message, auto forwarding, group messaging, automatic filing of messages, flagging of important messages and senders, customizable signatures, and more.
  - Listservs and discussion forums are very similar to email systems, but they can be used to send and archive announcements and user-submitted posts to a large group of people instantaneously. They differ from an individual user's mailing list in that they are maintained by one or more list owners on a separate messaging platform and thus do not rely on one user's email address.
  - Workflow systems route files or documents through organizations and groups using a predefined, fixed process. They include features including routing, development of customizable forms, and support for roles and privileges.
  - Group calendars allow for easy scheduling of meetings, workflow and project timelines, coordination of work teams, access control, and viewing of multiple staff and workgroup calendars.

A BRIEF HISTORY OF EMAIL, THE INTERNET'S FIRST KILLER APP

It's hard for many people to remember a time before electronic mail. Email as we know it began in 1971 when American computer programmer Ray Tomlinson sent a message from one computer system to another across the ARPANET, the precursor to the internet. Tomlinson is also credited with the use of the @ sign to link a username with the home server. Before the 1970s, users could only send messages to other users on the same computer system, and sometimes only if both were logged on to the system at the same time. With email, users at different organizations could now send messages instantaneously. By the end of the decade, most of the traffic across ARPANET consisted of email, and in the 1980s, commercial internet service providers such as DELPHI, Compuserve, Mindspring, and AOL expanded email service to the general public.

According to technology market research firm The Radicati Group, "e-mail is still the most pervasive form of electronic communication for both business and consumer users. Email remains integral to the overall Internet experience as an email account (i.e. email address) is required to sign up to any kind online activity, including social networking sites, instant messaging and any other form of account or presence on the Internet." Projections for email traffic worldwide exceed 306 billion messages per day in 2020, and are expected to exceed 360 billion per day by the end of 2024.

"Brief History of the Internet: Introduction," https://www.internetsociety.org/internet/history-internet/brief-history-internet; https://www.internethalloffame.org/brief-history-internet; https://www.radicati.com/wp/wp-content/uploads/2020/01/Email_Statistics_Report,_2020-2024_Executive_Summary.pdf.

- Synchronous
  - Videoconferencing systems enable real-time video and audio meetings among two or more participants at different sites. Systems such as Skype and Zoom have been popular for some time, but an increase in employees working from home recently has meant an explosion in the use of these tools. Although the capability to meet from any location is convenient, robust videoconferencing requires not only adequate bandwidth at each employee's location, but also a video camera, microphone, and speakers. In addition to Skype and Zoom, other highly used videoconferencing systems include Apple FaceTime and Microsoft Teams.
  - Although videoconferencing systems are enjoying massive popularity at the moment, text-based chat systems permit people to write and send messages in real-time without the need for video cameras, microphones, and speakers. In text messaging, multiple users can communicate in writing easily and quickly even if there is a slow network connection. These systems are particularly well-suited for short, quick conversations via a computer- or phone-based chat platform. Chat systems are also useful in library patron service situations such as virtual reference desks; librarians can field directional and reference questions using chat and SMS texting, and can either provide a quick answer or ask for more information from the patron for more in-depth work using a different platform, such as email. Some systems that include features for both internal and external text messaging include HubSpot Live Chat, LibraryH3lp, and Springshare LibChat.
  - Online whiteboards are just what they sound like: a collaborative platform allowing people working at the same location or remotely to brainstorm in real time and work on shared files in an editable on-screen area. Similar to synchronous text file editing, electronic whiteboards allow for the sharing and manipulation of visual information including graphs, charts, diagrams, and images. Common functions include drawing lines and shapes, adding text, embedding images, and uploading files such as PowerPoint presentations, audio files, photographs, etc. Some systems offer live video chat and text messaging within the application. Popular whiteboard systems include Whiteboard Fox, ConceptBoard, Witeboard, MURAL, and Microsoft Whiteboard.

Collaboration software will include a mix of asynchronous and synchronous tools in various combinations. Some popular collaboration and groupware tools include IBM Lotus Notes, Microsoft Teams, Jira, Google Drive, Confluence, Salesforce, and Slack.

Knowledge Portals

The sheer number and functionality of tools available for an institution's KM systems can be overwhelming. As mentioned earlier, all institutions are different and not all will need a CMS, DMS, and other organizational tools. Regardless of the KM system that is established, a mediating layer called a "knowledge portal" pulls these disparate pieces together by serving as a gateway between assets and users. Knowledge portals are IT systems, often with a webpage serving as a user interface, that provide a single point of access to key information and knowledge resources. Portals are highly customizable and can accommodate both internal and external knowledge. Common knowledge assets linked through a knowledge portal include repositories, internal databases, specialized websites,

news feeds, directories, links to groupware, wikis, and other systems. Knowledge portals are especially useful when there are several key systems that staff repeatedly need to access specific information and when frequently used systems are difficult to find.

Technology Adoption and Challenges

Too often, the effects of technology on the library are not given enough thought prior to the introduction of a new system. It is important to understand what KM systems cannot do, and merely introducing knowledge sharing technologies into the library does not mean that staff will share and use the knowledge that is available to them via these systems. A possible obstacle that can occur during the technology implementation phase of the KM cycle involves the expectation that the technologies are an end in themselves, that there is an ideal system that will run the KM process independently of human maintenance. There can also be a disconnect between how IT systems and organizational practices function, not to mention how well the new systems will be accepted within the existing organizational culture. Have such systems been implemented before, and how successful were they? How many staff possess the technical skills necessary to troubleshoot the system if necessary? Do staff understand how knowledge flows in and out of the system, and do they understand their role in the process?

Other possible roadblocks to consider include the level of managerial and technical support during both implementation and use of the system, a lack of attention paid to what the library needs and can afford, not adequately researching the specific functions and limitations of each system, inadequate content management, ease of integration into existing departmental workflows and processes, and ensuring that the knowledge in the system is complete, up-to-date, relevant, and easily findable.

Given that every library is different, there is no one-size-fits-all solution for the knowledge storage phase of the KM process. Each library must consider the types of institutional knowledge available and overall KM program goals, the technology skills of its employees, its IT staffing capacity, and the budget. Although some tools are open source, programming skills may be needed to set up and maintain the systems; however, hosted solutions may provide for less flexibility and longer technical support wait times. Further, the availability of specific technologies and how they are accessed (i.e., desktop, mobile, etc.) changes rapidly. An app or platform serving as a key piece in the organization's KM infrastructure may be discontinued with little to no notice.

In order to provide a human-centered context for making KM system implementation decisions, researchers N. K. Agarwal and Md. Anwarul Islam suggest two theoretical models for consideration, the Technology Adoption Model and the Diffusion of Innovation Theory. These focus on the user's perception of ease of use and overall usefulness before deciding to use a particular technology as well as their attitudes toward technology adoption. Both models place people at the center of technology decisions, as indeed, they remain the major drivers throughout the rest of the KM model. As Agarwal and Islam observe, "Technology is needed to support people's needs, and not the other way round. If KM and people are the horse, technology is the cart. We have to be careful that the cart does not pull the horse. Technology should act as support for the processes, policies and procedures adapted to best serve people in the organization/library in order to meet the mission and goals of the library" (2014, 324).

The Technology Adoption Model (also called the Technology Acceptance Model) explores two determinants of the likelihood of people using an IT system: perceived usefulness (how well they think the application will help them perform their job better) and perceived ease of use (how much effort they think is necessary to use the application). Predictably, these two factors influence the willingness of people to either accept or reject new technologies, but subsequent expansions of the Technology Adoption Model have included other relevant factors including the extent to which the technology adoption is voluntary or mandatory, people's perception of their status if they use (or don't use) the technology, the relevance of the technology for the job at hand, users' perception of output quality, and demonstrability of tangible results.

The Diffusion of Innovation Theory was popularized by sociologist Everett M. Rogers in 1962 in his seminal work *Diffusion of Innovations*. It refers to the rate at which new technology and ideas spread throughout a particular group or society. He defined diffusion as "the process by which (1) an *innovation* (2) is *communicated* through certain channels (3) *over time* (4) among the members of a *social system*. The four main elements are the innovation, communication channels, time, and the social system" (2003, 11). Rogers placed adopters of these new developments on a bell curve in five attitudinal adopter categories: innovators (2.5 percent of a given population), early adopters (13.5 percent), early majority (34 percent), late majority (34 percent), and laggards (16 percent). It is important to recognize that as technologies are adopted over time and become more widespread, people can change from one category to another; the rate of adoption can increase with an innovation demonstrated to be successful, and vice versa. In Roger's theory, people and organizations go through five stages of successful diffusion: knowledge, persuasion, decision, implementation, and confirmation. As with other stages of the KM cycle, library management should be aware of the need to devote time and energy to each of these stages regardless of where individual staff fall on the spectrum of adopter categories. Although innovators may be the most comfortable taking risks on a new system, laggards are change-averse and the most likely to say, "we've always done it this way." For KM technologies to be successful in the long term, the majority of library employees need to buy in to the system to some extent.

As the organization's KM process continues through iterative cycles, underlying technologies and tools will of necessity change and adapt to different library administrations, the institution's mission and goals, and advancements in available technology. What remains the same is the need for the KM system to facilitate knowledge creation and capture, provide a reliable infrastructure for knowledge storage and dissemination, and support easy, intuitive ways to share and build on organizational knowledge. In the next chapter, we turn to one of the most important phases of the KM process: knowledge sharing.

Key Points

- Technology does not come first in the KM process; people do. Technology should act as support to help people meet the mission and goals of the library.
- A KM system is any type of technological platform that is used for the application as well as the utilization of KM within the library organization. These systems serve to store as well as retrieve important data, information, and knowledge.

- Foundational elements of a KM system include an intranet, CMSs, DMSs, and groupware.
- Groupware, or collaboration software, can be either synchronous or asynchronous and are embedded in many other KM systems.
- A knowledge portal provides a single point of access to KM systems, including a CMS, DMS, collaboration tools, and other knowledge assets.
- Pitfalls in technology adoption include overreliance on a certain app or platform, inadequate managerial or technical support, and lack of attention to user adoption.

References

Agarwal, N. K., and M. A. Islam. "Knowledge management implementation in a library: Mapping tools and technologies to phases of the KM cycle." *VINE: The Journal of Information and Knowledge Management Systems* 44, no. 3 (2014): 322–44.

Allee, Verna. "Twelve principles of knowledge management." *Training & Development* 51, no. 11 (1997): 71–74.

Broadbent, Marianne. "The phenomenon of knowledge management: What does it mean to the information profession?" *Information Outlook* 2, no. 5 (1998): 23–34.

Davis, Fred D. "Perceived usefulness, perceived ease of use, and user acceptance of information technology." *MIS Quarterly* 13, no. 3 (1989): 319–40.

Garfield, Stan. *Proven Practices for Promoting a Knowledge Management Program*. Richmond, BC: LUCIDEA Press, 2017.

Rogers, E. M. *Diffusion of Innovations*, fifth edition. New York: The Free Press, 2003.

Ruggles, III, Rudy L. *Knowledge Management Tools*. Newton, MA: Butterworth Heinemann, 1997.

Sarrafzadeh, M., B. Martin, and A. Hazeri. "Knowledge management and its potential applicability for libraries." *Library Management* 31, no. 3 (2010): 198–212.

Teng, Sharon, and Suliman Hawamdeh. "Knowledge management in public libraries." *Aslib Proceedings* 54, no. 3 (2002): 188–97.

Warren, Tom. "Slack promised to kill email, and Slack Connect might just do it." *The Verge*, June 24, 2020. https://www.theverge.com/2020/6/24/21302050/slack-connect-work-emails-shared-channels-future.

CHAPTER 8

Sharing Knowledge: Learning and Dissemination

IN THIS CHAPTER

- Organizational Learning: A Brief Overview
- Communication Flow: Dissemination and Diffusion
- Supporting Day-to-Day Organizational Learning
- Knowledge Communities
- Opportunities for Organizational Learning
- Rewards and Incentives

"We now accept the fact that learning is a lifelong process of keeping abreast of change. And the most pressing task is to teach people how to learn."

— PETER DRUCKER

KNOWLEDGE MANAGEMENT (KM) IS OFTEN described as "getting the right knowledge to the right people in the right place at the right time." The processes of gathering, organizing, and storing institutional knowledge ideally meet the bare minimum of this basic conception of KM: tacit and explicit knowledge is stored in a reliable, easy-to-use system that staff can access when they need the knowledge. However, true KM does not stop there. Organizational knowledge is continually growing and changing depending on the industry, organization, technology, administration, staff, community, and many other factors. Comprehensive KM systems are active, growing knowledge infrastructures that help the organization and individuals respond to challenges. An important way they fulfill this mission is by supporting organizational learning, the ongoing process of using, sharing, and creating knowledge within an organization.

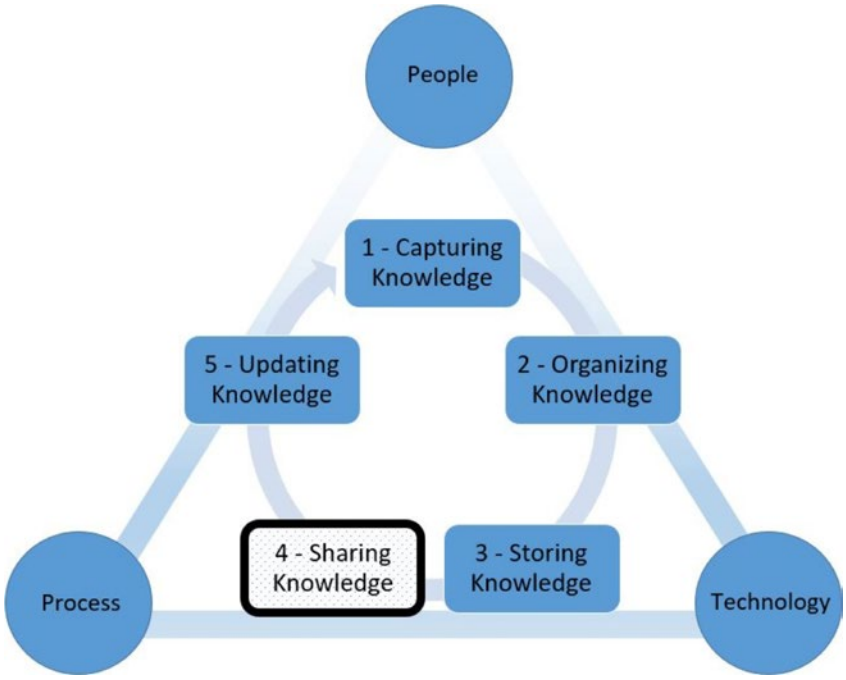

Figure 8.1. Knowledge Management Lifecycle: Sharing Knowledge.

On the surface, organizational learning and KM might seem to be the same thing: both deal with knowledge collection, creation, storage, sharing, and use. However, insight can be gained by viewing KM primarily as a framework that supports organizational learning. Learning in this context focuses on teams and individuals that need to improve their work performance, efficiency, skills, and experience, whereas KM deals more with the knowledge that those teams and individuals need for the learning process. In other words, KM enables organizational learning because knowledge is embedded into the organization's procedures, processes, and workflows.

Organizational Learning: A Brief Overview

In his 2006 book *The Fifth Discipline: The Art and Practice of the Learning Organization*, business researcher Peter Senge defined a learning organization as a dynamic system that continuously adapts and improves itself. The five basic underlying components of the title are:

- Personal Mastery: "the discipline of continually clarifying and deepening our personal vision, of focusing our energies, of developing patience, and of seeing reality objectively."
- Mental Models: "deeply ingrained assumptions, generalizations, or even pictures or images that influence how we understand the world and how we take action."
- Building Shared Vision: "the skills of unearthing shared 'pictures of the future' that foster genuine commitment and enrollment rather than compliance."
- Team Learning: "where the intelligence of the team exceeds the intelligence of the individuals in the team, and where teams develop extraordinary capacities for coordinated action. When team are truly learning, not only are they producing extraordinary results, but the individual members are growing more rapidly than could have occurred otherwise."

- Systems Thinking: "a conceptual framework, a body of knowledge and tools that has been developed over the past fifty years, to make the full patterns clearer, and to help us see how to change them effectively."

In Senge's construct, systems thinking is the fifth discipline that unites the other four. It recognizes and integrates the other components to enable organizations to identify long-term challenges and opportunities. The end goal of organizational learning, then, is to take action based on gathering information, creating knowledge from that information, and acting upon it.

Another related goal comes from a seminal work in the study of organizational learning, *Organizational Learning: A Theory of Action Perspective* (1978) by Chris Argyris and Donald Schön, who posit that learning involves the process of detecting and correcting error. If something goes wrong, people consider how the problem can be fixed and modify their actions accordingly; this is called "single-loop learning." The problem with this approach is that if something has gone wrong, there may be a root cause for the problem that has not been addressed. Instead of finding a quick fix for the problem and moving on, "double-loop learning" is an approach in which people go one step further and attempt to correct or change the underlying condition behind the problem. Double-loop learning lends itself to a deeper understanding of work operations and better decision-making.

Although there is no agreed-upon definition for organizational learning in a library setting, a basic premise of organizational learning theory is that increased learning helps a library become more effective as well as position itself to change and adapt for future success. Second, learning is heavily dependent on the environment and many members of an organization may hold mental assumptions that can inhibit the learning process (Evener 2019, 260). Regardless of industry, organizational learning is seen as key component as organizations continue to structure, restructure, and develop themselves to meet an increasingly uncertain and complex business environment. A particularly useful definition involving organizational learning in a KM is "an organisation where people at all levels, including individual, group/team and organisational level, continuously learn and transform themselves based on their experiences with the purpose of enhancing their capacity and adjusting themselves to the external environment" (Limwichitr, Broady-Preston, and Ellis 2015, 481).

Library staff training and professional development opportunities are certainly a cornerstone of most library administration's commitment to learning; however, it is important to shift some of this responsibility to the staff themselves. Writing in *College and Research Libraries*, veteran academic library administrator Donald E. Riggs states, "However, in a library purporting to be a learning organization, the commitment and responsibility for continuous learning activities rest on the shoulders of nearly all library employees. The library administration is responsible for setting the stage, providing leadership, and making the necessary resources available for the learning organization" (Riggs 1997, 298). Administrative commitment to a thriving, stable KM system is a way to fulfill that goal.

Communication Flow: Dissemination and Diffusion

Knowledge flow through the organization, then, is not one-way. The bulk of communication in hierarchical organizations tends to flow from top management to the rest of the staff, whereas more horizontally structured groups see information flow initiated

from multiple individuals and departments. Regardless of structure, it is useful to think of communication in terms of dissemination and diffusion. Dissemination involves the active vertical distribution, broadcast, or spreading of information of all kinds to general or specific audiences. Diffusion, although commonly equated with dissemination, more accurately refers to horizontal communications that are passive, unplanned, and uncontrolled. Disseminated communication is targeted messaging from an administrative or other defined group, whereas diffused communication is mediated by peers and is driven by those seeking answers to questions and interested in new ideas.

DISSEMINATION AND DIFFUSION

Dissemination ("make it happen")

- Active process, primarily vertical (top-down).
- Managers or team leaders communicate targeted knowledge to staff using official channels in the organizational structure. Each level of staff learns information from the level above until the communication has passed to all tiers of the organization.
- Allows library leadership to control information flow and ensure that only appropriate staff get certain information, reducing the spread of irrelevant information.
- Disadvantages include the possibility of information not being communicated from level to level and critical details being omitted.
- Strategies include linkage and exchange events to share relevant research syntheses, developing a user-driven dissemination strategy, media engagement, using a knowledge broker, and developing researcher/knowledge user networks.

Diffusion ("let it happen")

- Passive process, primarily horizontal (lateral).
- Unplanned, uncontrolled communication mediated by peers.
- Communication can take place immediately and not have to travel up and down the chain of command; saves time and allows the appropriate staff to cooperate with each other more readily.
- Disadvantages include the omission of key people in the discussion given that managers do not necessarily know about the communication and thus cannot offer operational and budget suggestions.
- Driven by the user's need for updates and new ideas in a particular area throughout internal and external networks.

Another related way to think about organizational communication is by the "push, pull, and exchange" model:

- Push: Producers of knowledge, regardless of their position on the organizational chart, send knowledge toward the appropriate target audiences via an established

communication channel. Push communication can be enabled through regular themed mailings, professional development training, and use of discussion forums and blogs.

- Pull: Users of knowledge seek out and actively get information from sources they identify as being helpful to their decision-making process. This process can be supported by filters and intelligent searching of the knowledge base, subscriptions to relevant newsfeeds and listservs, and support for requests to those in the organization most likely to have the needed information.
- Exchange: Knowledge producer and user come together in an interactive process at key points in a project or workflow to facilitate knowledge sharing.

As one of the predictors of success of an effective KM program is communication and open information flow among the employees of an institution, it is easy to assume that top-down communication is "bad" and horizontal communication should therefore be emphasized. Regardless of size, many libraries tend to be organized in the traditional hierarchical pyramid with a dean or director at the top and several functional departments (technical services, public services, information technology, etc.) reporting up through middle managers. If organizational power is concentrated in the "C-suite," lower-level employees can be left feeling as though their opinions don't matter. Even if library administrators ask for staff input, failing to seriously consider and address solicited suggestions and opinions can seriously damage the trust that employees have in upper management. Lack of trust in library leadership will most likely result in low employee engagement, decreased productivity, and higher rates of turnover.

In reality, top-down (manager-to-staff), bottom-up (staff-to-management), and lateral (peer-to-peer) channels of communication are all necessary components in the library's internal learning environment. Regular communication from management is a necessary part of knowledge flow in that it provides news and updates so that staff are better informed, builds a sense of transparency that contributes to employee trust, and decreases employee uncertainty. Staff who feel safe responding to calls for information and volunteering ideas and concerns to management are more likely to feel invested in the organization and motivated to do well. Knowledge sharing among all levels of the organization helps to break down the proverbial silos in which necessary information can too often become stuck.

In order to use the KM system to its fullest potential, all forms of internal communication can be greatly facilitated and supported through a variety of methods and tools that not only draw from the knowledge already collected in the organization, but also serve to create new knowledge that can flow back into the system. As employees learn more about library projects and workflows and develop new practices and procedures, these learning products should feed back into the system.

Supporting Day-to-Day Organizational Learning

Even if organizational learning isn't formalized, it still takes place every workday through countless interactions that employees have with colleagues, library patrons, and others in meetings, phone and videoconferencing calls, emails, wikis, and other avenues. Although most employees are used to these methods of communication, it's important to review best practices when thinking of these interactions as an opportunity for individual and group learning.

Getting the Most Out of Meetings

Regardless of whether they are in-person or virtual, the word "meeting" has become synonymous with "time-waster." Everyone has had the experience of sitting in a meeting that could have more profitably been canceled and the topic handled via email. Planning and conducting meetings with an eye toward effective time management and group learning raises morale and involvement.

- Consider if the meeting is necessary, or if the topic at hand should be discussed a different way. There is no point in having a regularly scheduled meeting if there is nothing to discuss, or if communication can be handled via email or brief call. Further, meetings should rarely (if ever) be held solely for the purpose of disseminating information—that can more efficiently be handled via group email or listserv.
- Be clear about the purpose of the meeting and prepare an agenda. Meetings can involve information dissemination, brainstorming, decision-making, and discussion. People need to be clear about what level of involvement and discussion will be taking place as well as the expected outcome. Sending an agenda to the participants ahead of time allows them to prepare by gathering needed materials and thinking about key points to discuss.
- Ensure that the right people are at the meeting. If the staff invited aren't involved in the project or don't add value, they shouldn't be at the meeting. If key staff or decision-makers can't attend, consider rescheduling to avoid the need to have the meeting again when everyone can be there.
- Take meeting notes collaboratively. In almost all cases, meetings should be documented through minutes or some other form of notes. An efficient way to immediately record meeting minutes and to help with brainstorming is to use a shared document editing platform such as Google Docs so that participants can follow the discussion and see exactly what was said. Including the meeting agenda at the top of the document helps keep the meeting on track.
- End the meeting with a tangible result or by establishing action items. These are tasks and deliverables that need to be accomplished before a scheduled date and should include specific details and the person or people to which they are assigned.

ACTIVITY: HOW MUCH DOES THIS MEETING COST?

Not sure if you should call a meeting? One important factor to consider is how much money is involved for one hour of everyone's time. The *Harvard Business Review*'s Meeting Cost Calculator estimates the budgetary cost of holding a meeting by multiplying the hourly salary of meeting participants by the length of the meeting (of course, this doesn't include snacks). Give it a try at https://hbr.org/2016/01/estimate-the-cost-of-a-meeting-with-this-calculator.

Email

As discussed earlier, email is a ubiquitous, heavily used method of transmitting and receiving information within and outside organizations. However, too often email is used

when other methods of communication might be more effective. Email is ideal when there is a need for a person-to-person conversation and synchronous communication is difficult (because of location, different time zones, etc.) and when an important message needs to be sent immediately by a large number of people. Given the amount of time that most staff spend on email, a few tips for managing and processing messages can help save time and energy:

- Include specific information in the subject line regarding the message's content.
- Format emails with readability in mind. Keep sentences short, omit filler phrases such as "hope you had a nice weekend" and "just touching base," and use bullets or numbered lists if appropriate.
- Detail specific expectations, tasks, and deadlines in the message so that they are on record for later reference.
- Develop a library of canned draft responses for common messages, such as sending information concerning patron requests or responding to vendors. These can also be stored in the KM system for the rest of a team to use as well.
- Make use of the rules feature for incoming email. Most email systems allow users to move, flag, and respond to email messages automatically. Rules are highly customizable and can also be programmed to perform tasks such as displaying new item alerts and playing sounds.
- Organize emails in inbox folders into categories such as by sender, by project, by deadline, waiting for response, and so on.

Wikis

In essence, a wiki is a website containing documents or interlinked collections of items (text files, videos, photos, music, URLs, etc.) that allows collaborative management and editing by its users. Wikis were first introduced in the mid-1990s and are now a relatively well-established KM technology. Rather than expect people to know how to build a website from the ground up, wikis provide content composition systems that make it easy to post materials quickly without the need to know HTML or other markup languages. Furthermore, posting and editing content is not limited to only one or two wiki owners; wikis are designed to be developed by groups of people within an organization or across the internet. Advantages of using wikis include:

- Collaborative authorship: Web documents are not owned by their original creators and can be edited by other users to create updated documents.
- Instant publication: As there is no editor review, new pages are published immediately and are visible to other users, who can then edit in "a continuous process of incremental knowledge contribution referred to as wiki magic."
- Versioning: Although edited versions of pages are published instantly, prior versions are stored in the wiki's database with author, date, and other related information to guard against loss of content.
- Simplicity of authorship: Web publication knowledge and skills are not required to publish information in a wiki (Kiniti and Standing 2013, 191).

Wikis generally serve three audiences: the public, specific organizations ("enterprise wikis"), and personal. Enterprise wikis can certainly be a useful tool during the KM

capture and create phase of the KM workflow and can be used as an organization's content management system or document management system. The ongoing capture and documentation process can be shared among many staff in wiki systems, and the fact that tacit and explicit knowledge is recorded in one place means that it can be verified and validated as part of the organization's knowledge base. However, one disadvantage of relying on voluntary approaches to knowledge capture and sharing such as contributions to a wiki are that the resulting knowledge can be incomplete. The strength of the wiki approach to KM is most apparent in the knowledge-sharing phase, when people can actively review, use, and build upon the knowledge in the wiki. Using wikis in the workplace allow for a unique virtual learning space for staff in that it gives them more control over the knowledge assets of an organization, and as such are well suited for social interaction and discussion among library employees. Working either individually or in groups, they can easily retrieve, use, create, and adapt institutional knowledge at point of need and instantly communicate updated knowledge to the rest of the organization.

Building a wiki is relatively simple, and there a number of options. Common features of most wiki software include access control, specialized plugins, templates, language configuration options, full text searching, mobile access, and sidebar support. Organizations already using platforms such as Sharepoint or Google Docs can set up wikis quickly using existing built-in wiki functionality. Wiki-hosting services that provide space and customization options are best for organizations with minimal technical expertise; some of the more popular services are Wikidot, Wikifoundry, PBWorks, Fandom (previously known as Wikia), and Tettra (a Slack add-on). They can also be set up on a self-hosted organizational intranet or a hosted service using platforms such as MediaWiki, TikiWiki, or Docuwiki. MediaWiki is the foundation for Wikipedia and many other popular wikis including Wikimedia Commons and Wikidata. It contains thousands of extensions and configuration settings that may not be necessary for a small library organization, and requires some technical expertise and coding knowledge to set up. However, it is entirely open source and free, and provides support for hundreds of languages.

Given their ease of use, wikis are a useful KM tool that can be used at nearly every phase of the KM process, from knowledge capture and creation to assessment.

ACTIVITY: HOST A WIKITHON

A "wikithon," like a "hackathon" common in information technology and programming projects, is a scheduled event in which people come together to create and edit wiki content. A wikithon can not only help facilitate content creation in a library's KM system, but it can also serve to introduce staff to the concept of the wiki itself.

- Determine the wiki pages or content areas that will be the focus of the event.
- Decide on a date and venue. If completely virtual, include a videoconferencing room so that people can have a sense of community.
- In addition to advertising the event, invite key people who need to be involved directly. Talk about the benefits of participation if they seem reluctant or uncertain.

ACTIVITY: HOST A WIKITHON (CONTINUED)

- On the day of the event, offer a quick training session before the wikithon starts for those who are unfamiliar with wikis. If there are breakout rooms or in-person tables, mix new and experienced users. Make sure users know who to ask for help.
- Have mileposts of work needing to be done scheduled and announce as those mileposts are reached.
- After the event, thank all participants and send a summary of the work that was completed.

For more information about wikithons, see:
http://www.nickmilton.com/2014/08/the-wikithon-great-way-to-get-wiki.html
https://en.wikipedia.org/wiki/Wikipedia:How_to_run_an_edit-a-thon.

Knowledge Communities

Communities are groups of people having something in common—geographical location, religion, beliefs, values, social norms, or interests. People in a community share a sense of belonging, making a difference to the group, fulfillment of personal needs, and some sense of social connection. Although many communities are based on those in a particular location (communities of place) or shared identity (communities of needs or identity), communities can also be based on membership within an organization. Employees associated with a particular department do not necessarily constitute a community, but small groups organized around common goals, projects, and professional interests can contribute significantly not only to their own work, but also to the organization's KM efforts. Further, these groups can be self-organizing (i.e., not formed by administrative mandate). There are important roles for both "canonical" (official) and "noncanonical" (unofficial) groups that form and dissipate as organizational needs change. As Brown and Duguid observe in their discussion of organizational learning communities,

> attempts to introduce "teams" and "work groups" into the workplace to enhance learning or work practice are often based on an assumption that without impetus from above, an organization's members configure themselves as individuals. In fact, as we suggest, people work and learn collaboratively and vital interstitial communities are continually being formed and reformed. The reorganization of the workplace into canonical groups can wittingly or unwittingly disrupt these highly functional noncanonical—and therefore often invisible—communities. (2000, 49)

Collaborative learning in small communities within an organization promotes nonhierarchical participation of people in the KM process through using creative and critical thinking skills and cooperative problem-solving. Communities from a KM perspective can be generally divided into four types: communities of practice, communities of purpose, communities of interest, and social communities (Milton 2010). The primary group of particular value to the KM process is the Community of Practice (CoP).

Communities of Practice

CoPs are groups of people with shared interests or sets of specific issues that come together in person or virtually to work through problems, brainstorm opportunities, tell stories, discuss best practices, review lessons learned, and network. They are "for practitioners, by practitioners," connecting those who need knowledge with those who have knowledge in the form of regular conversations. CoPs can be viewed as a more coordinated "water cooler" discussion involving people from across departments and even from different locations, taking advantage of the opportunity to learn in a social setting one step removed from their immediate work environment. Successful CoPs allow for widely dispersed groups of people to communicate with each other across organizational boundaries, and to see additional information and opinions about questions and topics without asking for permission from administration. Information generated in a CoP is recorded, uploaded to the organization's KM system, and communicated out to those outside the group.

In small organizations, conversations around the water cooler are often taken for granted, but in larger, geographically distributed organizations, the water cooler needs to become virtual. Similarly, as more employees work from home at least part of the week rather than at their office or library, the knowledge sharing that would occur in face-to-face social spaces needs to be replicated virtually. In the KM context, CoPs are primarily virtual communities. Some areas to consider when developing a CoP are as follows:

- Coordination: Depending on the size of the organization, a CoP can have from one to several group coordinators, each filling a key role (smaller libraries will need at least one facilitator, who will handle or delegate group responsibilities). Common roles are:
  - Champion/Sponsor—advocates for support of the CoP at the highest levels of the organization
  - Facilitator/Leader—organizes group events such as meeting, clarifies purpose of meetings, ensures participation from members, encourages comments from quieter members of the group, keeps discussion on topic
  - Knowledge Editor—collects, organizes, maintains, and publishes content
  - Membership Manager—handles registration and updates the membership directory
- Membership: The size of a community will of course depend on the size of the library organization, but membership should ideally be between ten and one hundred people. It is likely that a group of fewer than ten people will all know each other well already and have lines of communication in place, which will negate some of the need for a CoP. On the other hand, although having more people allows for more comprehensive knowledge sharing, too many members can quickly become unwieldy. Membership will include those core members who attend regularly, occasional participants, and lurkers. Newer librarians and staff should be encouraged to join existing communities where people are already sharing what they know in order to bring them up to speed more quickly and help them develop their professional network; these individuals should be actively recruited to join the CoP and asked to share their ideas for new activities and projects for the CoP based on their previous experience.
- Activities: The CoP leader and others will need to identify the learning goals of the community and decide what kinds of activities will best support learning and

knowledge generation. How will members communicate with each other, and what kinds of interactions will be supported? How can members collaborate with each other both within and outside CoP regular meetings? Will there be external resources such as reports, white papers, articles, and presentations that are needed to support the CoP's activities, and how will those be made available? Possible activities include an orientation, surveys, webinars, group presentations, podcasts, PechaKucha sessions, etc.

- Recording Knowledge: Finally, the knowledge products of the CoP should be uploaded, maintained, and made available in the organization's central knowledge repository. Questions to address include what will be archived, how files are made retrievable, and when and how will items be removed.

Communities of Purpose

CoPs can be either sanctioned by library administration or developed autonomously by staff; communities of purpose are formed at the administrative level and tasked with a specific, time-limited purpose or goal and deliverables. Membership is usually identified by management, although volunteers may be solicited. These groups are usually cross-divisional, pulling in staff from across the organization with expertise and experience considered to be helpful in achieving the community's goal. The success of these groups depends on a healthy work culture of sharing in that knowledge, and information needs to be shared freely across teams. Examples of communities of purpose are ad hoc committees such as search committees, groups that are investigating a new product or service, and strategic planning committees.

Communities of Interest

Communities of interest, also called interest-based communities, are forums for people who are interested in a particular topic, work-related or not, but are not necessarily experts or practitioners in that topic. These communities can focus on hobbies, sports, or general industry-related topics. Examples include book discussion groups, gaming interest groups, craft groups (knitting, workworking, etc.), and sports fantasy league teams. The purpose of the community of interest is primarily to share information, get answers to questions, and to improve understanding, rather to gain knowledge that directly pertains to a primary job responsibility. These groups are generally positive and can serve to introduce people to each other who wouldn't ordinarily interact during the course of a workday.

Social Communities

Although social communities might begin through work connections, their focus is not to share work-related information (although that will occasionally occur). These are groups of friends interested in socializing outside the workplace. Additional people can be invited to participate in social communities through their involvement in other organizational communities, but it is important to realize that these groups have no specific outcome or goal attached to membership. Social communities serve a different purpose than communities of practice, purpose, and interest; as the emphasis is on social bonds, knowledge-oriented discussions are generally few, and sometimes discouraged.

Opportunities for Organizational Learning

In addition to communities, other learning activities and programs can be used in conjunction with the organization's KM system. From formalized staff training to informal one-on-one conversations, there are few limitations to where and when learning can take place; the key is to be intentional about improving work performance, meeting the library's goals, and integrating and updating organizational knowledge for the benefit of staff and patrons.

- Apprenticeships and Mentoring: The apprenticeship model is one of the oldest forms of learning, dating back to the Middle Ages, and is still a valuable method of training in which a novice obtains practical experience by committing to work with a veteran professional for a specified period of time, often a number of years. The goal of an apprenticeship is not only to convey a threshold level of professional knowledge but also to initiate the apprentice into the culture and CoP of the field. In the library world, apprenticeships are paid positions (sometimes with benefits) and also include internships and graduate assistantships. Formal curricula and training usually accompany apprenticeships (e.g., enrollment in a library and information science program). Mentoring works on the same principle as apprenticeship, but is generally less formal, of shorter duration, and unpaid. Many larger libraries and some library association and consortia offer formal mentoring programs, and job shadowing, job rotations, and job swaps usually involve the establishment of a mentoring relationship. Apprenticeships and mentoring are particularly effective at conveying tacit knowledge, but are very time-consuming for both apprentice/mentee and expert/mentor.
- Peer Assist: Peer assist sessions are face-to-face or virtual meetings in which an individual or a group solicits expert input from another more experienced group on a particular issue or challenge that they are facing in their work. Sessions can involve a number of learning activities including briefings, presentations, question and answer sessions, and other discussions.
- Knowledge Café: This activity is an intensive conversational process that brings people together for a short period of time (between one and two hours) to talk about a specific issue, usually in a roundtable format. Depending on group size (fifteen to thirty is ideal, but the technique can accommodate more people), the group first discusses the main topic and then breaks into subgroups to talk about smaller aspects of the question. There is no formal presentation. The café ends with the groups coming back together and having a summary discussion.
- After Action Review (AAR): The AAR is a highly focused, very short (a half hour or less) operational review held immediately after a project or task is completed. The purpose of this exercise is to capture observations from project team members as soon as possible after the project is completed to learn information that can be used the next time the project or task is conducted. Questions for the AAR are usually general and open-ended, for example: What was supposed to happen? What actually happened? Why was there a difference? What have we learned? What will we do about it? Notes are taken throughout the AAR and should be logged in a central database that can be used by the current and future teams.
- Lessons Learned: More comprehensive and time-intensive than an AAR, a lessons learned exercise is a five-step process designed to analyze recently completed or-

ganizational projects with an eye toward constant improvement. Steps are Identify (comments and recommendations for next time, which can also come from an AAR), Document (record and share findings), Analyze (conduct an in-depth review of comments for improvement), Store (record all lessons learned materials in the central knowledge repository), and Retrieve (consult materials when beginning to plan a similar project).

KM EXERCISE: PLANNING A KNOWLEDGE CAFÉ

1. Select a key issue to discuss and phrase it as a question (i.e., "What are the current challenges involved in providing library materials and services to parents who home-school and how can we best deal with them?").
2. Schedule the café and send invitations, including the question. Allow between 1.5 and two hours for the entire event.
3. At the event, do a brief welcome and presentation (five minutes at most) on the purpose and process of the knowledge café. Spend a few more minutes outlining the topic and pose the question.
4. Break the group into smaller groups (no more than five people) and ask them to discuss the question or one facet of the question. They should select a spokesperson/rapporteur to report back on their discussion. Optionally, people should change tables every fifteen minutes to expand the number of people they interact with; in this case, the spokesperson should remain at the table to provide continuity.
5. Reconvene the group after forty-five minutes and ask each subgroup spokesperson to share the group's thoughts.
6. Collect notes and summarize for a summary report and/or for the library's knowledge base.
7. Plan your next knowledge café!

Rewards and Incentives

How can library management motivate staff to participate in an organization's KM program? Although learning new best practices, techniques, and tools to support increased work performance might be considered a reward in itself, other human factors can interfere with staff buy-in including limited time during the workday, the reluctance to "give away" useful information, and lack of trust that shared knowledge will be used appropriately and for the benefit of the organization. It can also take some time for staff to recognize and internalize the organization's commitment to KM and consider it to be a permanent expectation of daily work. Establishing systems of rewards and incentives can serve to partially offset staff reluctance and low participation, and emphasize the perceived importance of the KM program to library administration. For example, individual salary increases can be based on higher performance ratings tied to achieving KM goals, and evidence of consistent KM participation can be a requirement for promotion. In both cases, expectations must be clearly defined and codified in human resources policies and communicated to all staff.

One-time incentives not tied to salary or position can also be used to reward staff for knowledge sharing. Smaller rewards such as gift certificates, technology items, books, conference registrations, and journal subscriptions are awarded when predefined metrics are met, for example:

- Submitting the five most reused proven work practices
- Leading a CoP for one year
- Reusing content as part of three new project proposals
- Participating in a content creation initiative for three months or more
- Receiving the top ten most votes from peers for sharing the most (Garfield, 140)

Although a system of rewards and incentives can be valuable when establishing expectations for participation, in the long term it is up to library leadership to persuade staff of the value and potential usefulness of the KM cycle without needing to rely too heavily on these incentives. The message should be that KM-focused behaviors are an expectation of work performance, with or without rewards. In the end, knowledge sharing should be designated as a key organization value in the organization and staff need to realize their integral importance in making the KM system an enduring tool for continuous learning.

Key Points

- Organizational learning by individuals and groups is an ongoing, cyclical process that uses existing knowledge to create new processes, practices, and workflows.
- Communication can flow through an organization through dissemination (top-down, one-way information flow from supervisors) and diffusion (unplanned knowledge exchange mediated by peers).
- Organizational learning takes place not only via formal training, but also when using best practices in regular work activities such as meetings and email.
- Valuable learning takes place in knowledge communities, which include communities of practice, purpose, interest, and social interaction.
- Other learning opportunities involve apprenticeships, mentorships, peer assists, knowledge cafés, and AARs.
- Rewards and incentives can help spark participation in KM initiatives.

References

Argyris, Chris, and Donald A. Schön. *Organizational Learning: A Theory of Action Perspective.* Reading, MA: Addison-Wesley, 1978.

Baughman, M. Sue, and Neal K. Kaske. "Research: Theory and applications—impact of organizational learning." *portal: Libraries and the Academy* 2, no. 4 (2002): 665–69.

Brown, John Seely, and Paul Duguid. "Organizational learning and communities-of-practice: Toward a unified view of Working, learning, and innovation." *Organization Science 2,* no. 1 (1991): 40–57.

Brown, John Seely, and Paul Duguid. *The Social Life of Information*. Boston: Harvard Business School, 2000.

Cambridge, Darren, Soren Kaplan, and Vicki Suter. *Community of Practice Design Guide: A Step-by-Step Guide for Designing & Cultivating Communities of Practice in Higher Education*. [n.d.]. https://www.msfhr.org/sites/default/files/Community_of_practice_guide.pdf.

Evener, Julie. "Organizational learning in libraries at for-profit colleges and universities: A mixed-methods analysis." *Journal of Library Administration* 59, no. 3 (2019): 258–81.

Garfield, Stan. Proven *Practices for Promoting a Knowledge Management Program*. Richmond, BC: LUCIDEA Press, 2017.

Gurteen, David. "The knowledge café concept." *Knowledge Café: It's Good to Talk*. Accessed September 14, 2020. http://knowledge.cafe/knowledge-cafe-concept.

Kiniti, Sarah, and Craig Standing. "Wikis as knowledge management systems: Issues and challenges." *Journal of Systems and Information Technology* 15, no. 2 (2013): 189–201.

Limwichitr, S., Broady-Preston, J., and Ellis, D. "A discussion of problems in implementing organisational cultural change: Developing a learning organisation in university libraries." *Library Review* 64, no. 6/7 (2015): 480–88.

Milton, Nick. "The four community types." *Knoco Stories: From the Knowledge Management Frontline*, April 19, 2010. http://www.nickmilton.com/2010/04/four-community-types.html.

Ordoñez, Muriel, and Olivier Serrat. "Disseminating knowledge products." In *Knowledge Solutions*, pp. 871–78. Singapore: Springer, 2017.

Pressley, Lauren. *Wikis for Libraries*. New York: Neal-Schuman, 2010.

Riggs, Donald E. "A commitment to making the library a learning organization." *College and Research Libraries* 58, no. 4 (1997): 297–98.

Rowe, Sandra F. "Applying lessons learned." Paper presented at PMI Global Congress 2008—EMEA, St. Julian's, Malta. Newtown Square, PA: Project Management Institute, 2008. https://www.pmi.org/learning/library/applying-lessons-learned-implement-project-8344.

Wenger, Etienne, Richard A. McDermott, and William Snyder. *Cultivating Communities of Practice: A Guide to Managing Knowledge*. Boston, MA: Harvard Business School, 2002.

CHAPTER 9

Updating Knowledge: Assessment and Evaluation

IN THIS CHAPTER

- ▷ Evaluation of Procedures and Projects
- ▷ Assessing the Knowledge Management System for Improvement
- ▷ Knowledge Management Metrics
- ▷ Dealing with Challenging Knowledge Management Scenarios

"If you can't measure it, you can't improve it."
— PETER DRUCKER

AS DISCUSSED IN CHAPTER 3, the beginning of the knowledge management (KM) planning process involves a preliminary assessment of the current state of KM: namely, how well a particular organization is using its internal knowledge to further its goals. That assessment provides valuable information for the development of the KM framework, which serves as the roadmap for KM activities during the year or other specified time frame. Periodic reassessments as the KM process continues serve to "close the circle" and provide invaluable information for further building of the KM infrastructure. Establishing a formalized measurement and reporting schedule for the KM program allows the organization to discover what gaps still exist in the knowledge base and what adjustments are needed, report on progress to senior administration, update benchmarking for improvement, and evaluate the continuing usefulness of the program to the organization. Assessment can be performed at any point in the KM lifecycle, most typically at the start of the KM planning initiative, after the initial phase of KM activities have begun, when library administration calls for a progress report, and at key milestones in a major project.

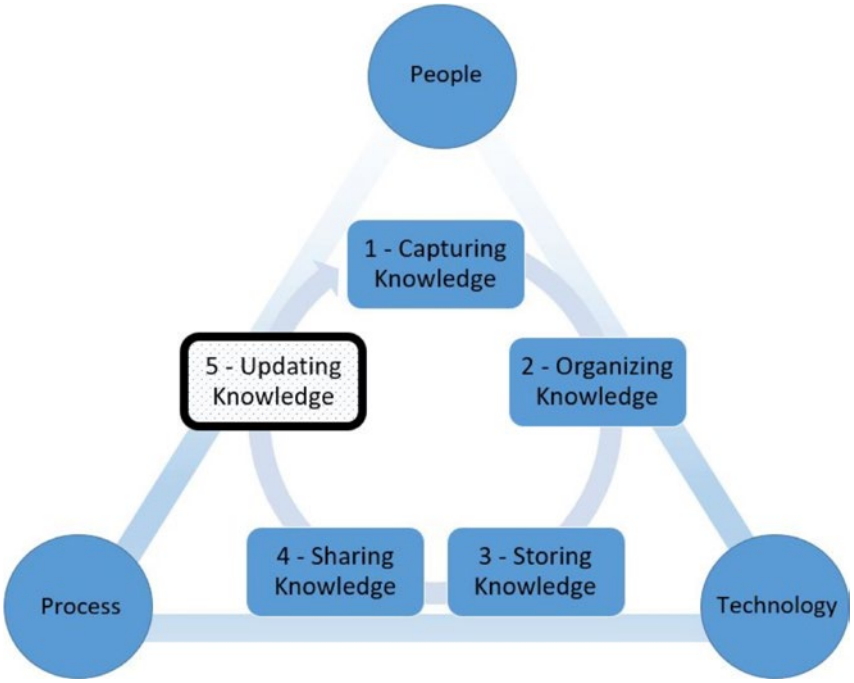

Figure 9.1. Knowledge Management Lifecycle: Updating Knowledge.

Evaluation of Procedures and Projects

The purpose of a KM assessment is primarily to gauge how well the KM program supports mission goals. During the planning phase, library staff provided comments and ideas about the processes and procedures that could use improvement. Based on these discussions, library administration may have chosen three or more mission-critical objectives to serve as the primary focus of the KM program for the review period, assigning current and projected metrics to measure how well the objectives were met. In addition to meeting core metrics, how well did the KM program contribute to meeting these objectives? Ideally, individual, team, and organizational capabilities driven by the KM plan should lead to improvements and growth in library services due to increased efficiency and knowledge flow.

For instance, one of the example objectives from chapter 3 was an increase of interlibrary loan fill rates by 5 percent by building out department capacity and investigating additional consortial relationships. Of course, library management should compare the baseline fill rate with the current fill rate as a quantitative measure. From a KM perspective, however, the project can also be assessed through analysis of several quantitative activity-oriented metrics, structured by phase of the KM lifecycle:

- Knowledge Capture—number of discussion groups or meetings dealing with the project, number of contributions to organizational repositories
- Knowledge Organization—metadata or other classification elements created for the system
- Knowledge Storage—number of messages or documents in the system, quality of the knowledge stored, number of document updates, user feedback
- Knowledge Sharing—number of active communities discussing the topic and number of meetings, number of knowledge products shared (i.e., presentations, surveys, videos, etc.)

Gathering qualitative measures such as post-project surveys, interviews, project debriefings, and one-on-one conversations will also yield useful information on how well the KM process contributed to the completion of the project. After analysis, all assessment data and comments are fed back into the KM system to be referenced in project planning.

Assessing the Knowledge Management System for Improvement

Development of an organization's KM system is an iterative process. An initial system is set up and tested, then evaluated at periodic intervals and updated. The goal is to get closer to an "ideal" system, but it is important to realize that the KM system will never reach that state; as the organizational environment changes, so too does the KM system. The KM lifecycle includes an assessment phase not because the system's tools and techniques are not in a constant state of evaluation, but primarily because the system's viability and usefulness to the organization relies on a consistent, scheduled method of assessment. Just as financial accounts are closed out at the end of the year and staff undergo performance reviews on a regular basis, so too should the library's KM system be subject to an assessment and review.

Regular surveys can be effective when evaluating the current state of the KM system and deciding how best to expand and maintain the system. Three commonly used survey instruments are the Opportunities Survey, Resource Survey, and Employee Satisfaction Survey (Garfield 2017, 24–27). Although these surveys are particularly useful to collect information and feedback at the beginning of the knowledge lifecycle, they can also be repeated at periodic intervals to gauge the currency and effectiveness of the existing system.

- The Opportunities Survey helps to identify current organizational challenges and ways to address them using KM procedures and systems. The general idea behind this survey is to get a feel for the overall organizational climate and opinions regarding the organization's knowledge flow, efficiency, decision-making support, and work challenges.
- Resource Surveys seek to conduct an inventory of the available resources in an organization involving people, processes, and technology components. The survey determines the usefulness of these various components and provides space for suggestions for improvements. Using this survey will yield information on gaps in current resources and preferred and popular tools.
- Employee Satisfaction Surveys are similar to Opportunities Surveys but are focused on feedback from KM system users as to the usefulness of the system. The goal is to get opinions about what is working well, what could be improved, and what ideas users may have for future system development. This survey should be conducted fairly frequently during the first year of system implementation (every one or two months) and once a year thereafter.

Knowledge Management Metrics

Whether qualitative, quantitative, or a combination of both, collecting and analyzing metrics about the KM program and its contribution to the progress of library programs is a necessary step in the KM process. Often, a qualitative metric for knowledge contributions by library staff will not be available as knowledge exchange is a complex interaction

based on human experience and relationships, and cannot be easily measured in most cases. Although the connection between KM practices and staff efficacy is sometimes hard to establish, there are valuable insights to be gained by taking a step back and evaluating organizational KM in a systematic way: motivating staff to continue using the system, communicating its value to users, and making a continued case to upper management are all necessary tasks for the KM manager or library administrator to include on their yearly checklist.

Collecting metrics should be a purposeful activity, related directly to the goals of the library and with improvements in mind. Metrics should not be gathered merely for the sake of filing a report; they should feed into further development of a program or service, as well as the KM system itself. Collecting data that has no direct usefulness in the planning process takes time that could more profitably be spent elsewhere. Metrics should be few in number and used for taking action based on the story told by the numbers and the information, tracking progress against organizational goals, and promoting the usefulness and value of the KM system to various constituencies. A useful framework for collecting and analyzing metrics can be based on the five KM lifecycle steps (capturing/creating, organizing, storing, sharing, and updating) or another structure that makes sense for the institution.

No single metric can serve to gauge the effectiveness of the KM program. Rather, multiple metrics, some with specific and targeted goals, should be monitored and periodically evaluated. Metrics can be quantitative or qualitative: qualitative measures attempt to reach a basic understanding of the overall effectiveness of the KM program, whereas quantitative measures produce numerical scores indicating how well individuals and groups are performing with respect to KM inputs and outputs. In general, KM best practices involve the capture and reporting of four types of metrics:

- Activity—Activity or operational metrics are quantitative measures monitoring KM activity to track the use of KM technologies and application of KM processes. These measures are based on data captured within the system. Examples include the number of contributions to a knowledge base, webpage visits, document downloads, attendance at community of practice meetings, number of peer assists, and number of KM-related presentations by employees. Although these measures are helpful in analyzing the level of activity and who is using the system, numbers such as document downloads and page hits do not always provide necessary context as to the value of the activity and how it contributes to the viability of the system. Knowing that ten people attended five community of practice meetings over the course of two months does not mean that everyone contributed to the discussions, that the conversations were recorded and analyzed, and that the content of the meetings contributed to the success of a particular initiative. It is best to minimize the effort spent on collecting and analyzing these statistics by concentrating on a few key metrics that directly relate to areas needing improvement. For instance, if staff report that a webpage or knowledge portal is not as useful as it might be, tracking which pages are hit most often, how long people remain on particular pages, and how often they are updated (if at all) will provide valuable information to investigate further through qualitative methods such as interviews and focus groups.
- Performance—Performance or goal-oriented metrics measure the level of staff compliance with KM performance indicators and targets and refer to meaningful

contributions of staff to the KM program, not merely passive attendance at meetings or infrequent contributions to a lessons learned database. These metrics relate directly to employee goals and thus can be used when writing staff evaluations; it is important that individuals be held accountable for achieving these personal objectives. Further, they help to identify how and why staff are not contributing to organizational KM. Reasons for this can include a lack of awareness, skills, or prioritization; in these cases, intervention can occur by supervisors to address noncompliance. Although reporting individual staff metrics should be limited to the staff and their supervisor due to confidentiality regulations, anonymized department-level progress reports should be updated and disseminated on a regular basis to keep employees on track, motivate participation in the KM program, and encourage improvements. Reporting by department or unit allows each group to compare their overall performance against other groups and can encourage a sense of productive competition.

- Business Impact—Impact metrics seek to define the specific value of business initiatives through measures such as cost savings, revenue, improved quality, higher customer satisfaction, new business, etc. From a library perspective these metrics can include statistics such as increased book circulation, higher attendance at story hours, and more contacts made with community leaders. They can be either quantitative or qualitative and track the overall benefits of the KM program to the success of the organization. As such they can be valuable when making the case to library administration to continue or expand a KM program, fund improvements to the system, and assign additional staff time and resources to KM initiatives. "Soft" impact metrics can be collected through surveys, anecdotes, success stories, interviews, and targeted focus groups. As with activity metrics, impact information is valuable but should be used in conjunction with additional assessment information to make the connection between the metric and condition of the process or initiative. Many factors generally enter into the success or failure of a particular program, and it can be difficult to establish causation using only impact data.
- Maturity—Maturity metrics are generally gathered when the KM program has been in place for a while and seek to review how embedded KM activities have become in the organizational culture. Participation in communities of practice, for example, can start off strongly but wane over time as group leadership changes and enthusiasm fades. Tracking the level of KM activities and staff opinions over time can be an effective method to target possible problem areas (Milton and Lambe 2019, 64).

In addition to metrics collected through user surveys, additional information can be collected by the KM manager based on a specific KM tool or process and through a variety of mechanisms. The following are a few examples of commonly used metrics grouped by KM activity.

Community of Practice Metrics

To keep communities of practice relevant and gaining new members, demonstrating evidence of meaningful conversations and action is essential. It can be difficult to connect community activity with its impact on library productivity through transactional data, so success stories and anecdotes demonstrating how knowledge generated in this setting can be useful as well.

- Total number of communities, total members per community, total contributors
- Total number of topics addressed, number of meetings and presentations, number of projects in process and completed, total number of events per community
- Average posts to knowledge base per day, number of unique contributors contributing at least once, number of repeat contributors
- Number of users sending and receiving messages
- Number of documents uploaded and downloaded from community of practice knowledge base
- Number of problems solved by the community of practice and related cost savings
- Community of practice usefulness rankings from group members

Search Metrics

Some search metrics should be readily available from information technology administrators or site owners via periodic automated reporting. Reports can be analyzed for general usage patterns, types of keywords being searched, and other metadata. Other assessment inputs involve asking system users to rate the relevance, currency, and quality of the information retrieved, as well as surveying the community of practice leaders, subject matter experts, and others to directly review and rate content of knowledge base information presented.

- Number of searches performed, number of successful searches performed
- Number of defunct or nonfunctioning pages
- Time spent by users on specific pages
- Metadata pertaining to dates of publishing and review: average age of pages, number of pages published prior to a specified date, number of pages past a designated review date

Lessons Learned Metrics

These metrics can be organized according to the phases of the five-step lessons learned activity, as well as the type of lesson learned (time, resource, financial, content, staff effort, system, etc.). The usefulness of analyzing these metrics becomes more apparent if they can be compared from project to project. For example, the lessons learned from one year's summer reading program should be incorporated into the following year's program, at which point activity metrics can be analyzed for possible differences due to applying improvements suggested by the lessons learned process.

- Number of problems solved or avoided due to lessons learned
- Time spent on project planning (increase or decrease)
- Number of informational resources available
- Budget efficiencies or inefficiencies

Knowledge Continuity

Knowledge continuity metrics refer to the collection and preservation of mission-critical knowledge that needs to be preserved when people leave the organization and communicated to current or new staff.

- Number of documents collected and stored from departing employees
- Number of documents communicated to replacement or successor employees
- Number of hours spent interviewing departing staff
- Estimated cost (staff time, reconstruction of lost knowledge) associated with capturing knowledge before employee departure
- Number of hours spent training replacement or new hires on knowledge gained from departing employees

Dealing with Challenging Knowledge Management Scenarios

During the knowledge update phase of the KM lifecycle, user surveys and metrics analysis will probably uncover commonly experienced problems and situations that were not anticipated during the earlier phases. Although these scenarios can arise at any point, the KM program evaluation phase is an excellent opportunity for library KM leaders and managers to pay deliberate attention to their resolution. The following are some common issues that should be discussed and addressed, organized by the foundational KM elements of people, process, and technology.

People

Leadership is not committed to the KM process, demonstrated by lack of budget and resources support and failure to use the system. From the outset of KM planning, senior leadership must agree to allocate the budget and staffing resources necessary, including support for at least one person who will be responsible for overall program leadership and coordination. This person or group of people must keep administration updated through regular presentations and periodic communication; in turn, administration should support clear and enforceable goals for staff, provide time during organization meetings for KM updates, establish a system of rewards and incentives for compliance, and integrate KM performance indicators into the regular reporting cycle. Finally, administrators should learn about and use the KM system themselves to demonstrate the organization's commitment to the process, to provide an example to others, and to contribute to overall program goals.

Staff tasked with managing the KM process are not as involved as they should be. Choosing leadership for the KM program can be difficult. Those who know the most about a particular area do not always possess the requisite organizational and communication skills to effectively manage the system and motivate people to use it. Responsibility for pieces of the KM system should not be considered an add-on to regular responsibilities; rather, it should be written into staff job descriptions and subject to regular assessment.

Too many people are in charge of the KM system, or roles are unclear. Although giving multiple people responsibility for a lessons learned database or a community of practice can provide useful overlap, it can also create tension and confusion if management efforts are not effectively coordinated and communicated. Expectations should be clear from the outset and posted in an easily accessible location.

KM is perceived as extra work that staff must take on along with other responsibilities in their already packed schedules. Often, the response to being asked to participate in KM efforts is met by the statements, "I don't have time" or "I'm too busy." The first step when dealing with these often very legitimate concerns is to communicate the value of KM to the organization and to the individual employee. Done well, KM will actually save

employees time in the long run. Therefore, knowledge capture and sharing should be written into existing workflows rather than setting up a separate process to save time and encourage compliance. Tools and systems should be set up to make participation easy and intuitive, and any knowledge transfer that can be automated and run in the background will also save time.

People are concerned that they do not understand their responsibilities vis-à-vis KM and that they lack the time to participate in KM tasks. Staff should be motivated to share, create, collaborate, and learn within the KM ecosystem through clearly communicated goals, a system of rewards and incentives, and management's expectation that KM is a regular part of tasks and workflows. Having clear and measurable goals that are periodically evaluated for each employee provides mileposts to check progress and reinforce compliance. Achievement of goals should be integrated into the performance evaluation system.

Staff are excited about the KM program at first, but lose motivation as time goes on. The novelty of having a new time-saving system that will help people get their work done can fade quickly. Encouraging an organizational culture that values consistent learning is more conducive to efforts to get people to consider the new system as permanent and commit to integrating it into their workflow. A system of rewards and incentives may also provide an extra push.

Active users lose interest because they are not rewarded. Deciding if and when to provide incentives is a difficult balance: on the one hand, library management wants to send the message that KM is important but on the other, training staff to only use the system if they can expect a reward negates the intrinsic benefit of the system. However, a community is only as strong as its users, so providing intermittent or occasional incentives can help reinvigorate motivation as well as establish performance expectations among new staff.

People are reluctant to ask for help publicly, fearing that they will look uninformed or unprofessional. Encouraging people to ask for help or advice in a public setting depends heavily on organizational culture. Employees need to feel safe sharing information, asking for help, and posting questions freely throughout the organization without fear of criticism, blame, ridicule, or repercussions. The system should be designed with features including a search function that is easy to navigate, an A-Z index, clearly defined user communities, and question boards where answers can be archived and searched. KM managers need to establish confidential or nonobtrusive ways to post questions, such as anonymous "ask the expert" tools.

Process

KM is not seen as being connected to the overall goals of the business. The purpose underlying KM is to support the organization's strategic plans and priorities by streamlining and maximizing use of information and knowledge. KM efforts should be connected directly to the library's mission and vision, and the end purpose of goals and metrics should demonstrate related progress. Its value to the organization should be made clear by direct alignment of KM program goals with those of the organization from the outset; this connection should be communicated regularly by KM and organization leadership. It is the responsibility of management to communicate the purpose and value of the KM program so that all staff can internalize the underlying vision for how KM in the organization is supposed to work and how it is integral to the success of projects and initiatives.

The organization has established numerous projects to be addressed by the KM program and implementation has become complex and confusing. This can sometimes happen when a new technology or system promises to be a magic solution to quickly solve all the organization's knowledge problems; of course, it is too good to be true. The better way to proceed is to focus on the basics and tools and procedures that people will actually use. By focusing on only a few initiatives and setting corresponding goals, the organization can avoid the trap of trying to solve everything at once. In order to keep people and resources focused, a good practice is to set no more than three goals for the year. These goals will serve as the foundation projects for the KM program. The goals should be easy to understand, articulate, complete, and measure, and should pertain directly to the overall library mission.

Organizations "push out" information to staff but fail to solicit information in return. Good managers want to ensure that their employees have the information they need to do their jobs effectively, and so it can be tempting to send lengthy email messages and other communications to staff, many of which the staff fail to read. This is a "push" method of communication. More effective is communicating by "pull," which encourages staff to opt in to information flow by actively looking for and hopefully finding the content that will be useful to them. Allowing staff to subscribe and unsubscribe from news feeds and listservs gives them more control over information flow; information that absolutely must be disseminated can still be sent via email or another mechanism, and having fewer of these mandatory messages will make it more likely that they will actually be read. In addition, scheduling regular opportunities to speak directly to managers via meetings, videoconferences, and small groups can be a better way to encourage give and take communication.

Requests to participate in the KM program are vague, lacking specifics and direction. Connecting with others in the organization and sharing information and knowledge needs to be articulated as more than as a general good. For example, non-specific statements such as "we all need to contribute documents to the knowledge base" and "everyone needs to connect and share knowledge more" are inconclusive and fail to articulate a compelling reason for participating in the KM program. Instead, management should ask people to get involved in KM-related activities targeted toward specific and current tasks for which they are suited. Demonstrating how KM can lead to better results achieved more efficiently clearly shows the advantages of using KM tools and techniques, rather than a generic approach.

People active in KM program leadership or participation leave the organization. Transfers, retirements, and resignations can affect KM program vitality just as they do general operations of the library. Some turnover is inevitable, and the responsibilities tied to particular KM activities and communities can fall through the cracks. Clear processes for expertise transfer and data migration in case key people leave must be part of the KM program. A detailed procedures document listing regular tasks to be performed and a detailed activity log will help smooth the transition and keep the system running smoothly.

Technology

Technology dominates the KM system, and people and process are not emphasized. The failure to balance people, process, and technology components is a common mistake, but avoidable. Rather than immediately choosing KM technology and tools (or settling for the existing systems already in place) and letting those decisions drive the process, the organization

should first evaluate the organization's needs and then carefully evaluate what technology solutions will best support those needs.

It can be difficult to keep up with new technology. In addition to having adequate information technology support, KM leadership needs to commit to consistent training for all staff. Releases and updates should be installed as soon as possible to keep features current. The message to staff should be that changes and updates to technology and KM platforms may be time-consuming at first, but the purpose behind the changes is to improve working conditions.

Information in the KM system isn't up to date and accurate. Regular updating, verification, and maintenance of knowledge in the system are challenging to manage, but essential if people are being urged to use it. Appropriate metadata must also be readily available to support knowledge retrieval. Information can be kept up to date by setting up automatic update reminders for people in charge of separate KM systems.

People find it difficult to locate information they need to do their jobs because search capabilities are not working, or materials retrieved are obsolete or irrelevant. The knowledge base system chosen should allow for searching not only by title and keyword, but also by date, tag, and other attributes. Allow users to quickly tag content with a "like" button if they were able to use the content or find it useful, and ask staff knowledgeable about particular topics to review individual entries and curate lists of recommended resources.

The focus of the KM program is on pushing people to contribute information to the system, but little attention is paid to the usefulness of the knowledge and its retrieval. People need to be convinced of the purpose behind contributing knowledge before they will spend valuable time participating. It is difficult to ask employees to contribute knowledge to the system on the chance that it may be needed at some point in the future. A better approach is to ask for information and expertise at the point of need, when there is a clear mission-critical reason for its collection and processing. A useful way to solicit this information is to form an ad hoc group or approach a community of practice, which can then discuss the issue and send forward contributions of documents, ideas, advice, and next steps. Gathering information regarding a new project from an active group of practitioners rather than relying on only knowledge in the knowledge base can result in new, fresh ideas geared toward the current situation, and provides new knowledge for others in the organization to use. These groups can consider the issue in context, debate contrasting points of view, and solicit new information from people both inside and outside the organization.

Key Points

- Assessing the organization's KM system and the projects it supports is a necessary step in the KM lifecycle for continuous improvement.
- KM system contributions to the success of projects can be evaluated using both quantitative and qualitative measures.
- Three useful surveys to evaluate the KM system itself are the Opportunities, Resource, and Employee Satisfaction Survey.
- KM metrics are generally of four types: activity/operational, performance, business impact, and maturity.
- Assessment can uncover challenges associated with the three foundational aspects of the KM lifecycle (people, process, and technology), and can suggest ways to deal with these issues.

References

Garfield, Stan. *Proven Practices for Promoting a Knowledge Management Program*. Richmond, BC: LUCIDEA Press, 2017.

Garfield, Stan. "KM conversation—The uses and benefits of analytics." LUCIDEA, March 12, 2020a. https://lucidea.com/blog/km-conversation-the-uses-and-benefits-of-analytics.

Garfield, Stan. "KM conversations—Using analytics part 2: metrics and reporting." LUCIDEA, March 5, 2020b. https://lucidea.com/blog/km-conversations-using-analytics-part-2-metrics-and-reporting.

Levin, Ginger. "Knowledge management success equals project management success." Paper presented at PMI® Global Congress 2010—North America, Washington, DC. Newtown Square, PA: Project Management Institute. https://www.pmi.org/learning/library/knowledge-management-success-generate-value-6656.

Milton, Nick, and Patrick Lambe. *The Knowledge Manager's Handbook: A Step-by-Step Guide to Embedding Effective Knowledge Management in Your Organization*. London: Kogan Page Publishers, 2019.

Rowe, Sandra F. "Applying lessons learned." Paper presented at PMI® Global Congress 2008—EMEA, St. Julian's, Malta. Newtown Square, PA: Project Management Institute, 2008. https://www.pmi.org/learning/library/applying-lessons-learned-implement-project-8344.

Verburg, Robert M., and J. H. Erik Andriessen. "The assessment of communities of practice." *Knowledge and Process Management: The Journal of Corporate Transformation* 13, no. 1 (January/March 2006): 13–25.

Wenger-Trayner, Etienne, and Beverly Wenger-Trayner. "Introduction to communities of practice: A brief overview of the concept and its uses." 2015, https://wenger-trayner.com/introduction-to-communities-of-practice.

Part III

NEXT STEPS IN KNOWLEDGE MANAGEMENT

CHAPTER 10

Future Directions for Knowledge Management in Libraries

IN THIS CHAPTER

- ▷ Future Trends in Knowledge Management
- ▷ Learning More about Knowledge Management

"The future always comes too fast and in the wrong order."
— ALVIN TOFFLER

IMPLEMENTING AND MAINTAINING A KNOWLEDGE management (KM) lifecycle is an ongoing strategic initiative which, done well, can transform the library's organizational culture and the way people work. Ideally, embedding a comprehensive KM program in regular library workflows and procedures make participation automatic and expected, and KM becomes an organizational ecosystem underlying everything the library does. As the flow of knowledge in and out of organizations continues to increase, more employees work from home, and new technologies are introduced into libraries and information organizations, KM systems will continue to be a necessary driver of organizational success and improvement. KM principles themselves have not changed substantially, but the evolution toward a digital workplace is changing KM's focus onto the creation and support of digital community building.

Literature on KM in library and information science environments suggests that innovations in KM have gone through four generations (Liebowitz and Paliszkiewicz 2019, 16):

- Personal KM—focusing on an individual's ability to leverage their own knowledge
- Collection and Codification—applying personal KM to the organizational setting

- Knowledge collaboration and social networks—organizations taking advantage of knowledge across disciplines and "knowledge silos"
- Fourth-Generation KM—expansion of KM made possible by new technologies including artificial intelligence (AI), machine learning, data analytics, and Internet of Things

Although KM activities have traditionally focused on the creation and dissemination of knowledge, information and data among a group of employees within a particular organization, new Fourth-Generation KM technologies open the door to increased collaboration outside the organization. KM work will continue to be supported by internal technological platforms such as an intranet, wiki, Sharepoint, Microsoft Teams, Slack, and so on. With the increase in use of online communication programs, however, regular collaboration with individuals and groups outside the immediate organization will be easier to implement. A focus on collaborative KM strategies will expand existing systems to allow networks of organizations to collectively create, share, access, and use knowledge across organizational lines.

Although the KM landscape continues to evolve and change, its fundamental purpose to support knowledge creation, sharing, innovation, reuse, and learning does not change. Watching global developments and trends in business, customer service, and technology will help library leaders keep their knowledge infrastructure flexible and responsive to rapidly changing conditions. This chapter examines some current and future trends that will change how KM works in libraries and other organizations, and will suggest ways to stay on top of KM developments in the face of rapid change.

Future Trends in Knowledge Management

Increased Emphasis on Remote Work

Although an increased emphasis on work-life balance has driven an increase in telework and flexible work-from-home arrangements for some time, the coronavirus pandemic crisis of 2020 has greatly accelerated the need for businesses and industries to facilitate distributed workforces. According to a recent study from the Stanford Institute for Economic Policy Research, 42 percent of employees in the United States are now working from home full-time, and telecommuting levels are likely to even out at two days a week post-pandemic. Although of course not all jobs lend themselves to remote work, the stigma attached with working from home has largely disappeared and the infrastructure supporting these arrangements will continue to be built out. In the past, many businesses discouraged remote work due to the perception that employees needed more direct oversight, but with the use of videoconferencing and collaborative platforms such as Zoom, WebEx, and Microsoft Teams, managers are discovering that operating in a remote digital workplace has gone better than expected. KM has helped to drive more effective work and collaboration across distributed workforces by supporting efficient asynchronous technological platforms and knowledge sharing.

According to the World Economic Forum, one of the top ways technology will transform global business by 2025 is a "blurring of physical and virtual spaces." Not only will more employees have the option to work virtually, at least part of the time, but an increased number of social events and interactions will be fully digitalized. Educational op-

portunities that used to take place face-to-face—training, conferences, online courses—will move to an online format. This trend was accelerated by the 2020 pandemic, and it will continue to expand with an attendant need to focus on network capacities, data privacy, and best practices when working in virtual communities.

For instance, further development of fifth-generation mobile networks (5G) will be necessary to address the problem of poor or limited network quality, which has become glaringly obvious as more businesses and individuals transition to regular online work. As virtual reality technologies become more readily available in the workplace, business applications including meetings, training sessions, and conferences will be able to capitalize on the possibilities of extended reality to enhance collaboration and knowledge creation. There will be an increasing demand for Internet of Things support of devices, applications, and infrastructure. The Internet of Things refers to physical devices (not only computers and smartphones) connected to each other on the internet. From a library perspective, the Internet of Things is already enabling services including meeting and study room usage tracking, visitor counts, robotic book retrieval, energy-saving environmental systems, remote self-service book kiosks, and more. The data streaming over internet connections generated by use of these technologies are a key component in the KM infrastructure to drive improvement and development of future services.

Artificial Intelligence

AI involves machines that are programmed to simulate human intelligence through mimicking responses and executing common tasks. This is accomplished through the use of specially designed algorithms, which in essence are a list of instructions that explain how to perform a specific task or function. AI devices are designed to remember human behavior patterns, learning and adapting according to usage preferences. Common functions performed by AI systems include email filtering, plagiarism checking, voice-activated personal assistants including Siri and Alexa, and facial recognition.

The use of AI also offers possibilities for development of KM systems. For example, in current KM practice, people needing information from an online knowledge base or website first try to search or browse to find their needed information and if they are unsuccessful there is usually an email address, phone number, or chat service that they can use to consult another person. Of course, this transaction involves significant time, effort, and persistence on the part of the questioner as well as a communications process that can be somewhat involved and lengthy. Automated AI-based chat software enables organizations to respond directly to patrons and customers in real time without human intervention. Although chatbots have been in use for some time, the new generation AI chatbots are designed to continually improve through use of natural language processing and human response data. The goal is to provide the questioner with an interaction virtually indistinguishable from a conversation with a human being.

Virtual assistants and AI-powered chatbots have already made an appearance in library settings. For example, the University of California Irvine Libraries has experimented with a chatbot that can answer short, simple library-related questions, such as library hours of operation and catalog searches. Released in 2014, "ANTswers: Your Interactive FAQ" is available at https://www.lib.uci.edu/antswers. The use of chatbots in reference and other online transactions has implications for KM systems as well, although KM managers should still practice caution in adopting a technology for KM purposes only because it is available. AI systems need to be able to handle the processing

involved with accessing potentially thousands or millions of documents in a knowledge base, perhaps spread out over numerous repositories, platforms, and shared drives. The KM ecosystem needs to be able to support effective AI implementation, including foundational activities including tagging, taxonomies, content cleanup and management, and tacit knowledge capture.

Visual Knowledge Management

Visual representations of data and information lead to richer communication, especially as more people demand instant access to information through social media and other media that are designed to accommodate short bursts rather than long blocks of text. Individuals and organizations post brief YouTube tutorials on every topic in order to aid understanding and drive people to their websites. Images can help improve understanding. Data visualization, the graphical representation of information, is becoming more a part of KM practices as well. Visualization techniques can be used throughout the KM lifecycle to collect more information than might be available via textual transmission. Visual elements, including search clouds, maps, charts, and graphs, provide users with a clearer view of data, making recognition of trends and patterns expressed in the data easier to see.

Learning More about Knowledge Management

The field of KM has been in existence for many years, and a thriving, generous community of practitioners and researchers has made countless resources freely available to people seeking to learn more about how KM can support their organizations and their own personal work. Although the best way to learn about KM is to get started and do the work, following KM thought leaders on social media (use the hashtags #km and #kmers), reading books and journal articles, participating in online communities, and talking to KM professionals at conferences is a good way to build KM expertise. The following list represents only a few of the many excellent resources available to the budding KM practitioner.

Books

If Only We Knew What We Know: The Transfer of Internal Knowledge and Best Practice, by Carla O'Dell and C. Jackson Grayson, Jr. (Free Press, 2012)

Knowledge Management for Libraries, by Valerie Forrestal (Rowman & Littlefield, 2015)

Proven Practices for Promoting a Knowledge Management Program, by Stan Garfield (Lucidea Press, 2017)

Working Knowledge: How Organizations Manage What They Know, second edition, by Thomas Davenport and Laurence Prusak (Harvard Business Review Press, 2000)

Periodicals

International Journal of Knowledge Management Studies (Inderscience): https://www.inderscience.com/jhome.php?jcode=ijkms

International Journal of Learning and Intellectual Capital (Inderscience): https://www.inderscience.com/jhome.php?jcode=ijlic

Journal of Information & Knowledge Management (World Scientific): https://www.worldscientific.com/worldscinet/jikm

Journal of Knowledge Management (Emerald Publishing): https://www.emeraldgrouppublishing.com/journal/jkm

KM World: Content, Document, and Knowledge Management (KMWorld): https://www.kmworld.com/Previous_Issues

Communities

Systems Integration Knowledge Management Leaders Community: https://sikm.groups.io/g/main

Blogs

American Productivity & Quality Center: https://www.apqc.org/blog
KM Institute: https://www.kminstitute.org/blog
The Knowledge Management Depot: http://knowledgemanagementdepot.com
Lucidea Think Clearly Blog: https://lucidea.com/blog

Websites

American Productivity & Quality Center: https://www.apqc.org/resource-library
Gurteen Knowledge Website: http://www.gurteen.com
KM Insight: https://kminsight.co.uk/insights
KMWorld: https://www.kmworld.com

Key Points

- KM systems need to constantly evolve in response to not only organizational but societal changes as well.
- KM has gone through four generations so far: personal KM, collection and codification, knowledge collaboration and social networks, and fourth-generation KM (made possible by new technologies).
- Future trends in KM may include an increased emphasis on remote work, AI, and visual KM.
- People interested in KM can stay up to date with this evolving field through following KM thought leaders on social media, reading KM-related materials and research, and participating in online communities.

References

"17 Ways Technology Could Change the World by 2025." World Economic Forum, June 23, 2020, https://www.weforum.org/agenda/2020/06/17-predictions-for-our-world-in-2025.

American Library Association. "Artificial intelligence." Accessed October 1, 2020. http://www.ala.org/tools/future/trends/artificialintelligence.

Bloom, Nicholas. "How working from home works out." Stanford Institute for Economic Policy Research (SIEPR), June 2020, https://siepr.stanford.edu/research/publications/how-working-home-works-out.

Cervone, H. Frank. "Predicting the future of knowledge management." In *Libraries that Learn: Keys to Managing Organizational Knowledge*, edited by Jennifer Bartlett and Spencer Acadia, pp. 67–76. Chicago: ALA Editions, 2019.

Garfield, Stan. "10 ways to build expertise in knowledge management." LinkedIn, June 9, 2015. https://www.linkedin.com/pulse/10-ways-build-expertise-knowledge-management-stan garfield.

Kim, Bohyun. "Moving forward with digital disruption: What big data, IoT, synthetic biology, AI, blockchain, and platform businesses mean to libraries." *Library Technology Reports* 56, no. 2 (January/February 2020).

KMWorld Staff. "Looking to the future of knowledge management: 2020 insight." KMWorld, January 7, 2020, https://www.kmworld.com/Articles/Editorial/Features/Looking-to-the-Future-of-Knowledge-Management-2020-Insight-135756.aspx.

Liebowitz, Jay, and Joanna Paliszkiewicz. "The next generation of knowledge management: Implications for LIS educators and professionals." *Online Journal of Applied Knowledge Management (OJAKM)* 7, no. 2 (2019): 16–28.

Murray, Art, and Brian (Bo) Newman. "A deep future approach to KM." KMWorld, July 2 2018, https://www.kmworld.com/Articles/Columns/The-Future-of-the-Future/A-deep-future-approach-to-KM-125947.aspx.

Rous, Beth S., and John B. Nash. "Visual communication as knowledge management in design thinking." In *The Handbook of Applied Communication Research*, edited by H. Dan O'Hair, Mary John O'Hair, Erin B. Hester, and Sarah Geegan, pp. 233–48. New York: John Wiley, 2020.

Singh, Prabhjot. "Shifting paradigm of knowledge management with 5G technology," May 15, 2019, https://medium.com/kochartech/shifting-paradigm-of-knowledge-management-with-5g-technology-c01b0cb07323.

Zalaznick, Matt. "How AI in libraries provides answers on campus." *University Business*, December 17, 2019, https://universitybusiness.com/artificial-intelligence-ai-in-libraries-answers-library-chatbot.

Glossary

After Action Review (AAR): A highly focused, very short (a half hour or less) operational review held immediately after a project or task is completed. The purpose of this exercise is to capture observations from project team members as soon as possible after the project is completed to learn information that can be used the next time the project or task is conducted.

Apprenticeship: An on-the-job education system in which workers train for a particular career with an experienced professional while also taking relevant courses.

Artificial intelligence (AI): Development of machines that are programmed to simulate human intelligence through mimicking responses and executing common tasks. This is accomplished through the use of specially designed algorithms, which in essence are a list of instructions that explain how to perform a specific task or function. AI devices are designed to remember human behavior patterns, learning and adapting according to usage preferences.

Badging: An incentive program, usually digital, in which employees are recognized for skills, experience, accomplishments, or completion of a project.

Big Data: Massive amounts of structured and unstructured complex data that grow exponentially over time and cannot be processed using conventional data processing techniques.

Change management: Planning and administering change and development within a business or organization.

Collaboration: Ways of interacting and working with colleagues and others in a group to share ideas and experiences, and to work on problems.

Communities: A group of people in the same physical or virtual location or having certain sets of characteristics or beliefs in common.

Competency model: Visualization of where individual and departmental skills, knowledge, and capacities reside within an organization; delineates the knowledge, skills, and abilities needed to successfully perform various functions and tasks, and can be used to identify where additional resources are needed.

Content management system (CMS): Software platform allowing users to collect, create, edit, archive, publish, and share knowledge products such as documents, database records, and video and audio files.

Culture: Characteristics of a particular group of people; the way things are done in an organization.

Data: Observable and verifiable facts, symbols, statistics, etc.

DIKW or Wisdom Pyramid: Also known as the wisdom hierarchy, knowledge hierarchy, and information hierarchy, the DIKW is a representation of the functional relationships among Data, Information, Knowledge, and Wisdom.

Document management systems (DMS): System or process used to store, track, and control digital documents including word processing files, spreadsheets, PDFs, and digital images of physical content.

Enterprise Social Network (ESN): An internal, private system of social media and social networking used to connect organizations for a range of business purposes and activities.

Explicit knowledge: Knowledge that can be fixed in a tangible form and is easily articulated.

Folksonomy: Also called collaborative tagging, social indexing, or social classification; a taxonomy developed by a broad community of people ("folks") in order to categorize various types of knowledge content including documents, webpages, images, and audiovisual content by creating labels or tags to enable others to find content based on their information needs and interests.

Gamification: Application of elements of game playing to business activities to encourage engagement with a knowledge management process or other procedures.

Incentives: System of payments (financial or otherwise) designed to motivate participation in an organizational initiative.

Information: Data processed and analyzed into a particular arrangement or sequence.

Information management: The collection, management, and distribution of information from one or more sources.

Intangible asset: An asset that is not physical in nature, which has a theorized value rather than a transactional monetary value.

Intellectual capital: Intangible assets of benefit to an organization, including employee expertise, patents and copyright, and information systems.

Intranet: A private, restricted communications network contained within an organization allowing employees to share knowledge and resources.

Knowledge: Awareness of a situation acquired through experience and education; judgment based on information.

Knowledge audit: The first step in a knowledge management initiative; an inventory and investigation of the information, people, systems, process, and knowledge resources available in an organization.

Knowledge café: An intensive conversational process that brings people together for a short period of time (between one and two hours) to talk about a specific issue, usually in a roundtable format. The main group first discusses the main topic and then breaks into subgroups to talk about smaller aspects of the question. There is no formal presentation. The café ends with the groups coming back together and having a summary discussion.

Knowledge management (KM): A range of systematic processes designed to gather, document, store, communicate, and evaluate knowledge and expertise to enable organizations to achieve success.

Knowledge map: A visual method used to graphically chart where collective and individual knowledge falls within an organization as well as track how knowledge flows throughout the organization; the map represents relationships among ideas, topics, concepts, and images in order to make those connections clearer.

Knowledge organization: A range of tools and techniques (i.e., thesauri, subject headings, ontologies, and other classification schemes) designed to support the organization of knowledge and information for more efficient management and access.

Knowledge retention: Process of retaining knowledge within an organization by interviewing and gathering knowledge from departing employees.

Knowledge workers: Professionals who generate value with information rather than through the production of goods.

Learning organization: Company or institution that actively facilitates the learning of its employees and continuously transforms itself (per Peter Senge).

Lessons learned: A collaborative exercise in which an individual or team shares what they have learned based on their experience completing a project; designed to analyze recently completed organizational projects with an eye towards constant improvement. Steps are Identify, Document, Analyze, Store, and Retrieve.

Metadata: A set of data that gives defining information about other data; provides description of a certain item's content.

Metrics: Measures of quantitative assessment used to track performance and accomplishments.

Ontology: A classification system that identifies items and concepts and their content and relationships.

Organizational asset: A resource of value owned, controlled by, or available to an organization that can be used to further its business goals.

Organizational knowledge: All knowledge contained within a business or other organization that provides value, including tacit and explicit knowledge.

Peer assist: Face-to-face or virtual meetings in which an individual or group solicits expert input from another more experienced group on a particular issue or challenge that they are facing in their work.

Personal knowledge management (PKM): Organizational processes that people use to gather, classify, find, process, and share knowledge in both their personal and professional lives.

Portals: Internet-based platform that provides a single point of access to organizational knowledge including databases, directories, tools, and more.

Process model: Also called a business process model; describes the flow of work in particular business functions and used to represent a series of steps needed to achieve a particular goal.

Project management: Method of defining, planning, scheduling, controlling, and reporting on a predefined, time-limited project from start to finish.

Records management: Systemic process for the creation, maintenance, use, and disposition of organizational documents, records, and archives.

Repositories: Central locations in which data, information, and knowledge are stored.

Social Network Analysis (SNA): A relationship mapping technique that maps and measures relationships and flows between people, groups, organizations, computers, or other information or knowledge processing entities.

Tacit knowledge: Knowledge that is accumulated from personal experience and context.

Tagging: Attaching a keyword description to an information asset for efficient retrieval or to group a collection of like assets together.

Tangible asset: An asset, usually in physical form, that can typically be transacted for a monetary value.

Taxonomy: A type of metadata used to classify items and concepts in a wide number of fields including computer science, education, business, etc.; contains terms specific to a particular field or organization and arranges these terms in a hierarchical classification system that can then be applied to topics, documents, or other elements.

Videoconferencing: Meetings conducted among two or more people at remote locations by means of video and audio communication technologies such as Zoom and Skype.

Wiki: A website allowing collaborative creation and editing of content by its users using a web browser.

Wisdom: The body of knowledge and experience that enables sound decision-making.

Workflow: A repeatable pattern of actions or sequence of steps used to bring a project or task from start to finish.

Sources

"17 Ways Technology Could Change the World by 2025," World Economic Forum, June 23, 2020, https://www.weforum.org/agenda/2020/06/17-predictions-for-our-world-in-2025.

Agarwal, N. K., and M. A. Islam. "Knowledge Management Implementation in a Library; Mapping Tools and Technologies to Phases of the KM Cycle." *VINE: The Journal of Information and Knowledge Management Systems* 44, no. 3 (2014): 322–44.

Allee, Verna. "Twelve Principles of Knowledge Management." *Training & Development* 51, no. 11 (1997): 71–74.

Alon, Lilach. "How Knowledge Workers Manage Their Personal Information Spaces: Perceptions, Challenges and High-Level Strategies." *Interacting with Computers* 31, no. 3 (2019): 303–16.

American Library Association. "Artificial Intelligence." Accessed October 1, 2020. http://www.ala.org/tools/future/trends/artificialintelligence.

Appleton, Maggie. "Building a Second Brain: The Illustrated Notes." *Digital Garden*, last modified January 6, 2020, https://maggieappleton.com/basb.

Argyris, Chris, and Donald A. Schön. *Organizational Learning: A Theory of Action Perspective.* Reading, MA: Addison-Wesley, 1978.

Barão, Alexandre, José Braga de Vasconcelos, Álvaro Rocha, and Ruben Pereira. "A Knowledge Management Approach to Capture Organizational Learning Networks." *International Journal of Information Management* 37, no. 6 (2017): 735–40.

Barnes, Stephanie. *Designing a Successful KM Strategy: A Guide for the Knowledge Management Professional*. Medford, NJ: Information Today, 2015.

Bartlett, Jennifer A., and Spencer Acadia, eds. *Libraries that Learn: Keys to Managing Organizational Knowledge*. Chicago: American Library Association, 2019.

Baughman, M. Sue, and Neal K. Kaske. "Research: Theory and Applications—Impact of Organizational Learning." *portal: Libraries and the Academy* 2, no. 4 (2002): 665–69.

Bloom, Nicholas. "How Working from Home Works Out." Stanford Institute for Economic Policy Research (SIEPR), June 2020, https://siepr.stanford.edu/research/publications/how-working-home-works-out.

Bolisani, Ettore, and Constantin Bratianu. "The Emergence of Knowledge Management." In *Emergent Knowledge Strategies: Strategic Thinking in Knowledge Management*, edited by Ettore Bolisani and Constantin Bratianu, pp. 23–47. Cham, Switzerland: Springer, 2018.

Broadbent, Marianne. "The Phenomenon of Knowledge Management: What Does It Mean to the Information Profession?" *Information Outlook* 2, no. 5 (1998): 23–34.

Brown, John Seely, Stephen Denning, Katalina Groh, and Laurence Prusak. *Storytelling in organizations: Why Storytelling is Transforming 21st Century Organizations and Management*. Burlington, MA: Butterworth-Heinemann, 2004.

Brown, John Seely, and Paul Duguid. "Balancing Act: How to Capture Knowledge Without Killing It." *Harvard Business Review*, May-June 2000, https://hbr.org/2000/05/balancing-act-how-to-capture-knowledge-without-killing-it.

Brown, John Seely, and Paul Duguid. "Organizational Learning and Communities-of-practice: Toward a Unified View of Working, Learning, and Innovation." *Organization Science* 2, no. 1 (1991): 40–57.

Brown, John Seely, and Paul Duguid. *The Social Life of Information*. Boston: Harvard Business School, 2000.

Bruno, Denise, and Heather Richmond. "The Truth About Taxonomies." *Information Management Journal* 37, no. 2 (2003): 44.

Bukowitz, Wendi R., and Ruth L. Williams. *The Knowledge Management Fieldbook*. Harlow: Pearson Education, 1999.

Bultrini, Leda, Sally H. McCallum, Wilda B. Newman, and Julien Sempéré. *Knowledge Management in Libraries and Organizations* [IFLA Publication 173]. Berlin: De Gruyter Saur, 2016.

Cambridge, Darren, Soren Kaplan, and Vicki Suter. *Community of Practice Design Guide: A Step-by-Step Guide for Designing & Cultivating Communities of Practice in Higher Education*. [n.d.]. https://www.msfhr.org/sites/default/files/Community_of_practice_guide.pdf.

Cameron, Kim. "An Introduction to the Competing Values Framework." Organizational Culture White Paper. Holland, MI: Haworth (2009). https://www.thercfgroup.com/files/resources/an_introduction_to_the_competing_values_framework.pdf.

Cameron, Kim S., and Robert E. Quinn. *Diagnosing and Changing Organizational Culture Based on the Competing Values Framework*, third edition. San Francisco, CA: Jossey-Bass, 2011.

Cervone, H. Frank. "Predicting the Future of Knowledge Management." In *Libraries that Learn: Keys to Managing Organizational Knowledge*, edited by Jennifer Bartlett and Spencer Acadia, pp. 67–76. Chicago: ALA Editions, 2019.

Daland, Hilde. "Managing Knowledge in Academic Libraries. Are We? Should We?" *Liber Quarterly* 26, no. 1 (2016): 28–41.

Dalkir, Kimiz. *Knowledge Management in Theory and Practice*. Third edition. Cambridge, MA: MIT Press, 2017.

Davenport, Thomas H., and Laurence Prusak. *Working Knowledge: How Organizations Manage What They Know*. Boston, MA: Harvard Business School Press, 1998.

Davis, Fred D. "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology." *MIS Quarterly* 13, no. 3 (1989): 319–40.

Denning, Stephen. *The Leader's Guide to Storytelling: Mastering the Art and Discipline of Business Narrative*, second edition. San Francisco: Jossey-Bass, 2011.

Denning, Stephen. *The Springboard: How Storytelling Ignites Action in Knowledge-era Organizations*. Boston: Butterworth-Heinemann, 2001.

Drucker, Peter. *Landmarks of Tomorrow*. New York: Harper, 1959.

Duhon, Bryant. "It's All In Our Heads." *Inform* 12, no. 8 (1998): 8–13.

Eppler, Martin J. "Making Knowledge Visible Through Knowledge Maps: Concepts, Elements, Cases." In *Handbook on Knowledge Management 1*, pp. 189–205. Berlin: Springer, 2004.

Evans, M. Max, Kimiz Dalkir, and Catalin Bidian. "A Holistic View of the Knowledge Life Cycle: The Knowledge Management Cycle (KMC) Model." *Electronic Journal of Knowledge Management* 12, no. 2 (2014): 85–97.

Evener, Julie. "Organizational Learning in Libraries at For-Profit Colleges and Universities: A Mixed-Methods Analysis." *Journal of Library Administration* 59, no. 3 (2019): 258–81.

Farrell, Maggie. "Leadership Reflections: Organizational Culture." *Journal of Library Administration* 58, no. 8 (2018): 861–72.

Forrestal, Valerie. *Knowledge Management for Libraries* [Library Technology Essentials #5]. Lanham, MD: Rowman & Littlefield, 2015.

Garfield, Stan. "10 Ways to Build Expertise in Knowledge Management." LinkedIn, June 9, 2015. https://www.linkedin.com/pulse/10-ways-build-expertise-knowledge-management-stan-garfield.

Garfield, Stan. "15 Knowledge Management Benefits." LinkedIn, August 11, 2014. https://www.linkedin.com/pulse/20140811204044-2500783-15-knowledge-management-benefits.

Garfield, Stan. "Five Reasons for Starting a KM Program." Originally published June 11, 2020, https://stangarfield.medium.com/5-reasons-for-starting-a-km-program-8742683250f0.

Garfield, Stan. "KM Conversation—The Uses and Benefits of Analytics." LUCIDEA, March 12, 2020, https://lucidea.com/blog/km-conversation-the-uses-and-benefits-of-analytics.

Garfield, Stan. "KM Conversations—Using Analytics Part 2: Metrics and Reporting." LUCIDEA, March 5, 2020, https://lucidea.com/blog/km-conversations-using-analytics-part-2-metrics-and-reporting.

Garfield, Stan. "Knowledge Managers and KM Leaders." Originally published September 26, 2016, https://www.linkedin.com/pulse/knowledge-managers-km-leaders-stan-garfield.

Garfield, Stan. *Proven Practices for Promoting a Knowledge Management Program*. Richmond, BC: LUCIDEA Press, 2017.

Gurteen, David. "The Knowledge Café Concept." *Knowledge Café: It's Good to Talk*. Accessed September 14, 2020. http://knowledge.cafe/knowledge-cafe-concept.

Hedden, Heather. *The Accidental Taxonomist*, second edition. Medford, NJ: Information Today, Inc., 2016.

Hislop, Donald, Rachelle Bosua, and Remko Helms. *Knowledge Management in Organizations: A Critical Introduction*. Oxford University Press, 2018.

Hjørland, Birger. 2016. "Knowledge Organization." *Knowledge Organization* 43, no. 6: 475–84. Also available in Hjørland, Birger, ed. *ISKO Encyclopedia of Knowledge Organization*, http://www.isko.org/cyclo/knowledge_organization.

Hodge, Gail. "Knowledge Organization Systems: An Overview." In *Systems of Knowledge Organization for Digital Libraries: Beyond Traditional Authority Files*, pp. 4–9. Washington, DC: Digital Library Federation, 2000. https://www.clir.org/pubs/reports/pub91/1knowledge.

Holloway, Pam. "The Know-How of Knowledge Interviews: Capturing Key Knowledge in Exit Interviews." AboutPeople and Knowledge Harvesting Inc., 2006. http://knowledgetransferalliance.pbworks.com/f/The+Knowledge+Interview+Guide.pdf.

Islam, Md Anwarul, Naresh Kumar Agarwal, and Mitsuru Ikeda. "Effect of knowledge Management on Service Innovation in Academic Libraries." *IFLA Journal* 43, no. 3 (2017): 266–81.

Jain, Priti. "Knowledge Management in Libraries and Information Centers: A Bibliometric Perspective." *Advances in Social Sciences Research Journal* 7, no. 4 (2020): 431–53.

Joudrey, Daniel N., and Arlene G. Taylor. *The Organization of Information*, fourth edition. Santa Barbara, CA: Libraries Unlimited, 2018.

Joy, E. Eldho, and K. P. Vijayakumar. "The Relevance of Communities of Practice (CoP) in University Libraries: A Knowledge Management Perspective." *SRELS Journal of Information Management* 53, no. 5 (2016): 359–65.

Kiesling, Bruce, and Melissa Laning. "We Are Happy To Be Here: The Onboarding Experience in Academic Libraries." *Journal of Library Administration* 56, no. 4 (2016): 381–94.

Kim, Bohyun. "Moving Forward with Digital Disruption: What Big Data, IoT, Synthetic Biology, AI, Blockchain, and Platform Businesses Mean to Libraries." *Library Technology Reports* 56, no. 2 (January/February 2020).

Kiniti, Sarah, and Craig Standing. "Wikis as Knowledge Management Systems: Issues and Challenges." *Journal of Systems and Information Technology* 15, no. 2 (2013): 189–201.

KMWorld Staff. "Looking to the Future of Knowledge Management: 2020 Insight." KMWorld, January 7, 2020, https://www.kmworld.com/Articles/Editorial/Features/Looking-to-the-Future-of-Knowledge-Management-2020-Insight-135756.aspx.

Koenig, Michael E. D. "What is KM? Knowledge Management Explained." *KM World*, January 15, 2018. https://www.kmworld.com/About/What_is_Knowledge_Management.

Koloniari, Maria, and Kostas Fassoulis. "Knowledge Management Perceptions in Academic Libraries." *Journal of Academic Librarianship* 43, no. 2 (2017): 135–42.

Koloniari, Maria, Eftichia Vraimaki, and Kostas Fassoulis. "Factors Affecting Knowledge Creation in Academic Libraries." *Journal of Librarianship and Information Science* 51, no. 1 (2019): 20–33.

Kotter, John P. *Leading Change*. Boston, MA: Harvard Business Review Press, 2012.

Levin, Ginger. "Knowledge Management Success Equals Project Management Success." Paper presented at PMI® Global Congress 2010—North America, Washington, DC. Newtown Square, PA: Project Management Institute. https://www.pmi.org/learning/library/knowledge-management-success-generate-value-6656.

Liebowitz, Jay, and Joanna Paliszkiewicz. "The Next Generation of Knowledge Management: Implications for LIS Educators and Professionals." *Online Journal of Applied Knowledge Management (OJAKM)* 7, no. 2 (2019): 16–28.

Limwichitr, S., J. Broady-Preston, and D. Ellis. "A Discussion of Problems in Implementing Organisational Cultural Change: Developing a Learning Organisation in University Libraries." *Library Review* 64, no. 6/7 (2015): 480–88.

Luan, Jing, and Andreea M. Serban. *Knowledge Management: Building a Competitive Advantage in Higher Education*. San Francisco: Jossey-Bass, 2002.

McAdam, Rodney, and Sandra McCreedy. "A Critical Review of Knowledge Management Models." *The Learning Organization* 6, no. 3 (1999): 91–101.

Milton, Nick. "The Four Community Types." *Knoco Stories: From the Knowledge Management Front-line*, April 19, 2010. http://www.nickmilton.com/2010/04/four-community-types.html.

Milton, Nick, and Patrick Lambe. *The Knowledge Manager's Handbook: A Step-by-Step Guide to Embedding Effective Knowledge Management in Your Organization*. London: Kogan Page Publishers, 2019.

Mohajan, Haradhan. "A Comprehensive Analysis of Knowledge Management Cycles." *Journal of Environmental Treatment Techniques* 4, no. 4 (2016): 121–29. http://jett.dormaj.com/Volume4_Issue4.html.

Murray, Art, and Brian (Bo) Newman. "A Deep Future Approach to KM." KMWorld, July 2 2018, https://www.kmworld.com/Articles/Columns/The-Future-of-the-Future/A-deep-future-approach-to-KM-125947.aspx.

Naisbitt, John. *Megatrends: Ten New Directions Transforming Our Lives*. New York: Warner Books, 1982.

Nazim, Mohammad, and Bhaskar Mukherjee. *Knowledge Management in Libraries: Concepts, Tools and Approaches* [Chandos Information Professional Series]. Cambridge, MA: Chandos Publishing, 2016.

Nonaka, Ikujirō, and Hirotaka Takeuchi. *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. New York: Oxford University Press, 1995.

Nonaka, Ikujirō, and Noboru Konno. "The Concept of '*ba*': Building a Foundation for Knowledge Creation." *California Management Review* 40, no. 3 (1998): 40–54.

Ordoñez, Muriel, and Olivier Serrat. "Disseminating Knowledge Products." In *Knowledge Solutions*, pp. 871–78. Singapore: Springer, 2017.

Ornat, Natalie, and Renee Moorefield. "Process Mapping as an Academic Library Tool: Five Steps to Improve Your Workflow." *College & Research Libraries News* 79, no. 6 (5 June 2018): 302.

Pauleen, David, and G. E. Gorman. *Personal Knowledge Management Individual, Organizational and Social Perspectives*. Burlington, VT: Gower, 2011.

Polanyi, Michael. *The Tacit Dimension*. Chicago: University of Chicago Press, 2009.

Powell, James, and Matthew Hopkins. *A Librarian's Guide to Graphs, Data and the Semantic Web*. Waltham, MA: Chandos Publishing, 2015.

Pressley, Lauren. *Wikis for Libraries*. New York: Neal-Schuman, 2010.
Riggs, Donald E. "A Commitment to Making the Library a Learning Organization." *College and Research Libraries* 58, no. 4 (1997): 297–98.
Rogers, E. M. *Diffusion of Innovations*, fifth edition. New York: The Free Press, 2003.
Roknuzzaman, Md, and Katsuhiro Umemoto. "How Library Practitioners View Knowledge Management in Libraries: A Qualitative Study." *Library Management* 30, no. 8/9 (2009): 643–56.
Rossett, Allison, and Jeannette Gautier-Downes. *A Handbook of Job Aids*. San Francisco: Jossey-Bass/Pfeiffer, 1991.
Roughen, Patrick F., and Deborah E. Swain. "Building Innovative Brands: Cases of Tacit and Explicit Knowledge Conversions in Children's Libraries." *Public Library Quarterly* (2019): 1–21.
Rous, Beth S., and John B. Nash. "Visual Communication as Knowledge Management in Design Thinking." In *The Handbook of Applied Communication Research*, edited by H. Dan O'Hair, Mary John O'Hair, Erin B. Hester, and Sarah Geegan, pp. 233–48. New York: John Wiley, 2020.
Rowe, Sandra F. "Applying Lessons Learned." Paper presented at PMI Global Congress 2008—EMEA, St. Julian's, Malta. Newtown Square, PA: Project Management Institute, 2008. https://www.pmi.org/learning/library/applying-lessons-learned-implement-project-8344.
Rowley, Jennifer E. "The Wisdom Hierarchy: Representations of the DIKW Hierarchy." *Journal of Information Science* 33, no. 2 (April 2007): 163–80.
Ruggles, III, Rudy L. *Knowledge Management Tools*. Newton, MA: Butterworth Heinemann, 1997.
Sarkhel, Juran Krishna. "Strategies of Indigenous Knowledge Management in Libraries." *Qualitative and Quantitative Methods in Libraries* 5, no. 2 (2017): 427–39.
Sarrafzadeh, M., B. Martin, and A. Hazeri. "Knowledge Management and its Potential Applicability for Libraries." *Library Management* 31, no. 3 (2010): 198–212.
Schopflin, Katharine. "Practical Knowledge and Information Management." *Online Searcher* 43, no. 6 (Nov/Dec 2019): 32–35.
Schopflin, Katherine, and Matt Walsh. *Practical Knowledge and Information Management*. London: Facet Publishing, 2019.
Senge, Peter M. *The Fifth Discipline: The Art and Practice of the Learning Organization*. New York: Doubleday, 2006.
Serrat, Olivier. "The Five Whys Technique" (Knowledge Solutions Guides). Manila: Asian Development Bank, February 2009, https://www.adb.org/sites/default/files/publication/27641/five-whys-technique.pdf.
Shpakova, Agnessa, Viktor Dörfler, and Jillian MacBryde. "The Organic Roadmap of Knowledge Management in Innovative Companies." *EURAM 2017* (2017), https://strathprints.strath.ac.uk/61072.
Shropshire, Sandra, Jenny Lynne Semenza, and Regina Koury. "Knowledge Management in Practice in Academic Libraries." *IFLA Journal* 46, no. 1 (2020): 25–33.
Singh, Prabhjot. "Shifting Paradigm of Knowledge Management with 5G Technology." May 15, 2019, https://medium.com/kochartech/shifting-paradigm-of-knowledge-management-with-5g-technology-c01b0cb07323.
Soergel, Dagobert. "The Rise of Ontologies or the Reinvention of Classification." *Journal of the American Society for Information Science* 50, no. 12 (October 1999): 1119–20.
Sole, Deborah, and Daniel Gray Wilson. *Storytelling in Organizations: The Power and Traps of Using Stories to Share Knowledge in Organizations*. Cambridge, MA: LILA, Harvard University Graduate School of Education, 2002.
Sonnenfeld, Jeffrey A., and Maury A. Peiperl. "Staffing Policy as a Strategic Response: A Typology of Career Systems." *The Academy of Management Review* 13, no. 4 (1988): 588–600.
Swiss Agency for Development and Cooperation SDC. "Knowledge Management Toolkit." Berne: SDC, 2009. https://usaidlearninglab.org/sites/default/files/resource/files/SDC-KM-Toolkit.pdf.

Takeuchi, Hirotaka, and Ikujiro Nonaka. "The Knowledge-creating Company." *Harvard Business Review* 85, no. 7/8 (2007): 162–71.

Takeuchi, Hirotaka, and Ikujiro Nonaka. "The New New Product Development Game." *Harvard Business Review* 64, no. 1 (1986): 137–46.

Teng, Sharon, and Suliman Hawamdeh. "Knowledge Management in Public Libraries." *Aslib Proceedings* 54, no. 3 (2002): 188–97.

Vander Wal, Thomas. "Folksonomy Coinage and Definition." Published February 2, 2007, http://vanderwal.net/folksonomy.html.

Vela, Sarah. "Knowledge Management, Diversity, and Professional Hierarchies in Libraries." *Journal of Library Administration* 58, no. 8 (2018): 835–60.

Verburg, Robert M., and J. H. Erik Andriessen. "The Assessment of Communities of Practice." *Knowledge and Process Management: The Journal of Corporate Transformation* 13, no. 1 (January/March 2006): 13–25.

Warren, Tom. "Slack Promised to Kill Email, and Slack Connect Might Just Do It." *The Verge*, June 24, 2020. https://www.theverge.com/2020/6/24/21302050/slack-connect-work-emails-shared-channels-future.

Webb, Sylvia P. *Knowledge Management: Linchpin of Change*. London: Taylor and Francis, 2017.

Wenger, Etienne, Richard A. McDermott, and William Snyder. *Cultivating Communities of Practice: A Guide to Managing Knowledge*. Boston, MA: Harvard Business School, 2002.

Wenger-Trayner, Etienne, and Beverly Wenger-Trayner. "Introduction to Communities of Practice: A Brief Overview of the Concept and Its Uses." 2015, https://wenger-trayner.com/introduction-to-communities-of-practice.

Wiig, Karl M. "Knowledge Management: An Introduction and Perspective." *Journal of Knowledge Management* 1, no. 1 (1997): 6–14.

Willmore, Joe. *Job Aids Basics*, second edition. Alexandria, VA: Association for Talent Development Press, 2018.

Wilson, T. D. "The Nonsense of Knowledge Management." *Information Research* 8, no. 1 (2002): 144–54.

Wilson, T. D. "The Nonsense of Knowledge Management Revisited." In *Introducing Information Management: An Information Research Reader*, edited by Elena Maceviciute and T. D. Wilson, pp. 151–64. London, UK: Facet Publishing, 2002.

Zalaznick, Matt. "How AI in Libraries Provides Answers on Campus." *University Business*, December 17, 2019, https://universitybusiness.com/artificial-intelligence-ai-in-libraries-answers-library-chatbot.

Zlatos, Christy. "How Are They Faring? Knowledge Management Practices in Support of Senior Librarians in Association of Research Libraries (ARL) Member Libraries." Paper presented at *Satellite Meeting—Knowledge Management Section: New Directions in Knowledge Management, Wrocław, Poland, 2017*. http://library.ifla.org/1720/1/S04-2017-zlatos-en.pdf.

Index

Page references for figures are italicized.

About the Author

Jennifer A. Bartlett is the interim associate dean for teaching, learning, and research at the University of Kentucky Libraries. She has worked in academic and public libraries for over twenty years and focuses on public services and academic library management and administration. She is a book review columnist for the publication *Online Searcher* and the co-editor of *Practical Academic Librarianship*. She has also served as a member of the International Federation of Library Associations Knowledge Management Standing Committee, and is the co-editor (with Spencer Acadia) of *Libraries that Learn: Keys to Managing Organizational Knowledge* (2019).