Powerful public sector knowledge management: a school district example

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Abstract

Purpose – Drawn from a recent research study of the Toronto District School Board, this paper aims to examine how the District employs knowledge management to initiate and improve early literacy instruction and achievement.

Design/methodology/approach – This study draws on Nonaka and Takeuchi’s framework to explore how focusing on tacit-to-tacit knowledge-sharing strategies influence early literacy-based knowledge sharing within and across schools. Data collection involved the collection and analysis of documents used and designed by Early Years Literacy Project (EYLP) staff members. The second phase engaged a cross-section of 34 EYLP teachers, administrators and senior TDSB superintendents and EYLP management team members in individual semi-structured interviews. Participants commented on their experience vis-à-vis the various knowledge management strategies used to support its implementation. Data from the interviews was codified, analyzed and summarized and summaries were shared with participants for comment.

Findings – The District has employed a comprehensive strategy designed to build instructional and leadership capacity via the use of in-school knowledge activists and informal professional networks. This paper explores the impact of these strategies on school and district-level teacher and leader learning and organizational culture.

Originality/value – The overall impact of these strategies for professional and organizational learning and the challenges associated with employing knowledge management within education and the broader public sector are presented.

Keywords Knowledge management, Public sector organizations, Tacit knowledge, Education

Paper type Research paper

Introduction

The business community has developed a growing interest in recognizing, formalizing and mobilizing employee knowledge in support of innovation and competitiveness (Drucker, 1993; Earl, 1994; Nonaka, 1991). Not surprisingly, much of this literature explores corporate applications of knowledge management including: different conceptions of organizational and personal knowledge (Brown and Dugid, 2000; Hansen et al., 1999); strategies for managing knowledge (Davenport and Prusak, 1998; Nonaka, 1991; Nonaka et al., 2001); and, case studies of the impact of knowledge management on organizational success (Kreiner, 2002; Morey and Frangioso, 1998; Nonaka and Takeuchi, 1995, 1997; Smith, 2001; Weick and Roberts, 1996).

At the same time, there has also been a growing interest in public sector applications of knowledge management. Within this limited body of academic research, the potential benefits of public sector adoption of knowledge management include: improving organizational quality and efficiency (McAdam and Reid, 2001); reducing costs (McAdam and Reid, 2001); and, decreasing interagency fragmentation (Ardichvili et al., 2003). While there are strong arguments for the strategic use of knowledge management to improve public sector performance, several endemic challenges stand in the way of most public
sector knowledge management initiatives. These challenges are not limited to but include the isolated nature of most public sector work (Murray, 2001), worker desire to maintain and protect their own personal knowledge (Murray, 2001), and the seemingly perpetual reduction of centrally allocated resources (McAdam and Reid, 2001).

While the potential value of public sector knowledge management is evident, implementation challenges notwithstanding, public sector organizations have often been reluctant to explore the possibilities of knowledge management. For example, within education, there has been little research or discussion of knowledge management as a strategy for improving organizational practice, program implementation and teaching and learning (Fullan, 2001). Many of the potential benefits of knowledge management within the public sector, as stated above, apply equally to education. Similarly, the overall challenges facing the introduction and implementation of knowledge management strategies within education are similar and include: the technological limitations in schools and school systems; the independent nature of schools and teaching; the lack of teacher time outside the classroom; and, the ever-worsening budgetary constraints.

Acknowledging the similarities between education and other public sector organizations, this paper presents examples from a recent case study of a large urban North American school district. While the Toronto District School Board does not have a formal knowledge management strategy, within its efforts to improve early literacy achievement it has employed knowledge management strategies to mobilizing teacher and administrator tacit knowledge in support of improving literacy teaching and learning. Even though many in the District remain unfamiliar with current knowledge management theory, employing a knowledge management framework to examine their efforts clearly highlights the successes and challenges of applying knowledge management thinking within education, and the ramifications for other public sector organizations will feature prominently in the discussion.

Scope of the paper

This paper is drawn from a recent research study exploring the Toronto District School Board’s efforts to initiate and improve early literacy instruction and achievement. More specifically, this paper highlights the District’s focus on creating and enhancing opportunities for literacy-based knowledge sharing between teachers and leaders.

Beginning with an introduction of the Toronto District School Board and their Early Years Literacy Project, this paper reviews applicable knowledge management literature and provides the context for the discussion of the various knowledge strategies being employed throughout the District. In turn, the paper focuses on tacit-to-tacit knowledge conversion via the use of in-school knowledge activists and informal professional networks. A discussion of the impact of these strategies on teacher and leader learning and organizational culture precedes a more general discussion of the challenges in developing and implementing comprehensive education knowledge management initiatives.

The Toronto District School Board

The Toronto District School Board (TDSB) is the fourth largest school District in North America and is located in Toronto, Ontario, Canada (population five million). Each year, the TDSB educates over 200,000 kindergarten to grade five students in its 451 elementary
schools. In the District, 41 percent of elementary students speak English as their second, or third, language. To complicate matters, many schools experience high student turnover, which in some cases has reached 40 percent within a given academic year.

At the same time, the provincial government has introduced province-wide standardized literacy testing for all grade three students. Serving many students who are learning English for the first time, the District faces significant challenges in getting students to achieve on the one-size-fits-all student literacy performance test.

In support of improving their overall achievement in literacy, the District designed the Early Years Literacy Project to improve literacy overall instruction and student achievement. While the District does not specifically name knowledge management as a driver of their early literacy-related activities, the design of its professional development activities, communication strategies and infrastructure reflect elements of knowledge management theory (Edge et al., 2001). It is for this reason that the TDSB was selected as a site for this research.

The Early Years Literacy Project

In 1999, the TDSB initiated 93 schools into Early Years Literacy Project. In 2003, there are 103 schools in the Project. The Early Years Literacy Project (EYLP) targets kindergarten to grade three classrooms and strives to ensure that all EYLP students are reading and writing at their grade level. The EYLP maintains cohesive school-level and classroom-level literacy foci and requires that all EYLP schools must maintain a two-hour literacy block and employ specific instruction and assessment strategies. In addition to school-level resource injections for literacy supplies, other EYLP components include:

- in-school teacher leaders known as literacy coordinators; and
- a strategic professional development strategy for teachers and leaders within EYLP schools.

Literacy coordinators

Literacy coordinators (LCs) are teachers who are appointed as half time in-school literacy experts and half time as classroom teachers. Traditionally, LCs are selected by their principals on the basis of their early literacy expertise and ability to work with their peers. As professional development leaders, LCs work across the school to coach their peers by modeling of teaching strategies, supporting team teaching and working with individual teachers to expand their instructional repertoire. In support of their own learning, LCs participate in mandatory professional development sessions focused on literacy instruction, leadership and educational change.

EYLP professional development

The EYLP professional development strategy develops both leadership and instructional capacity among Principals, literacy coordinators and teachers. The annual, mandatory EYLP Summer Institute brings whole school teams together for one week of literacy sessions. A unique feature of the on-going series of EYLP training is the specific and deliberate focus on both the process and theory of educational change.

The knowledge management literature

This literature review builds support for knowledge management as a strategy for improving individual and collective outcomes within the education sector. It also provides the rationale for assuming that education case studies provide valuable insight for the public sector as a whole. The review includes an overview of:

- the current status of knowledge management within education research;
- the role of knowledge management in public sector organizations; and
- the knowledge management framework that guided this research and analysis.
The framework specifically focuses on tacit and explicit knowledge conversion (Nonaka and Takeuchi, 1995) that, in turn, frames the presentation of the key knowledge management strategies at work within the district.

**Knowledge management in education**

While one would suppose that educational organizations are relatively knowledge-intense organizations, there has been little discussion of knowledge management as a strategy for improving organizational practice, program implementation and teaching and learning within education (Fullan, 2001). Much of educational knowledge management research focuses on information management systems (Hannum, 2001), libraries and information technology (Barron, 2000) and pilot projects within higher education (Cistone and Stevenson, 2000). At the moment, there is a lack of discussion within education of the potential of scaling-up these opportunities to create more systematic and systemic strategies for codifying and cataloguing knowledge and improving teaching and learning outcomes in schools and school districts.

**Knowledge management in the public sector**

Knowledge management has the potential to greatly influence and improve the public sector renewal processes (Fullan, 2001; McAdam and Reid, 2001). McAdam and Reid (2001) believe that knowledge management is “especially important in the public sector as staff have long been identified as the key knowledge depository” (McAdam and Reid, 2001, p. 20). As many government agencies are dealing with excessive attrition and retirement, capturing the knowledge of experienced and departing employees is of strategic importance. McAdam and Reid also found that public sector employees expressed a “greater appreciation of knowledge construction, as being both scientific and socially constructed” relative to their private sector counterparts. This provides an interesting discussion point in the context of the TDSB case and the potential for its applicability to other public sector organizations as it demonstrates the potential of bringing individuals together for opportunities to develop and share their knowledge.

Current examples of public sector knowledge management are often narrowly focused and do not provide rich data on the strategies and experiences of those engaged in the process at the organizational level. This research often focuses on the role of technology or e-government services (Ling, 2002). Other areas of the literature highlight knowledge management in specific branches of the public sector including police (Dale, 2001; Luen and Al-Hawamdeh, 2001) and health care (Van Beveren, 2003). While there is growing interest in public sector knowledge management as a whole there are still few articles exploring the relevant and challenging issues that are applicable across all public sector organizations.

The integration of knowledge management within any public sector organization faces challenges. Svieby and Simons (2002) report that two of the most significant challenges are the culture of resistance and culture of hoarding knowledge that are found in most public sector organizations. Public sector organizations have more significant challenges than their private sector counterparts in establishing collaborative cultures (Svieby and Simons, 2002). Other challenges to implementing knowledge management within the public sector include: the inherent challenge of many different and incompatible operating systems that often exist within different government organizations and across different levels of government (Murray, 2001).

This brief overview of the recent research suggests that public sector knowledge management initiatives are valuable but face uphill sector-specific challenges. It also highlights the personal and cultural challenges public sector employees face regarding sharing their knowledge and expertise.

**Conceptualizing knowledge management**

Knowledge management theories focus on both the technological infrastructures organizing individual and collective knowledge and the structures that nurture the social conditions...
encouraging employee sharing of knowledge and expertise. Marshall et al. (1997) expand on Von Krough et al.'s (2000) conception of knowledge management and suggest:

The management of knowledge goes far beyond the storage and manipulation of data, or even of information. It is the attempt to recognize what is essentially a human asset buried in the minds of individuals, and leverage it into an organizational asset that can be accessed and used by a broader set of individual on whose decisions the firm depends (Marshall et al., 1997, p. 229).

While the overall research project explores the tacit and explicit knowledge conversion strategies being utilized within the EYLP, this paper will focus solely on the tacit knowledge conversion strategies being employed within the Project to support teacher and leader learning.

**Tacit knowledge**

An organization's success is greatly influenced by its ability to mobilize and capitalize on internally held tacit knowledge (Fullan, 2001; Von Krough et al., 2000). Nonaka and Takeuchi (1995, 1997) view tacit knowledge in two forms: cognitive and technical. While the cognitive aspects (mental models, perspectives, beliefs, schemata) assist individuals in understanding their world and refer to conceptions of “what is and what ought to be” (p. 60), the technical aspects of tacit knowledge (know-how, crafts, skills) assist individuals in completing their day-to-day duties and tasks. Conversion of tacit knowledge occurs between individuals and may involve verbal and/or non-verbal communication. Examples of non-verbal communication include observation, modeling, imitation and job shadowing.

Given these definitions of tacit knowledge, the potential value of creating strategies and methods to support the conditions for sharing of tacit knowledge between public sector employees, in our case teachers, administrators and District level officials becomes clear.

**The conceptual model for this research**

Nonaka and Takeuchi (1995, p. 3) define knowledge creation as “the capability of a company as a whole to create new knowledge, disseminate it throughout the organization, and embody it in products, services, and systems”. They state that the “key to knowledge creation lies in the mobilization and conversion of tacit knowledge” (Nonaka and Takeuchi, 1995, p. 56).

During knowledge creation “the main information process is the conversion of knowledge. Members share their personal knowledge through dialogue and discourse, and articulate what they intuitively know through analogies, metaphors as well as more formal channels” (Choo, 1998, p. 3). Nonaka and Takeuchi (1995, p. 61) stress the social nature of knowledge conversion and creation by stating that “it is a social process between individuals and not confined within an individual” that “is anchored to a critical assumption that human knowledge is created and expanded through social interaction”. To this end, Nonaka and Takeuchi’s model includes four stages of knowledge conversion. For the purpose of this paper, the first stage of the model, tacit-to-tacit will be highlighted.

Based on this brief overview, it becomes clear that knowledge management within public and education sectors can contribute to improvements in both individual and organizational performance. This paper focuses on the application of strategies to promote tacit-to-tacit knowledge sharing within the EYLP and their impact on teacher and leader learning and school and district culture.

“Within education, there has been little research or discussion of knowledge management as a strategy for improving organizational practice, program implementation and teaching and learning.”
Research methodology

This study employed a knowledge management framework to explore how focusing on tacit-to-tacit knowledge sharing strategies influences early literacy-based knowledge sharing within and across schools. Nonaka and Takeuchi's (1995) knowledge conversion model guided the three phases of data collection and analysis. The first phase of the research involved the collection and analysis of documents used and designed by EYLP staff members. The second phase engaged a cross-section of 34 EYLP teachers, administrators and senior TDSB superintendents and EYLP management team members in individual semi-structured interviews. Participants were asked to comment on their Project experience vis-à-vis the various knowledge management strategies used to support its implementation. Data from the interviews was codified, analyzed and summarized and summaries were shared with participants for comment.

Findings

Teacher and leader learning are enhanced by both tacit-to-tacit and tacit-to-explicit knowledge conversion strategies employed by the EYLP. In turn, beneficial changes occurring within school and District cultures are also occurring. This section will focus on two key examples of EYLP knowledge management strategies:

1. literacy coordinator as in-school knowledge champion and their impact on teacher learning and school-wide culture; and
2. informal mandatory LC leadership networks and their impact on leader learning and District-wide organizational culture.

While not exhaustive, these examples illustrate the potential power of knowledge management in mobilizing the expertise of public sector employees and supporting professional development in support of organizational change.

Literacy coordinators as knowledge champions

Knowledge champions are recognized as an excellent strategy for mobilizing organizational and individual knowledge (Jones et al., 2003). One of the most significant elements of the EYLP success is the recruitment, training and support of the literacy coordinators. LCs are, in effect, in-house literacy knowledge champions charged with developing teacher instructional skills and building a knowledge-based professional community within their schools. To this end, LCs bring groups of teachers together to work on developing shared literacy goals for the school. Much of the work of LCs involves sharing their tacit knowledge with their peers and mobilizing teacher tacit knowledge within the school. LCs engage teachers in tacit knowledge conversion using strategies such as: book and study groups; discussion and planning sessions; lesson and instructional technique modeling; mentoring; inter-classroom observation; and, team teaching.

Impact on teacher learning

Several teacher learning outcomes are directly linked to the LC’s role as a literacy knowledge champion. The Early Years Project has ensured that LCs develop skills in sharing their own tacit knowledge and mobilizing that of their peers. As such, LCs receive training addressing literacy content, leading the change process and coaching. LCs report that many teachers have expanded their overall knowledge of literacy instruction and developed an ever-expanding repertoire of instructional strategies. Greater LC and teacher confidence in their own teaching performance and a greater sense of how to personalize their teaching to meet the needs of their students is also evident. They also hold a greater belief in their ability to assist children, of all ability levels, to learn to read and write.

Impact on school-wide organizational culture

While LCs primarily work individually with teachers, their secondary role involves coordinating and initiating literacy-focused activities within their schools. For example, LCs chair in-school literacy committees comprised of teachers and administrators. As
literacy committee chairs, LCs develop the school’s literacy plan and create opportunities for active dialogue and learning about literacy.

Many of the LCs successfully and actively engineer literacy-focused cultures within their schools. Many participants directly relate these new cultures of sharing and learning to three isolated, yet related, changes:

1. teachers’ newfound ability and interest in sharing their experience and knowledge with their peers;
2. teachers’ ability to discuss their work using a common literacy-based language; and
3. teacher and leader access to the LC as an on-site expert helping them improve their practice and confidence.

Participating LCs also report a newfound confidence and skill in literacy instruction both personally and amongst their peers (Edge et al., 2001). For many, this confidence has improved their ability to communicate with parents about their children’s academic progress and at-home strategies that can be used to improve student reading and writing. Many participants also suggest that literacy-focused school cultures enable greater community participation in the school and its literacy related activities.

Leader learning: mandatory informal networks

The informal LC leadership networks serve as another EYLP tacit-to-tacit conversion strategy. During the first two years of the project, LCs often self-initiated small independent and informal LC networks facilitate communication with their colleagues. Many networks were formed on the basis of geographical proximity of schools and/or previous relationships between LCs. In the third year of the project, EYLP staff discovered a correlation between the LC retention and their membership in an informal peer network. The chance of an LC leaving his/her position was less likely if they were actively involved in a peer LC network.

Considering the potential implications of this finding, the EYLP now requires that all LCs participate in an LC peer network. The project has managed to maintain the flexible parameters of the informal networks by allowing LCs to select the network they would like to belong to. LCs also have the opportunity to create new networks. Networks are required to meet once a month, at a time and location of their own choosing and are also permitted to set their own agenda and structure.

Impact on leader learning

Currently, LC networks exist in many different forms. In some cases, previously established networks have remained intact and new members have joined. In other instances, new networks were formed as old networks meshed together and LCs began to move across the system to search of new professional connections. Participants are almost unanimously excited about the benefits of their participation in their LC network.

Much of the network-based knowledge work involves tacit-to-tacit conversion. LCs work with their peers to answer each other’s questions and share their own strategies for improving instructional practice. Regardless of the size or composition of the networks, all LCs discuss the evolution of their network-based discussions as they have evolved from content and instruction-driven to a more sophisticated discussion involving issues related to supporting teachers and managing school-level change. This is not surprising if one considers the growing level of skill within the ranks of the LCs.

LCs report that participating in networks has improved their school-level leadership abilities and their confidence in taking on leadership roles throughout the district. These opportunities to share and discuss issues within the informal network settings, without the participation of principals or superintendents, enables free flowing discussion and knowledge sharing to emerge. In addition, many networks have established their own electronic conferences to facilitate communication with members between their face-to-face meetings. The free exchange of ideas within networks and electronic conferences has
bolstered LC confidence and reinforced their commitment to understanding and improving effective teaching and leadership practice.

In some networks, LCs work across schools to create literacy-based learning opportunities for their peers. For example, several networks conducted needs analyses within their schools and designed professional development to address identified gaps. In several cases, LCs have even opened up these professional development sessions to schools beyond those in their network, providing an even greater opportunity for knowledge building and sharing within the district.

**Impact on school and district culture**

The nature of teaching, focused within individual classrooms, creates a very isolated professional work environment. In turn, schools, by tradition, are very isolated organizations. Employing tacit-to-tacit knowledge conversion strategies, the EYLP has enticed many individual teachers out of their classrooms, created opportunities and obligations to share and united their efforts via a school-wide focus. In most EYLP schools, teachers now work collaboratively to improve instructional practice.

The network initiative further extends this growing culture of collaboration by requiring all LCs to participate in networks with their peers from other schools. This strategy ensures that LCs are learning of the strategies and challenges occurring at other schools and building valuable professional networks. In turn, networks have generated additional professional development opportunities for teachers and leaders within the district. This locus of generation of new professional development is quite unique within the district. In non-EYLP schools, teacher and teacher leader generated professional development is not the norm and serves as a testament to the changes in district-level culture that the EYLP has produced over time.

Finally, there has been a distinct shift in terms of policy and policy initiation. Many new initiatives and practices have been adopted within the EYLP, including specific student assessment and instructional techniques. Recognizing the success of EYLP schools in adopting new practices, the district has piloted several new initiatives within the EYLP schools prior to launching them across the entire system. For example, EYLP schools were invited to participate in the first year pilot of the district’s school planning process. Many participants value the close relationships between EYLP and the greater TDSB. The EYLP has become both an incubator of literacy knowledge, a testing ground for new district initiatives and also a source of district level policy.

**Conclusion**

Within the Early Years Literacy Project, the importance of relationship building and networking, in support of tacit-to-tacit knowledge conversion, is evident. As illustrated above, the district has been quite successful at building a culture of sharing via the use of a unified literacy focus and a strategic multi-pronged approach to sharing knowledge and expertise amongst teachers and teacher leaders. Although not included within this brief introduction to the work in the Early Years Literacy Project, there are many other interesting and productive strategies being used to support tacit-to-tacit conversion as well as tacit-to-explicit conversion. In the latter category, the EYLP has worked to encourage LCs to evaluate the gaps in their own knowledge and work in teams to create explicit resources to assist others in their work. This has resulted in the production of a “Life as a literacy
coordinator video;’ a monthly EYLP newsletter and an essential leanings document that make explicit the individual and collective literacy knowledge held within the EYLP.

The EYLP has managed to use knowledge management strategies to reinforce the importance of collaboration and moving schools and teachers away from the isolated nature of teacher work. It has mobilized knowledge champions to assist teachers in real-time, in their classrooms to improve their teaching. This strategy not only saves time and money but has also yielded better student achievement results (Edge et al., 2001). It is also important to note that the EYLP’s attention to detail and provision of resources and support to teachers and schools has also served to make teachers and leaders feel that they were respected and valued. This presents another valuable lesson for public sector organizations.

This research was conducted during the fourth and final full year of guaranteed funding for the Project. While this was cause for concern amongst all of our participants, almost everyone expressed their desire to continue within the knowledge frameworks and strategies established by the EYLP. There is interest in maintaining time for teachers to meet within the schools, for LCs to meet with their peers and for opportunities for teachers to become professional development leaders within the district. As in most public sector organizations, money and budget cuts are part of the cultural landscape. Within the EYLP, it appears that commitment to knowledge management and the skill development may serve, at least in the short term, to override the impact and morale issues associated with cuts in funding.

The EYLP is not without its challenges and there are still many schools that have not fully implemented the strategies. One of the most significant challenges, from a knowledge management perspective, is the chronic lack of sophisticated technology in schools. In many ways, this may be the reason for the lack of technologically orientated knowledge management strategies within TDSB and other education systems. On the other hand, much excellent knowledge and information has been shared and developed within the EYLP without the assistance of sophisticated databases for managing knowledge. The challenge remains, how does the district now scale-up their technological infrastructure to meet the level of sophistication of the current relationship and network-based on-going knowledge conversion? Building the social and technological commitment to creating explicit manifestations of the tacit knowledge held by teachers and leaders will assist the District in dealing with the loss of knowledge resulting from the upcoming large-scale retirement of baby-boomers.

Technological and cultural challenges aside, the Toronto District School Board case provides evidence that knowledge management can support the sharing and mobilization of good practice and individual knowledge and experience throughout the organization. These strategies are not limited in use to education but can be employed within the wider-public sector to challenge the non-collaborative culture that often pervades public sector work.

References


Further reading

