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Librarians and Teachers as Research Partners:
Reshaping Practices Based on Assessment and Reflection

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Introduction

The key to building instructional leadership is empowering partners to examine their teaching practices through the lens of actual student behaviors. Practitioners effectively gain this knowledge when they collaborate with colleagues in implementing strategies, reflecting on the results, and sharing them with the professional community (York-Barr & Duke, 2004). This learning is situated in practice and must be learned in practice. In short, schools are places where educators as well as students learn (Hiebert, Gallimore & Stigler, 2002; Ball & Cohen, 1999).

Frequent critical reflection is a formal and central part of inquiry. The idea of reflective practice, which was originally popularized by Donald Schon (1983), emphasizes that the tacit knowledge implicit in professional actions must be described through a process of observation and reflection. Mezirow (2000) states that such learning is transformative; that is, meaning is made by negotiating interpretations, using contextual understanding, critically reflecting on assumptions, and validating meaning by assessing rationales. Proponents of the notion of reflection-in-action maintain that this results in elaborating frames of reference, learning new frames, altering points of view, and transforming habits of mind (Mitchell, 2003; McNiff, 2002; McKernan, 1996; Schon, 1983).

The process of reflection is not necessarily a private activity. Research on restructuring schools indicates that teachers in effective schools do not operate in isolation (Newmann & Wehlage 1995). Student achievement is related to teachers being collaboratively responsible for student learning. McGregor (2004) stipulates that library media specialists must situate themselves "solidly in the middle of this collaboration" (202). As key members of school communities, they have a crucial stake in contributing to the quality of teaching that shapes student learning.

Information Power: Building Partnerships for Learning (AASL & AECT, 1998) places student learning unequivocally at the core of services provided by the library media center. As instructional colleagues, library media specialists are strategically positioned to assume a leadership role in curriculum reform (Lance, 2003; Doiron & Davies, 1998; Todd, 1997; Woolls, 1997; Stripling, 1995). They help to resolve instructional problems and model reflective practice. *Information Power* states that "leadership is demonstrated when information literacy is integrated across all subjects and grades, when connections are made between information-based learning and the skills students will need in the workplace and home" (AASL & AECT, 1998, 52).

Research Focus

Over the past decade, my investigations as an academic researcher have converged on several overarching questions related to the importance of reflective practice in improving classroom and library instruction:

- How do instructional partners effectively facilitate student learning, particularly learning that embeds the information search process?
- How do instructional partners refine their craft knowledge?
- How do they contribute to and expand the professional body of knowledge about effective instructional practice?

In this paper, I report on a multi-year project to (1) identify key components of effective teaching in collaborative elementary school classroom-library settings, and (2) translate this knowledge into practitioner-facilitated professional development. I briefly review the literature on two overlapping strands that are critical for improvements in teaching and learning: practitioner research and communities of practice. I then summarize the methods employed in the practitioner research described in this report. The major segment of the paper focuses on the results gleaned from the practitioner research (phase one) and the implications of the findings in the development of a practice-based approach to professional development (phase two). I use the terms *librarian* and *library media specialist* as well as *library* and *library media center* interchangeably throughout the article.

Phase One
The first phase centered on five case studies of practitioner research in different elementary schools in Hawaii. I summarize each case study in terms of its context, specific questions addressed, data collected and findings. In all of these studies, the instructional partners defined and refined their craft knowledge based on practice and reflection. They analyzed the effectiveness of various interventions that they used to teach students the information seeking process. They also identified recurring themes and features that crossed context boundaries.

Phase Two
This phase of the project, which is still in early development, focuses on extending the knowledge gained through the practitioner research studies to a larger educational community. Several of the library media specialists, who have been involved in the studies, are collaborating with me in designing a professional development initiative for other school teams interested in using an inquiry approach to teaching and learning. We will be taking a work group approach with the school librarians serving as informal mentors to individual school teams. By exchanging professional knowledge, participants will examine their instructional practices to verify and modify them in light of research-substantiated experience. They will hypothesize or predict the relationships between teaching behaviors and learning, and explain observed connections. The desired outcome

is to harness the potential of continual evaluation as teams test their practices in different local contexts.

Review of Related Literature

The notions of practitioner research and communities of practice are fundamental to collaborative inquiry. Both concepts assume that certain aspects of the human experience can only be richly understood when two or more people engage in spiraling cycles that alternate between having experiences and reflecting together on these experiences.

Practitioner Research

The term practitioner research is often used synonymously with action research. I will be using these terms interchangeably throughout this paper. The validity of the concepts, models, and results that practitioner research generates depends "not so much on scientific tests of truth as on their utility in helping practitioners to act more effectively, skillfully and intelligently" (McKernan, 1996, 4). Farmer (2003) states that this type of research "provides a realistic bridge between day-to-day educational practice and educational theory" (4).

The roots of contemporary action research can be traced to Kurt Lewin's work in the 1940s. His contribution was an elaborated theory that focused practitioner research on a social problem needing resolution, with the goal being better action or practice. He applied theories to practice through repeated cycles of problem conceptualization, planning, fact-finding, implementation, and evaluation, leading into reconceptualization for a further iteration of the process. Practitioner research as reflective practice was also influenced in the late 1960s and early 1970s by the work of the Humanities Curriculum Project (HCP) in the United Kingdom under the leadership of Lawrence Stenhouse. Rather than collaborative teams of teachers who practiced and researchers who observed and reflected, the HCP emphasized the teacher as both practitioner and reflector (Elliott & Adelman, 1996).

The participative nature of action research has challenged the standard model of social research that assumes professional researchers should exercise maximum control over the process. Two important dimensions of this research are the democratization of the process and the empowerment of participants, who are viewed as change agents. Practitioners are colleagues in the process of identifying issues and questions and determining alternative means of gathering necessary information to probe for solutions. They participate in the collection and analysis of data, determine future classroom-library action based on findings, and decide on effective means of disseminating gained knowledge to the larger educational community. While they are the primary informants, the school team members also become interpreters and research designers. The exchanges between different participants, and between participants and researchers, offer a dialectic that challenges weak or inconsistent data or interpretations. Checking validity in this type of research involves triangulation of inquirers and methods. For example, inquirer triangulation might be derived from at least three people examining and reporting on the same evidence or event. Method triangulation demands the comparative analysis of

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different forms of data including journal entries, interviews, field notes, and student work samples.

Practitioner research requires systematic and intentional inquiry. Participants meet regularly to articulate instructional concerns and discuss alternative strategies to improve practice (Mitchell, 2000; Cochran-Smith & Lytle, 1993). More than a series of concrete steps, action research is "a process of learning from experience, a dialectical interplay between practice, reflection and learning" (McNiff, 2002, 13)

The following assumptions undergird practitioner research:
1. Research is exploratory in nature. The aim is to better understand "issues and factors at work in a learning or teaching process rather than to measure the effects of currently known variables" (Neuman, 2003, 107).

2. Research legitimizes the teaching experiences and practical wisdom that instructors use in mediating their professional lives (Ghaye, 1997).

3. Researchers and practitioners work side-by-side as partners in settings where each benefits from the other's expertise. Practitioners use the wealth of their experience to test difficult-to-implement but promising ideas. Researchers, in turn, have greater access to investigational contexts and populations, and gain a rich source of fresh concepts and hypotheses (Hiebert, Gallimore, & Stigler, 2002).

4. The academic partner plays several potential roles. One is to suggest frames that help practitioners make tacit knowledge explicit. Another role is to affirm the value of the practitioners' experiences, ideas and insights. A third role is to provide platforms for teacher and librarian researchers to share their understandings.

5. This form of research has dual aims of (a) improving local professional practice and (b) developing the quality of professional practice in a wider sphere. Teaching— whether it occurs in the classroom or the library media center—is not a purely private and personal activity. It is a professional activity that can be continuously improved if it is made public and examined openly (Hiebert, Gallimore, & Stigler, 2002).

School Librarians and Practitioner Research
There are specific references to practitioner research in the literature of school librarianship that date back to the 1970s. In 1979, the American Association of School Librarians sponsored a preconference on action research. Speakers at this session encouraged library media specialists to improve their instructional programs by engaging in action research (Loertscher, 1979). The British Library in 1987, published proceedings of a seminar that focused on collaborative inquiry enhancing the use of information skills (Ruddick et al., 1987). In 2002, the Australian School Library Association produced a meta-review of evidence linking school libraries to student achievement (Lonsdale, 2003). In general the Australian report confirmed the need for more local "small-scale,

qualitative studies" to evaluate the impact of the school library on aspects of learning (Lonsdale, 2003, 1).

Over the last two decades, there has been a steady stream of literature from Europe, Canada, Australia, and the United States describing the process of practitioner research, its relevance to the concerns of library media specialists and its value to the profession (e.g., Englert, 1982; Rehlinger, 1988; Stripling, 1989; Howe, 1998; Woolls & Loertscher, 1999; Dickinson, 2001; McNicol, 2004). Three recent publications have provided useful guidelines for school librarians conducting action research (Howard & Eckhardt, 2005; Farmer, 2003; Sykes, 2002). Sykes (2002) renders a thoughtful account of her own experiences as an action researcher. Farmer (2003) introduces useful background information about statistical concepts and suggestions for a wiser consumption of research. Howard and Eckhardt (2005) promote the importance of sharing the results locally through school and district presentations and nationally through conferences and publications.

While the body of literature just described offers models and strategies to conduct action research, relatively few library-focused projects using this methodology have actually been published. A notable attempt to bring attention to action research in library-connected instruction was a special issue devoted to this topic in *School Libraries Worldwide.* In it, Todd (1997) described how a long-term project conducted at a secondary college in Sydney, Australia, provided evidence that integrated information literacy skills positively influenced student achievement. Three other studies in the same issue reported the results of practitioner research conducted in an elementary school (Harada & Yoshina, 1997), a junior high school (Loerke & Oberg, 1997), and a high school (Howe, 1997). In each case, the researchers studied how students progressed through various research projects and analyzed how different teaching methods and strategies influenced student success.

At the 1997 Conference of the International Association of School Librarianship, Howe (1997) reported on her study conducted at an independent secondary school in Pittsburgh in which she concluded that electronic search skills could be effectively imparted through systematic and formal instruction. She noted that some skills were best taught in collaboration with the subject teachers but that other skills could be taught in a short course offered by the school librarian. More recently, Farmer (2001) presented a case study describing how her high school in California implemented information literacy standards across the grade levels. She provided a detailed account of how students' skills levels were assessed and how various research products were developed. The paper also included an evaluation of the project's results.

Communities of Practice
Learning within a collaborative community has garnered strong support from both theoreticians and practitioners (Barab, Barnett, & Squire, 2002; Wenger, 1998). Educators have argued that for teachers to be successful in implementing new practices in their classrooms, they must be afforded opportunities to participate in professional communities where they discuss new teaching strategies and garner support from their

peers as they implement those strategies in their classrooms (Cochran-Smith & Lytle, 1993).

Barab and colleagues define a professional community of practice as a "persistent, sustained social network of individuals who share and develop an overlapping knowledge base, set of beliefs, values, history and experiences focused on a common practice and/or mutual enterprise" (Barab et al., in press, 5). These communities develop over an extended time frame in the pursuit of a shared undertaking. They elaborate on experiential learning cycles through individual and shared exchanges (Bray et al., 2000).

Carefully planned professional development contributes to establishing and sustaining communities that target instructional improvement and school reform (Borko, 2004; Barab, Barnett & Squire, 2002; Little, 2002; CoVisProject, 2000; Ball & Cohen, 1999). Such communities establish and maintain communication norms and trust. They encourage collaborative interactions that occur when groups of teachers work together to examine and improve their practice. In these communities, there is a willingness among members to assume responsibility for their
colleagues' growth and development (Borko, 2004).

Role of School Librarians in Communities of Practice
While the concept has figured prominently in the literature of school reform, publications focusing on the school library's participation in communities of practice have been sparse. The more general term, learning communities, has been present in educational literature since the early 1960s and was formally introduced to the national audience of library media specialists in 1998 with the publication of *Information Power: Building Partnerships for Learning* (Pasco, 2004). The document describes a learning community as a dynamic organism that embraces all stakeholders from students to professional associations. In such communities, the library media specialists "collaborate for authentic, information-based learning" (AASL & AECT, 1998, 123).

Several library educators (e.g., Barron, 1994; Herrin, 1995) have elaborated on the importance of fostering such communities in today's schools and identified library media specialists as potential leaders in building collaborative networks with classroom teachers. In 2001, I reported on one such example that was cooperatively implemented by the Hawaii Department of Education, the Hawaii Association of School Librarians, and the University of Hawaii (Harada, 2001). The objective of the year-long initiative was to develop reflective practice among teachers and librarians as they collaborated on an inquiry approach to learning. The teams reported the following insights gained from the collaborative experience: (1) effective instructional planning required consensus on learning goals and desired outcomes; (2) central to inquiry learning was having students involved as partners in shaping their learning experiences; and (3) the diversity of skills and experiences represented in a team was an asset rather than a liability.

Methodology

Klobas (1997) identifies the following as key components in designing and executing practitioner research:

- Clear definition of the problem or situation to be addressed
- Selection of appropriate actions or interventions based on the problem definition
- Identification of techniques for data collection
- Implementation of the planning-action-evaluation cycle

It is important to note that these components are not necessarily representative of an ordered progression from one area to another. As unplanned changes and events occur, the researchers should be able to reflect on these occurrences and consider revised options.

In the five cases of practitioner research reported in this paper, multiple data-gathering procedures were employed including the examination and analysis of the following: (1) samples of students' work, (2) reflection logs written by students, (3) teacher and librarian lesson plans, and (4) informal notes and anecdotal logs maintained by the instructional partners. In the study at Mililani Mauka Elementary, the library media specialist also devised a simple pre and posttest to determine whether students could identify the major components of the information searching process.

As the university partner in these studies, I observed instruction in the library media centers and shared my field notes. In several instances (Mililani Mauka, Shafter, and Lincoln Elementary Schools), graduate students from the University of Hawaii's Library and Information Science Program also observed ongoing library instruction and contributed their field notes. In addition, I conducted unstructured and semi structured interviews on a monthly or more frequent basis with the respective teams and made summaries of these interviews available to my school partners for reaction and further reflection. I also shared published research that had implications for the participants' own inquiries. These articles related to topics such as critical thinking, inquiry learning, assessing for learning, and reflective practices.

Phase One: Summaries of Practitioner Research

The five studies are chronologically presented with each described in terms of its school context, research questions, methods of data collection, and findings. Common threads in these cases included the implementation of a process approach to information searching and use, incorporation of strategies for student self-reflection and assessment, and the integration of guided inquiry as a framework for learning. All of the schools in these studies used modified versions of Kuhlthau's Information Search Process (2004). In all instances, the libraries operated on flexible schedules. By virtue of working with me as the external academic partner, the teams shared one unique feature: they had opportunities to learn about the prior investigations and converse with the teachers and librarians who had participated in them. These conversations motivated them to develop their own research questions.

Mililani Mauka Elementary (1995-96) [1]

School context. Mililani Mauka was located in a rapidly growing middle class community outside Honolulu. With a student population of 1,100, it was the largest of the schools in this pool of studies. Almost 46 percent of the students were Japanese with other Asian American ethnic groups comprising an additional 22 percent of the population. In standardized tests, 91 percent of the students scored average or above in reading and 92 percent placed in average or above stanines in math. Seven percent of the students were in special education and less than one percent of the students were in English as a Second Language (ESL) programs. All 39 faculty members were fully licensed with 24 faculty having more than five years of teaching experience.

The library media specialist, Joan Yoshina, and her teachers had been working on more integrated instruction; however, she felt that their work lacked student involvement in assessing their understanding of information searching as a process. To substantiate her observations, she devised a simple pretest requiring students to identify the skills needed to complete a research assignment dealing with mammals living in Australia. She discovered that of her upper elementary students, fewer than 20 percent mentioned formulating a focus or planning for research, and none identified assessing either the product or the process as critical. Yoshina shared her findings with two of her teachers, Karen Makekau and Laverne Tada. Identification of this problem served as the catalyst for their research.

Research questions. The team formulated the following questions to guide their inquiry: (1) What might be effective intervention strategies to help students understand a process approach to information searching and use? (2) How might students assess their own learning throughout this process?

Two thematic units were identified as the foci for the team's investigations. At the fourth grade, Tada selected the theme of interdependence in a rain forest. At the sixth grade, Makekau chose the theme of conflict and compromise and had students examine a range of current national and international conflicts. The fourth grade unit resulted in a classroom re-creation of the rain forest ecosystem. Sixth grade students worked on web pages to share their information on different national and international conflicts. Both teachers planned separately with Yoshina. Each teacher met with the librarian for approximately six hours prior to initiating her unit. They also met at the midpoint and end of the units for about two hours each time. In between these formal meetings, they had brief face-to-face touch points and frequently exchanged comments by phone and e-mail.

Data collection and findings. A total of 51 students - 22 in grade four and 29 in grade six - were involved in the units than ran for ten weeks. The instructors met with me on a monthly basis throughout the planning and implementation of the projects. A graduate student and I observed and kept field notes on approximately half of the lessons taught in the library. The team members maintained weekly anecdotal logs and created lesson plans.

Approximately half of the direct instructional time was conducted in the library; the rest of the work was done in the classrooms and the computer lab. Classes averaged about two 45-minute sessions a week in the library during the first six weeks with less formal visits in small groups during the remainder of the project. Yoshina taught the lessons on formulating a focus, planning for research, and collecting information. The teachers led the presearch and production phases of the units.

An analyses of the lesson plans, corroborated by the field notes, interviews, and anecdotal logs, revealed the use of various intervention strategies throughout the Information Search Process including concept mapping and the creation of rubrics for assessing note taking and the final products. Conferencing and journal writing were used extensively throughout the units.

A posttest, similar to the pretest, was administered at the end of the units. The most impressive gains were: (1) 95 percent of the students identified presearch activities as important in formulating a research focus; and (2) 100 percent of them said that both the product and the process had to be assessed.

The following findings emerged from the instructors' logs, student journals, interviews, and work samples:

1. A combination of guided practice, immediate feedback, and conferencing was deemed "highly effective." Instructors and students singled out conferencing as "most essential." Both the fourth and sixth grade students felt that the one-on-one interaction helped them think about what they were doing and assisted them in interpreting and organizing their information. One student wrote in his log, "If we were given at least one week to gather notes, then just let us have conferences for the rest of the time." Given the labor intensive nature of conferencing, both teachers acknowledged the benefits of working with the librarian as a partner. In an interview, Makekau said, "Working with Joan, we were able to split the workload. She was adept at counseling the students and we were able to meet with twice as many students in the same amount of time. She was a godsend!"

2. A majority of the student journals mentioned that learning to "think aloud" was new to them and they saw genuine benefits in using this strategy. One student wrote, "It all became clearer to me when Mrs. Y [librarian] started telling about what she was thinking as she wrote examples of good notes on the white board." In my field notes, I also captured one student applying this strategy as he explained how he was using an electronic encyclopedia to a peer:

   I look under religion because I know that the causes for this conflict had to do with religion. The information goes too far back and doesn't say anything about today's conflict. I need to go back to the outline of the article and find something more current. Now I am looking under that. If this does not pan out, I might have to. . . .

3. Students and instructors repeatedly mentioned the positive results of constructing and using rubrics. The students helped the instructors draft rubrics for taking notes and for their final products. One sixth grader noted, "Now I know what to put in my [web]page. Making the assessment tool made me more confidant [sic] about our project and how we could make it meet the criteria." It should be noted that the students in both grades tended to rate themselves slightly higher than did the instructors. Since this was the students' first experience with rubrics, the instructors felt that additional modeling and guided practice in future projects would benefit everyone.

4. Both students and instructors frequently mentioned the recursive nature of the process. Students found that they were modifying their foci and "going back and forth between taking notes and finding a new topic when I couldn't find enough information on my first topic." More often, students found themselves shifting between collecting information and working on their presentations as they discovered they were missing important pieces of information. As one student commented, "This [process] never ends!"

Shafter Elementary (1999-2000) [2]
School context. Shafter was situated on a military base on the edge of Honolulu. All of the students attending the school were military dependents. The smallest of the schools in this group of studies, Shafter had a student population of 212. Over 45 percent of the students were Caucasian and another 27 percent were African American. In standardized tests, 92 percent of the students scored average or above in both reading and in math. Twelve percent of the students were in special education and another 5 percent were ESL students. There were 17 faculty members, 14 were fully licensed, and 12 had taught for more than five years.

Claire Sato, the library media specialist at Shafter Elementary, had spoken with Joan Yoshina and read her published accounts of the work conducted at Mililani Mauka. She was already involved in extensive collaborative work with many of her teachers and was keenly interested in examining the use of journal writing as a means of raising students' awareness of the Information Search Process. Sato invited Eileen Suda, who taught a combination fifth and sixth grade class, to join her in this investigation.

Research questions. As a team, they devised the following questions to drive their research: (1) What understandings and problems do students express through their journals as they work through a research assignment? (2) What feelings do they express? (3) How does journal writing inform our instruction?

They decided to work on two cycles of research with the students. The first assignment on how geography influences a culture or civilization was a required unit of study completed in the fall semester. Students produced poster displays of their findings that were exhibited in the library. The second assignment, which was conducted in the spring, engaged students in selecting heroes from history. This unit evolved from questions that students had raised about "What makes a person heroic?" and "Who is a hero to me?"

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Students created short skits and mock interviews as well as trading cards of their chosen heroes. Sato and Suda collaborated on the assignments during periods when Suda's students were on the playground with the physical education teacher. Since the library operated on a flexible schedule, Sato could accommodate this type of collaborative planning.

Data collection and findings. Seventeen students participated in this study, seven fifth graders and ten sixth graders. The class spent a total of twelve weeks on the two research assignments. The librarian assumed the lead in a total of twenty-four instructional sessions that dealt with exploring the general themes, formulating foci and questions, and locating and documenting information. Instruction was largely direct and structured in the first cycle. During the second cycle, however, students worked more independently with Sato and Suda guiding and facilitating their efforts. The classes visited the library as many as three times a week for an hour each time.

Students each wrote a total of twenty-six journal entries. A graduate student from the University of Hawaii and I analyzed the journal entries. To ascertain cognitive response levels, we modified a coding scheme used by Staton (1988) in her analysis of journal writing. We coded affective responses using Kuhlthau's (2004) stages of emotional expressions. In addition to the analysis of the journals, the librarian maintained weekly anecdotal logs and the graduate student from the University of Hawaii recorded field notes for the sessions taught in the library. I also interviewed the school team on a monthly basis for the duration of the assignments.

The following findings emerged from the journal analyses, anecdotal logs, field notes, and interviews:

1. While students could often complete a task on paper, they had little understanding of the purpose for doing it. This was especially true in the first cycle. In her anecdotal log, Sato noted:

   By reading the journals, I see how faulty some of our observations have been. All the students seemed to be on task. But did they truly understand what they were doing and why they were doing it? Their journals clearly tell us that they were clueless.

   Reflections like the one above, led the library media specialist and teacher to re-examine their intervention strategies. One important activity that resulted was the inclusion of debriefing sessions with the class after each new learning experience. During these sessions, either Sato or Suda took the lead in presenting examples of the journal entries and facilitating discussions on how these entries provided evidence of learning. As a team, the instructors also engaged in more frequent conferencing sessions with the students. By modifying their instructional approaches, they noted that students expressed a clearer understanding of key aspects of the information seeking process in the second assignment. Figure 1 displays examples of entries from two students during the first and second cycles of research.

Figure 1. Examples of Journal Entries for Cycles One and Two

Journal prompt: Why is exploring a topic important to your work?

Student A, cycle one: "This is educational but when do we really start our research?"

Student A, cycle two: "Exploring helps me know what I will be researching. I look for possible topics. I skim different resources, see if they are understandable and interesting. The more sources, the more places I have to find information. Also I need to find something that interests me because I will have to stick with it for a long time!"

Journal prompt: How would you explain how to find information and take notes to a new student in our class?

Student B, cycle one: "The way we take notes is we get the book with the subject we want, then we answer the questions that we had."

Student B, cycle two: "Scan through all of your resources. Take your time while doing this. While skimming you tag important sections then it will be easier to go back to that page and find information. Always look at your questions because they give you clues about what to look for. Take notes by writing keywords first, then long answers. Don't copy your answers out of the book because the teacher knows what kind of work you do and you will have to redo it anyway."

2. In both cycles, a majority of the students experienced emotional peaks and valleys similar to the patterns reported in Kuhlthau's studies (2004) with high school students. In the exploration stage, for example, Suda's students expressed apprehension, frustration, and bewilderment. As they moved into formulation of a focus, there was guarded optimism. This was followed by feelings of confidence if they were successful in gathering information on their selected topics or dejection if they were not able to find what they needed. Finally, students indicated their elation and relief as they completed their trading cards, which was one of their final products. Figure 2 presents excerpts from one student's journal.

Figure 2. Example of One Student's Affective Responses

Finding a focus: *"I feel misplaced because I am not realy [sic] sure of what I am supposed to do. I kind of feel like I am doing something wrong."*

Gathering information: *"I feel good about it because I learned lots of things that I never knew before. I feel I am getting a lot accomplished."*

Completing a product: *"YES! I'm done!!! I can't believe it. I think that my trading cards turned out really well. I mean when your mom says that you can make money off of making trading cards you can't be doing too bad!"*

The instructors acknowledged these feelings as an integral part of comprehension and assessment for learning. Because the journal was not a tool for grading, students felt safe expressing themselves and taking risks in describing what they knew.

3. Journal writing provided the instructors with critical snapshots that revealed the private thoughts of all students. Through reading the journals, Suda and Sato were able to more clearly identify variations in students' perceptions and understandings of the information search process. This increased engagement also sharpened the team's awareness of individual development. In the following log entry, Sato captures the problem-solving capabilities of one student:

> *L. is a child, who usually needs to be told what to do, how to do it, and when to do it. She is currently working on her trading card. In her log, she wrote of all the steps she had taken. I was impressed. I had no idea that she had taken these steps to complete her tasks without calling Eileen [teacher] or me. When she finally came to me today with something she couldn't solve, I commended her for the work she had already done. As we worked together, she came up with suggestions of what she might try.*

4. Reflection was a learned skill that required extensive practice and feedback. Many of Suda's students had never written journals and they indicated the need for more time to do their entries. As one of the culminating activities, the librarian asked students to comment on the merits of journal writing. A majority of the students indicated that keeping journals allowed them to explain what they were learning and how they were feeling about their experiences. One student noted:

> *Later on, you can look back and see what you did. You can see what you did better than before. You can also see what you thought and felt. The next time you do something like this, you can learn from what you did before.*

5. The counseling role of the instructor assumed a richer dimension as both Suda and Sato discovered how positive and constructive dialogue reinforced strong performance. This discourse involved a continuous exchange with students to clarify and elaborate on described experiences and to provoke thinking about new ways to approach information problem-solving tasks.

Waikele Elementary (2000-01) [3]
School context. Established in 1998, Waikele was the newest among the five schools in this group. It was located in a rapidly growing lower middle class community about twenty miles from Honolulu. Of the 788 students, almost 46 percent were Filipino from recently immigrated families. In standardized tests, 77 percent of the students scored average or above in reading and 83 percent placed in average or higher stanines in math. Six percent of the students were in special education and 15 percent were ESL students. Forty-one of the 45 faculty members were fully licensed. Only 13 of them had taught for more than five years.

Debora Lum, library media specialist, and Kathy Souza, a kindergarten teacher, had attended a summer institute where both Yoshina and Sato had described their practitioner research. Intrigued by these investigations, Lum and Souza wanted to study how they might effectively engage kindergarten students in inquiry-based learning.

Research questions. The team's research questions centered on: (1) How might kindergarten students demonstrate their understanding of inquiry as a process? (2) How might we nurture such inquiry?

Unlike the experiences at Mililani Mauka and Shafter, where existing curriculum requirements largely predetermined the units of study, the Waikele team wanted to experiment with an inquiry generated by the children. The opportunity presented itself when one of Souza's students discovered a strange bug on the school playground. The kindergartners had a flood of questions about the insect. Souza invited them to find out more about it and asked for volunteers to serve as the "detectives" on this project. The three volunteers not only conducted the investigation but also reported their progress to the class throughout the project. They worked with the librarian in seeking information. When the students were unsuccessful in locating the bug through the library's resources, the librarian helped them in sending e-mail to an entomologist. Ultimately, they created a one-minute video that was viewed by the entire school on the closed circuit television network. Both Lum and Souza helped the students organize their information and the school's video coordinator assisted in the production phase of the students' work.

Data collection and findings. The students spent four weeks on this project. Lum and Souza maintained logs throughout the process. As the university partner, I observed them in three work sessions with the students and prepared field notes on these experiences. I also met with the instructors at four points in the project and recorded our conversations.

While they were working on their project and again at the end, students contributed to a web representation of the inquiry process (Figure 3). This was a critical artifact that captured their collective knowledge about the process as kindergartners.

Figure 3. Web Representation of Inquiry Process by K Students

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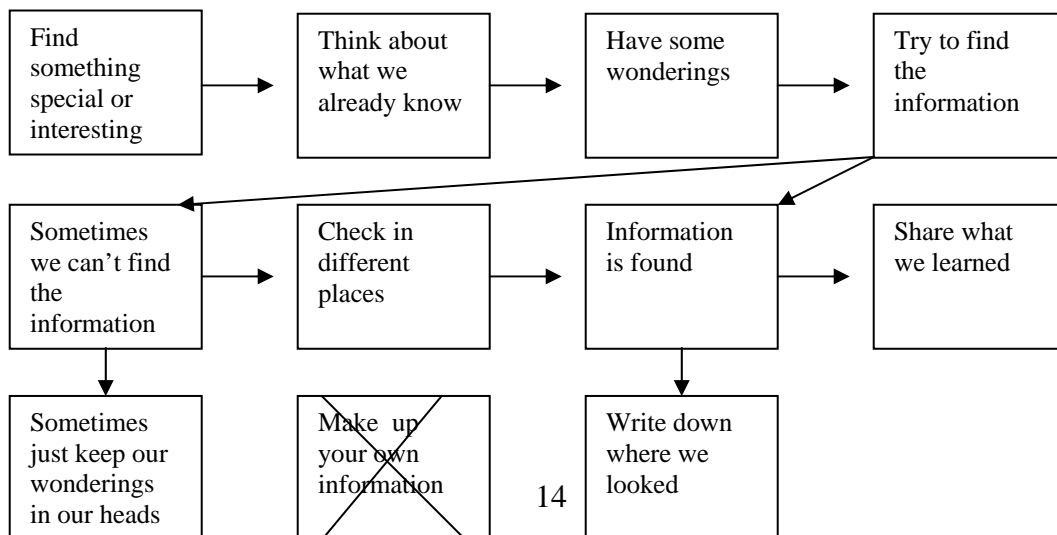
By studying the above artifact and conversing with the students, the instructors identified the following notions about inquiry emerging from their young learners:

- An inquiry is fueled by a desire to know something.
- Prior knowledge must be considered as part of an investigation.
- Questions (i.e., wonderings) shape an inquiry.
- Information may not be easily found.
- Ethical management of information is critical.
- Knowledge gained should be communicated to others.

Additional findings that were gleaned from the instructors' logs and interviews included the following:

1. The instructors recognized the centrality of student-generated questions in the inquiry process. These questions framed what the children wanted and needed to know. Souza reflected, "I now realize that when questions come from the children, they are more powerful and purposeful than teacher-generated questions."

2. Affect was strongly associated and woven into cognitive meaning making. Students expressed a growing sense of empowerment as they brainstormed ideas, selected alternatives, and overcame problems. They proudly mentioned learning new skills in using technology to gather information and communicate their findings. One student said, "I want to teach my friend how to ask wondering questions and find answers to them." Another student told Souza, "I have a new wondering. I think I know where to find out more about it."

3. Both instructors found themselves reexamining their roles as teachers. They experimented with more facilitative styles of interaction that focused on coaching rather than "telling and testing." They provided students with time and space to investigate and pose questions. Where appropriate, they offered suggestions, posed options, and raised further questions that stretched the students' thinking and encouraged connections with prior learning.

Mililani Waena Elementary (2003-04) [4]
School context. Mililani Waena was the second oldest of five elementary schools serving the Mililani community. Of the 650 students, 20 percent were Japanese with almost equal proportions (11 percent) of Filipino, Hawaiian, and Caucasian students. In standardized tests, 83 percent of the students scored average or above in reading and 89 percent placed in average or higher stanines in math. Seven percent of the students were in special education and 2 percent were ESL students. There were 46 faculty members; 41 were fully licensed; and 31 of them had taught for more than five years.

The faculty at Mililani Waena had recently received training in problem-based learning and they were eager to develop learning that incorporated this approach. The library media specialist, Linda Kim, had read about the Waikele work with kindergartners and she wanted to develop a strand of research that examined how genuine inquiry might be developed in an upper elementary classroom at her school. One of her fifth grade teachers, Leila Robello, indicated that she was unhappy with a unit on nutrition that she introduced each fall. She normally taught the unit through textbook assignments and culminated it with students taking a quiz on the food groups and writing a short report on the nutritional value of specific foods. Kim asked if she wanted to experiment with a problem-based approach to the unit; Robello was willing to take the risk.

Research questions. As a team, they wanted to explore the following questions: (1) How might a problem-based approach make learning real for students? (2) How might implementing this approach influence our teaching?

Rather than beginning with a teacher-selected topic, Kim and Robello invited students to contribute topics and issues dealing with the general theme of nutrition. Students brainstormed many possibilities, discussed them with families and peers, and voted on one problem they agreed was critical: the need for more appetizing as well as nutritious school lunches. Their goal was to devise appealing and balanced school lunch menus and present the two best menus to the cafeteria manager and the principal.

Data collection and findings. Twenty-one students were involved in this study that lasted for nearly a semester. Kim and Robello met informally to plan and improvise lessons throughout the project. Kim took the lead in the presearch and information gathering phases of the work. Robello worked with the students on the products. Throughout the process, Kim kept informal notes describing students' progress and lesson-planning with Robello. As the university partner, I met with her about twice a month to examine student work samples and discuss problems and progress. Students maintained weekly logs. Kim and Robello wanted the students to help in defining and shaping the project. While they established broad guidelines for it they continually modified the specific tasks as they worked with the students.

The school team emerged with the following key understandings about a student-centered approach to learning:

1. Questioning was at the core of the experience. In this case, the students identified the problem and the essential question. With the help of the instructors, they also created more specific questions that helped them search for information about the nutritional content of different foods and the importance of achieving a balance in healthy school lunches for young people.

2. Learning was a social experience. Students interacted with their peers, experts, and families at various points in their work. For example, they surveyed other fifth graders about what they wanted in a school lunch. They interviewed a dietitian and the cafeteria manager about the nutritional content of the lunches served. They also

asked members of their families about ethnic meals prepared at home and the possibility of incorporating some of these foods into a school menu. Students created their menu entries in pairs and another student team critiqued each menu.

3. Students learned by doing. As mentioned above, they created and conducted a school survey, interviewed family members and community experts, and visited supermarkets to study labels on food products. To successfully accomplish these various activities, students determined relevant questions to explore, methods to summarize the collected information, and strategies to evaluate this information. Throughout the process, they actively engaged in team and class discussions to identify problems and seek ways to solve them. The final products—creating new menus—demonstrated students' ability to apply their learning to an authentic goal.

4. Assessment was a shared and continuous experience for both instructors and students. The youngsters discovered that each activity was an essential piece in helping them understand and move forward on their project. In their logs and group discussions, they asked themselves questions such as, "What new information did I learn from this task?" "What's my next step?" "What new questions popped into my mind?" Students also worked with the instructors in creating a checklist to critique their menus.

   Students' responses and performances, in turn, influenced the instructional plans. For example, when students wanted to survey schoolmates regarding their favorite lunches, it was immediately apparent that they had little experience with survey techniques. Working as a team, Robello and Kim helped the students devise appropriate and relevant questions and taught them how to compile and summarize the data.

5. Problem-based learning strengthened feelings of empowerment among the students. The issue that they tackled was personally meaningful and connected to a broader health concern. Throughout the investigation, the students collaborated with the instructors on the questions to pursue, end goal and products desired, sources of information to use, criteria to measure their products, and plans for their culminating presentation. In their final logs, students commented on the aspects of this project that were "different" from other classwork. They overwhelmingly mentioned the hands-on and experiential nature of the investigation including the survey, interviews, menus and "taste tasting the winning menus which were Spanish rice and chili dog." They liked the "openness" of the project ("We selected what we wanted to study"). According to the students, being active partners in making critical decisions about the learning experience outweighed the obstacles they encountered at different points in their work. The consensus was that the students wanted to "do more projects like this one."

6. For the instructors, problem-based learning required taking risks and sharing control with the students. In her notes and her conversations with me, Kim repeatedly

mentioned that this form of learning required that the instructors "take their cues" from the students. In our final meeting, she said:

> *We had to have a framework for the project and basic expectations for the students, but we also had to be open and flexible about listening to what students wanted to know and how they wanted to proceed. This was pretty scary for Leila [teacher] and me. We had to temper our normal tendencies to 'direct' the project with our desire to 'negotiate' and 'facilitate' the direction of this unit. We discovered that we had to have a focus but we also had to listen carefully to what students had to say. We had to honor their thinking and work with them to build as much of their thinking into the experience as possible.*

Lincoln Elementary (2005)
School context. Lincoln is the only school among the five that is located in Honolulu. Of the 440 students, 37 percent are of Hawaiian descent. Many of them live in the Hawaiian Home Lands of Papakolea, a community situated several miles from the school. Nearly 60 percent of the students receive free or reduced lunches. In standardized tests, 69 percent of the students scored average or above in reading and 71 percent placed in average or above stanines in math. Twelve percent of the students are in special education. Among the schools studied, Lincoln also has the highest percentage (18 percent) of ESL students. There are 27 faculty members; 26 are fully licensed; and 19 of them have taught for more than five years.

The school is establishing a standards-based curriculum that emphasizes collecting evidence of student learning. In the last two years, teachers have produced "document boxes" containing exemplars of student work and used a variety of tools (e.g., rubrics, checklists, journals) to assess student performance. Karen Muronaga, the library media specialist, regularly plans and implements projects with teachers at all grade levels. With the recent attention on evidence-based practice, Muronaga realized that her instructional assessment was "very informal" and "based largely on casual, undocumented observations." At various workshops and conferences, she had heard about the other examples of practitioner research reported in this article. These accounts spurred Muronaga's interest in examining methods of more rigorous assessment for student learning in her program. She invited one of her fifth grade teachers, Alice Yip, to join her in this investigation.

Research questions. The team's major questions were: (1) How well are students learning the various aspects of the Information Search Process? (2) How might we assess for this learning? (3) How might assessment improve our teaching?

During the fall term, Muronaga and Yip worked with fifth graders on a required unit dealing with information about the fifty states in the U.S. Each student produced a series of postcards on the state he or she chose to study. The cards were part of a "suitcase display" that also included a visual product or artifact representing the state. Students invited their parents to a special evening celebration in the library where their products were exhibited.

Data collection and findings. Twenty-nine students participated in the project over a period of eight weeks. Most of the presearch and focus formulation activities occurred in the classroom over a period of four weeks. Students spent two weeks – ten sixty-minute sessions – taking notes in the library. The remainder of the time was devoted to working on the final products in the classroom and at home with students returning to the library only when they needed additional information.

In the role of the university partner, I interviewed the librarian and teacher about a dozen times before, during, and after the project. I shared my extensive notes on these sessions via e-mail and invited Muronaga and Yip to add their reflections to my thoughts. I was also able to observe five of the ten class sessions in the library and maintained field notes. We used these notes as points of conversation and reflection at our face-to-face meetings; we also continued the dialogue using e-mail.

Muronaga focused on the skill of taking notes for this particular assignment. She devised a rubric at the "exceeded," "met," "approaching," and "not met" levels to assess for this skill and discovered that over 70 percent of the students were at the "approaching" level on several criteria including the accuracy and completeness of their notes and their ability to capture information in their own words. Based on observations of students working in the library and an examination of students' notes, the instructors reevaluated their own instruction. They identified the following as critical design issues in strengthening their lessons:

1. The learning outcomes must be clearly identified and stated in language that the students understand. While the instructors had selected appropriate content and information literacy standards for this particular unit, they retrospectively realized that the standards had to be translated into more clearly observable performance behaviors. For example, the social studies standard selected was "to understand how distinct physical characteristics of a place or region shaped human interaction with it." Students did not fully understand the language of this standard. On their note taking forms, they invariably left this item blank or provided notes that indicated their confusion ("I guess they don't have enough to eat there," "There are cows in the mountains," "There are more spaces for homes"). Both instructors conceded that they had not "fully understood the importance of restating the standards in language that the students could understand." Muronaga added, "I'm not sure we fully comprehended the standard ourselves. If we weren't clear, how could we expect the students to know what they were supposed to do?"

2. The criteria used to assess for the outcomes must also be precisely articulated. Muronaga originally identified accuracy as the only criterion to examine students' proficiency in note taking. After the team studied several samples of students' notes from a prior assignment, they identified the following additional criteria: notes being relevant to the questions asked, notes supplying details, and notes being written in the students' own words. While she originally considered a checklist, Muronaga ultimately decided that a rubric would be a more precise instrument. The version used

with the students is displayed in Figure 4. It is important to note that the rubric is still undergoing revision based on continuing work with the students.

Figure 4. Rubric for Note Taking

Criteria	Exceeded	Met	Approaching	Not met
Accuracy and detail	All of my notes provide details that support my main points.	Most of my notes provide details that support my main points.	Some of my notes provide details that support my main points.	Few or none my notes provide details that support my main points.
Relevance	All of my notes answer my questions.	Many of my notes answer my questions.	Some of my notes answer my questions.	Few or none of my notes answer my questions.
Originality	All of my notes are in my own words.	Most of my notes are in my own words.	Some of my notes are in my own words.	Few or none of my notes are in my own words.

3. The activities and tasks must be aligned with the outcomes desired. In the case of note taking, the form required that students write their information in complete sentences. This invited simply copying the information from the source, especially when students did not fully understand the text. The instructors have since revised the form so that students provide keywords and short phrases before writing complete sentences in the next project.

One of the other questions on the note taking form asked students to compare their state and Hawaii on particular topics (e.g., tourist sites, economy). In the short turnaround time given the students--one library visit of sixty minutes--they were not able to locate information on their state as well as comparable data on Hawaii. They frequently wound up "guessing" or "making up the information." On the next iteration of this unit, Yip plans to incorporate a segment on Hawaii in the presearch phase of this assignment. Students will then have the data they need to make more intelligent comparisons as they gather information on their respective states.

Salient Themes and Issues
In discussing the results of these various studies with the school teams involved, it became apparent to everyone that the elements of practitioner research paralleled Kuhlthau's Information Search Process. As one of the librarians noted, "We were actually moving through the same process that our students were experiencing without explicitly recognizing it." Figure 5 indicates the sense-making relationship inherent in both practitioner research and the Information Search Process.

Figure 5. Practitioner Research in Relation to Information Search Process

Information Search Process		Practitioner Research
Initiation	⟹	Recognizing the need or impetus for change
Selection	⟹	Identifying potential research questions
Exploration	⟹	Reviewing and discussing relevant literature and experiences
Formulation	⟹	Planning the project and interventions, defining the problem in terms of enabling actions and methods of assessment
Collection	⟹	Employing multiple means of data collection
Presentation	⟹	Analyzing the data and summarizing findings, using results to inform teaching, disseminating findings to the larger community
Assessment	⟹	Reflecting throughout the project

Importantly, they realized that they were "learning-as-a-part-of-a-community." In an attempt to interpret these interlocking experiences, I introduced the notion of *dualities* as a useful construct to describe the overlapping yet conflicting themes and activities that drive the dynamics of change in practice. According to Barab and colleagues (2002), the inherent interplay of these dualities provokes questions that ultimately transform current practices. These dualities are conflicting demands that need to be balanced rather than minimized. They occur along a continuum, and the choice of action is not seen as opting for one polar opposite over another but rather as balancing and making compromises to address competing needs within particular learning contexts.

As a group, we identified the following tensions in our body of practitioner research. Examining our findings in terms of dualities provided us with an analytical lens for characterizing community dynamics and describing their inherent interaction.

Learning as both private and social. One school librarian stated that for both students and instructors, learning was continually "under construction in the mental representations of the individual's mind." These representations were abundantly evident in the reflection logs and anecdotal records written by all participants. At the same time, learning was situated in the social interaction among the members of the community. As students worked in teams to solve problems and prepare their presentations, they discovered the power of team thinking. A sixth grade student captured the synergy of the interaction when she wrote, "I had some good ideas but when my team members talked about their ideas, I knew we could come up with something even better if we combined

our ideas." The instructors also repeatedly expressed the same sentiments. They underscored the need for opportunities to reflect privately and exchange ideas publicly as essential elements in constructing knowledge. As one of the librarians noted:

> *By talking things out, frustrations became surmountable. In our meetings, I would mention how something was a problem, then C. [teacher] would ask questions. As we tackled the questions, one of us would come up with alternatives that I had not originally considered. Gradually, we would both see ways to approach the situation that I don't think either of us might have considered if we were working totally alone.*

Inquiry as linear and recursive. In planning for the learning experiences, the instructional teams organized the lessons in a conventionally linear fashion that started with an introduction of the assignment and progressed through various phases of the information seeking process. Through their logs and interviews, however, the team members readily acknowledged that the learning process itself was "messy," "convoluted," and "much more complex" than they had anticipated. While the Information Search Process presumes some sense of linearity (e.g., students formulate a focus before attempting to gather information), the learners going through the process often "backtracked" or "leapt ahead" depending on their assessment of progress being made. The following student's log reflected the recursive nature of the process:

> *I realy [sic] thought I had all of my notes and I was ready to work on my poster board. Boy, was I wrong! The first thing I had to do for my board was to draw a picture of artifacts from Greek civilization. But did I save pictures? Nope! I forgot to check what I needed for my board while I was taking notes. Now I have to go back to the Internet and books to find what I need.*

The work of the instructional teams mirrored the same back-and-forth actions that were critical in assessment-driven learning. Toward the end of a project, one of the librarians stated:

> *Our final unit plan looked very different from our original one. We made so many adjustments to it based on what we observed students doing. A big a-ha for us, I think, was that preplanning the unit was very important so that we had a sense of our targets and what we wanted to have the learners accomplish. At the same time, we had to be flexible enough to make changes as we looked at actual student work. We had to be willing to return to the drawing board. This was a lot of work but it was so critical.*

Pedagogy as directive and facilitative. Barab and colleagues (2002) indicate that both the *acquisition metaphor* and the *participation metaphor* are inherent in instructional practices. The acquisition metaphor describes an authoritative and directive form of instruction that inculcates a passive and receptive approach to learning. The participation metaphor refers to a facilitative stance that encourages active, self-determined learning. The teams involved in these studies constantly wrestled with balancing these two

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approaches. Concepts that were unfamiliar to students (e.g., creating higher level questions, evaluating Internet resources, comparing information from two or more sources) required more explicit teaching strategies. Rather than a lectures-only approach, however, I observed the teams introducing these concepts by combining lectures with time for guided practice and feedback. During their lectures, the instructors frequently posed questions and challenged students to predict what they might discover before engaging them in the work sessions.

The students' logs and conferences with the instructors also created important avenues for dialogic interaction. The following excerpts of a conference between a student and a librarian captures a facilitated exchange:

> *Student: "I found some really cool information about pyramids on this web page."*
> *Library media specialist (LMS): "Sounds promising. Who was the author of this web page?"*
> *Student: "It was part of some class project so I guess it was done by a student."*
> *LMS: "How about looking again at the criteria we set up as a class for evaluating web sites? It's always a good idea to check against the criteria."*
> *Student [pausing a minute]: "Oh, you mean the list we put together about things to look for? [pausing again] Oh, the one about whether the person was a reliable expert?"*
> *LMS: [nods her head]*
> *Student: "Yeah, it might not be such a good idea to use this source after all."*
> *LMS: "Well, how could you check whether the information at this source might be reliable after all?"*
> *Student: "Go to some other sources?"*
> *LMS: "What might you have in mind?"*
> *Student: "I like the Internet so I could check one of the online encyclopedias. If that doesn't work, I could find some of the books."*

Curriculum as teacher directed and student centered. Given the reality of standards-based expectations for all students, the instructors felt genuine pressures to control and manage the curriculum. At the same time, they continually debated how they might provide for more student involvement in shaping the learning experiences. At Waikele and Mililani Waena, the teams experimented with a more open-ended, student-inspired foci for the inquiries. In the other instances, the topics or themes were pre-selected; however, the instructors incorporated a range of opportunities for students to formulate questions, select personally relevant foci for study, and decide on best means to communicate their findings. They persisted in looking at learning experiences from the "child in the chair who is watching us work at the table" (Jacobs, 2004, 26). In this negotiation, they involved the students in decision-making that motivated and empowered them. They struggled with achieving the targeted consistency while providing the flexibility that was considered critical for student participation in the process.

Curriculum focusing on product and process. All the teams had previously emphasized the completion of end products as the major learning targets for units of study. They estimated that 50 percent to 70 percent of the time was devoted to the preparation of final presentations. At the same time, they admitted that the culminating efforts were often disappointingly superficial. Their interest in conducting practitioner research, therefore, was motivated by their desire to make the learning experience deeper and more meaningful for students. By devising curriculum that incorporated the information searching process as a critical component for inquiry learning, the teams were recognizing the centrality of a process approach. One teacher's comments during an interview clearly captured her efforts to mesh process with product in her work:

> *I have to admit that before we collaborated on this unit, I always skimmed through stuff at the beginning. I didn't really think about the importance of the presearch phase. Actually, I didn't KNOW [emphasized] about the presearch phase. I never really thought too much about the fact that the students might not understand the assignment. I never considered that they didn't have a big picture about the general topic. I never gave them time to consider the questions. I guess what I am saying is that I never really saw this whole thing as a PROCESS [emphasized]. I just concentrated on pushing students through the assignment so they could work on a poster or a slide presentation or whatever. Now that I am working on this unit, I cringe to think what I expected and how little I realized that students cannot be expected to do good work if you haven't brought them through the HOW-TO [emphasized] part of things.*

Issue of time. Time was one of the crucial issues embedded in the above-mentioned dualities. In all instances, the teams faced the challenge of "finding time" to do more in-depth planning. The school administrators were critical in resolving this problem. At Shafter, for example, the principal promoted the library's flexible schedule and allowed teachers to be released during physical education activities so that in-school planning could take place. At other sites, the administrators created special waiver days for in-school curriculum development. They hired substitutes for the teachers, and the librarians were able to join the faculty in planning the curriculum. Teams also resorted to asynchronous means of communication (e-mail) to complement their face-to-face planning sessions.

The need for more time, however, remained a persistent challenge. In addition to the planning alternatives described above, all teams voluntarily met during their preparation periods and after school. At Lincoln, the team also elected to meet during the summer and spring vacations. In my interviews with the teachers, I asked them why they were willing to collaborate given the time and labor involved. One teacher's response reflected the general sentiments of the group:

> *I won't lie to you. This is a lot of work. It takes a lot of time. But I wasn't satisfied with what I was doing before in terms of research with the kids. Working with my librarian has really opened my eyes. I can see a difference in the quality of what the students are turning in. I didn't realize that she could help with so much of the*

teaching and conferencing. It's like sharing the workload. I also feel that the first time we plan is the hardest. We have to understand each other's teaching and planning styles and we have to work out a kind of rhythm. You know what I mean? I just feel it gets easier over time. I guess what I am trying to say is that it's an investment that pays off in the long run for students and teachers like me.

Issue of leadership. In any team, leaders are necessary for a group to effectively establish and meet its targeted goals. Newer conceptions of school level leadership have expanded the notion of teacher leadership from formal roles to include leadership practiced through more informal means (York-Barr & Duke, 2004). Informal leaders work collegially with other faculty to encourage examination and evaluation of instructional practices and their effects on student learning and progress. They exert influence by being able to collaborate, build trusting relationships, and promote growth among colleagues (LeBlanc & Shelton, 1997).

In the studies reported in this paper, the librarians emerged as informal leaders who established their teams and nurtured rapport with their partners. In each case, the librarian had more years of overall teaching experience as well as more years of tenure at the school. Data gathered from the logs, interviews, and meeting notes revealed the librarians' strong facilitative skills in conducting collaborative work. The librarians suggested time lines for meetings and maintained informal notes from these sessions. They were adept at guiding discussions, frequently using the following types of "coaching questions" espoused by Costa and other educators (qtd. in Jacobs, 2004, 48):

> *"Tell me more about . . ."*
> *"Could you explain what you mean by . . ."*
> *"What if we were to . . .?"*
> *"How else might we . . .?"*
> *"What do you believe about . . .?"*
> *"How do you feel about . . .?"*
> *"What follow-up can we provide . . .?"*

Phase Two: Professional Development Based on Practitioner Research

Practice-based Approach
The body of practitioner research summarized in this paper has evolved into important considerations for a practice-based approach to professional development. Ball and Cohen (1999) describe a practice-based approach as one in which the curriculum is grounded in the tasks, questions, and problems of actual practice. For example, developers use the actual contexts of instructors' ongoing work in designing particular units of instruction and their strategies for assessing students' learning. As an alternative, developers collect concrete records and artifacts of teaching and learning that might be used as the curriculum for professional inquiries. The target is to create a common ground on which individuals and teams might work, compare thinking, and explore alternatives.

In Hawaii, we are in the early stages of planning an initiative as described above. Beside myself, the development team includes two librarians from the case study schools and a state level specialist in school library services. Our goal is to construct a framework for professional learning that fosters serious discourse based on concrete tasks and artifacts of practice and engagement in communities of learning. Our work has been heavily influenced by the following design principles (Borko, 2004; Fishman et al., 2003; Little, 2002; Wilson & Berne, 1999; Hawley & Valli, 1999):

1. Professional development involves the learners in the identification of what they need to learn and, when possible, in the development of the learning opportunity and the process to be used.

2. It must be primarily school based and integral to immediate and authentic problems.

3. It provides learning opportunities that relate to individual needs. At the same time, however, professional development is organized around collaborative problem solving. By working together, educators address issues of common concern. This facilitates the identification of both the causes and potential solutions to problems.

4. It engages participants in developing a theoretical understanding of the knowledge and skills to be learned. Results of research must be accessible to practitioners so that they expand and extend their professional knowledge base. For example, the notion of dualities that we discovered through our practitioner research would be important to share with the participants.

We envision school teams shaping their own learning agendas and creating school-based plans for instructional change. To foster a disposition of inquiry, they must have opportunities to probe ideas and perspectives and challenge evidence and possibilities. There must also be mechanisms for cross-networking with other teams to reflect on shared interests and shared struggles. Informal mentoring would be a critical component of the network infrastructure.

Communities of Practice
A central assumption in a practice-based approach is that strong communities of practice cultivate teacher learning and instructional improvement. As mentioned earlier, communities of practice are groups of people who share similar goals, interests, and practices and, in doing so, employ common practices, work with the same tools, and express themselves in a common language. Through such common activity, they come to hold similar beliefs and value systems (Collaborative Visualization [CoVis] Project, 2000).

To foster these communities, we are incorporating virtual means of community-building as well as sessions for face-to-face interaction. We plan to use a range of technologies including e-mail, threaded discussion boards, listservs, and real-time discussions (chat). We are also designing online workspaces that would allow teams to organize, exchange, and manage a variety of activities including discussions, notes, announcements, and

works in progress. In these private collaborative workspaces, teams might generate dialogues, discuss emergent goals, and solve problems (Lieberman & Grolnick, 1999, 301).

The Journey Continues

Learning is turning the mirror toward us as professionals and examining our personal assumptions about teaching, risking the sharing with others, and engaging in thoughtful conversations that ultimately reshape our practice (Senge, 1990). Spiraling cycles of action and reflection form the core of collaborative inquiry. System-wide reform takes root through collaboration at the school level where the particularities of context and individual differences are salient. Reflective practice has the greatest potential to create educational improvement because it places the individual practitioner at the center of reform efforts.

Substantive pedagogical change requires extended professional development over time (Supovitz, 2001). As researchers, we need to know what teachers learn from professional development and how it impacts the quality of student learning. Fishman and colleagues (2003) maintain that it is necessary to build an empirical knowledge base that links different forms of professional development to both teacher and student learning outcomes.

In this paper, I have focused on the advantages of learning through practitioner investigations of their own programs. In the next phase of my work with co-researchers, we will be studying professional development that fosters communities of practice and the critical issues that must be addressed if we are to support their emergence. This research must not only describe the structures and participants in such communities, but the processes by which they interact. There will also be a need to identify the existing system tensions and how they impact community life. We will collect our data from many of the following sources: pre- and post-assessment of student performance, observations of classroom and library instruction (enactments of practice), surveys of participants' reactions to the professional development experience, reflection logs of participants' insights into their own learning, document analysis (student work samples and instructors' unit plans), and observations of face-to-face and online professional development activities.

When practitioners surface issues and problems arising from actual classroom and library practices, they derive new understandings from them, translate these new understandings into performance, and extend the knowledge base of the profession. For adult learners, the learning process is complex and varied. Inquiry learning, reflection, and practitioner research are interwoven practices that promote critical thinking, intelligent choices, and self-empowerment. Wells (1993) states compellingly why professional communities of inquiry are crucial:

If the goal of reflection is understanding, the purpose of understanding is improvement in action. It is through engaging in this ongoing cycle of action research that we can best hope to change schools from within. (275)

Notes

[1]The Mililani Mauka study is detailed in the following articles: Harada, V. H., & Yoshina, J. (1998). The missing link: One elementary school's journey with assessment. *School Library Media Activities Monthly, 14,* 25-29; Harada, V. H., & Yoshina, J. (1997). Improving information search process instruction and assessment through collaborative action research. *School Libraries Worldwide, 3*, 41-55.

[2]The Shafter study is reported in Harada, V. H. (2002). Personalizing the information search process: A case study of journal writing with elementary-age students. [Online] *School Library Media Research.* Retrieved March 23, 2005 from http://www.ala.org/Content/NavigationMenu/AASL/Publications_and_Journals/School_ Library_Media_Research/Contents1/Volume_5_(2002)/Harada.htm

[3]The Waikele study is reported in Harada, V. H., Lum, D., & Souza, K. (2002/03). Building a learning community: Students and adults as inquirers. *Childhood Education, 79,* 66-71.

[4]The Mililani Waena study was presented at the 2003 American Association of School Librarians Conference in Kansas City, MO. Slides used in a presentation entitled, "Problem-Based Instruction: Making learning real," are available at http://www2.hawaii.edu/~vharada/ under "Sample Presentations."

Acknowledgments

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