

Multimedia Cases of Practice: On-line Learning Opportunities For School Leaders

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Abstract

Computer-based multimedia technologies have great potential for providing rich learning opportunities for school leaders in the context of their work. One promising avenue is the development of hypertext narratives of practice that can capture and communicate the complexities of exemplary leadership practice. This paper discusses the construction and user-testing of a multimedia narrative of practice based on Breakfast Club, an innovative program intended to develop a professional community in an urban elementary school. First, the paper develops an account of professional expertise that suggests the practical wisdom of school leaders needs to be represented in context. Multimedia cases of practice that represent such wisdom begin with the programs school leaders design to alter the instructional programs of their schools. Second, the paper describes the development of a question-based multimedia case of practice designed around the questions that school leaders are likely to ask about new programs in order to facilitate their own understanding. Finally, the paper offers an analysis of a round of user-testing with fourteen school leaders conducted to refine and rebuild the multimedia narrative.

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Improving achievement for all students has risen to the forefront of recent public policy interests in schools and schooling. School reformers and legislators alike have pushed for, and have largely received, an accountability revolution that increasingly holds public schools responsible for improving student achievement. Achieving the required student learning gains, however, depends on the local conditions for improving student learning (Newmann & Wehlage, 1995; Elmore, 2002). School capacity describes the collective ability of the adults in a school community to implement structural and cultural changes that improve the practices of teaching and learning in their schools. For Youngs and King (2002), this school capacity exists in the interrelation of principal leadership, technical resources, professional community, program coherence, and teacher knowledge, skill and disposition. The presence of these characteristics in a school provides a powerful resource for school leaders interested in promoting change in

student achievement. The responsibility for developing and maintaining capacity for improving teaching and learning across classrooms and schools falls mainly on these local school leaders.

Leaders require many forms of knowledge to guide their work in local capacity building. Leaders have an abundance of models and techniques to choose from in their efforts to build local instructional capacity. Researchers have focused on developing several forms of knowledge to guide the work of local school leaders. For example, research on effective schools (e.g. Purkey & Smith, 1983; Taylor, 2002) attempts to guide school change by highlighting the characteristics of successful schools. Other research focuses on the development of specific aspects of the school system, such as teacher evaluation practices (Danielson & McGreal, 2000), the development of professional community in schools (Kruse & Louis, 1995; Bryk & Schneider, 2002), or teacher compensation structures (Odden & Kelley, 2001) as vehicles to reshape schools. Comprehensive school reform models package a number of techniques as a systemic approach for promoting school change. From the perspective of practice, however, the linking of these complex components into a manageable system presents real challenges. Leaders interested in improving local school capacity often find it difficult to determine where to start. Further, since schools do not exist in vacuums, local leaders must understand how to negotiate the existing situational and cultural constraints and affordances in order for capacity building efforts to achieve intended results. Adjusting intended and unintended consequences of interventions shifts the tasks of school leadership from implementing a list of key programs to the intentional development and management of complex systems of practice (Halverson, 2003).

The knowledge of successful leaders thus moves beyond an understanding of *what to do* to the capacity to size up *what is needed* in particular situations and the ability to take the appropriate steps to get it done. Aristotle (1941) described this complex blend of understanding, apperception and action as *phronesis*, or practical wisdom (Halverson, 2002, under review). Practical wisdom describes a sophisticated cognitive ability that spans deliberation, judgment, choice, action and reflection (Aristotle, 1941). Professional, practical wisdom is developed through reflection upon long experience in setting and solving the emergent problems of a given profession (Schon, 1983, 1991). Engagement in the problems of practice not only develops but also discloses practical wisdom in individual patterns of problem setting and problem solving over time (Halverson, 2002). Although this emphasis on problem setting and solving would seem to make practical wisdom a form of expertise, Aristotle is clear that *phronesis*, as a characteristic of an individual, cannot either be abstracted to general principals (*episteme*) or reduced to accessible procedures (*techne*). However, research on practical wisdom can be enhanced by investigations into professional expertise. Simon (1993) echoes Aristotle's comment on the importance of experience in developing expertise in his claim that it takes at least ten years to develop expertise in a given domain. Expertise research indicates that expert school leaders solve problems similar to other managerial positions (Leithwood & Steinbach, 1989; Leithwood, Begley & Cousins, 1994). Leithwood and Steinbach (1989), for example, suggest that as compared to non-experts, expert leaders rely more on collaborative planning and information gathering, do not mention constraints, and focus on achieving the goals of the organization in describing solutions to poorly structured problems.

While articulating these characteristics is helpful in understanding where to look for expertise, communicating practical wisdom requires researchers to move beyond the identification of characteristics of expertise to documenting and representing how these capacities live together in the actual practice of school leaders. Because of the essential connection with personal character and local situations, practical wisdom has proven difficult to communicate beyond the context in which it is exercised (c.f. Ryle, 1949; Bourdieu, 1991; Dunne, 1993). The embodiment of practical wisdom in individual character may explain why understanding the context and constraints of problems and solutions that arise in the course of complex practices often requires that practitioners participate in the discussion with appropriate levels of similar experience (Cole & Scribner, 1974). Representations of the practical wisdom that guide school leaders, for example, to successfully implement complex reform programs must include reference to the typical constraints and opportunities of the situation that are often tacit in the accounts of experienced practitioners. Decontextualizing the wisdom of practice, so valuable for traditional expertise research, takes away the conditions necessary to understand practical wisdom.

Helping school leaders develop the ability to apply knowledge appropriately in their work requires access to rich examples of contextualized practical wisdom to guide their practice. Mentoring and apprenticeship rely on developing long-standing interpersonal relationships to communicate practical wisdom through work routines and training. Mentoring and apprenticeship relationships, however, are expensive and promise privileged access, acquired through long interaction, to what mentors know. What is learned through mentoring also suffers from heavy reliance on local constraints, and thus the quality of what is learned depends largely on the ability of the mentor to relate knowledge to a wider context (Feiman-Nemser, Parker, & Zeichner, 1993). Widely accessible representations of practical wisdom may serve to correct the accidents of local circumstance that characterize mentoring and apprenticeship relations.

Because practical wisdom is expressed in the context of particular circumstances, cases provide an appropriate medium for the expression of *phronesis*. Researchers have long turned to the development and study of cases to capture in narrative the ways circumstances interlink to form a context through which actors must navigate (Shulman, 1992; Ragin & Becker, 1992; Bruner, 1986). Narrative features of plot, setting and character are widely used in developing cases to illustrate how practitioners acquire and allocate resources, negotiate competing demands, and overcome obstacles to achieve goals. Case study research provides ample evidence for how cases can be used to illustrate exemplary practices as well as to problematize situations for pedagogical purposes (Merseth, 1997; Bridges & Hallinger, 1995).

The recent development of multimedia cases of educational practice point to how video and hypertext systems can make case representations of practice more accessible to practitioners, allowing users to select case features of particular interest and to construct their own paths through the intricacies of the case (Shrader, 2000; Steinkuhler, Derry, Woods, & Hmelo-Silver, 2002; Kolodner, Crismond, Gray, Holbrook, & Puntambekar, 1998). Hypertext refers to a text-based document including links that, when chosen by readers, cause other documents to be displayed. Computers and the Internet have long relied on hypertext systems to allow readers to customize text to find the information they want. In a multimedia hypertext system, some of the

links incorporated into the text lead to non-text based media such as videos, graphics, audio or animation files. The promise of multimedia hypertext systems is to supplement a linear, text based document with media intended to enrich the reader's experience. Multimedia narratives of practice provide two key advantages over linear, text-based narratives:

- Incorporating video and documented artifacts in the narratives can give a sense of the authenticity and immediacy of the practice represented (Bransford, Brown, & Cocking, 1996; Fitzgerald, Deasy & Semrau, 1997); and
- Hypertext narrative organization can give the practitioner greater control over the direction of the narrative path, allowing practitioners to craft a path according to their own interests.

While some researchers are skeptical of the capability of multimedia narratives to inform research on practice (e.g. Banks 1994), other researchers have reported on the value of incorporating video into the narrative analysis and reconstruction process to stimulate reflection on practice (Barron and Goldman, 1994; Lampert and Loewenberg-Ball, 1998). Using cases to represent the wisdom of how practitioners navigate complex local systems is an important first step in communicating *phronesis*.

While cases can be used to represent practice, a central pedagogical value of case utilization is to engage readers in relating the represented situation and strategy to their own experiences. Cases can engage readers in open-ended, unresolved problem solving activities (Shulman, 1992; Wassermann, 1994) or can help readers follow along with the intricacies of exemplary problem-setting and solving practices (Sykes & Bird, 1992). In pedagogical situations, cases can act as catalysts for discussion of complex practices as students struggle to understand and to develop problem-solutions to fit the constraints of the given case. Case development and sharing can also serve as an occasion for reflection on practice (Schon, 1983; Kleinfeld, 1992; Richert, 1991). Jordan and Henderson's (1995) interaction analysis describes a process whereby videotaped examples of practice are logged and summarized, and then broken into selected vignettes. These vignettes then form the basis for a reflective discussion in which practitioners comment upon the intentions, goals and outcomes of their work. While Frederiksen, Sipusic, Sherin, & Wolfe (1998) tell of how this type of reflective video practice, used with small groups, helps teachers reason through each others' practice, Shrader, Williams, Walker & Gomez (1999) use reflective video techniques to capture teachers' practice in a multimedia web-based system design to aid in teaching project-based science curricula. Cases can also be further used as sophisticated probes to evoke practical wisdom in those who read them. This residual benefit of sharing cases is used to identify key gaps in novice knowledge and to elicit missing aspects of the represented cases with more experienced learners. Leithwood and Steinbach (1989), for example, used generic case scenarios with a variety of school leaders to develop a framework for differentiating expert and novice school administrative knowledge. As a research tool, cases can thus be used to produce as well as to represent knowledge.

Here we argue that the practical wisdom of leadership consists, in part, of the patterns of how practitioners set and solve problems in the course of their work. We explore the idea that

multimedia cases of practice provide a medium to share representations of practice, and also can serve as occasions to elicit and document the practical wisdom of case users. Our aim is to recount how we built a multimedia case of practice and to discuss the responses offered by a range of school leaders to the case. We begin by describing the characteristics of a prototype multimedia case we developed to document leadership practice, the Living Curriculum for School Leaders. Our research team chose to build our multimedia case for school leaders around Breakfast Club, a locally developed professional development program designed to engage faculty in conversation around research on reading and writing. We then profile the leaders of Adams school, a K-8 Chicago Public School, and explain why we selected the Breakfast Club as a representative case. After describing how the case was built, we turn to our discussion of the user testing process, which helped clarify not only where we needed to improve the case, but also how the user's interaction with the case helped to elicit their own practical wisdom.

Breakfast Club: Multimedia Case of Practice

Here we outline the process we developed to design a prototype of a multimedia case of practical wisdom and discuss the reactions of different groups of users to the case. We begin with a discussion of the school leadership practices we sought to document. We then recount the case construction process and discuss the means taken to test the case with users to correct case deficiencies and to explore the prior knowledge users expressed in reaction to the case.

Research Context

The research presented here focuses on exploring ways to access, document and communicate the practical wisdom of leadership practice. Our investigations were focused on identifying urban elementary schools with a demonstrated record of improved student achievement and strong leadership.¹ Adams School, a K-8 Chicago public school, has a well-documented record of steady gains in student achievement according to district standardized test measures.² According to a Chicago Consortium for School Research report (1999), these gains in student achievement have largely been attributed to leaders. Under the leadership of Principal Beverly Williams and her administrative team, Adams has engaged in coordinated activities designed to integrate an evolving understanding of best practices into everyday instruction. To achieve this goal, Adams has focused on building a collaborative organizational structure that a) allocates adequate time and resources to individually-guided professional development, and b) provides leadership opportunities for teachers and staff to guide development activities (Halverson & Gomez, 2001).

¹ This work draws upon and extends the research of two funded projects: 1) the Living Curriculum project (with Principal Investigators (PIs) Louis Gomez, Daniel Edelson and James Spillane), a National Science Foundation (NSF) funded effort to develop web-based multimedia systems to share the practice of project-based science teaching with the education community; and 2) the Distributed Leadership project (with PI James Spillane), an NSF and Spencer Foundation funded effort to examine how leadership practices are socially and situationally distributed in urban elementary schools around math and literacy instruction.

² All names associated with the school are pseudonyms

In our research at Adams, school leaders and teachers often pointed to Breakfast Club as a catalyst for establishing collaborative practices around instruction in the school. School leaders and teachers at Adams School designed Breakfast Club in 1995 as an opportunity for teachers to discuss research relevant to current instructional initiatives and practices in their school. The guiding principle of the Club is that, once each month, an Adams teacher leads a discussion before the school day begins about a piece of research – usually about reading or writing instruction – with a group of the school’s K-3 teachers and administrators while enjoying a hot breakfast. During the years 1998-2001, there was an average of eight Breakfast Club meetings per year, with an average of fourteen faculty members in attendance. Most of the faculty members were preK-3 teachers. Principal Williams attended about three-quarters of the Breakfast Club meetings during this time period; the language-arts coordinator attended each meeting. The administrative team thought that the readings should be aligned with the instructional priorities of the school, particularly in language arts, so that teachers would be reading about issues that they should be practicing in their classrooms. Williams thought that a hot breakfast, paid from her own pocket, would give a clear invitation to faculty members and show that she was willing to make a sacrifice for the program to get off the ground. Our research suggested that the design rationale of the leaders included the following insights:

- The program should not be mandatory in order to avoid the stultifying atmosphere of many faculty meetings;
- The substance of the discussions themselves should sell the program. If there was good information provided and exchanged at the meeting, then word would get around and more people would want to attend;
- It should take place in the morning so that teachers’ minds would be fresh and ready to entertain new ideas;
- The readings should be kept short so that teachers would have a greater chance of reading them before coming to the session; and
- Teachers should select the readings and lead the discussions.

While Breakfast Club started as a discursive forum for teachers to talk about research and practice, it has since evolved into a complex artifact that supports teacher brainstorming, experimentation, and design of curricular initiatives for the language arts program at Adams. Sample Breakfast Club topics from the 1998-2001 school years included a review of a multiple-methods approach to language arts instruction, a conversation about the value and viability of learning centers in primary classrooms, discussions of the components of an ideal language arts classroom, and presentations detailing how various components of a new school wide language arts initiative worked in the classroom.

Building cases on artifacts of leadership practice

These complex links between other aspects of the Adams instructional program led us to investigate how to communicate the function and systemic interconnections of Breakfast Club with the school culture. Halverson (2003) discussed how school leaders develop *artifacts* to influence the instructional culture and practices of schools. Here artifacts refer to entities

constructed by actors to influence the practices of others. Although in ordinary usage, artifacts refer to technological devices such as computers, pencils and telephones, in organizations there is a range of intangible artifacts, such as policies, programs and procedures that leaders develop and use to influence the practice of others. Breakfast Club proved to be an ideal artifact that served as a conceptual hub for the professional community at Adams. School leaders and teachers commonly pointed to Breakfast Club as an important catalyst for the instructional climate at Adams. The simple structure made Breakfast Club recognizable to other school leaders as an organizing metaphor for how leadership practice evolved at Adams. In addition, the simplicity and familiarity of Breakfast Club-like programs might allow school leaders from outside Adams to focus on the nuances of the practice instead of struggling to understand the function of Breakfast Club.

Once we decided to build a case around Breakfast Club, we were faced with the challenge of linking our research on Adams' leadership to practices of Breakfast Club. Halverson (2002) draws on the literature on expertise explored above to investigate how a problem setting and problem solving process precede artifact creation. While many problem setting and problem solving processes result in decisions, some also result in the creation of artifacts that embody intended problem solutions. Artifacts embody the deliberate intentions of designers, and these intentions are meant to guide the use of the artifact in practice. Designers build features into artifacts that are intended to affect practices in certain ways (Halverson, 2003; Norman, 1993). Looking backwards at this process, we can explore features of artifacts to understand the assumptions that designers made about the nature of the problem and its solution. Investigating how an artifact was created may disclose not only how designers proposed to solve the problem, but also reveal how strategies and resources were used and which goals were addressed. Further, designed artifacts often, but not always, become institutionalized as resources that the school can draw upon to frame subsequent design tasks. This iterative movement between artifacts and resources allows school leaders to build capacity for subsequent activities in their schools. The ability to intentionally develop the structures that support such capacity is an important indicator of instructional leadership expertise. We thus set out to build a case using a key artifact, Breakfast Club that seemed situated at the heart of Adams' instructional practice.

Living Curriculum for School Leaders (LCSL)

Our efforts to build a multimedia narrative of practice that represents the practical wisdom present at Adams School were grounded in the context of the Living Curriculum project. The Living Curriculum for Teachers (LCT) project used complex, project-based middle school science curricula as a hub for documenting teaching practice that facilitated teacher learning and professional development (Shrader, 2000). The differences between school leadership and teaching, however, suggested that curricula did not provide a similar organizing principle for the Living Curriculum for School Leaders (LCSL). While teachers directly engage with curricula, the task of school leaders is to establish a supportive context for instructional innovation (Spillane, Halverson & Diamond, 2001). We felt that an artifact such as Breakfast Club would provide a robust organizing principle for understanding how school leaders establish the context for instructional innovation.

We decided to use a question-based case model to provide a non-linear, user-guided path through narrative content. The question-based strategy used in the Living Curriculum design draws on a hypertext expert-based system theory (Ferguson, Bareiss, Birnbaum, & Osgood, 1992). Information in the Living Curriculum is organized in chains of questions relevant to the subject at hand so that practitioners can choose their topics of interest and follow questions chains as far as their interest leads them. The key task in constructing the Living Curriculum is to organize potential questions into a semantic index that associates related questions to one another. Questions ought to be presented to practitioners so that follow-up questions flow logically from main questions. Based on their knowledge of the content area and of how practitioners learn the content in question, system designers initially develop a question index that links content with likely questions. Developing a system prototype requires testing potential users to refine the system questions to establish links between loosely associated questions and to vet follow-up questions. However, without a sense of what kinds of questions are worth asking, the Living Curriculum system can leave a user faced with a bewildering assortment of questions, resulting in a random “let’s see where this leads” strategy of question coverage.

Our effort at designing the initial question set was directed toward anticipating the questions that school leaders were likely to ask in considering a program like Breakfast Club for their schools. Some of these questions, to be sure, would focus on feasibility and fit issues such as meeting times, resources and materials. But in our experience, many school leaders would want to know, for instance, how Breakfast Club would promote professional community, how teachers were invited into the program, and how teachers used their experiences as occasions for discussion. After discussing the issue with over a dozen system designers and practitioners, we chose four central questions to help users frame the context, identity, procedures and progress of the Breakfast Club:

- What should I know about Adams School?
- What is Breakfast Club?
- How does Breakfast Club work?
- What are the keys to the success of Breakfast Club?

We used these questions to code and organize the interview, field note, video and documentary data we collected concerning leadership at Adams. As we sorted through the data, we developed sub-questions that helped us to flesh out these key questions, including:

What should I know about Adams School?

- Where is Adams School?
- Who are the leaders at Adams?
- Who teaches at Adams?
- What are the students like at Adams?
- What accountability pressures do Adams staff members face?
- What are some of the internal programs at Adams School that encourage collaboration?

- What is Adams' record of student achievement?

What is Breakfast Club?

- What is the purpose of Breakfast Club?
- What difficulties did the school initially encounter when developing and implementing Breakfast Club?
- How did Adams School overcome initial obstacles to implementing Breakfast Club?
- Why did attendance at Breakfast Club meetings improve?
- How has Breakfast Club evolved over time?

How does Breakfast Club work?

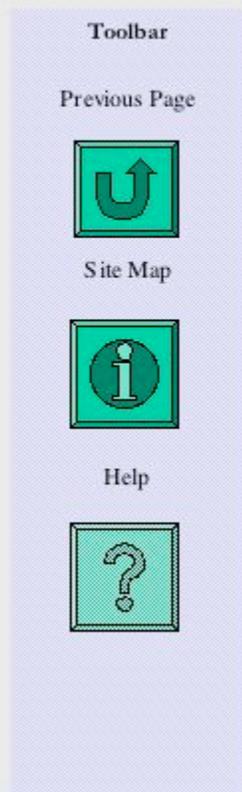
- Do the same teachers repeatedly present, or does everyone participate?
- What are the norms that govern Breakfast Club?
- What does a typical teacher presentation of research look like?
- How do teachers react to research presented by their peers at Breakfast Club?
- What are some of the themes that guide collaboration at Adams School?
- How do teachers use their classroom experiences as a collaborative teaching and learning tool at Breakfast Club?
- What is the role of administrators within Breakfast Club?
- How did Breakfast Club fit with other programs at Adams?

What are the keys to the success of Breakfast Club?

- How does Breakfast Club invite teachers into Adams School's power structure?
- What is an example of how Breakfast Club invites teachers into the power structure of Adams School?
- Has Breakfast Club improved student learning?
- Has Breakfast Club improved teaching?
- How would Breakfast Club work in other contexts?

Once we had organized the data into answers to these questions, we laid out and printed the material in Microsoft PowerPoint pages. We laid the pages out on a large table, and began to draw links between the pages. This allowed us to develop further questions that would link content from one area to another. Our resulting prototype LCSL case narrative consisted of thirty screens including related questions, video-clips, and other artifacts such as sample meeting agendas and reading lists (sample, Figure 1). The video selections on the right of the screen illustrated the main points made in the text. The navigation buttons on the left of the screen help the user to navigate a path through the narrative. To incorporate the relevant aspects of the narrative, a site map structure organized the relevant information.

Learning Technologies for School Administrators



How did Adams School overcome initial obstacles to implementing Breakfast Club?

The perceived requirements of a professional community of teachers would not allow the leadership team to tolerate a status quo. Consequently, Breakfast Club began, but as a volunteer program only. The principal decided that "Rather than just eliminate anybody," said Principal Watkins, we chose to say that "anybody who wants to come to the meetings can come." Thus, the principal used this strategy of beginning an institutional change process by invitation:

It was a real sticky situation, in who was going to participate and who was not going to participate. I did not really know the politics of the whole school yet, because we were such a big school, and there were people coming forward, and those are always the best people who are coming forward. But you did not know who was who, so to speak.... I did not have a select committee. It worked out better in that respect so nobody can say that they were not invited, nobody can say it was their plan and not our plan.

**Why did attendance at Breakfast Club meetings improve?*

**Do the same teachers repeatedly present, or does everyone participate?*

**What are the norms that govern Breakfast Club?*

Figure 1: Sample Screen from LCSL for School Leaders version 1.0

In designing the case, we sought to achieve a balance between the details of program implementation and the ways in which Adams leaders thought about their role as instructional leaders. For example, our data showed that leaders made a conscious effort to refrain from making content-based contributions to the Breakfast Club discussions. When discussing the role that administrators played in Breakfast Club discussions, we developed the following narrative in the case:

The administrators in the Breakfast Club refrained from framing the discussion among the teachers, instead adopting the role of information distributor. For example, on one occasion one teacher asked whether a certain reading program was "mandated by the state or optional." The faculty members looked toward the administrator in the room, the Language Arts Coordinator, who responded that the program was mandatory. On another occasion, near the end of a Breakfast Club meeting and following a session on envisioning the ideal reading classroom, the principal noted that the school was a

recipient of a grant that would give each classroom teacher about \$2,000 for the materials and to help establish ideal reading classrooms in the school.

However, the way we presented the information emphasizes that this is what Adams' leaders did, not what implementers ought to do. This gap between represented practice and the experience of the user was left unaddressed in the system. Such leadership restraint from participation may or may not resonate with other leaders' conceptions of themselves as instructional leaders. School principals that helped to develop the initiatives, for example, might wish to take a more active role in subsequent discussions. Leader non-participation might also give the message that discussions of instructional practices are the business of teachers, not leaders. Another screen addressed the issue of how and why faculty attendance improved:

At first, Breakfast Club meetings were sparsely attended. Apparently, teachers saw these initial efforts as unrelated to their essential responsibilities in the school. However, over time, the Breakfast Club was increasingly seen as the place for teachers to hear about current developments in the school community. One teacher noted that, "Breakfast Club became the place to hear about what was going on" in the school. An informal expectation arose that teachers would take turns reviewing research and presenting their opinions of the research at Breakfast Club meetings. Within several years many of the teachers had presented articles. The artifact that began with an invitation to professional community became more and more a part of the institutional culture.

Here we address a key issue faced by school leaders in implementing optional discussion programs like Breakfast Club: how to motivate and encourage faculty attendance. Cultivating this informal expectation is a valuable insight for leaders of fledgling discussion programs who are worried about initial poor attendance. Adams school leaders could have chosen to require participation at Breakfast Club at the risk of a union grievance. The LCSL system tries to anticipate such leader concerns by providing access to valuable practical wisdom from leaders who have already traveled a similar path. Helping to explain how patience and perseverance over time, together with providing useful information and access to needed resources made Breakfast Club a meeting that faculty members were compelled to by self-interest rather than by force was imperative to the success of our design effort.

Thus one of the challenges of constructing the LCSL prototype was to balance the process of capturing the nuts and bolts of how the program was constructed while not reducing the representation into a step-by-step recipe for Breakfast Club. We did not intend to represent Breakfast Club as a silver bullet that schools could use to construct instructional capacity in their schools. Rather, we envisioned the case as a representation of the practical wisdom that made the Breakfast Club possible and successful. To this end, we emphasized the representation of leader's design rationale so that users could compare their understanding with the case.

The User Testing Process

The design of computer-based multimedia cases of practice offers an opportunity to bring together the traditions of case development and human-computer interaction. User testing plays an important role in tailoring the interface and function of computer programs to user needs (Flagg, 1990; Nielsen & Mack, 1994; Schniederman, 1998). In user testing, potential clients interact with systems to determine the bugs, gaps and errors in interface design. User testing practices integrate user input throughout all aspects of the design process: from program conceptualization to task analysis to prototype revision and through roll out and implementation strategies. A residual effect of user testing multimedia cases of practice is to open a window on how users think about the practices represented and, in turn, think about their own practice. User testing a case of practice, for example, not only provides designers with helpful information about how to refine the design of the software; it also provides the designers-as-researchers with a glimpse into the often-inaccessible area of professional practice. This glance into practice, revealing much more than practitioners' functional processes, shows actions *in situ*, the context in which the work is done. The process of user testing provides researchers with insights into the rhythms and assumptions of practitioners in their daily work (Halverson, 2002). Furthermore, user testing cases or practice often elicits the problems faced every day as practitioners seek to resolve, in their own terms, the problems addressed in the case.

We had two goals in conducting the user testing. First, we wanted to understand the gaps, flaws and confusing aspects of our interface and case representation. Second, we wanted to elicit the stories users would tell interacting with the different aspects of the case. To these ends, we were less interested in having the users acquire specific learning goals than in encouraging them to use the case as an occasion for reflection on practice.

We organized the user-testing process of LCSL development to include a variety of users from two main audiences: 1) those whose practice was represented in the case (insiders), and 2) those who were coming to the case from outside Adams (outsiders). We invited fourteen users to interact with the system. Our internal user pool included four teachers and administrators from Adams while our external user pool included one educational administrator not affiliated with a particular school, four urban high school teachers and administrators and five rural school district administrators (a superintendent, two principals, a curriculum director, and a business manager). We performed the tests as a two-person team: one team member acted as a facilitator while the other videotaped the interaction of the user(s) with the system and facilitator. Four of the users navigated the system alone while the other ten worked in pairs. Each user was permitted to spend as much time as they needed to navigate the system.

We began the user test by giving each participant a brief written questionnaire designed to give us some background information on his or her administrative experience, current position, professional development responsibilities, computer literacy, and relevant Internet use and experience. At the end of the pre-test questionnaire, just prior to our instructions to begin

navigating the system, we asked users to consider the questions, *What is Breakfast Club?* and *What did the Adams School staff do to create a professional development community?* as they utilized the LCSL. We encouraged users to talk aloud about the choices they made in navigation and their observations on the direction and quality of the system content. Meanwhile, as users navigated the system, we asked probing questions to discover the reasons for their comments and choices.

During the course of the external user testing process we asked several questions designed to give feedback on key aspects of the system. These questions concerned both system design issues and reflections to elicit users' practical wisdom. In the following sections, we provide a review of user responses to the questions designed to address reflective issues. We focus first on the issues raised by the Adams faculty and staff in reviewing the case. We then turn to the external audience responses to the Breakfast Club narrative of practice.

Insiders

We conducted a user testing session with two teachers, an assistant principal and the language arts-coordinator from Adams School. Like the external audience, the internal audience commented on usability and coherence issues and made suggestions about the intelligibility of follow-up questions and the ways in which video was used in the case. The three main themes that emerged from the internal audience user testing were that Breakfast Club served as 1) a condition for subsequent professional development programs at Adams, 2) an occasion for documenting practice, and 3) an occasion for reflection on practice.

1) Breakfast Club as a condition for subsequent development

The case served as a spark for helping users reflect upon how Breakfast Club served as a resource for subsequent initiatives at Adams. Understanding how artifacts such as Breakfast Club become institutional resources is a key aspect to untangling the iterative, systemic nature of leadership practice in schools. Breakfast Club led to an increased sense of the Adams faculty as pedagogical experts both within and outside the school. This perceived level of faculty expertise has helped several teachers take a leadership role in the professional development program of the school. Adams users also noted that several new programs resulted from Breakfast Club. For example, the spin-off artifact Teacher Talk represented an effort to use the model of Breakfast Club to structure conversations around student learning with the Middle School teachers; while another spin-off artifact, Teacher Leader, was developed to allow teachers use the expertise and confidence acquired through Breakfast Club to lead grade level professional development sessions for their peers. One Adams user commented that until they saw the representation of the effects of Breakfast Club, they did not realize the effects it had on other aspects of the instructional program.

While these artifacts became venues for teachers to express their newfound, in-house expertise, this expertise also began to find more formal outlets. For example, one teacher related how her efforts to develop a "workshop on integrating math with other subjects" grew from her experiences with Breakfast Club. Another teacher talked about how her role as a leader in

Breakfast Club encouraged her to take a more prominent leadership role in a district teacher network organized around literacy practices.

The Five-Week Assessment program provided another example of the effects of Breakfast Club on the school instructional program. The locally-designed Five-Week Assessment provided formative assessment information to guide teachers' efforts toward improved student achievement on summative, high-stakes exams. Adams teachers and leaders related how the Five-Week Assessment should be seen as an artifact that both results from and supplements Breakfast Club inspired professional learning opportunities at Adams. The process of coordinating instructional initiatives with test performance deficiencies is a blurry process at best. Summative data resulting from the mandated district assessments may help show that there are problems with the instructional program, but they give almost no indication of where the problem is, and provide even less information about what might be done in response. While the development of Breakfast Club allowed the school community to discuss the virtues of instructional initiatives, the Five Week Assessment program was developed to help teachers measure how these initiatives improved student learning toward the district goals, thus helping give the staff a better sense of what practices teachers perceived as successful. Seen in relation to other artifacts, Breakfast Club was a catalytic resource for the school that established the conditions for subsequent instructional innovations.

2) Breakfast Club as an occasion for documenting practice

Adams school had a substantial recent history as a research site. Classrooms were regularly videotaped for research and promotional purposes. However, most Adams videotaping opportunities were developed to communicate internal practices to external audiences rather than to promote reflection on practice within Adams. The videos of teaching practice in the Breakfast Club case reminded leaders of the value of recording examples of good teaching practice for professional development within the school. The case also prompted school leaders to note the importance of documenting existing school practices in the event of a change in leadership. Adams described the importance of developing a video record of teaching practice in the school as an occasion for reflective practice, and should current leaders move on, for preserving the spirit and structure of the school's innovations.

3) Breakfast Club as an occasion for reflection on practice

One consequence of the traditional organization of schools is the "egg carton" model of school organization, in which teachers received little organizational encouragement to share instructional practices outside the context of their classrooms (Lortie, 1975). At Adams, Breakfast Club formed a key artifact in helping bridge the gap between classrooms by establishing a climate of practice sharing. Hearing other teachers present the strategies they used to improve test scores in their classes seemed to reduce the feelings of inadequacy and competition among peers, opening up innovative practices for review. Breakfast Club also help reluctant teachers, many of whom "were not given to change," use research-based methods in their discussions and practice. The increased trust resulting from the implementation of programs like Breakfast Club points to an interesting consequence of artifact implementation. Bryk and

Schneider (2002) describe how relational trust among adults is an important feature of schools that improve student learning. We contend that the implementation of Breakfast Club in the existing school culture helped, over time, to create a sense of trust among teachers and leaders around instructional practices. The slow thawing of existing institutional prohibitions against discussing teaching practices seems to have been a consequence of the system of practices connected with Breakfast Club. While it is difficult to support a strong claim that Breakfast Club created the kind of reflection that led to the integration of research and practice, it is significant that the teachers and leaders involved in this occasion for reflection on practice credit it with serving as a catalyst for using research to inform practice at Adams.

Outsiders

We tested the LCSL case with ten urban and rural practitioners unfamiliar with Adams or with Breakfast Club to get a sense of what impression the program would make with external school leaders and teachers. Our test subjects included teachers, building and district administrators and a program coordinator for an urban arts program not affiliated with an individual school. The purpose of the external user testing was primarily to gauge whether the case itself provided a coherent view of the artifact represented and, secondarily, to determine whether Breakfast Club would be a viable option for practitioners to implement in their schools. During the course of the sessions, several issues cropped up offering interesting insights about user perceptions of the case and stories related to their own sense of practice. These issues included: 1) relevance of the video to the case, 2) similarities, if any, that the program had with external practitioners' schools, 3) feasibility in external practitioners' schools, and 4) measuring the effectiveness of Breakfast Club.

1) Was the video relevant to the case?

We decided to incorporate video clips into the system to heighten users' sense of "experienced credibility" (Fogg & Tseng, 1999). We hoped that by showing the program in action, rough edges and all, we might bring a sense of legitimacy to the narrative that could make Breakfast Club a viable means to build professional community in other schools. In this sense, the videos would not make the argument for the efficacy of Breakfast Club; rather, they would create a sense of authenticity for users that this is a real program that works in a real school.

Early in the system testing, external users seemed ambivalent about the relevance and value of video. The video was perceived as something that could be safely skipped to get to the central message of the program. When asked why she was skipping the video clips, one user commented that, "We want to get through it; we want to see what it has to say. We need to get to the facts." Another noted the lack of context that set up the video of a conversation between several administrators. One administrator viewed the reflective interviews with a sense of hollow rhetoric, saying, "this sounds too much like a professional presentation."

As they became more comfortable with the system, however, several users indicated that the videos of the Breakfast Club in action did provide a stronger sense of authenticity. After watching an exchange between several faculty members during a Breakfast Club discussion, a

user who initially expressed doubt about the value of Breakfast Club commented that this “actually sounds like it might be fun to get together and react to this stuff...there seems to be a comfort level here when they are actually talking with each other.” Another user commented that she “liked hearing the teachers talk,” and that the examples of teacher interaction “would be very good to have at the introduction of the session...as (an illustration) of what working smarter, not harder, looks like.” Another user, after listening to a teacher talk about the value of Breakfast Club, commented that “she’s being honest, that you are being a good teacher when you go back to school [and read articles], that [part of teaching] is continuing to learn things.” She continued: “I liked the [reflective interview] video clips; they give a sense of where the commitment came from in the program. She’s very clear about the purpose; they used it as a task force to get the middle school organized.”

The perceived value of the videos was not universally positive. Seeing what the discussions looked like in action led one user to critique the Breakfast Club setting, calling it “a stereotypical, boring faculty meeting. I don’t see anything here that is exciting to me...I just see blah discussions.” The conventionality of the setting displayed by the video led the user to equate Breakfast Club with the tedium of a normal faculty meeting.

2) *What, if anything, does this program remind you of in your school?*

Bruner (1986) uses the concept of verisimilitude to describe how people interact with narrative. Verisimilitude here refers to the degree to which the case “rings true” for similarly situated practitioners. An important aspect of verisimilitude is measured by whether the narrative evokes similar cases among individual users. Since *phronesis* is constructed from prior experience, evoking similar prior experiences in users helps researchers to understand where artifacts like Breakfast Club fit in the context of existing practice. Sorting these “reminders” into categories helps to both place Breakfast Club within the context of current understanding, and to build in cues for system redesign. Here we highlight the several reminders that emerged.

Computer-based resource for best practices. One group of users saw the LCSL system itself as a computer-based resource about best practices, and was reminded of other best-practice resources, such as journals and newsletters. One user remarked that she was not as familiar with electronic presentation of resources and was more comfortable with print versions of the resources. She could not tell much of a difference between an electronic case and similar cases presented in print journals.

Catalyst for district-level outcomes. A district administrator commented that the design of Breakfast Club seemed to parallel current initiatives in her district: “It is a lot like what our professional development committee is trying to do...it has taken on a nice life, it has become a real group of colleagues.” To this administrator, the specifics of the program did not appear as interesting as the ultimate effect the program had on the Adams school community.

Example of issue-based faculty community: Smoker. One pair of school leaders was reminded of how their school’s smoking lounge had provided an open forum for teachers to talk with one

another about the issues of the day. This leader picked up on the teacher collegiality and collaborative nature of Breakfast Club in noticing the similarities to the smoking lounge. An administrator in the same school commented how in the Smoker, as they called the smoking lounge, “there were just as many non-smokers as smokers.” A key difference between the Smoker and the Breakfast Club is that Smoker discussions tended to dwell on emergent strategic and management issues concerned with student behavior and negotiating the school bureaucracy, with little emphasis on sharing instructional practice. The community developed at the Smoker seemed directed less toward teaching and learning and more toward sharing strategies to survive the everyday organizational and management pressures of teaching.

3) *Would Breakfast Club work in your school?*

Most users wondered about obstacles to and opportunities for implementing Breakfast Club in their schools. Keeping in mind that *phronesis* suggests that artifacts cannot be ripped from their native context and transplanted elsewhere to achieve their original effect, we consider below four key issues that emerged regarding portability of Breakfast Club.

Resources. Time to meet and availability of breakfast proved to be the main concerns for external users in reflecting on the resources needed to get a Breakfast Club off the ground. Time for teachers to prepare for and participate in the discussions was also an issue. One teacher commented, “I would like to know where the research comes from (i.e. which journals) and who determines it.” External users indicated that more of the material resources Adams leaders used to conduct and manage their program should be integrated into their system as downloadable artifacts so that implementers would not have to reinvent the wheel. The breakfast itself provided an interesting area of concern as a contended resource to leaders in one district. One administrator felt that her teachers would perceive the act of providing a meal as an act of manipulation and as a needless expenditure of resources.

Breakfast Club in Secondary Schools. Language Arts instruction in many elementary schools, including Adams, spans across teachers at each grade level. The cross-school literacy initiatives at Adams, introduced and discussed through Breakfast Club, helped establish this common ground through requiring teachers to design and use a common language arts program throughout the school. Several users questioned whether such a program would work with a typically more departmentalized high school faculty. One user related his experience with establishing a book club at the high school level that did not take off because, as he suggested, the readings he selected were not as vital as Breakfast Club activities to the school’s core teaching practices.

Insider/Outsider Culture. Several users commented on the potential for voluntary attendance programs such as Breakfast Club to create an insider culture within the school. One teacher noted that, “If there is an insider group, the group the principal talks to, then you’d get invited to these meetings. If you aren’t [in the group], you don’t [get invited].” Adams school leaders stressed that persistent invitation to participate, together with establishing presenter schedules a year in advance, helped mitigate the establishment of an insider/outsider culture. In practice, Breakfast

Club also began to serve the role of an information distribution meeting. For example, the principal usually took the final five to ten minutes of each Breakfast Club discussion either to announce opportunities for teachers to receive resources, reveal upcoming obligations or provide advance notice for upcoming instructional obligations. Providing resources that all teachers could use thus provided another incentive for teachers to participate in Breakfast Club.

4) How can you tell whether Breakfast Club is working?

The connection between Breakfast Club, professional growth and student achievement was a concern for users as well. Several users indicated that testimonials about how teacher practice changed would have helped make a better case for Breakfast Club. Another teacher commented “I see this (Breakfast Club) as a means for professional growth in the classroom...I still go back to school-wide results.” An administrator noted the lack of attention paid in the LCSL to how the Adams community evaluated the success of Breakfast Club, and suggested that the links between program performance and student achievement be made clear in the next version.

Conclusion

The LCSL Breakfast Club case proved an interesting experiment in constructing a non-linear multimedia narrative of practice. The question-based format pushed designers to anticipate how users might interact with the story of the development and use of Breakfast Club. The Breakfast Club case encouraged us to move beyond telling a good story to customizing a narrative that would address questions likely to occur to an interested practitioner. This transformation pushed us to radically restructure the case from a passive, text-based representation of practice to an interactive, multimedia-based representation.

The intention of our LCSL case organization is to provide an occasion for reflection on practice. Having access to what similarly situated practitioners do and think gives leaders an opportunity to vicariously participate in the represented practice, providing the opportunity to think through practice along with successful peers. This vicarious participation would not work as well if the practice were represented as a finished product to be imported into native school contexts. Thus, in designing our system, we attempted to incorporate instances where Adams school leaders thought about and engaged in their work as much as possible. In doing so, we sought to draw attention away from the artifact itself and toward the artifact as an occasion for reflection on practice.

One valuable outcome of the LCSL prototype was to develop and vet a template for use in structuring subsequent narratives. After reviewing the user testing data, we revised the organizing question template to be used in the organization of subsequent cases:

- What is (the artifact)?
- How does (the artifact) work?
- What are the benefits of (the artifact)?
- What are the challenges of designing and implementing (the artifact)?

- What is the school like in which (the artifact) was developed?
- Would (the artifact) work in my school?

These questions seemed to address the basic concerns new users had in their initial interaction with the LCSL system. We suggest as an avenue for future research by the LCSL team and other researchers that this list be expanded.

We have argued that practical wisdom needs to be situated in a recognizable context for the lessons to ring true. Our experience with case design and user testing pointed toward new questions and organizational heuristics designed to give users a better sense of the nature of the program, its function and the constraints faced in design and implementation. For example, the user testing process pointed to developing a more detailed profile of the school to create a sense of legitimacy and authenticity for Breakfast Club. It appeared important to users that we build a sense that Breakfast Club is a real program developed in a real school. Video clips of the Breakfast Club in action and statistics about demographics, faculty composition and student achievement helped give a sense of the world at Adams.

The prototype Breakfast Club case for LCSL provided a good opportunity for us to test how cases of leadership practice might help communicate the practical wisdom of school leaders. The system characteristics that users noticed and named, the flaws and irregularities mentioned and the programs and ideas evoked pointed toward the directions in which the system needs to be developed further. The single case we chose to prototype also fell short of showing the interconnected nature of the *phronesis* of school leadership at Adams. In order for the systemic inter-reliance of professional development, assessment and planning to come through, a fully functional LCSL would need to include additional artifact cases as well as to develop the means to show the interconnections within the system (Halverson, 2002). Nevertheless, the Breakfast Club prototype established a method through which these further questions can be tested in subsequent system design. This three-step process involves first creating rich cases of successful leadership practice, modeling the cases according to the LCSL template and using the methods of user testing to understand the obstacles perceived to exist along the way to engaging in these practices themselves. This method allows researchers to document how practitioners build and navigate complex systems of practice, and also to learn from practitioners about the ways cases make them think about their own practice.

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ERIC descriptors

Instructional Leadership

Web-Based Instruction

Educational Media

Leadership Training