Knowledge Management for School Leaders: An Ecological Framework for Thinking Schools

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Although there has been a great deal of recognition in the business world that information and knowledge management can be vital tools in organizations, it is only recently that educational administrators and teachers have begun to look at how they might use information systems to assist in creating effective learning environments. In the business research environment, the evolution from data to information and from information to knowledge plays a leading role in shaping how organizations develop strategies and plans for the future. Using examples from schools, this paper illustrates how knowledge management can enable schools to examine the plethora of data they collect and how an ecological framework can be used to transform these data into meaningful information.

Although there has been a great deal of recognition in the business world that information and knowledge management can be vital tools in organizations, it is only recently that educational administrators have begun to look at how they might use information systems to assist in creating effective learning environments. In the business research environment, the evolution from data to information and from information to knowledge plays a leading role in shaping how business communities of practice in organizations develop strategies and plans for the future. Although there is a great deal of research literature on the information technology sector in business to support this idea, literature regarding information management to support educational learning is scarce. Therefore, this paper draws on theories from the business field, including information management, knowledge management, and knowledge ecology, to suggest how knowledge management, when applied with an ecological framework, can benefit schools.

Knowledge management, from a practical and policy perspective, can be used to support educational administration, which in turn supports teaching and learning. The impact of the use of data and information on the current educational system, through knowledge management, can enable schools to evolve from bureaucracies forged during an industrial era to educational knowledge ecologies that are prepared to compete in a networked information-driven global society. Within an ecological framework of knowledge management schools must examine the plethora of data they collect, how to transform data into meaningful information, and how, or if, that information becomes knowledge to sustain thoughtful educational decision making.

INFORMATION MANAGEMENT

The study of the field of management information systems (MIS) has undergone several decades of observation and examination in the business environment. Historically, MIS theory and practice primarily focused on the technical systems that provided computer-based computations, such as in finance and accounting (Laudon & Laudon, 1997). Management information systems were used to control, quantify, and disseminate an organization's expanse of data and support the management of a business organization. In more recent times, MIS migrated to manufacturing and human resources and more recently to information technology or information services or systems. These units within business organizations refer not only to the administration of the information resources but also to the computing equipment, programs, and data throughout the organization. However, most database management systems contain quantitative elements that lack the added value or context of the information that managers need to make decisions in the business environment (Davenport, DeLong, & Beers, 1998).

The study of these systems is a more recent phenomenon that, with the advent of information technology, centers on both the technical and social nature of information systems (Laudon & Laudon, 1997). This includes not only the management and technological aspects but also the organizational and social development of how these systems are used and by whom (Davenport, 1997; Schrage, 1997; Telem, 1996). In addition, the influences of international economics and competing global markets add pressure to the business community to find ways to use data to improve the efficiency of business functions. Because information systems used in businesses today are based on sophisticated computer and network technology, the increasing intricacy of technology needed to perform requisite procedures and the demands of temporal constraints all contribute to the increased pressure to obtain fast and reliable information (Federation for Enterprise Knowledge Development, 1999).

Therefore, the study of information systems is best suited to an approach that is interdisciplinary and draws from social, behavioral, and technical disciplines (Community Intelligence Labs, 2000; Telem, 1996). This approach deals not only with the design and implementation of information systems but also with changes in management, attitudes, organizational behavior, and policy (Sirotnik & Burstein, 1987).

In today's expanding global markets, more businesses are facing the reality that data-based information systems are important but not enough. Businesses have become concerned with mobilizing what they believe is their greatest asset—knowledge: the combination of information, experience, circumstances, understanding, and cogitation that can be applied to any decisions or situations (Cliffe, 1998; Davenport & Prusak, 1998; Hansen, Nohria, & Tierney, 1999; Zisman, 1999). Therefore, managing knowledge networks within organizations has now become a critical challenge taken up by the business community (Zisman, 1999).

THE SHIFT FROM INFORMATION TO KNOWLEDGE MANAGEMENT

Knowledge management is used to describe the management of information-based knowledge assets within an organization. Although technology and computers are fundamental to the process of managing knowledge in organizations, knowledge management is often confused with, but is not synonymous with, the management of information technology systems (Duffy, 2000). There are many definitions of knowledge management. The Gartner Group, an international firm that provides research, analysis, and advice on many areas of information technology, articulates one of the most widely used definitions. They define knowledge management as a discipline that encourages a mutually supported method to create, capture, organize, and use information (Bair, 1999, in Duffy, 2000). This includes information that is easily measurable as well as the more difficult to measure information that is either unspoken or informal.

Duffy (2000) suggests that knowledge management is the process whereby the creation of knowledge is a result of people applying a multidimensional categorization of information in several different contexts by multiple users. Therefore, for the knowledge management process to become effective in a business environment, the organization must understand and appreciate the human element that adds value to the information.

The management of knowledge and its relationships has been categorized as unwieldy at best (Davenport, 1997). One real difficulty with knowledge management lies in the transfer of knowledge from one individual to another. The knowledge that resides with individuals, as described by Nonaka and Takeuchi (1995) and Polanyi (1975), is tacit knowledge—that which

is not structured, document based, or tangible. Tacit knowledge is only accessible symbolically through individuals and is attainable only with extraordinary effort (Davenport & Prusak, 1998). Many organizations are easing this process of tacit knowledge transfers through the use of storytelling and community-based forums. These forums, which might consist of electronic discussions or postings on an organizational Web site, convey to staff the culture, rituals, and organizational traditions that exist as one component of the history of the organization (Brown, 2000; Davenport & Prusak, 1998).

It is believed that successful organizations that forge ahead in a rapidly changing business environment will do so through the creating and sharing of new knowledge (Senge, 1997). The implications of these changes on the theory and practices of business management are numerous and far-reaching (Brown, 1999; Senge, 1997). For example, the use of cross-functional teams and customer or product-focused business units and work groups are just a few of the emerging trends precipitated by knowledge management.

Some of the most recent work in this area focuses on a centuries-old model referred to as communities of practice (Wenger & Snyder, 2000). Communities of practice in classical Greece and the Middle Ages consisted of individuals working independently and uniquely apart from each other, but in today's business environment communities of practice exist within an organization. A community of practice is where enculturation, immersion, and real learning take place (Brown, 2000). It is the environment where an individual moves from explicit knowledge (about a subject) to tacit knowledge (the "how to" of a subject) in an organization. Communities of practice are by nature organic, spontaneous, informal, and ecological (Wenger & Snyder, 2000). Communities of practice have emerged as a very effective form within business organizations today. Driving this learning and change model is knowledge sharing where there are a limited number of organizations building and growing communities of practice (Wenger & Snyder, 2000).

An ecological approach to knowledge management is also found in Davenport's (1997) work on information ecology. He calls for communities of practice through the establishment of an ecological model of knowledge management that is holistically directed within an organization. The human-centered information management model described by Davenport focuses on the information environment, the organizational environment that surrounds it, and the external environment of the marketplace. The technical architecture of an organization, although secondary, is important to the flow of knowledge and information in an organization. Primary importance is instead placed on the humans, in their strategic use of information, information politics, and the culture and behavior of individuals in an organization.

The ecology metaphor has been previously used to describe the use of knowledge within organizations. Specifically, the term *knowledge ecology* has been used to illustrate how ideas are exchanged, innovations blossom, value is added to information, and new knowledge is tested and applied through accrued expertise and learning and within the rich perspective of the ecosystem (Community Intelligence Labs, 2000). A knowledge ecology is different from knowledge management in that it does not claim to institutionalize new ideas nor does it claim that knowledge itself be managed.[1] It is seen as an organic and evolving system that exists over time. Knowledge ecology has been used as a framework to show how the goals and objectives of an organization can be cultivated simultaneously with the goals and objectives of the individual. The growing field of information technology further augments the use of such a model by using previously unavailable digital technologies for data collection, information gathering, and knowledge application (Community Intelligence Labs, 2000). The ecology metaphor is used here to emphasize that the use of a knowledge-based information system requires a framework that mirrors the complexity of schools—that is, an active, interdependent, and complex adaptive system.

The ecological framework expands on traditional concepts of knowledge management to include a comprehensive perspective that embraces a wide range of disciplines that build on each other—from organizational learning (Argyris & Schon, 1996; Senge, 1997) to intellectual capital (Sveiby, 1997) to information ecology (Davenport & Prusak, 1998) to communities of practice (Brown, 1999; Wenger & Snyder, 2000). It engages the concept of communities of practice and closely reflects on the role of leadership (Community Intelligence Labs, 2000; Lemke, 2000). An educational learning community, similar to a business community of practice, is internally focused on the happenings within an educational community as it strives to establish a base of knowledge to lead policy and practical transformation in a methodical and more effective manner (Felner, Kasak, Mulhall, & Flowers, 1997).

An ecological framework, however, moves beyond the learning community to engage outside forces and influences beyond its own boundaries and expertise for inspiration, challenge, and validation. It stretches beyond communities of practice to include an external environment that is dissimilar from itself, which adds an intrinsic dimension to the knowledge and learning that occurs within the community as a whole (Brown, 2000). It therefore, enables the ideas, information, and motivations that emerge within a school to interact with each other and with their external communal environment, that is, community representatives and integral stakeholders in the educational process. The greater the interaction, the greater the cross-fertilization of ideas, creativity, and increased use of intelligence based on knowledge in the organization (Community Intelligence Labs, 2000).

The following is an illustration of the how an ecological framework for knowledge management can be applied in a school organization: A principal and assistant principal of a large high school notice that student suspensions seem to be happening more frequently. To gain an understanding of what is happening at the school, the administrative team considered designing a system to accumulate and track suspension data. The school guidance team was included in their discussions and brainstormed the variables they thought would be necessary to track, such as name, gender, race, incident, how many occurrences, and type of incident. While discussing certain student cases at the school, they began to think about where certain incidents took place, the time of day, and which teachers and students were involved. The team decided that it might be important to gather these additional data. They hypothesized that as data were accumulated and disaggregated by student, time, and location, the team might discover patterns over time that might further explain or provide additional information about the suspensions. After the implementation of the suspension information system the team noticed that a 1st-year teacher in need of student management skills was involved in many of the instances and that the names of a few students appeared regularly during a particular period of the day. This information, placed in the context of the school environment, led the team to a new understanding. The process resulted in new knowledge that was used to increase their understanding of the situation (in this case with a new teacher and a particular student) and to act and negotiate the situation through a supportive intervention. The team decided to maintain its suspension tracking system and to meet on a weekly basis, not only to review suspensions but also to extend its function to student attendance issues as well.

FROM DATA TO INFORMATION TO KNOWLEDGE: APPLYING KNOWLEDGE MANAGEMENT TO SCHOOLS

The shift from data to information to knowledge is at the core of knowledge management. It starts with a basic assumption that the accumulation of data is influenced by the core values of the school organization (or a department, grade, or team within the school) and that these data through some process of human interaction and information technology then take on significance and importance as information. Next, through the process of context, accumulation of data, sense making, synthesis, and reflection, this information is transformed and converted to knowledge that is relevant to educational decision making within the school as an organization. This may or may not produce an action step, but it does influence the next round of data accumulation in terms of deciding if the current data collected

meet the needs of school administrators and teachers (Brown & Duguid, 2000; Community Information Labs, 2000; Johnson, 1996).

In the past, knowledge management practices focused primarily on the management of existing data-based resources within an organization. Today, the focus of knowledge management identifies additional information needs throughout the organization and then uses innovative information technology tools to create, capture, and use that information to meet organizational goals (Duffy, 2000). Historically, most school districts do not employ the necessary and qualified personnel to plan, design, and implement even the most basic information systems. Nor do they provide—often due to fiscal constraints—adequate training necessary to ensure the information system's survival. A national study of five school districts, conducted by the U.S. General Accounting Office, found that not only were the basic components of a technology plan met with resistance but also that districts were stymied by losses of internal and external funding and an inability to support an adequate number of staff to implement programs (U.S. General Accounting Office, 1998).

School districts frequently employ an information architecture that is disjointed and counterproductive, not unlike the business environment. Data sources are often not compatible or linked in a manner that allows staff to retrieve data with ease. In addition, most departments and offices in schools maintain independent sources of data with these sources rarely related to each other (Kongshem, 1999). The school student management system often does not share data with the health office system or with the system that is in place to collate enrichment services for children. A teacher who is in charge of special education services might not have access to the district's special education database, where all students who are required by law to have these services are listed confidentially. Therefore, the teacher is forced to compile her or his own data on students either by pencil and paper or by the development of a local database. Not only does this lead to data redundancy and inaccuracies in the data over time, but it also leads to the individual teacher's collection and use of data that is neither institutionalized nor rewarded. However, as the technology industry gains the support and the understanding of the education market, it is likely that school districts will restructure their information architecture to move further along the data-information-knowledge continuum. Schools will be aided in this process by a combination of factors, such as increased familiarity with technology, technological enhancements that ease of use of technology, and expanded interactions with others in both the private and public sector through technology.

More recently, schools have begun to take part in one such initiative: the Schools Interoperability Framework (SIF). This particular initiative was originated by the technology industry as a technical blueprint to ensure that

K-12 instructional and administrative software applications can be used together more effectively (Bushweller, 2000).

Similarly, to expand technology interactions with others and to provide data services in a cost-effective manner, some school districts have begun to use the services of an application service provider (ASP). With an ASP, a district essentially rents an application over the Web from an information service (Bushweller, 2000). All data are then stored and serviced by the provider and are accessible to secure users via an Internet browser and appropriate passwords. These systems range in scope from data reporting and curriculum management to communication and collaboration and may include school employee files, student grades, student financial data about free and reduced lunch applicability, and discipline logs. Many state education agencies, including those in North Carolina, Florida, and New York, participate in such systems.

The emerging interest in data mining and data warehousing in schools is reflected in the education literature as well (Bushweller, 2000; Kongshem, 1999; Liddle, 2000; Streifer, 1999). Additionally, school districts are implementing technology applications at the administrative level as a means to execute data-based decision making that affects the organization and its students (Bushweller, 2000). School districts have begun to implement a form of what businesses have been using throughout the 1990s and refer to as knowledge management, often in partnership with other businesses (Kongshem, 1999; Streifer, 1999). In Connecticut, Kentucky, and Florida such partnerships are being forged with the assistance of companies such as KPMG Peat Marwick LLP and IBM (Shaw, 2000; Streifer, 1999). From tracking state tests to increasing the data provided to parents to providing teachers with student portfolios and grades from prior grades to obtaining an overall view of a school building, schools, often partnered with businesses, are beginning to implement data warehousing and knowledge management models (Kongshem, 1999; Streifer, 1999).

However, information management in schools will not rely solely on knowledge tapping of individuals or individual practices within the organization as in business but also on the strategic implementation, purchase, and support of management information systems and the personnel critical to their operation. For example, federal, state, and local school board policies affect how school districts manage knowledge and perform business functions. In some cases, school board approval must be attained prior to altering any procedure within a district. Other procedures, especially those aligned with accounting functions, are guided by state regulations. Therefore, school districts must include policies and regulations in planning for the implementation and use of knowledge-based information systems—that is, those systems that are embedded within the context of knowledge management processes (Bushweller, 2000). It is also argued that

knowledge-driven schools will not emerge until affordable information tools are readily available in schools and prove their value to administrators and boards of education (Streifer, 1999).

WHY SCHOOLS NEED AN ECOLOGICAL FRAMEWORK FOR KNOWLEDGE MANAGEMENT

The following is typical of the type of stories heard in schools across the country. In response to new state standards, a new math and science curriculum is developed with great enthusiasm by an active team of faculty members. An instrument devised by the state to test the school's progress in meeting the standards is administered to students in the fall. Based on the results of this first set of tests, teachers are advised that they will need to modify their curriculum midyear. However, the test results are not compiled and distributed to the school until April—not enough time to modify the current year's curriculum nor to remediate or prepare students for the next year's curriculum shifts. Subsequently, the teachers are informed that their students did not meet the appropriate standards based on the new curriculum. Therefore, teachers and administrators are constantly in the position of repairing or changing plans in midair, and, subsequently, students are often caught in the middle. A more efficient use of test data collection and dissemination would enable teachers to build additional flexibility into their curriculum design. Alternatively, any design and implementation of mandated tests and interventions should fully take into account the need for access to timely data.

What we do know is that it has become critical for schools to be more flexible in response to changes in the external environment. The need to adapt to external competitive demands (e.g., statewide assessments, school report cards) and to respond to a client base, such as local taxpayers who wish to see their investment yield, is crucial in a competitive global education market. Schools can best prepare for midair changes by focusing proactively on the process of change, rather than reactively to the change itself, long before the change arises. This includes changes that are driven by the community, local business, other school districts, and higher education institutions, or changes in the educational environment (such as federal, state, and local policy or fiscal constraints). An ecological framework weaves together the actions of building a vision, stating the school's mission, and engaging in reflective practice and inquiry, which are integral to growing a nurturing and well-founded environment that can sustain and meet midair adjustments.

The driving force for using an ecological framework for knowledge management in schools stems from internal management information needs as well as from the external demands for information. Within schools, man-

agement information needs might include coordination of class scheduling; special education and special programs scheduling; tracking of attendance, suspensions, grades, and test scores; reallocation of human resources in terms of work overload; professional development; transportation; and finance and budgeting. External demands for information include the demand for greater accountability at the district and state level; student and teacher assessment and measurement; educational policies and mandates; information markets; and other external providers of information to parents and the community.

Presently, many schools are held to accountability standards as determined by externally mandated testing, partially as a result of schools not being able to determine and measure indicators of success with their own internal information systems. However, if schools were to compile a portfolio of assessments based on their own institutional mission, and then have the ability to gather data within the context of this mission, data on student test scores would then be moved from independent status to an interdependent level of information merit. This could enable schools to measure success in a broader context and to move away from the more narrowly defined indicators of success.

We have identified four steps that can be taken for schools to apply an ecological framework for knowledge management. The purpose of this is to help illustrate, ultimately, how schools may benefit through knowledge management and how an ecological perspective further adds to the cross-fertilization of ideas. This process allows the school organization to simultaneously grow as a learning community, thereby maximizing the efficiency and the effectiveness of the school and its district, while meeting the goal of creating knowledge-based information that evolves into intelligence and thoughtful decision making. The steps include 1) evaluating the current availability of information, 2) determining information needed to support decision making, 3) operating within the context and perspective of the school's organizational processes, and 4) assessing the school's information culture and politics.

The first step requires that schools determine which kind of information is currently available and to develop a road map of how information flows throughout the organization (Davenport, 1997). This includes not only mapping current information processes and procedures that exist but also making sure that it is accessible to all members of the staff and the learning community. The organization and individuals need explicit knowledge of getting things done as part of the community of practice and the overall knowledge ecology (Brown, 2000; Davenport, 1997).

Traditionally, using data for decision making at the school-wide level has been difficult, partly due to the inefficiency of paper file-and-folder tracking systems and partly due to a culture in which teachers and administra-

tors who use data to solve problems are often perceived as instigators or troublemakers. Therefore, there is little incentive in many schools for faculty and administrative staff to base educational decision making on data. Data that are electronically collected are often controlled at the district level with little or no access provided for individual school managers. However, there is a growing need for the use of information in schools as school-based accountability moves to the forefront of discussions regarding educational effectiveness. With the current nation-wide emphasis on issues of accountability, this becomes more important in thinking about how to structure outdated structures and processes (Kongshem, 1999). This presents a timely opportunity for schools to address the issue of data by meeting the information demands of parents and the larger community in a responsive and thoughtful manner.

The current availability of information will be influenced by how well information needs have been tied to the school's stated mission and goals over time. For example, if the information needs of teachers and administrative staff have been identified and tied to a school's mission, then it is likely that classroom and school-wide curriculum decision making is well informed. A clearly articulated mission and goals need to be infused throughout the school. Supported top down from school administration and bottom up from the end users of information, the school mission as well as its goals must be expressed to teachers, administrative staff, students, and parents.

Second, the school organization must then establish which type of information is needed to support decision making and policy that is aligned with its goal and mission. It is important to recognize that as information gathering evolves, so does the school organization (i.e., the individuals who are employed and the technological hardware that is in place), requiring an increased need for greater flexibility (Davenport, 1997; Johnson, 1996).

Within a school, accurate information is needed to coordinate, manage, track, and allocate. Existing student data, stored simply as numerical data points, need to be transformed from information to knowledge so that school administrators and teachers can make more effective information-based decisions in schools and classrooms that benefit students. For teachers, this means using information as an analytical tool to individualize student instruction and plan classroom instruction. This value-added transformation of information to knowledge can also assist administrators in placing and evaluating professional staff, determining staff training needs, and establishing professional development programs. Therefore, strategies used to gather knowledge-based information systems are based on the core values of the organization, no matter where a school resides on the data-information-knowledge continuum.

However, in many school districts there is a growing unmet need for information. For example, in New York schools are now being asked to

report high school student cohort scores on state examinations, while simultaneously being asked to track 175 hours of staff development for each teacher it employs during a 5-year period. Nationwide, there are educational debates equating teacher and principal accountability with compensation and test score results; however, there are often no systems in place to adequately measure this. The Tennessee Value Added System (Sanders & Horn, 1994) is a first step in this area, although much additional research is needed.

Third, the context and perspective of the organizational environment's business processes, organizational structure and function, and human resources issues need to be assessed, specifically in terms of information needs. This involves a thorough evaluation of school philosophy and goals, leadership, and cultural assumptions (Schein, 1992). Additionally, accessibility to and availability of technology, and having a physical plant that is conducive to communication are also essential.

The success of a knowledge-based information system depends on identifying information needs in conjunction with a team of community members within the organization who will collect or use the information. Ultimately, the use of information within the school organization must be tied to its mission where value-added assessment becomes a natural part of the environment. Teachers' and administrators' roles evolve and encompass not just the growth of children but also the learning community as an organization. It is then, for example, that issues such as standardized testing can be placed in perspective.

The school organization needs to provide opportunities for the horizontal and vertical communication as well as the capture of tacit knowledge (Nonaka, 1991). For example, in the classroom, new ideas can be shared across a grade level as well as among grade levels. If a group of teachers on a grade level work together to discuss academic intervention services available to children on that grade level, the discussion and insights can then be shared with other grade-level teams at faculty or curriculum meetings. The knowledge shared at these types of functions has the potential to affect practice and school policy if it is then brought back to the grade-level meetings for evaluation.

It is important to reiterate, however, that information is in itself a nebulous substance. For example, it may be that there is little information within an organization that can actually be called new per se. However, it is within the process of accumulating, synthesizing, and sense making of information that knowledge, the intangible commodity of all educational institutions, is created. It is in the process of creation, management, and dissemination among integrated systems within the school that an ecological framework for knowledge management emerges.

Fourth, the organization should also conduct an assessment of its information culture to address questions of information politics (Davenport,

1997). For example, how is information shared and by whom? Who provides and interprets information? Who controls the information and why? How is information used to resolve conflict? Are people rewarded for sharing information? Or is information used for decision making ignored? Are information systems subtly sabotaged (i.e., not maintained, duplicate paper versions kept)?

The culture of the school organization must communicate the value and importance of information. Therefore, a high level of trust is essential to a culture that communicates the value and importance of information. Behavior that demonstrates good conduct must emanate from the school leadership to all partners in the school organization. Individuals within the school need to be responsive and communicate information that assists school-based activities as well as other individuals in the educational learning community. The school culture should communicate to all teachers, administrators, students, and parents that anyone in the school who has access to information should be able to share information with anyone else (Schein, 1992). This communicates not only an openness about information but also an unspoken respect that all are valued and worthy of holding and disseminating information that is important for one reason or another.

Finally, information needs and strategies must be openly discussed in the school and school district. Teachers and staff need to be aware of the information that is available to them. Teachers and administrators need to feel that information is accessible and not guarded internally by a select few. The presence of feudal information empires undermines the concept that each individual as well as the total organization can be a repository for valuable information (Davenport, 1997). Opportunities should exist to discuss how information flows in the building, where information slows or halts, and where hubs of information in the school are located. Such issues need to be openly discussed in teams where strategies can be developed in order to augment the flow of information.

Through a systemic approach that is open, complex, and adaptive, educational leaders can maintain and develop an ecological framework for knowledge management in schools that will positively affect each member of the school community and impact the school's mission. If a school operates as a knowledge ecology, students, teachers, and principals are individually and collectively increasing the school's capacity and development to sustain or expand its operations and accomplishments. This systemic phenomenon has the potential to support enduring and sustained educational change (Nevins, DiBella, & Gould, 1999). The benchmarks of such a system might be to strengthen leadership, minimize turnover of faculty and principals, and create higher expectations for students. Ultimately, value is imposed through the individual perspectives and experiences of members of the organization, thereby transforming information

into knowledge that supports teaching and learning and helping the organization to grow, expand, and perform more effectively.

CONCLUSION

We believe that educational leaders need to be able to lead information-based knowledge management efforts and that as society becomes increasingly information based, teachers, learners, and school leaders are uniquely positioned to play a prominent role in this process. The process of developing an ecological framework for knowledge management in schools ultimately allows educational leaders to cultivate the knowledge that is held in the many abstract recesses of the educational learning community (by teachers, staff, principals, parents, and students). It has the potential to enhance the overall academic and fiscal performance of teachers, administrators, staff, and students by using knowledge-based information systems as a catalyst to redirect and balance organizational culture and performance that can support organizational learning, transform the school into an evolutionary and innovative learning environment, and meet global demands and issues. Supported by growing technology networks, this framework offers a means for the organizational learning community to economically and academically reap benefits available to them in the 21st century.

Note

1   Brown and Duguid (2000) address the issue of knowledge management and its potential to stifle creativity. However they do not provide an alternative model outside of knowledge management.

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