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ABSTRACT

This monograph presents a set of emerging theories, along with current practices and recommendations, that focus on the effective management of knowledge in educational settings. It provides a set of simple designs for linking people, processes, and technologies, and discusses how organizations can promote policies and practices that help people share and manage knowledge. The details in the monograph are drawn from discussions at the Knowledge Management in Education Summit held in December 2002. The aim of the monograph is to build from the insights of presenters and participants at the summit in an effort to share the most recent understandings about knowledge management in education. It describes knowledge management as a set of practices that helps to improve the use and sharing of data and information in decision-making. Following a discussion on improving accountability in education, the monograph addresses technology culture and information culture; provides practical approaches to knowledge management; discusses the practical aspects of knowledge management; and offers recommendations for those interested in promoting the use of knowledge management practices in education. (Contains a list of 34 references and further resources.) (WFA)

Knowledge Management in Education: Defining the Landscape.

Lisa A. Petrides
Thad R. Nodine

March 2003

KNOWLEDGE MANAGEMENT IN EDUCATION:

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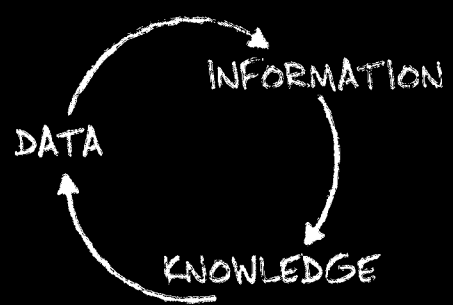

By Lisa A. Petrides and Thad R. Nodine
The Institute for the Study of Knowledge Management in Education
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KNOWLEDGE MANAGEMENT IN EDUCATION:
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FOREWORD

Knowledge Management in Education is a monograph that makes eminent sense—a wonderful combination of good intuition, practical know-how, and a feel for what might be best described as a set of emerging theories focusing on the effective management of knowledge in educational institutions. Along the way, *Knowledge Management in Education* supplies us with a framework for understanding how good assessment practice, in fact, depends on effective information management.

In part, what the authors give us is a language for becoming more adept at the management of knowledge in our lives as both teachers and scholars. And in part, what we are offered is a set of simple schematics for linking people, processes, and technologies–for understanding "that people, not systems, manage knowledge." The authors help us to understand how organizations can promote policies and practices that help people share and manage knowledge. By putting intuition into practice, knowledge management builds upon collegial and professional teamwork by actively engaging people in sharing with others what they know and what they are learning.

Finally, *Knowledge Management in Education* reminds us that education is truly a seamless endeavor. Much of what the authors have learned derives from both primary and secondary education as well as from higher education. What their monograph demonstrates is just how useful and feasible it is to apply knowledge management practices to both K-12 and collegiate environments.

The monograph draws on the research that led to the establishment of the Half Moon Bay, California-based Institute for the Study of Knowledge Management in Education (ISKME) and on the discussions with leaders and experts attending the first ever Knowledge Management in Education Summit in December 2002. The meeting was co-sponsored by ISKME and the San Francisco Bay Area and Silicon Valley Knowledge Management Cluster.

The monograph identifies the landscape and provides a road map for leaders to follow for many years to come. I hope that the analysis and recommendations in these pages will launch further debate and prompt practical steps to help school systems, colleges, and universities improve their efficiency, enhance their decision-making capacity, and ultimately increase their overall effectiveness.

ROBERT ZEMSKY
CHAIR AND CEO, THE LEARNING ALLIANCE FOR HIGHER EDUCATION
PROFESSOR, THE UNIVERSITY OF PENNSYLVANIA

PREFACE

In December 2002, a group of 40 professionals from K-12 schools, colleges, universities, and business participated in the first professional gathering in the United States focusing on the role of knowledge management in education. Held in San Francisco, California, the Knowledge Management in Education Summit, as it was called, was co-sponsored by the San Francisco Bay Area and Silicon Valley Knowledge Management Cluster, and the Institute for the Study of Knowledge Management in Education (ISKME).

For two days, participants at the Summit discussed the opportunities and challenges faced by those working to improve the use and sharing of information in education through practices that have come to be known as knowledge management. As might be expected in a field so new, there was much engagement—and spirited agreement and disagreement—about the key elements of knowledge management, the most effective ways to implement its practices, and the primary challenges that lie ahead. There was widespread consensus, however, about the overall prospects that knowledge management holds for educators: more effective decision-making about work processes, program improvement, and, most importantly, student outcomes.

This monograph, drawn from the dynamic discussions at the Knowledge Management in Education Summit, seeks to build from the insights of presenters and participants, in an effort to share with a wider community the most recent understandings about knowledge management in education today. Both ISKME and the Knowledge Management Cluster are grateful to the many participants at the Summit who shared their experiences and perspectives. We are also indebted to Sun Microsystems, whose generous support has enabled the creation and dissemination of this monograph.

Although this paper reflects the insights of many, final responsibility for the opinions represented rests solely with its authors. We welcome the feedback and perspectives of readers and hope this monograph serves as a springboard for future discussion and dialogue.

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MARCH 2003

ACKNOWLEDGEMENTS

The Institute for the Study of Knowledge Management in Education (ISKME) is grateful to many people for supporting the creation of this monograph. First, we would like to thank Art Pasquinelli at Sun Microsystems, whose support made the development of this monograph possible. We would also like to express our appreciation to Phoenix Wang, who played an instrumental role in enabling this monograph to come into being. John Maloney of the San Francisco Bay Area and Silicon Valley Knowledge Management Cluster (the KM Cluster) played a key leadership role in co-sponsoring the Knowledge Management in Education Summit. The KM Cluster (www.kmcluster.com), a free, member-based community of practice established in 1998, conducts quarterly events throughout the San Francisco Bay Area and Silicon Valley, focusing on knowledge management and electronic collaboration.

We would like to thank the participants and presenters at the Knowledge Management Summit, whose lively and thought-provoking conversations laid the groundwork for the monograph. Finally, we would like to thank the many reviewers whose comments and feedback on the monograph have helped us to build a foundation to support this new field of knowledge management in education: John Cherniavsky, Susan Zahra Guiney, Bobbi Kurshan, Kathy Kyne, James Maddirala, John Maloney, Kris Mayer, Sara McClelland, Harriet Robles, Andreea Serban, Joseph Stevenson, Chris Thorn, Arthur Tisi, and Tim Wilmot.

INTRODUCTION

Information practices and learning strategies known as knowledge management are gaining acceptance in the field of education. At the most basic level, knowledge management can be described as a set of practices that helps to improve the use and sharing of data and information in decision-making. Several educational institutions across the country have recently received grants to implement knowledge management practices. Cuyahoga Community College in Cleveland, Ohio–perhaps the first educational organization in the country to receive a grant for knowledge management–received matching funding from a foundation in Cleveland to hire a chief knowledge officer to improve information sharing throughout the organization. Jackson State University, in Jackson, Mississippi, received a Title III grant from the U.S. Department of Education to hire a vice president for knowledge management systems and support staff, and to implement technologies that improve information flow. Foothill De Anza Community College District, in Cupertino, California, received a FIPSE (Fund for the Improvement of Postsecondary Education) grant to implement knowledge management practices to enhance evaluation of outcomes. And the Model Secondary School Project has received funding from the Bill and Melinda Gates Foundation to implement, in several urban high schools nationwide, student learning strategies that build from a knowledge management framework.

THE KNOWLEDGE MANAGEMENT IN EDUCATION SUMMIT

The information, examples, and descriptions of knowledge management practices found in this report have benefited from the rich discussions that took place at the Knowledge Management in Education Summit, held in December 2002 in San Francisco, California. The Summit, which was the first professional gathering in the United States focusing on the role of knowledge management in education, brought together 40 professionals from K-12 schools, colleges, universities, and business. It was co-sponsored by the San Francisco Bay Area and Silicon Valley Knowledge Management Cluster, and the Institute for the Study of Knowledge Management in Education (ISKME).

Meanwhile, several foundations and other major funding agencies of educational institutions are interested in knowledge management both internally and externally. The David and Lucille Packard Foundation has funded a research project on the use of knowledge as a philanthropic resource. The W. K. Kellogg Foundation has been implementing an initiative to capture and organize their internal organizational knowledge. The National Science Foundation is seeking to use the practices of knowledge management to better understand the long-term effects of its funding over time, to enhance information sharing across its internal divisions, and to improve the way grantees evaluate and share information about their outcomes.

Given this growing interest among funding organizations and agencies in the practices of knowledge management, it is fair to raise two simple questions that are not quite so simple to answer: What is knowledge management, and what challenges and opportunities does it offer for education?

THE DRIVE FOR IMPROVEMENT AND ACCOUNTABILITY IN EDUCATION

State and federal funding for education at all levels is growing tighter, while at the same time, external pressures for measurable improvements in K–12 education show no abatement, and demands for improved information about student outcomes in higher education appear to be on the upswing (Miller, 2002; Ewell, 2002). Meanwhile, schools, colleges, and universities are asking themselves difficult questions about internal accountability: Which programs and services are integral to our mission? How could we better meet the needs of our students? What student interventions are most effective? How can we improve student outcomes?

Which programs and services are integral to our mission? How could we better meet the needs of our students? What student interventions are most effective? How can we improve student outcomes?

In this climate of increased external and internal pressures for improvement, the information needs of school teachers and administrators, college faculty, and administrative staff have never been greater–yet the perils of information overload are real. School administrators are forced to adapt to external demands such as statewide assessments and school report cards, often struggling to produce the required data from their current information systems. Even more than standardized tests, having good, qualified teachers, is crucial to "leaving no child behind"–and that requires changes to be made in the way people work within educational institutions. This includes the need for ongoing and effective professional development. At the same time, teachers are required to remain abreast of a wide variety of changing standards, curricula, and pedagogical methods. Security and health procedures are increasingly complex and cumbersome. Yet there are fewer in-service days, the costs of taking teachers out of the classroom are rising, and the costs of copying and distributing materials are likewise increasing.

At the college and university level, faculty face an expanding universe of information pertinent to their field, and it is difficult to remain abreast of these developments. In these tight fiscal conditions, college and university budgets are limiting staff and faculty development, and travel time to conferences. Meanwhile, the purview of college faculty is expanding. They are being asked to become more involved in K–16 issues, standardized testing, and the reform movement in K–12 schools. They are also being asked to teach a much wider proportion of the population, to understand which teaching strategies are most successful with which demographic groups, and to be more involved and persistent about student assessment issues–from college entrance and placement to value-added issues related to the degree. Many innovative faculty members feel burdened by the cumbersome processes required for curriculum development, program approval, and student assessment. They often have access only to very rudimentary information about

trends in student outcomes, particularly by demographic group or other specific criteria. And in many cases, they feel removed from the information-gathering efforts and the management decisions of the college or university.

In light of the external and internal demands for accountability and improvement in education, combined with the many demands on the time of teachers, faculty, and staff, educational institutions and systems at all levels are seeking to understand how they can more effectively collect, disseminate, and share information. As organizations dedicated to education, moreover, they understand only too well that knowledge is their key asset–and many educational institutions are seeking better ways to transform that knowledge into effective decision-making and action.

TECHNOLOGY CULTURE AND INFORMATION CULTURE

Educators have been using information management tools for years to improve the efficiency of administrative services and the effectiveness of academic programs. Historically, the practice of information management within education has focused primarily on the technical systems that are implemented to collect, organize, and disseminate the organization's expanse of quantitative data in such areas as finance, accounting, and enrollment planning, to name just a few. As more state legislatures, trustees, administrators, teachers, faculty members, parents, and students have begun to seek better outcomes from education–or at least to have a better sense of what current outcomes measure, in the case of higher education–many educational institutions and systems have invested in technology in order to generate data that can provide answers to those seeking improved performance.

Not surprisingly, those institutions that are investing in technology are finding that technology implementation does not necessarily improve decision-making, nor does it necessarily improve outcomes. For instance, some colleges have been able to develop expensive and sophisticated technological systems that allow departments to share information in real time via Web-based systems. Yet at some of these institutions, faculty members do not trust the data generated, administrators in decision-making capacities are not using the system, and executive leaders have used the results to cut back departments, effectively sending the message that the new information system will be used to punish programs rather than to seek improvements. Similar situations have occurred in schools, where teachers are often the last to know about overall student trends and are typically not provided with ample opportunities to meet with their colleagues to explore findings and develop promising solutions. Unfortunately, many schools, colleges, and universities are pouring millions of dollars into information technology without considering how to effectively integrate those technologies into shared decision-making processes to improve academics, operations, and planning.

Some Common Barriers to Effective Information Use

Most educational institutions have some type of information system in place, but several barriers make it difficult to use and share data and information effectively. Some of these barriers include:

1. **Lack of staff.** School, school district, and college personnel do not always have enough qualified staff to provide proper analysis of raw data.

2. **Data collection not uniform.** Various units and departments within educational institutions often use different software, definitions, and other means to collect and organize data, which causes significant problems in analysis and use.

3. **Lack of leadership.** Many schools, school districts, colleges, and postsecondary systems face high turnover rates among upper-level managers, which makes it difficult for them to remain consistent in using and sharing data and information.

4. **Lack of integration of technology.** Many teachers, faculty, and staff adopt a "hands-off" approach to technology issues, leaving them to "experts" who might know a lot about hardware but very little about the information needs of people in the organization.

5. **Unclear priorities.** Information collection and analysis is often isolated and not clearly related to the mission of the organization.

6. **Distrust of data use.** Many teachers and faculty have witnessed the manipulation of data, and are wary of any process that would have their work, class outcomes, or other activities subject to institutional "bean counting."

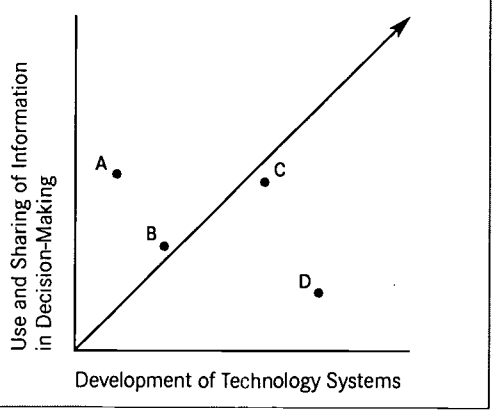
On the other hand, many schools, colleges, and universities are farther along in developing an "information culture," yet lag behind in their "technology culture." For example, some school districts may be struggling to get by with older mainframes and a patchwork of software applications that do not "speak" to each other. Yet their administrators and teachers are asked to work in teams to develop effective standards for each grade level that are in line with state standards, and to develop local ways–beyond standardized test scores–to assess student progress. Meanwhile, teachers within schools are meeting together to discuss the progress of individual students and to address problem areas through in-school and after-school programming–but without access to a technological infrastructure that could provide basic feedback concerning the effectiveness of their interventions. At the college level, faculty members at some institutions have developed strong curriculum development processes, interdepartmental assessments of student portfolios, or program review boards–while having little or no access to timely information about their students or about the success rates of particular student groups.

Many schools, colleges, and universities are pouring millions of dollars into information technology without considering how to effectively integrate those technologies into shared decision-making processes to improve academics, operations, and planning.

One of the primary benefits of knowledge management is that it actively addresses both the technology culture and the information culture at an institution, and seeks to advance both simultaneously. Both the technology culture and the information culture are unique to the organizational context of the school, college, or university. The technology culture can be thought of as the institution's use and integration of technology in planning, development, operations, and assessment. For instance: Do teachers have access to computers in their classroom? Can they track detailed, day-to-day assessments in routine ways? Do academic counselors have online access to previous student interventions? Are rank-and-file staff encouraged and provided with training to learn how to use new software and hardware?

The information culture, on the other hand, is distinct from what has become known as "information systems." It involves information politics and processes for sharing information within and across the organization. For example: Who possesses information? Are there incentives for and effective means for sharing vital information to improve performance? Does the principal at the school use data in determining the need for specific programs and interventions? Does the president of the college ask for relevant data and information when a dean requests a new program or an increased budget? Are new teachers, faculty, and staff provided with the information they need to perform their jobs?

FIGURE 1: BALANCING INFORMATION CULTURE AND TECHNOLOGY CULTURE



Consider, for instance, the four institutions depicted in Figure 1. Institutions A and D have significant gaps between their use of technology and their use of information. Institution A might be a middle school that has developed effective collaborations among teachers and staff and that has specific processes for sharing information among teachers about particular students. However, its technological systems are out of date, its teachers do not know how to get access to student trend data, its school system offers very little computer training, and there aren't enough computers for full-class activities.

Institution D, on the other hand, might be a university that has a very sophisticated technological system and plenty of computer training opportunities for staff and faculty. Yet deans do not share information about their departments except when pressed from above, and that rarely happens. Faculty members meet once a month in departmental meetings that are usually unproductive. Faculty senate meetings focus primarily on maintaining faculty rights and privileges. In terms of writing, publishing, and teaching, faculty are often on their own. Plenty of information could be generated by the information system about student course-taking patterns and outcomes, if someone were to ask for the data—but there are few internal incentives to do so.

Institutions B and C, when compared to either A or D, have a much closer balance between their use and sharing of information in decision-making and their development of technological systems. Institution C is farther along the continuum than institution B. Although institution A is farther along than C in using and sharing information, and D is farther along than C in developing a useful technological system, institution C is most likely reaping better administrative results and student outcomes because its technology and information culture are in balance. Faculty and staff committees are not frustrated by lack of timely data; technology is being used as a tool that can provide feedback on results, rather than being seen as an end in itself.

In many cases, moreover, institution B is probably better poised than either A or D to move forward in addressing its challenges. Institutions that have developed very strong technology or information cultures have often done so at the expense of the other, and there is considerable institutional backing for the systems in place. Creating the opportunities for organizational change within that kind of context is necessary, but difficult.

A KNOWLEDGE MANAGEMENT APPROACH.

Educational organizations—whether they be schools, colleges, universities, or systems—are not machines. That is, the machine model for organizational development, which describes various inputs being transformed by specific processes into outputs, is not particularly accurate or useful in understanding the complex ways that educational organizations function. It is much more useful to consider educational organizations as adaptive, social systems where people cooperate to achieve common purposes. Organisms recreate themselves through the transformation of matter and energy. Just as ecosystems rejuvenate themselves through cycles and seasons, educational organizations grow and revitalize themselves through the knowledge they create, their processes for passing that knowledge on to others, and the exchanges and relationships that they foster among people.

Knowledge management brings together three core organizational resources—people, processes, and technologies—to enable the organization to use and share information more effectively.

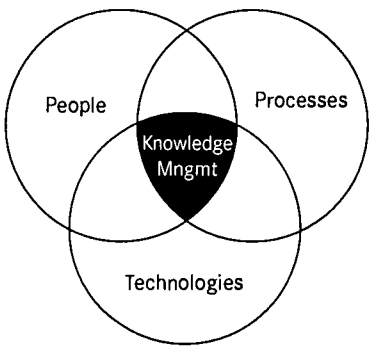
As organizations committed to educational missions, schools, colleges, and universities are charged with passing along knowledge to students (through exchanges between students and teachers, through exchanges between students and books or other resources, and through exchanges among students themselves).[1] As organizations, however, educational institutions face similar challenges that many other nonprofit and for-profit organizations face as they seek to share information and knowledge among people within the organization. Technical systems can help to generate data and information. To facilitate the sharing of information and knowledge, however, educational organizations have begun to look beyond technical capabilities and to focus on their overall information environment: human resource policies, information politics, group dynamics, departmental silos, processes for information exchange, and the organization's incentive structure. It is also important to understand the specifics of the organizational context, and the dynamics and pressures of the external environment, such as district-wide or system-wide governance, parent and community support, and state and federal oversight (Davenport, 1997).

Knowledge management builds upon a human-centered approach that views organizations as complex systems that spring from the unique organizational contexts in which they are developed. There is no single, accepted definition of knowledge management—the field is too new and the term remains a contested topic of debate. Considered broadly, however, knowledge management in education can be thought of as a framework or an approach that enables people within an organization to develop a set of practices to collect information and share what they know, leading

[1] There are, of course, many other important roles for educational institutions, such as research and community service.

to action that improves services and outcomes. In seeking to balance an organization's information culture and its technology culture (see Figure 1), knowledge management brings together three core organizational resources–people, processes, and technologies–to enable the organization to use and share information more effectively (see Figure 2).

FIGURE 2: THE KEY REALMS OF KNOWLEDGE MANAGEMENT



PEOPLE

People, not systems, manage knowledge. But organizations can promote policies and practices that help people share and manage knowledge. Knowledge management builds upon collegial and professional teamwork by actively engaging people at many organizational levels in sharing with others what they know, and what they are learning. In many schools, colleges, and universities, working groups of staff and teachers from across departments have come together by common need and exchange information because it makes their jobs more rewarding and their work more effective. These groups build relationships, trust, and expertise; they create a shared repertoire of resources, tools, and artifacts that support future learning. In many organizations, these kinds of informal, self-sustaining collegial bodies–such as informal research and study groups, and brown bag lunches–have been around for a long time. They are often at the center of innovation and energy, sometimes despite–and sometimes because of–a lack of acknowledgment or attention from above. Knowledge management seeks to foster the development and utility of these "communities of practice" (CoPs), while maintaining their "user" control.

PROCESSES

Formal and informal administrative procedures, curriculum development processes, information sharing patterns, information silos, salary incentives, and many other work practices affect information flow within every organization. These processes exist whether or not people choose to participate in or pay attention to them. Knowledge assessments, audits, maps, and improvement plans help to establish robust processes that enable people to get the information they need, when they need it, as well as to share it with others who may benefit from it. In highlighting patterns of information use that might not be obvious otherwise, knowledge management practices help to promote those processes that lead to more informed decision-making.

TECHNOLOGY AND INFORMATION SYSTEMS

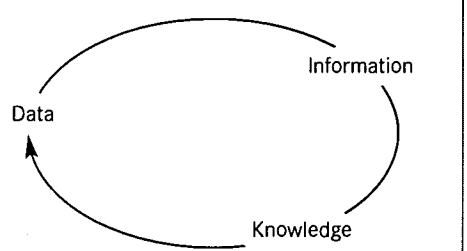
Technology needs to be recast not as a cost center that puts a strain on limited resources for schools or colleges, nor as a driver of knowledge management, but as a vital and necessary contributor to the health and effectiveness of the organization. The most effective technologies within a knowledge management framework are broadly accessible to target user groups and promote the tracking and exchange of useful information across departments.

In short, knowledge management is an approach that can inform a wide range of practices within, and can shape the values of, an educational organization. Integrating knowledge management requires understanding how to align, within a specific organizational context, three core resources—people, processes, and technology—any of which can be ignored, but only at great cost to the organization and to those within it. Those organizations that invest in new technology without understanding their existing organizational and human patterns of information sharing are not reaching the potential of their investment. Likewise, those that invest heavily in information-sharing processes but do not have effective means for tracking student outcomes are tying the hands of their employees. Improved decision-making, enhanced creativity and innovation, and stronger lines of lateral, as well as vertical, communication are important outgrowths of knowledge management. For educational institutions, however, the full promise of knowledge management lies in its opportunities for improving student outcomes. The ultimate benefit of this, of course, is to students, teachers, and the education community as a whole.

THE KNOWLEDGE MANAGEMENT CONTINUUM

The practices of knowledge management can provide a framework for understanding how and where to focus energy to improve educational outcomes, given the goals and mission of the organization. In this process, the data-information-knowledge continuum provides an iterative cycle that continually connects back to and helps people focus on outcomes (see Figure 3).

FIGURE 3: THE KNOWLEDGE MANAGEMENT CONTINUUM



Data can be thought of as the expanse of facts or quantitative measures available to and about an organization. Data become information when humans place them in context through interpretation that might seek to highlight, for instance, patterns, causes, or relationships. Reports and strategic planning documents are examples of information: data placed in context. Information can be shared or hoarded. Knowledge, on the other hand, is the understanding that develops as people react to and use the information that is available to them. Knowledge is both individual and organizational. It can be described as a belief that is justified through discussion, experience, and perhaps action. Knowledge can be shared with others by exchanging information in appropriate contexts. Organizations that establish effective forums and processes for sharing knowledge also tend to excel at bringing new employees "up to speed." On the other hand, organizational knowledge can be lost when people leave the organization and take what they know with them.[2]

The data-information-knowledge continuum is a crucial component of knowledge management practices because it emphasizes a feedback mechanism that may either produce an action step or a reassessment of the kinds of information needed to take effective action. This iterative cycle connects action-based knowledge back to the reevaluation of outcomes. As a result, it is also useful in assessing where an organization stands in its practice of knowledge management in various areas. For instance:

1. DATA

   Do decision-makers ask for pertinent data and are the available technologies sufficient for delivering those data? Routinely asking for pertinent data is the first key step in making important decisions that shape administrative services or academic programs.

2. INFORMATION

   Does the organization regularly transform available data into useful information through interpretation and presentation, given the crucial circumstances of organizational context? Is that information disseminated broadly and in user-friendly formats to those who need it?

[2] Much has been written about tacit versus explicit knowledge, but explicit knowledge is but another name for information: knowledge that is expressed to another, usually in written form. Tacit knowledge is better described as implicit knowledge—that is, knowledge that could be, but has not yet been, expressed formally or explicitly. An example of implicit knowledge includes understanding who to approach to "get things done." One of the key organizational challenges is determining how to recognize and share implicit knowledge, so that it becomes more explicit.

3. KNOWLEDGE

Are there effective means for engaging appropriate people in discussion (both online and in-person) to further refine, synthesize, and reflect on the information and probe for deeper understanding? Sometimes, this step leads directly back to a new round of data accumulation and interpretation. At other times, this step leads to the articulation of an action plan and the creation of outcome measures that, in turn, require new data probes in order to measure and understand outcomes. Essentially, knowledge is the application of information to decision-making or action.

Organizations that employ strategies for collecting, handling and distributing data are engaged in data management, which is also commonly known as data-driven decision-making. These organizations take the additional step to knowledge management when they regularly engage a cross-section of key stakeholders in authentic dialogue and action to improve outcomes by examining and improving the effects of proposed interventions. As examples of knowledge management approaches, consider the following:

A HIGH SCHOOL EXAMPLE

An assistant principal of a large high school notices that student suspensions are occurring more frequently. She talks to the principal, and the two decide to design a system to track suspension data. They include the school guidance team and two teachers in their discussions, and the team brainstorms the variables they want to track, such as name, gender, race, incident, how many occurrences, and type of incident. While discussing specific student cases, the team begins to think about where certain incidents have taken place, the time of day, and which teachers and students have been involved. The team decides that it might be important to gather these additional data as well. After implementing the data-gathering system, the team notices that a first-year teacher in need of student management skills is involved in many of the instances and that the names of a few students appear regularly during a particular period of the day. This information, placed in the context of the school environment, leads the team to a new understanding (in this case regarding a new teacher and a few particular students) and to act and negotiate the situation through a supportive intervention. The team decides to extend the tracking system's function to include student attendance as well.

A COLLEGE EXAMPLE

Two college teachers, one in biology and the other English, find out that each has begun developing and implementing a community-involvement component to a course. The two begin meeting to share information about their experiences. Within a month, two other faculty members hear about their efforts and join in the meetings. The administration looks favorably on these kinds of cross-departmental groups, and provides technical support to enable the team to create a Web site and a user's group dedicated to their work. Through the Web site, direct emails, announcements at faculty meetings, and other means, the faculty members publicize the meetings, and over the next six months they are joined by at least one faculty member in almost every department. Several faculty members attend the meetings because they would like ideas on how to include such a component in their courses. Teaching plans and syllabi are posted on the Web site.

Through their discussions during the year, the teachers agree that these courses are popular among students, but enrollment has remained only moderate because of the additional time required of students to complete the community-involvement elements of the course. Yet the payoffs have been significant: anecdotally, the teachers have seen their students develop deeper understanding of the issues. The teachers would like to add credit hours to their courses, but there are procedural difficulties in doing so. In preparing their case for additional credit hours, they decide to collect information about the number of student hours required and the relationship between student enrollment in these courses and various elements of persistence and completion. They find that students who take these courses spend almost twice as many hours as they do in similar courses without the community requirement. They also find that students who take these courses are more likely than other students to complete their major. By this time, the teachers are making plans to apply for several grants.

The matrix presented in Figure 4 provides a few additional examples of the knowledge management approach along the data–information–knowledge continuum, but it is by no means exhaustive, either in the list of functions provided or in the ways these functions can be informed by a knowledge management approach.

FIGURE 4: A FEW EXAMPLES OF KNOWLEDGE MANAGEMENT APPROACHES, BY FUNCTION

FUNCTION	DATA	INFORMATION	KNOWLEDGE
MISSION	Data are collected about community needs and demographics, and about overall goals that lead to well-articulated institutional mission.	Administrative and teacher/faculty teams assess effectiveness of programs in reaching institutional mission.	District/system trustees openly discuss requests for new programs and other needs in relation to mission-related data and information.
STRATEGIC PLANNING	Information system collects outcomes data based on objectives that are connected to major goal areas.	Information about outcomes is distributed to program areas for review and discussion.	Teacher/faculty/staff teams assess the data and information, and determine needs for intervention and additional data/information.
Two Examples from K-12 Schools			
INTEGRATING TECHNOLOGY INTO THE CURRICULUM	Teachers meet by grade level to test various software applications that are age-appropriate and subject-specific. Each grade-level team creates a rubric that outlines what they expect the technology to do for them and the children.	The principal, a member from each grade-level team, and the technology support staff put a plan together to modify the computer lab schedule, purchase and install new software, and offer staff development to meet the needs raised during the sessions with the teachers.	This school-wide team meets bi-monthly to discuss and assess the effectiveness of the technology implementations and makes changes accordingly.
STUDENT LEARNING	Web-based interactive worksheets provide ongoing assessments of student learning.	Based on assessment results, teachers begin to revise the timeline of classroom activities to better account for student needs.	Teachers meet collaboratively and learn that a handful of children in each class need additional reading skills. They brainstorm effective interventions and take their proposal to the principal.
Two Examples from Colleges and Universities			
ACADEMIC COUNSELING	During the first semester student plans are electronically entered into a database and available to the student as well as counselor via a Web portal.	The plans are updated by the student and/or counselor at least annually and interventions (tutoring, etc.) are recorded.	Counselors share aggregate as well as individual information and strategies with teachers based on the findings in the database regarding the effectiveness of interventions.
ENROLLMENT PLANNING	Deans have access to real-time, daily head counts by section. Students enroll electronically, without waiting in line.	Deans work with faculty members to offer more sections as some of them fill up.	Faculty, deans, and executive staff meet to discuss long-term enrollment trends and the availability of courses to meet changing community needs.

WHAT WE KNOW SO FAR: PRACTICAL ASPECTS OF KNOWLEDGE MANAGEMENT

In a field so new, there is much agreement–and disagreement–about the key elements of knowledge management and the most effective ways to implement its practices. But there are also many lessons learned that hold promise for those who are seeking to promote the use of knowledge management practices in their school, college, university, or educational system. The following section presents what we have learned so far in the implementation of knowledge management in the field of education. It is based on the spirited discussions that took place at the Knowledge Management in Education Summit in December 2002, and illustrates some of the practices and challenges that lie ahead for K–16 education organizations. As with many of the previous examples and descriptions, there were varying levels of agreement at the Summit as to the most effective approaches to knowledge management. However, there was widespread consensus about the overall prospects that knowledge management holds for educators: more effective decision-making about work processes, program improvement, and, most importantly, student outcomes.

WHAT WE KNOW SO FAR: PRACTICAL SUGGESTIONS FOR IMPLEMENTATION

1. Build on the vocabulary and practices of the organizational context.
2. Focus on people and their needs, and go where the energy is.
3. Make explicit the work processes and patterns of information flow.
4. Make sure technology is on board, but do not let it steer the ship.
5. Improve student learning and outcomes; don't settle for procedural tinkering.
6. Expect an iterative process that endures over time.
7. Consider the larger picture.

Providing others with experiences in using and sharing data and information in decision-making is itself an educational process that takes time.

1. BUILD ON THE VOCABULARY AND PRACTICES OF THE ORGANIZATIONAL CONTEXT

Start small and build on successes. In most organizations, not everyone accepts the value of using data and information in decision-making. In fact, many people have direct experience with those who manipulate data for their own purposes, or who use it as a source of power. Providing others with experiences in using and sharing data and information in decision-making is itself an educational process that takes time. The more effective efforts, not surprisingly, are undertaken with an understanding of unique organizational contexts, as well as the risks and opportunities involved. Those who undertake this process create trust by building allies wherever possible, by being rigorous in assessing the appropriateness and accuracy of data that are collected, by using data and information in positive ways, and by engaging in open-ended discussions rather than insisting on particular ends.

At many levels of education, people have begun implementing some of the practices of knowledge management, often without reference to the term knowledge management. Two higher education institutions, however, now have positions responsible for knowledge management efforts. Early on, these staff positions met some resistance from several people in the organization who, not surprisingly, considered themselves to be purveyors of knowledge. Many bywords and practices within the education world—collegiality, collaboration, and teamwork, to name just a few—can be used effectively to build support for knowledge management efforts. Selecting the appropriate terms to describe the practices of knowledge management to others is important and can build both from the organizational context and from the organization's vision.

Knowledge management efforts that lead to success garner attention, yet people are suspicious of the value of such efforts if an area is selected for analysis and problem-solving simply because the solution can be predetermined with relatively shallow top-down collaboration. Often, buy-in will be most effective when there is clearly a dysfunctional area of the enterprise that needs attention and that involves a degree of institutional risk in tackling it. Good examples might be a lagging area of test scores in an elementary school, or the inability of deans to get timely and accurate information about class sizes and enrollments. In such cases, incremental yet clear criteria for success can help to generate ongoing teacher, faculty, and staff support for more ambitious goals.

2. FOCUS ON PEOPLE AND THEIR NEEDS, AND GO WHERE THE ENERGY IS

The power of knowledge management, particularly when compared to other change efforts, is that it maintains focus on people—on faculty, staff, and students—and their needs. There is no quick fix for managing knowledge in an organization. And there is no single system, no matter how complex and integrated, that can manage knowledge. In the final analysis, it is people who manage knowledge, and it is the role of organizations to promote policies and practices that help people want to share and manage knowledge effectively.

Knowledge management is more likely to take root in communities that need to share knowledge to realize their goals, that have some information-sharing norms in place, and that have a leader who is willing to sponsor the effort.

For that to happen, people within the organization must recognize a value in involving themselves in the practices of knowledge management. That is, even though the prime motivator for educators is, most often, their desire to be help students be as successful as possible, there must be something in it for educators. Implementing knowledge management in organizations is more difficult when non-collaboration is the norm, or when data and information infrastructures are under-funded or otherwise have a diminished capacity. Knowledge management is more likely to take root in communities that need to share knowledge to realize their goals, that have some information-sharing norms in place, and that have a leader who is willing to sponsor the effort.

In one example, a group of middle school teachers who felt powerless about their curriculum development process began meeting on their own to discuss ways to improve it. Some of the problems identified included gaps and overlap in the curriculum. They found a curriculum tool that had been used in another school district to review its entire K-12 curriculum. They modified the curriculum tool and then began to share their findings with other middle school teachers through email. Once other teachers joined the group, they decided to develop subcommittees to look at single areas of content across grade levels. The social studies teachers worked independently as a team, inviting 5th grade teachers via email to discuss, for example, the material they covered on explorers. Together they discussed which explorers should be taught in which grade, how their decisions fit with state standards, and a range of options for assessing students on the material covered. The principal at each school was brought into the discussions and kept appraised of decisions through emails. The teachers invited the district assistant superintendent for curriculum to several key meetings to get buy-in. Based on these series of discussions, the curriculum was adjusted to eliminate duplication, to include material that had been omitted, and, most importantly, to strengthen teaching.

Along the way, the teachers had already been establishing an online track record of resource notations for the curriculum and connections to the state curriculum, which the district then agreed to put up on the district Web site. This was made available to others in the learning community, including parents. Several teachers decided to continue to meet regularly to discuss and track student assessment issues based on the new curriculum. In this case, no one talked specifically about knowledge management or communities of practice, yet several key elements were in place, including working to improve processes, using technology to facilitate discussion and share results, and focusing energy on student assessment. And the key driver throughout was the teachers themselves.

Cuyahoga Community College has likewise focused on faculty energy. In seeking to implement knowledge management practices, the college performed a knowledge audit, which involved interviewing a wide range of faculty and staff about the key components of their jobs. The interviews covered a variety of information issues, but focused on the information bottlenecks that were obstructing

Communities of Practice

At Cuyahoga Community College in Ohio, faculty and staff with common interests on a particular topic create Communities of Practice (CoPs) in order to:

- Gather data and share information;
- Share ideas and insights;
- Address challenges and advise each other;
- Learn and laugh together;
- Create new processes, frameworks, templates;
- Own and maintain content about their topic (through a Web portal, email, and other means); and
- Create and update a rating scorecard about outcomes.

At Cuyahoga Community College, faculty and staff who join CoPs have the following roles:

- Sponsor
- Knowledge coordinator
- Subject matter specialist
- Portal moderator
- Primary community member (full attendance and regular contributions)
- Secondary community member (less participation in person, but sometimes full electronic participation)

their work. From that audit, staff and faculty worked together to determine their most urgent needs. What they found was that faculty were very frustrated with the college's curriculum and program approval process, which faculty felt was too cumbersome and prevented them from responding promptly to the needs of the community for new courses and programs. Building on existing faculty committees, a community of practice (CoP) was established to tap into faculty energy in this area, bring in those who needed to be involved in the process (including deans and administrators), and discuss and institute the changes that would enable the organization to improve. The effect has been to empower people to share information laterally and vertically in the college, which in turn has created organizational changes that have significantly improved work processes.

At Cuyahoga, setting up this original CoP was supported by grant funds from a local foundation, which the college matched. Several CoPs have now been set up at the college and paid for by the college, using the framework established by the first CoP, in areas such as grants development and curriculum development. These follow-up CoPs have originated from faculty and staff interest rather than from top-down requirements. And according to those involved in the process, it is not just new or younger faculty who are participating. In fact, some of the most significant involvement has come from seasoned faculty who know the system and, given the means to do so, are more than willing to improve it.

At Jackson State University, the practices of knowledge management have been used to provide "actionable knowledge" to academic units to undertake university-wide program review and reorganization. In each academic unit, faculty members are brought together to reconsider, problem-solve, and make recommendations about how and where their program fits within the overall mission of the university. During this process, faculty members have been provided with easy access to data (about their own and other academic programs) that they never had access to before, including enrollment rates, persistence rates, credit hours, grade point averages, graduation rates, faculty ratios, and demographics. In an organizational and a state context in which funding is being reduced and the faculty understand that changes will be needed, this data-information-knowledge continuum enables them to investigate data themselves, meet on their own, request new data and information, and create their own arguments about the role of their academic unit in the university. Rather than being a top-down process, the sharing of data and information, coupled with long-term commitment to leadership and other forms of action research training, has helped to engage faculty members in building their own arguments for support and improvement. Next steps include evaluating ways to integrate the use of knowledge management practices in developing new policies for post-tenure review, online education, and academic accreditation.

3. MAKE EXPLICIT THE WORK PROCESSES AND PATTERNS OF INFORMATION FLOW

Every organization has work processes, administrative procedures, and patterns of information flow, but some organizations are more deliberate than others in examining and improving them. Information and knowledge audits that examine work processes and information flow can be valuable in helping key people in the organization recognize patterns that are overlooked on a day-to-day basis. It is important to know, for instance, which staff and faculty are burdened with what kinds of routine processes. It is also important to tie work processes to the institutional mission

and to organizational goals. For instance, which processes—such as textbook selection, library purchases, curriculum development, or program approval—are hindering the institution from fulfilling its mission? Which processes are contributing to its mission? Work processes that engender high levels of frustration among students, staff, or faculty and prevent the organization from achieving its goals offer prime opportunities for knowledge management initiatives.

Information and knowledge audits that examine work processes and information flow can be valuable in helping key people in the organization recognize patterns that are overlooked on a day-to-day basis.

Another key element is identifying the trigger points for information control and information sharing in the organization. Historically, how have data and information been collected and disseminated throughout the organization? Which offices are now responsible for gathering data; which ones are responsible for interpreting them and providing decision-making support? Who routinely has access to what kinds of data and reports? Who is excluded, and why? As will be discussed later, what incentives are there to hoard or share data and information with others? Part of the reason for examining these issues is to spark debate and open discussion about information practices, policies, and politics, in order to build support for the use of information in decision-making.

Finally, the practices of knowledge management themselves need to be objects of examination and discussion. There is no cookie-cutter approach that will be useful in all institutions. Selecting the appropriate tools of knowledge management depends on the people involved, the organizational history and context, and the goals that people seek.

4. MAKE SURE TECHNOLOGY IS ON BOARD, BUT DO NOT LET IT STEER THE SHIP

Technologies are crucial to the sharing of information because they provide an efficient and automated means to track data over time, interact with colleagues, post information, and share discoveries—all while creating a record that can be searched and used as a building block of institutional memory available to new faculty and staff hires. In this sense, technology can be very attractive as an enabler that can help people exchange information in ways that create better decision-making. Likewise, purchasing campus-wide technologies that are portal-based and that integrate existing disconnected systems can promote a more democratic dissemination of data and information to decision-makers throughout the school or college, whether they be librarians, teachers, principals, counselors, or executive vice presidents.

One of the most common—and unfortunate—oversights of those seeking to establish knowledge management practices at an organization, however, is to try to do so primarily through purchasing and implementing new technologies. The exchange of information is a social process; it is people who choose to use technologies—or not use them. As a result, the most successful technology implementations are those that are accompanied by human-based strategies that build from the organizational context, and from an understanding of the patterns of information use already present.

Considering both the fiscal and human costs of implementing new technology systems, schools, colleges, and universities are well served by creating communities of practice—or similar collaborative teams by another name—around any significant technology purchase. Since one of the goals is to integrate knowledge-sharing practices into everyday work, those whose jobs will be changed by technology implementation—that is, the primary end users—need to be at the table and have a real voice in selecting, designing, and implementing new technologies. These collaborative teams typically bring together management, teachers, faculty, counselors, information systems specialists, business specialists, and others. In most cases, it is the work and exchanges of these collaborative teams that set the stage for effectively using technology and sharing information.

One of the real benefits of communities of practice is that they serve not only to energize people around an area of real concern, but also to create and update content that is very useful in the orientation of new teachers, faculty, and staff. However, in relation to building communities of practice, educational organizations that have been most effective in creating technological support for such collaborative work have found that maintaining a people-based approach is crucial. To that end, portal- and Web-based systems provide easy access to team members and an automated way to post and update content. Email and file-sharing software that is familiar to people is important in facilitating use. Technological software that supports mentoring and other social issues is helpful. Finally, since team members and others access and update the content posted through shared technologies based on their own needs, it is crucial that they have a sense of ownership and responsibility for it. They have got to own it; otherwise they will not maintain it.

5. IMPROVE STUDENT LEARNING AND OUTCOMES; DON'T SETTLE FOR PROCEDURAL TINKERING

There have been scores of popular initiatives seeking greater administrative efficiency and productivity in schools, colleges, and universities. These kinds of improvements are important, but the changes that are crucial consider student learning and outcomes: how effective are educational, academic, and other programs inside and outside the classroom in improving student learning? for which students? over how long? in what ways? These are the kinds of questions for which the practices of knowledge management are particularly useful.

Within K-12 classrooms, learning information systems are being developed that can provide ongoing assessments of student skills and abilities. For example, in one system, every time students read a chapter or a book, they sit down at the computer, log in, and complete an interactive worksheet about what they have read. The system, in turn, builds a database that provides the teacher with ongoing, day-to-day, and trend assessment information about each child, automatically creating a feedback loop for the student and teacher. In general, when teachers are trained to use the system, they are not particularly interested in the assessment component or in the powers of the database. On the other hand, they have all kinds of questions about the pedagogy of the worksheets. Once they start using the system, however, they see that the real value is not so much in the interactivity of the worksheets, but in the daily assessments that are automatically integrated into the learning process, and in the information about patterns of student learning that they suddenly have access to. With a few clicks of the mouse, they can find out which books and assignments were most effective and which ones were most troubling—

for specific groups of students. Once they are provided with this information, they can adapt their pedagogy along the lines that makes sense for their students. If they have access to a collaborative team discussing these kinds of issues school-wide, then the database increases and the sample becomes more extensive—and the knowledge that is gained and shared increases as well.

Different learning and teaching strategies are effective to varying degrees for different groups of students. Knowledge management practices seek to help teachers and faculty gather data and share information about which teaching approaches are most effective in specific learning environments. Through this democratization of data—that is, making data available in a timely way to the people who need it—the real discussion among faculty can begin: Is it better to maintain consistent teaching styles and help all students perform within them? Should teaching styles be revised based on who is in the class? Project-based approaches have become more popular recently, and they mirror the work environments in which many students will find themselves after graduating—but are they more effective? Likewise, is team-based learning—also common in the work environment—appropriate, and if so, in which kinds of situations or for which kinds of content? Given the data, teachers and faculty can discuss these kinds of questions within their own organizational context, design a series of interventions or a revised curriculum based on the needs of their students, gather outcome data again, review the results, and share their results among a wider circle of colleagues. For teachers and faculty as well as students, the knowledge management process promotes participation, interaction, and, most importantly, learning.

6. EXPECT AN ITERATIVE PROCESS THAT ENDURES OVER TIME

Knowledge management is not a static process, nor is it a linear one. All along the way, important social issues of information sharing are raised, which can lead to setbacks, roadblocks, and detours. With the sharing of data and information, issues of trust arise continually. Important decisions about whom to keep in the loop at which stages—the teacher's union, the program director, the assistant principal—cannot always be made effectively, and in many cases, certain kinds of decisions will be attacked no matter who is consulted. Whenever possible, it is important to lay the groundwork before moving ahead—and this is yet another way to emphasize the importance of organizational context.

In many ways, the horizontal and collegial structure of educational organizations makes schools, colleges, and universities more appropriate than corporations and other business enterprises to a knowledge management approach, which by necessity builds from the bottom up. But this is not to say that initiatives that promote greater sharing of data and information will be met with open arms. In fact, those department heads, program managers, deans, and others whose sense of power has been directly related to how well they have hoarded and selectively shared information, may find ways to resist the organizational changes that can help to bring about improved sharing of data and information, particularly involving outcomes. In some ways, when the owners of information start to get nervous and anxious, that is an early sign that the practices of knowledge management are having some effect. On the flip side, organizations benefit enormously when people who have been formerly excluded from the feedback loop now begin to gain access to information and to join with others to actually change the system.

Yet change can be difficult for everyone, and it is important that appropriate professional development be provided to those experiencing changes in their work. This includes meetings to allow people to voice their concerns and ideas, training in using new technologies and procedural systems, and, where possible, retreats that explore new possibilities and choices. Leadership trainings and skill-building opportunities can be particularly effective in helping people establish and reaffirm their own sense of worth and value within an information-sharing environment.

7. CONSIDER THE LARGER PICTURE

Just as it is important to start small, building from an organizational context, it is also crucial to maintain a vision of the larger picture. In a sense, engaging in the practices of knowledge management is like taking a series of steps, each of which enables us to see a bit farther, and deeper. One of the first steps involves becoming more aware of the information structures we are working within. Additional steps reveal opportunities for moving forward with revised structures, relationships, and influence. The more people share information, the more each of them gains; knowledge is created by the interaction of experience with information.

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Within this context, it is important to examine the incentives for sharing information within and across organizations. Are people rewarded for sharing information, whether or not it negatively or positively reflects on a particular program? In many organizations, large amounts of information that could be used for decision-making are ignored because there are few incentives for information sharing. If compensation and rewards are based on what people know, then there's no incentive to add to the knowledge base. If the reward system, on the other hand, is based on what people teach others in the organization, then people will be much more likely to share information and engage in dialogue about organizational improvement. In many cases, this may require initiatives outside the organization, in the realm of public policy and debate.

CONCLUSION AND NEXT STEPS

It is not an exaggeration to suggest that there are teachers, faculty, and administrators at every school, college, and university in the country who are employing information management strategies to improve decision-making. The practices of knowledge management offer ways for people to build on that energy; organize efforts; share resources, information and knowledge; and bring about improvement. The most successful efforts start small, with pilot projects, and later expand to larger and more encompassing initiatives—and they maintain a focus on people and their needs.

For educational institutions, the practices of knowledge management are particularly promising and appropriate. The democratization of data and the sharing of information induces people at every level to contribute, to participate, to interact, to grow, and to learn—while mastering higher order skill sets. Making sense of information that is necessary to success is a crucial step; imparting what one learns and knows to others is more difficult and rewarding still.

At the end of the day, then, knowledge management is not an end in itself or an all-encompassing system that will bring about change. Rather, it merely offers a set of practices and values—some of which are appropriate for one organization, others for another—that help people to better reach their goals. As in most initiatives that are transformative, what matters over the long run is vision, passion, leadership, and persistence.

In the meantime, however, what lies ahead for those interested in promoting the use of knowledge management practices in education? What are the looming needs for the field at large? Some of the next steps include:

1. **CONTINUE TO REFINE AND COMMUNICATE TO OTHERS THE VALUE OF KNOWLEDGE MANAGEMENT APPROACHES IN EDUCATION.** Considering how new the field of knowledge management in education is, it is not surprising that there are many definitions of and misunderstandings about it. This is made even more complex by the fact that knowledge management is not a single approach, but rather a set of practices and values that is dependent to some degree on organizational context. Nonetheless, it is important to begin establishing a shared—and accessible—lexicon for knowledge management practices.

2. **BE RIGOROUS IN CONNECTING KNOWLEDGE MANAGEMENT APPROACHES TO OUTCOMES.** There may be many definitions of knowledge management, but the overall goal of knowledge management in education is clear: improved decision-making throughout the organization to advance and improve student learning. This overall goal will become increasingly important, as schools, colleges, and universities come under pressure for increased accountability from external and internal sources.

3. **CLEARLY DISTINGUISH KNOWLEDGE MANAGEMENT APPROACHES FROM TECHNOLOGY IMPLEMENTATION AND INFORMATION SYSTEMS MANAGEMENT.** Technology is a crucial component of knowledge management, but it is not the driver. People are the drivers, and the organizational environment in which they share information is crucial.

4. **RESEARCH AND TRACK KNOWLEDGE MANAGEMENT EFFORTS IN SCHOOLS, COLLEGES, AND UNIVERSITIES,** to understand better and encourage those organizational environments, work practices, and infrastructures that maximize information use and sharing in decision-making.

5. **ASSESS THE EXTENT TO WHICH KNOWLEDGE MANAGEMENT PRACTICES AND VALUES CAN CONTINUE TO TRANSFORM THE CLASSROOM EXPERIENCE.** Information sharing, teamwork, and collaborative learning have been important curricular developments over the past few decades. Students are the most important stakeholders at schools and colleges. It is crucial to help them develop the kinds of critical thinking and communication skills that will enable them to succeed in an information-rich environment.

6. **CREATE A NATIONAL FORUM FOR ENGAGING AND SHARING INFORMATION ABOUT KNOWLEDGE MANAGEMENT PRACTICES AND THEIR EFFECTS ON EDUCATION.** This forum can include meetings, online gatherings, and other ways to share information, but it must also begin establishing resources and a databank for tracking the implementation and effectiveness of knowledge management practices in education.

7. **CONSTRUCT EDUCATION POLICIES THAT ALLOW K–16 INSTITUTIONS TO IDENTIFY AND IMPROVE THE VALUE OF PROGRAMS AND SERVICES THAT CONTRIBUTE TO STUDENT ACCESS AND SUCCESS.** This requires emphasizing state and other policies that encourage schools and colleges to use data in ways that improve how they analyze issues relating to student success. And it requires de-emphasizing or eliminating those policies that demand from the schools data that bear little relevance to the larger educational context.

Funding organizations of educational institutions have, for some time, shown increased interest in the information-sharing practices of grantees. Meanwhile, educational institutions at all levels are being forced to respond to increased calls for accountability. And the information needs of–and demands on–teachers, faculty, staff, and administrators are increasing rapidly, with little end in sight. In this environment, educational organizations across the country are in need of information strategies that build from the organizational context to transform knowledge into effective decision-making and action. Knowledge management can help provide the tools–and the values–for that to happen.

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The Institute for the Study of Knowledge Management in Education (ISKME) works with educational institutions, organizations, and systems to increase their capacity for knowledge-based decision-making as a means to promote student and institutional success. ISKME, a 501(c)(3) non-profit corporation, conducts applied research to more effectively understand how education institutions can create organizational environments and infrastructures that maximize information and knowledge across all levels of the organization.

As a think tank dedicated to improving learning outcomes in education, ISKME assists schools and colleges in improving their use of information technologies and in otherwise identifying, distilling, and harnessing information. ISKME partners with schools, school districts, two-year colleges, four-year colleges and universities, college and university systems, and training centers to transform their knowledge capital into more effective practices in learning and instruction, assessment and quality standards, administration and management, and information management.

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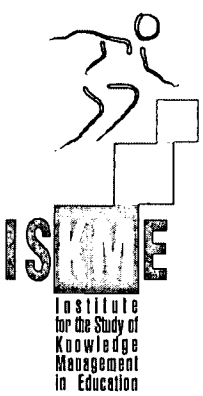

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