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AUTHOR Castle, Shari; And Others
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ABSTRACT

This paper describes the use of educational research and development resources by practitioners within the National Education Association's Mastery in Learning Project (MIL), a 5-year national second wave reform effort. Four research questions were addressed: (1) What are practitioners' information needs over time in the context of research-based school reform? (2) From where did practitioners' information come? (3) To what extent were the practitioners satisfied with the information they received? and (4) What are practitioners' information needs for the future? Data sources include documentation of materials mailed to practitioners in 24 of MIL's schools, annual reports from each school, computer network activity analysis, and the results of an information-use survey. Practitioners' need for research and development was categorized by teaching function. Results indicate that 21% were concerned with the executive functions, 14% with the interactive functions, and 66% with the organizational functions of teaching. The extent to which practitioners' information came from three Office of Educational Research and Improvement (OERI) sources was reported to be "none" for 52%, "some" for 30%, "a lot" for 3%, and "most" for .77%. Implications are: (1) teachers consider educational improvement to be primarily affected by changes in the school-wide organization; (2) teachers have great confidence in the wisdom of practice and rely principally on each other for information on topics of concern; and (3) the computer network shows potential for linking that practical wisdom with research findings. Data are presented in 15 tables and five figures, and instruments used in the study are appended. (19 references) (GL)

Beyond Access: Use of R & D Resources in the NEA Mastery In Learning Project

Shari Castle

Beverly Johnson

Carol Livingston

NEA Mastery In Learning Project

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Abstract

This paper describes the role of educational research and develoment resources by practitioners within a 5-year national second wave reform effort, the National Education Association's Mastery In Learning Project (MIL). The research questions were: (1) What are practitioners' information needs over time in the context of research-based school reform? (2) From where did practitioners' information come; to what extent did it come from the federally-funded ERIC Clearinghouses, Regional Laboratories, and Centers? (3) To what extent were the practitioners satisfied with the information they received? (4) What are practitioners' information needs for the future? Sources of data include documentation of materials mailed to practitioners by MIL staff, annual reports from each school, computer network activity analysis, and results of an information-use survey. Practitione rs' need for R&D was categorized according to the teaching functions. 21% were concerned with the executive functions, 14% were concerned with the interactive functions, and 66% were concerned with the organizational functions of teaching. Results showed that the extent to which practitioners' information came from the three OERI sources was reported to be "none" for 52%, "some" for 30%, "alot" for 3%, and "most" for .77%. However, it cannot be determined from the survey how often OERI Programs "informed the informants" (i.e., secondary sour :). Implications are: (a) teachers consider educational improvement to be primarily affected by changes in the school-wide organization; (b) teachers have great confidence in the wisdom of

practice and rely principally on each other for information on topics of concern; (c) the computer network shows potential for linking that practical wisdom with findings of research.

Beyond Access: Use of R & D Resources in the NEA Mastery In Learning Project

The second wave of school reform, now in process for several years, focuses on school-level decision making; collegial, participatory environments for students and faculties; personalization; flexible use of time; student understanding beyond mere recall; and higher order thinking skills (Michaels, 1988). This paper describes the use of educational research and development resources within a national second wave reform effort, the National Education Association's Mastery In Learning Project (MIL), in which the use of the educational knowledge base for the purpose of reforming schools has been a focus.

Rationale

We live in an "information age," a time when knowledge increases exponentially every few years. It is now infinitely more important for students to know how to access millions of facts rather than to memorize a few. No longer is it sufficient to know how to read; students must know how to read critically and thoughtfully. Teachers are urged to empower students by teaching them to take more responsibility for their own learning. Yet, how can teachers who are not empowered with access to new knowledge empower their students? How, then. do we use knowledge to empower teachers?

Teacher empowerment, like student empowerment, is promoted through knowledge. Knowledge holds a social power in that those with knowledge are given respect and status (Berliner, 1987). But even more important, knowledge holds the power of enablement, psychological authorization, capability, and rights (Thompson, 1989). As teachers become active agents, they question, think, multiply knowledge, increase their power to educate, and change the institutions in which they work.

Educational research, though relatively young, has made considerable progress. Just two decades ago, the scientific information on teaching was fragmentary and

inconsistent at best (Arends, 1988). Much of what we now label as "research knowledge" is based on observations of effective teachers themselves. We have learned about effective teaching practices by observing and recording what effective teachers do. From this process, some teaching principles and guidelines for best practice have been identified and recorded.

In 1986, the U.S. Department of Education published a guidebook called What Works? (U.S. Department of Education, 1986) which contains forty-one research-based findings about the enhancement of student and school achievement. Even though the book proposes many ideas which teachers might consider "common knowledge," that common knowledge does not necessarily translate directly to "common practice."

Even with the recent proliferation of research in education, to say that there now exists a deep well of information from which teachers can draw infallible guidance for practice would be a gross misrepresentation (although such a claim might be welcomed by practitioners, administrators, and the public-at-large). "Magic formulas" for practice are neither the product, nor the purpose, of educational research. What then is the function of educational research?

Livingston and Castle (1989) discuss five qualitatively different functions of research in education as: (a) application, (b) justification, (c) contemplation and deliberation, (d) transformation, and (e) production.

Although the application function of research is to direct practice, it often promotes the perspective that research will have "the answers." Because research knowledge explains what happens most of the time and under particular conditions, it is not generalizable to all students in all places at all times. Research can, however, offer guidelines for teachers who are knowledgeable about their own abilities and skills, those of their students, and the contextual features of the particular classroom, school, and community (Arends, 1988).

Frequently the language of research utilization in schools is one of justification and control. Research findings are converted to policies which ignore limits to generalization. But the most debilitating aspect of such practice is that it denies the practitioner a sense of professional competence and strips him/her of an opportunity for growth through informed decision-making. As early as 1929, Dewey cautioned that "no conclusion of scientific research can be converted into an immediate rule of educational art" (Dewey in Berliner, 1987, p. 29). New information empowers teachers to balance reason and passion; it helps them form a solid foundation for decisions made which can then be justified and shared (Castle, 1988).

Findings from educational research should cause the individual teacher and the collective school organization to carefully examine and reflect upon common practice. Berliner suggests that it is the function of research to produce findings that "complicate things" and are "counterintuitive" (Berliner, 1987).

Research can also produce benefits beyond the scope of its reported information in that it can stimulate new insights or assist in the reframing of problems and perceptions. Several MIL schools have given credit to the discussion of research for newly formed visions and redefined missions (Livingston & Castle, 1989).

Through active involvement in the research process, practitioners improve their own abilities and add to the knowledge base of their profession.

If research provides knowledge, and knowledge is power, why then do practitioners find difficulty in using research? In his literature review on these issues, Fleming (1988) enumerated fourteen problems associated with teachers using research. Some of those factors included: (a) perceived limited utility or potential to improve practice; (b) amount of time required to identify, locate, comprehend, and evaluate information sources and research findings; (c) information overload; (d) patterns of organization and communication in the workplace; (e) lack of skills in understanding and interpreting research; (f) the reactive (rather than reflective) orientation of educator's daily

work; and (g) the misapplication of research through inadequate preparation of teachers, inappropriate use of information, or unrealistic mandates.

Similarly, the results of an MIL study on teachers' use of the knowledge base (Castle, 1988) found three major obstacles: (a) lack of interest or motivation to read research; (b) too much research to synthesize; and (c) lack of applicability and practicality of the material.

Fleming (1988) also reported factors which were found to facilitate teachers' use of research. Some of those factors included: (a) improving access to information available within the organization; (b) responding to legislated mandates or requirements; (c) creating incentives and rewards for information seeking and use; and (d) increasing the technological capacity of the organization. In Rogers and Shoemaker's (1971) classic work on communication of innovations they suggest that new information will more likely be considered if: (a) there is a relative advantage to using it; (b) the information has compatibility with the existing values, past experiences, and perceived needs of the potential users; (c) the complexity of the information presented is not considered an impediment to understanding and application; (d) the information appears to have "trialability," that is, it can be experimented with on a limited basis; and (e) the information and its outcomes have perceived observability, that is, results can be demonstrated or seen firsthand.

An earlier MIL study (Castle, 1988) found similar facilitators of teachers' use of research. The findings included: (a) availability and accessibility of research; (b) effective methods of dissemination and interpretation (e.g., small group discussion); (c) released time designated for knowledge-base work; and (d) practical linkages of research to specific situations.

Often in the research-to-practice literature the metaphor of a "bridge" between research and practice is suggested as something we should strive to build. That metaphor seems to miss the point. A bridge is a stationary structure built between places that will

never come together. Those on opposite sides of the bridge only cross for a temporary visit or greet each other in passing, then they quickly return to their "side." When a bridge is built, no thought is given to filling the chasm between. To travel on a bridge is to go from side to side, not to advance. This metaphor does not imply the empowerment of teachers through the sharing of knowledge. A bridge does not suggest true interaction between researchers and practitioners.

Perhaps we could start envisioning the research-practice relationship as collaboration in the construction of a major thoroughfare. For years researchers and practitioners have engaged in independent efforts at building roadways toward the same destination with only an occasional intersection along the way, many of those being "bumpy" and difficult to travel. As we continue to grow in the realization that each party has unique knowledge and understanding to share with the other, and as we develop ways to deliberate together about that knowledge, empowered teachers and learners will surely be the result.

Statement of the Problem and Research Questions

At the Mastery In Learning Project, we have studied various aspects of the research utilization issue. Because collegial use, discussion, and creation of knowledge-base information have not traditionally been prominent activities among school faculties, we were interested in learning about this activity as it proceeded. Our inquiries included systematic data collection, formal and informal discussions with participants, and reflections on our MIL experiences.

It became evident that knowledge base use is a complex endeavor. The process evolved differently across schools and with varying degrees of success. We were able to draw some conclusions about the obstacles to and facilitators of teacher use of the knowledge base (Castle, 1988). We also became aware of some more fundamental issues of conceptual and epistemological origin that have influenced our attempts to understand and facilitate the linking of theory and practice (Livingston & Castle, 1989). We

came to question the process of dissemination and application. We began to concentrate on ways to encourage deliberation and dialogue between practitioners and with researchers (Castle, Livingston, Trafton, & Obermeyer, 1990).

The focus for this paper is to look at the topics and sources of information teachers have used and their satisfaction with them in the context of the Mastery In Learning Project. Research questions include:

1. What are practitioners' information needs over time in the context of research-based school reform?

2. From where did practitioners' information come; to what extent did it come from the federally-funded ERIC Clearinghouses, Regional Laboratories, and Centers?

3. To what extent were the practitioners satisfied with the information they received?

4. What are practitioners' information needs for the future?

Mastery In Learning Project Description

The Mastery In Learning Project is a school-based educational reform initiative designed to help school faculties take an active role in directing school renewal efforts and, in the process, restructure their schools to ensure that students achieve "mastery."

The Project[1] is founded on the belief that "mastery" in learning cannot be limited to a discrete listing of easily measurable skills. It must include the facility and confidence, judgment and strength, and command of knowledge and skills to understand relationships, solve problems, and contribute to the culture. "Mastery" in teaching means developing students' knowledge, thinking skills, and orientations so they will apply skills and knowledge creatively, productively, and responsibly to the world around them.

Achieving "mastery" as it is envisioned in the Mastery In Learning Project requires a re-examination of those decisions that reflect the substance, form, and quality of education: decisions about what is to be taught and learned, materials and methods of

instruction, criteria and methods of assessment, expectations and roles for all stakeholders in the education process, and the use of space, time, and resources.

Because each school and community is unique, the specific characteristics of school and program must be defined within the context in which they reside. The Project builds on the principle that every decision about learning and teaching that can be made by a local school faculty, should be made by that faculty (Bentzen, 1974; Bentzen et al., 1968; Carnegie Task Force on Teaching as a Profession, 1986; Goodlad, 1984; Sarason, 1971). Decisions so derived will be more effectively implemented because teachers, administrators, and other staff will be committed to those decisions and will be able to articulate the reasons underlying that commitment. Well-informed by research and practice, faculties themselves become reformers. MIL is committed to the concept of teacher as thinker and informed decision maker.

Project Phases

Although the local faculty (teachers and administrators) designs the specific reform agenda within an individual school, the MIL Project design specified the four phase process by which restructuring occurs (see Figure 1):

Insert Figure 1 about here

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1. Profiling the school (several weeks). A description of the school is created to serve as a benchmark for the Project's efforts. Structured interviews with teachers, students, parents, and administrators provide data to describe the school on the day the Project begins. This description includes the school's academic program, instructional styles, student attitudes and aptitudes, and other conditions influencing learning and teaching.

2. Inventorying the faculty (several days). Through a series of group and individual activities, the school faculty establishes initial priorities for improvement. The process

reveals similarities and differences in priorities and aspirations among faculty members. It begins the process of building the collegiality necessary for a comprehensive, faculty-led renewal effort.

3. Empowering the faculty toward renewal (two to three years). The faculty works to create the skills, attitudes, and inclinations necessary for sustained inquiry into the assumptions and practices that define their school. They organize working committees and coordinate their efforts through a Steering Committee. Using the knowledge base--research, theory, ideas and materials from good practice--the school staff explores improvement options and then designs, pilots, and revises specific programs or interventions. Project schools use TRaK (Teaching Resources and Knowledge--the Project's database), a specially designed computer network, and other sources to find and use the resources they need.

4. Cultivating comprehensive change (ongoing). Having developed a clearer sense of the nature of learning, teaching, curriculum, and school culture that corresponds to their vision; and having developed skills and habits of collaboration and collegiality; the faculty moves from fragmented activities to comprehensive change. They transform the school into a self-renewing center of sustained inquiry--the MIL concept of a restructured school.

The Role of the Knowledge Base

The emphasis on faculty interaction with the knowledge base distinguishes the Mastery In Learning Project from other "second wave" reform initiatives. It is during the third phase, *Empowering the Faculty Toward Renewal*, that use of the knowledge base is central. At this point, the faculty must make informed decisions about how to proceed with their identified improvement priorities. Having nearly completed the fourth year of the Project, many of the 26 schools in the MIL network are still negotiating their way through the third phase. It is complex, but crucial.

Much of the Project's energy is devoted to providing faculties with the necessary time, skills, and resources required to explore options and make well-informed decisions. Each school has had a special budget, a bank of substitute days to draw upon for released time, the services of a site-based consultant, an ongoing site-based documentation and assessment procedure, knowledge-base resources and assistance from the Project's central office, a computer network designed to facilitate interaction between researchers and practitioners, support from regional educational laboratories and universities, and, a resource of increasing importance, their own collective experience and knowledge. (For more information about the Mastery In Learning Project see McClure, 1988; and National Education Association 1987, 1988.)

The role of the MIL central office in resource assistance falls largely into three categories: (1) the creation and dissemination of topical packets; (2) continuing response to requests for more specific information; and (3) facilitation of the computer Network (see Figure 2 for events affecting Project R & D).

Insert Figure 2 about here

TRaK packets. Initially, as faculties identified priorities, several topics emerged across sites as important to faculties engaged in site-based, faculty-led school renewal. These topics included, for example: critical thinking, integrated curriculum, discipline, and approximately 25 others. Specialists at the MIL office provided resources for initial exploration of those topics and consideration of options for action. They assembled a TRaK (Teaching Resources and Knowledge) packet for each of these identified topics. (See Table 1 for complete list of packets.) Each packet provided a sampling of research

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Insert Table 1 about here

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articles, syntheses, articles from practitioner journals, bibliographies, and other materials. The intent of each packet was to represent dominant perspectives from the arenas of research, theory, and practice in forms applicable to all organizational levels. (Needless to say, this was an optimistic undertaking.)

Specific information requests. The second and ongoing category of assistance is response to follow-up requests for specific information after local faculties study the packet information and delineate more clearly site-specific needs. This assistance comes in the form of printed resources as well as networking to individuals and organizations.

Computer network. Augmenting the networking among project schools and research sites is a partnership formed with the IBM Corporation a year and a half ago for the creation of a computer network devoted to school renewal (Castle, et al., 1990). The primary purpose of the IBM/NEA-MIL School Renewal Network is to create an interactive knowledge base on school reform by a community of actively-engaged practitioners, researchers, staff developers, and disseminators. The Network^2 is designed to address the following needs: (a) location of and access to research and other resources; (b) interaction between researchers and practitioners around the use and generation of research on school reform innovations; (c) dialogue about issues central to school reform work (such as site-based decision making); (d) data gathering and analysis; and (e) efficient communication across MIL.

After more than two years of planning and negotiating, the School Renewal Network began in October, 1988. The School Renewal Network, an asynchronous teleconferencing and messaging system using PCs, represents the first electronic network dedicated specifically to school reform. The Network began during the third year of MIL with a training session in Washington, DC. The structure for the database was based on the commonplaces of schooling: teaching, learning, curriculum, and school culture (see Appendix A). At this point, the schools had identified their improvement priorities and had spent at least one year using the knowledge base to investigate those priorities and design

action plans. Network participants included the MIL schools; representatives from regional laboratories and centers and several major universities; and schools from other networks (The Coalition of Essential Schools, The National Network for Educational Renewal, and the NEA Learning Laboratories).

IBM provided hardware, software called PSInet (People Sharing Information Network), and technical support. MIL provided personnel, overhead, demonstrations, initial training, information resources, and server maintenance. Each site provided a Network coordinator, training for faculty members, and telephone costs.

In the second year of the Project, MIL obtained grant funding from the Secretary's Fund for Innovation in Education at OERI to further develop the Network. Planning for Network revision began at MIL's annual fall conference and was completed at the Network conference at the IBM facilities in Boca Raton, Florida. The additional (OERI) funding enabled us to focus the research-practice dialogue by selecting and defining 10 critical topics and engaging a researcher for each topic. The critical topics represent seven of the most often identified reform topics across the 26 MIL schools: Parent Involvement, At-Risk Students, Curriculum Design, Positive School Climate, School/Classroom Organization, Instructional Strategies, and Thinking. In addition, they include Networking, which grew from the initiation of the Network; Restructuring/Site-Based Decision Making, which is foundational to MIL and the Network (and one of the Secretary's priorities); plus, the most recent common concern across MIL, Authentic Student Assessment. Each practitioner site chose two or three topics on which to focus--topics in which they had experience and expertise, as well as ongoing action projects. Each topic was defined and delineated at the December meeting by the practitioners along with the researcher responsible for that particular topic. After the meeting, the conference and session structure was changed to reflect the ten topics and their definitions (see Appendix B). In addition, the grant provided for a consultant to the researcher group and one to the practitioner group to facilitate the interaction among participants in each role.

Method

Participants

The Mastery In Learning Project includes 26 demographically representative schools in 21 states. Five pilot schools have been involved in MIL for 4 1/2 years; an additional 18 schools have been involved for 3 years. Two schools completed their MIL work at the end of the fourth year; two new schools were added at that time having now completed a half year with MIL. MIL schools include approximately 20,200 students, 2,000 teachers, 450 support staff, and 65 administrators. Each school has a steering committee and topic-related subcommittees. In addition, each school employed a part-time, site-based consultant to facilitate the faculty's work during the first 3 years of the full Project (excluding the pilot year). A few schools have retained their consultant for the current year.

The Network includes, in addition to the 26 MIL schools, six schools from other reform networks (National Network for Educational Renewal, Coalition of Essential Schools, and NEA Learning Labs), and 13 research sites (one center, three regional laboratories, eight universities, and one educational foundation).

Data Collection/Sources

Data were collected from three sources: (a) a survey of the MIL schools; (b) records from the MIL central office; and (c) analysis of the computer Network.

Survey. A four-page survey was mailed to the Steering Committee Chair at each of 24 MIL schools (two schools that joined MIL during the current year were not included in the survey). The Steering Committee Chair distributed a copy of the survey to the chair of each subcommittee that had functioned at some time during the Project. The surveys were to be completed collaboratively by subcommittee members, if possible. The survey form was also sent out on the computer Network. Those who had a sufficient skill level with the computer "forms" could opt to complete and return the surveys electronically (see Appendix C).

Project records. Project records traverse the course of information use at MIL from its conceptualization in March, 1985, to the present. Records include: the initial conceptualization, school files, records of mailings to each school, staff files of school requests, list of TRaK packets compiled by the MIL staff on the 32 most common topics, books purchased, workshops announced, mailings from the MIL office to all Project schools, conference programs (specifically designed to meet faculties' needs), MIL newsletter topics, and research and occasional paper topics.

Two caveats to the Project records as a data source should be kept in mind. First, Project records vary in completeness. For example, not all Project staff kept equally detailed records of information mailed to schools; not all schools kept and/or sent to the MIL office equally detailed records of information use at the school sites. Second, the records result from interaction between the sites and the MIL staff, not simply one-way requests for information. For example, conference planning included extensive input from practitioners, but also included inspiration, vision-building, and cross-site needs as viewed from the MIL office. Thus, these Project records indicate a composite of practitioner information needs, staff guidance, and a formative approach to learning about and adjusting the research use process as the Project progressed. Even with the incomplete and interactive nature of the Project records, the data provide an authentic representation because of multiple, triangulated data sources and emphasis on discerning patterns rather than reporting statistics.

Computer network. Data were derived from three sources: (a) computer log files, (b) print-outs of Network papers for content analysis, and (c) interviews with the participants. Log files and papers were obtained for four month-long periods comprising a purposive sample of network activity: (a) January 1989, the first period by which most initial users had signed on; (b) April 1989, the period immediately following MIL's annual AERA breakfast meeting at which participating researchers were provided additional Network information and urged to contribute to the Network interchange; (c) mid-October

to mid-November 1989, the thirty-day period immediately following MIL's annual fall conference at which Network planning took place; and (d) January 1990, the first full month of activity under the new Network conference and support structures. (These time periods will be designated by the abbreviations J '89, A '89, O-N '89, and J '90, respectively.)

Daily log files are created by the PSInet server and stored as DOS text files. The data in these log files enable us to determine types of user activity and patterns of use. Daily Network activity involves primarily two forms of communication: messages and papers. Messages are "private" communications in the sense that they are directed by the originator to specified sites. In contrast, papers are "public" communications which are distributed automatically to all users who have joined the session to which the paper was sent.

Network papers are printed out daily and filed by the Network systems operator. Those papers reveal the user source, communicative focus (question, response, information, etc.), content, and dialogic nature of the public communication over the Network. Such information provides insight into the nature of research-practice interaction and the school reform impact of the Network.

An interview protocol was designed to obtain user perspectives on the Network and its effectiveness. Based on experiences to date (including feedback from a December, 1989 training conference), questions were designed to probe issues of potential impact. The interview protocol is provided as Appendix D. All but one researcher (n=12) and all practitioner users (n=32) were interviewed by telephone in early February, 1990.

Data Analysis

Survey. As a first step in survey analysis, responses were listed by question for each item on the survey protocol. All responses were tallied. Responses to question 1A were categorized according to a teacher function framework (Arends, 1988). Categories

were developed for the comments, then responses were tallied according to the category system.

Project records. Each data source was examined separately for topics and sources by Project year. These were tallied within and across years and data sources. Broad patterns were then identified (tally numbers are not used for category comparison since some data sources were not complete).

Network log file analysis. One investigator created a C-language computer program to read input log files and create an array consisting of workstations along one dimension and information about use along the other dimension. Information about use included daily network activity (messages and papers) by site, message activity by user type, and paper activity by user type. An array was created for each of the time periods. Statistics relative to use were calculated, and tables were developed.

Network content analysis. To analyze content patterns in the papers (the public information) on the Network, printouts of all papers sent during each of the four time periods were examined and classified by conference and session, paper category, user category, and content category.

The paper category was determined by the investigator: requests or questions for specific information or assistance (R/Q); answers or responses to those questions and requests (A); information offered, not in response to a request (I); discussion, deliberation, or open-ended questions posed to stimulate dialogue (D); and a miscellaneous category which included student use of the network (O). For this analysis, users were grouped into two broad categories, practitioners and research/practice supporters (the latter group consists of researchers, staff members, and others whose goal it is to stimulate or support the research/practice interaction).

The content category system was derived through an iterative classification process resulting in the descriptors in Table 13. Simultaneously, patterns of conversation across papers were noted. These were represented on annotated node-link diagrams.

Conversations were tallied by length across the four time periods to represent the development of network conversation patterns over time.

Network interviews. As a first step in interview analysis, responses were listed by question for each of the items on the protocol. From the range of responses on these lists, categories were developed for each question. Then, for researchers and practitioners separately and for the participants as a whole, the interview responses were tallied according to the category system. The resulting tallies for each question provide information about each group and for the Network overall.

Results

The results reported here are in order of data source rather than in order of research question.

Survey results

In order to investigate important topics, respondents were asked to identify the three primary topics on which they needed information over the time their subcommittee was active. Using Arends' (1988) framework from Learning To Teach, the results were categorized according to the teaching function each topic addressed (see Figure 3).

Insert Figure 3 about here

Of the topics designated by the 86 respondents, 21% were concerned with the executive functions of teaching. Executive functions include such things as planning for instruction, building a productive learning environment, developing multicultural and mainstreamed classroom, and managing classroom groups. The executive functions are those things a teacher does beforehand to prepare for instruction.

In addition, 12.5% of the identified topics fell into the realm of interactive functions of teaching. Interactive functions are the things a teacher does when in direct contact with

-was it the one across the hall, two wings away, across town, or those on the computer network?

The principals also held a strong place as providers of information. In each year, the principals' responses slightly exceeded the number of requests made of them. This could be the case for a combination of reasons: first, the principal is easily accessed; and second, many principals define their role as the instructional leader of the school.

The site-based consultants, whose role included assistance in research utilization, proved to be an important provider of information particularly during years 1 and 2. They were employed part-time and spent time each week at the school site, and therefore were an accessible source of information. The decline of activity with site-based consultants in year 3 is probably due to the consultants' emphasis on developing the research-use capacity among their faculties. In year 4, only a few schools retained their site based consultant (by Project design).

Although the MIL staff was centrally located (close to only one school), the staff was accessible to practitioners for site visits as well as by telephone and mail. Beyond accessibility, however, the practitioners knew the MIL staff, either personally or secondarily through their peers' contacts at MIL meetings (an advantage that the Labs and Centers generally did not have). Having a providers name and face in mind appears advantageous.

An additional advantage the MIL staff might have over central office staff or principals, is that they clearly held no evaluative position within the schools or districts. To confess to MIL that help was needed in some area of instruction posed no threat to one's end-of-the-year evaluation.

Practitioners also requested and received information from ERIC, the Regional Educational Labs, and Centers. Table 3 reflects information pertaining to these providers.

Insert Table 3 about here

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the students. These activities include such things as teaching for higher-order thinking, teaching through presentation, teaching cooperative learning, and empowering students.

The vast majority (66%) of the topical concerns dealt with the organizational functions of teaching. The term "organizational" refers to the school as an organization and has as its primary concerns improving classrooms and schools for the entire student body and improving the teachers' workplace. Examples of topics in this category are school-wide discipline policies, parent and community involvement, public relations, and faculty development or inservice training for teachers. To some extent, it is logical that the majority of the topics are concerned with school-wide issues since the purpose of the MIL Project is school-based restructuring.

In order to investigate the sources of information teachers used, for each of the three topics respondents were asked two separate questions: "From whom did you REQUEST information on this topic?" and "From whom did you RECEIVE information on this topic" (see Figure 4 for raw data and Table 2 for percentages of responses). Besides

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Insert Table 2 about here

Insert Figure 4 about here

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the nine listed on the survey, an Other category was provided. Among the other sources listed were: local universities, state and county agencies, state departments of education, local businesses, and a variety of workshops and conferences.

Other teachers were the most often-used source of information in every year of MIL. Teachers value the "wisdom of practice" and teachers' information is accessible--easy, quick, and inexpensive. However, the survey does not specify who the other teacher was-

In general, approximately one half of the respondents reported that they received no information from these providers. However, between one-quarter and one-third reported that "some" assistance was received from these sources. The "no response" category indicates the item was left completely blank on the survey form. The omissions could be an indication that the respondent was not familiar enough with the source to provide an honest appraisal, or perhaps it was used as a quicker way to indicate "none."

The Regional Labs had agreed to provide services and/or materials to the MIL schools in their region. Thus, these 26 faculties had more direct access to Regional Labs than is typical of non-MIL schools.

The numbers of responses from ERIC may be misleading, as ERIC materials were contained within responses from the MIL staff, and possibly from the central office personnel and/or local universities The Project records did not always specify the original source or how it was located. Hindrances to ERIC use (as specified in respondents' comments) were the cost, the inconvenience of going to another location to use the service, and lack of expertise in using the descriptors and limitors.

Teachers who checked "alot" or "most" in response to the information received from the Regional Educational Labs were from two sites. Both of these sites are served by the Appalachia Educational Laboratory. The topics listed were keeping teachers informed of school policies, flexible scheduling, critical thinking, parent involvement, public relations and community support, and correlating subjects across the curriculum.

Respondents receiving "alot" or "most" of their topical information from Centers were from three different sites. The topics named were: ways to motivate students to become more involved with school, parent involvement, self-directed learning, unity and cooperation among staff, communication skills, restructuring, at-risk students, and positive school environment. Because the survey did not specify "centers" to be the OERI-

supported facilities and MIL practitioners are not as familiar with this term, teachers' interpretation of "centers" may have been broader than the survey intended.

Table 4 shows the location of ERIC access to MIL teachers. The large majority of

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Insert Table 4 about here

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respondents (72%) reported ERIC available from a local university (and several noted that this was at their own expense). The percentages listed in the positive response columns beside district and school are interesting in that the numbers represent conflicting information. Respondents from over one-third of the sites gave conflicting "yes/no" responses. This was not an indication of uncertainty: all the respondents reported what they believed to be true. The "Did Not Know" column in Table 4 was not originally part of the survey form. Besides the 13% who chose not to respond, there were a number of respondents who wrote question marks on the items (constituting the "Did Not Know" column). Central office personnel ranked comparably to ERIC and the Labs in spite of the fact that they are local and free. It appears that information dissemination to school district offices does not reach practitioners to any greater degree than through teachers' direct access to ERIC and the Labs.

Figure 5 provides a graphic look at each provider's ratio of requests to responses

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insert Figure 5 about here

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across their years of involvement with the Project. There are no major differences between requests and responses for any of the Providers. This indicates that practitioners in the Mastery In Learning schools were getting answers to the questions they asked.

Teachers were asked (on survey question 5) to identify topics on which they were unable to find the information needed. In response to that query, nine different teachers

named eighteen different topics. These topics were evaluation, block scheduling, at-risk students, core curriculum, interdisciplinary curriculum, morale, school climate, global education, technology, student success, restructuring for schools and citizens of the 21st century, effective communication within the school building, using software, the effect of music and movement on students' listening and comprehension skills, grouping, cooperative learning, testing, children and stress, children and environmental influences. Most of these topics were broad listings with no definitive contextual information and no topic was listed twice. Several of the topics were among the most important in other data sources indicating that some, but not all, needs were met.

In the section for "additional comments," several teachers noted an inability to clearly define the topic for which they were seeking information. One teacher wrote, "We didn't always know what we were looking for so it was difficult to search and difficult for the MIL staff to help during those first two years." Another commented, "It was hard to find something that was exactly what we were looking for." Perhaps lack of problem or topic focus contributed to the "information overload" found to be problematic in MIL and other research (Fleming, 1988). Likewise, the lack of clarity may have contributed to difficulty in effective use of ERIC descriptors by teachers.

In Sawyer's (1987) "Roadblocks to Use of the Knowledge Base in MILP Schools," lack of faculty focus was one roadblock listed. This finding was confirmed by the survey comments of two different teachers. One wrote, "...the problem was to have a majority agree on what we wanted." While another teacher added, "we had difficulty focusing on which topics had the widest appeal."

Lack of skill in understanding and interpreting research was a hindrance to one site as one teacher's comment shows, "our problem is that we need more hands on help to understand some of the information and materials we do have. . . this is time I do not have." This statement also confirms previous findings (e.g., Fleming, 1983).

Six different teachers (25% of those making additional comments) remarked that the ICM/NEA Mastery In Learning School Renewal Network had facilitated research use in making information more accessible. One teacher wrote, "we explored how to use research, but it took us two years and the use of the Network before we found easy access to research and broad intent among the staff to seek and use it."

The Network's benefit spreads beyond the MIL schools as several teachers explained in their comments. "Information has increased with time [over the computer network] and even though we are no longer actively searching for information [on this topic], we are able to keep abreast [of new information]. We also serve as a conduit to provide the rest of the district with current information..." This statement explains how the Network can supply more responses than the requests it receives (as shown in Figure 5). A second teacher commented, "this [computer network] has been very beneficial to our school. We use PSInet to get information from other schools as well as for sharing our successes."

Even though the vast majority of comments added by teachers did not deal directly with the information requested (i.e., topics on which you were unable to find the information you needed), the very act of adding the comments may demonstrate active support of a research endeavor and/or enthusiasm for the research utilization process.

Project Record Results

Information needs are seen in the broad patterns indicated in the Project records. The recorded information topics, when tallied across the Project's four years, fell into three levels of frequency--higher, medium, and lower--with negligible items dropped (see Table 5).

Insert Table 5 about here

Approximately one-tenth of the recorded items dealt with a new curricular focus, particularly critical/higher order thinking and curriculum integration. Other frequent information needs included faculty issues (roles, collegiality, climate), school and classroom organization (especially scheduling, class size, and grouping/tracking), curricular subject areas, and student learning (particularly learning styles, motivation, and responsibility).

When broken down by year, subtle shifts in information focus are evident (see Table 6). New curricular focus was the highest recorded topic during the first year,

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Insert Table 6 about here

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shifting to curricular subjects during the second year. Student assessment surfaced as one of the top three topics during the third year. This problem is due to the incongruities experienced when changing curriculum while assessing progress with standardized tests unrelated to the new curricular changes. During the third and fourth years, the change process and faculty issues became uppermost in the Project information records. The focus shifted from content information on identified priorities to the process of change and faculty-level decision making. Perhaps sufficient content information had been obtained, studied, and used during the first two years while action plans were being developed; however, trying to implement the action plans during the third and fourth years raised process questions about change, implementation, and faculty involvement.

An additional way to consider the data is to look within each topic and identify the year in which each topic received the most attention. New curricular focus was highest during the first year, then tapered off to half its original importance. Curricular and student-related issues dominated the first year; subject areas, parent/community involvement and process issues (faculty collegiality and climate, and using research) became stronger during the second year; change process issues clearly dominated the third year; and

attention to exceptional and at-risk students, multicultural and equity issues came to dominate information needs during the fourth year. While some reform efforts have been criticized for overattention to teacher-related issues and others for overattention to student-related issues, the information topics shown here indicate a balance, over time, between the two. A content focus was strong during the first two years, a process focus emerged during the second year and became strongest in the third year. The content focus returned, in a new, more specific way during the fourth year.

The list of TRaK Packets provides an overview of more specific topical needs during the first and second years (see Table 1). Packet topics were chosen based on the most common reform priorities across sites.

The Network began during the third year, so the information needs related specifically to its use were tallied separately. The highest information need concerned the nature and process of electronic dialogue and involving increasing numbers of faculty members in using the workstation and/or information (see Table 7). Technical (hardware

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Insert Table 7 about here

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and software) information and OERI grant-related information (fourth year only) and were of medium importance.

In addition to information needs, Project records provide broad, general patterns about the sources from which the information came. According to Project records, most information came through the TRaK packets, particularly during the first year (see Table 8).

Insert Table 8 about here

(It should be remembered that part of the site-based consultant's role was to obtain information for their schools, but this is not indicated in our records; therefore, these findings are limited to what was recorded/developed at the MIL central office.) Packet mailings decreased after the first year, but follow-up requests for more specific information--fulfilled through articles, papers, readings, and other resources--increased during the second and third years. The computer network became an information source during the third year and increased dramatically during the fourth year (see Network results). The MIL office also purchased and loaned books, wrote and distributed papers and other publications, and sent ERIC Searches and Digests.

One other interesting pattern can be noted in the Project records data. School faculties requested and/or received almost as much, if not more, information unrelated to their identified priorities as that related to their priorities (see Table 9). Perhaps the nature

Insert Table 9 about here

of schooling is "messy" enough that topics interrelated and overlapped to a great extent. Perhaps faculties were willing to take any information they could get, partially leading to the identified problem of information overload and lack of focus. In addition, some of the requests came from individuals with particular interests, whereas priorities were established by whole facuities.

Network Results

At its onset and throughout the first three time periods investigated, Network use was dominated by MIL sites--practitioners and staff. The researcher-practitioner dialogue intended was not occurring. This balance changed in January of 1990, with the

researchers assuming a more active role and the MIL staff assuming less leadership in Network activity (Table 10 illustrates the changes in network contributions by the primary user groups).

Insert Table 10 about here

The decrease in IBM and MIL staff messages probably reflects the decrease in need for technical support, while the increase in researcher messages probably was stimulated by the personal interaction at the Boca conference and by the OERI monetary support. The increase in the number of papers sent and received reflects the better-developed data base, particularly after the restructuring of the Network. It also indicates a greater mastery of the technical/procedural facets of Network use, and for practitioners, more psychological comfort in "speaking publicly." The Network made a significant shift from messaging as the primary activity toward use as the knowledge resource for which it was intended.

Change in content of Network papers over time. Classification of the papers for each time period into requests/questions, responses/answers, information, or discussion/deliberation reveals that the nature of Network communication changed as the Network developed (refer to Table 11 for details). Initially, requests and responses were

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Insert Table 11 about here

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out of balance. Nearly half of the papers were requests or questions (and virtually all of them from practitioners), while only 15% were responses (5% practitioner responses). The notion of teachers as contributors to the knowledge base was not in operation.

By January of 1990 the types of papers were more nearly balanced; indeed, the percentage of responses exceeded that of the requests. Announcements of resources

and information provision became the dominant type of communication. Discussion--the deliberative, reflective category--rose to 20% (It was higher in October when the form and function of the Network were under discussion and people's interests were more issue focused.) In January 1990, discussion and responses together comprised slightly less than half of the papers, suggesting greater involvement and dialogue across parties.

Another way to examine Network dialogue is to follow and map the development of conversations (Table 12 illustrates conversation development over time). The bulk of

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Insert Table 12 about here

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conversations remain one link in length--that is, they are a question followed by a single answer or a request with one response, and then they end. Conversations are beginning to develop and track more extensively, however.

One of the difficulties in stimulating dialogue on the Network is the wide range of issues important to practitioners engaged in school renewal (see Table 13 for a listing of

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Insert Table 13 about here

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papers by content). Great breadth limits depth; this was particularly a problem in the earlier periods investigated.

By January of 1990 there was greater interplay between researchers and practitioners, and practitioners increasingly provided information and responses, as well as questions (Tables 14 and 15 demonstrate this development). Despite the great variety

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Insert Tables 14 and 15 about here

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of content and user activity portrayed, a few patterns stand out: (a) again, attention to Network issues was strongest in the October-November period during planning for the Boca conference; (b) the topics defined by practitioners and researchers at the Boca conference to structure the new Network have stimulated participation from both groups during the final period; (c) practitioners have become increasingly comfortable, willing, or interested in sharing their own approaches and experiences as reflected in the "Current Instructional Practice" category, but pre-existing resources and programs are also the topic of many papers; and finally, (d) providing for at-risk students appears to be the most frequent substantive topic.

Network contributions became more clearly stated over time. In particular, questions and requests became less global. Consider, for example, a request sent in January 1989: "How are reading teachers being used in other schools?" This query received no responses, perhaps because the question was too broad and open-ended. As the Network matured, the users put more information into their requests to clarify them or to share existing practices as a discussion starter.

In general, across all time periods, practitioners posed questions and provided information specific to particular situations and oriented toward action. Not surprisingly, researchers' contributions tend to be more general, looking across situations for patterns and contrasts.

Did the Network facilitate use of the knowledge base? When posed this question, 70% of the interviewees responded in the affirmative. Researchers, however, were more evenly divided in their assessment. Several remain concerned about the significance of the topical information and about their roles in the dialogue.

Although the level of faculty/staff use of the Network (beyond the computer coordinator) is fairly low, respondents reported ways in which they involve others with the Network information and knowledge. As in the content dimension, traditional roles are still in operation: Practitioners answered from a "user" perspective and researchers from that

of "provider." Practitioners have held committee (32%) and individual (25%) sessions at the workstation; computer coordinators have printed information and disseminated it to individuals (57%) and created notebooks (43%) of printouts. Researchers (18%) have solicited information from their colleagues.

The information provision function of the Network appears to be functioning well. Sixty-eight percent of those interviewed reported that they had made requests for information and 66% of them received responses.

Has the Network impacted school reform? It is too early to determine the Network's impact on school reform with certainty, but we are encouraged by the indicators of potential:

1. Dialogue focused around ten critical topics important for school reform;
2. More extensive and useful data base;
3. People (researchers and practitioners) getting the information they seek;
4. Increased contributions by researchers and practitioners;
5. Face-to-face interaction followed up by electronic interaction.

The Network has begun to expand the roles basic to school reform (National Foundation for the Improvement of Education: Christa McAuliffe Institute, 1988). Educators are reaching out, looking for new ideas, and in some cases, re-examining their practices. Those are certainly good signs.

Barriers are also common. Time and resources pose a major problem. Both researchers and practitioners have other pressing agendas for their time. The teaching environment does not easily provide the time or space for Network activity Furthermore, the impact is severely limited by problems of access--one computer to an entire school. This forces much of the interaction to be done with paper copy, eliminating one of the advantages of an electronic data base.

Conclusions

Conclusions are reported here across data sources organized around the research questions.

Practitioners information needs

Two conclusions stand out: (a) needs for organizational information; and (b) need for both content and process information. Sixty-six percent of survey topics were classified as organizational functions. On the one hand, the MIL focus involved school-level change, so this result is not too surprising. However, teachers have not traditionally had a vehicle for considering organizational change issues. When given the authority and a vehicle, these teachers were willing to take on the issues relevant to changing their schools at the organizational level. They have had organizational concerns which they previously had no way to address.

Topics need to focus on both the content and process of school change. In fact, these emphases intermingled over time moving from content to process to content. Perhaps the most seriously needed topical information is Alternative Student Assessment. Faculties have changed their curricula to include higher order thinking, integration of subject matter, and developmental appropriateness; yet they find no way to assess student progress in these areas and find that school improvement is still externally evaluated by traditional standardized testing. The new methods of assessment these faculties require are not yet available.

Needs for process information exist, as well. The second wave of school reform requires skills that faculties, having never been involved in collegial, site-based decision making, do not necessarily possess. Information and ongoing training in developing collegiality, defining and practicing new roles for teachers and administrators, understanding group development and decision making, and implementing school-wide change are needed.

Finally, one of the most successful aspects of the computer Network has been practitioner-level involvement in the identification and definition of topics. These findings indicate the importance of involving practitioners in topic development, regardless of whether the vehicle is electronic or not.

Practitioners' information sources

The sources of information available to the MIL faculties were many and varied. In several ways, they had an ideal situation with the MIL staff locating, purchasing, and providing resources; the services of site-based consultant; and a contact person at their Regional Laboratory. With the advent of the computer Network, they had direct access to university, Lab and Center personnel. The finding that responses balanced requests indicates that these various sources met many of their needs.

Still, other teachers remained the single greatest source of information. Most indicated that ERIC, the Labs, and Centers provided "some" information. Problems with ERIC access included not knowing about it, now knowing where or how to access it, not using it frequently if located outside their building, and not having money and/or procedures to pay for ERIC services, particularly through university sites.

Central office personnel did not fare very well as an information source. Perhaps faculties did not request information of them since other sources were available. But perhaps this suggests that a dissemination chain which goes through the central office and thus leaving practitioners at the bottom of the chain) means that, at best, only "some" of the needed information will reach its ultimate destination. This has implications for OERI dissemination models

Packet distribution as a major source was closely followed by requests for additional, more specific information. This indicates the importance of extending information provision beyond a one-time occurrence. Follow-up on generalized information enabled the faculties to relate the packet information more particularly to their school situation.

The computer network appears to provide an important and fairly effective information source, particularly during its second year. It is difficult to separate the Network's particularly characteristics from its point of inception during the Project's third year; at this point, the practitioners have probably developed some knowledge use skills and attitudes that have contributed to the Network's effectiveness. Even so, the Network appears to make a unique contribution to practitioners sharing their problems and successes publicly with other practitioners, and to discussing the use of generalized research findings in specific situations with knowledgeable researchers and disseminators.

Perhaps the most striking finding relevant to the sources teachers used was the importance of personalization. They requested and received information from people they knew or, at least, people for whom they name: other teachers, principals, and consultants at the local sites; MIL staff at the national office; their designated MIL contact person at their Regional Lab; and Network participants. Indeed, the Network shifted from messages to papers after the practitioners and researchers met together as a group. Not only is the contact personalized, and therefore, more easy to initiate, but the resulting information is personalized, making it more useful and relevant. Personalization is an element of second wave reform in many ways, and extends to the access and use of research, as well.

Practitioners' Satisfaction and Continuing Needs

Practitioners have received responses to their requests; that is clear. Developing a well-focused facility agenda and problem statement appear important to receiving information that fits. It is also clear that authentic practitioner involvement in defining these foci is essential.

The problem is not just access to information -- information was provided. The problem became how to make sense of the information and use it in specific settings. One site-based consultant commented that availability of information was not the problem; use of the information was the problem. Interpreting research, synthesizing, making sense of conflicting findings, and using generalized findings in particular contexts were problematic

once the information was received. These are problems for which the faculties had assistance from their consultant, the MIL staff, and the researchers on the Network. Still, these are activities which require time and skill. The empowerment of teachers through knowledge will be a slow, difficult, and fragmented process until teachers' professional workday includes time for research consideration and use. A variety of incentives have been important to development of the Network including stipends, well-defined roles, a sense of shared purpose about school reform and about research-based decision making, and personalization. Even so, time is reported as the biggest obstacle.

In many instances, practitioners did not need more information, but new kinds of information. Each consideration or decision appeared to raise new questions. For example, one faculty studied the tracking literature and decided to eliminate tracking in their school. New questions then emerged, most particularly, how to organize and teach a class with students of various ability levels. New instructional strategies, such as cooperative learning, were needed and ongoing training and practice in using the new strategies were essential for the success of the original goal (to eliminating tracking). Resource assistance and its use in situations where practitioners are developing new attitudes and skills must be continuous and ongoing until an innovation and its sub-innovations are institutionalized.

The Network has been one vehicle for facilitating use of the knowledge base. Users report that it provides access, a forum for discussing new questions as they arise, and a way to share successes. The practitioner users have become much more comfortable with sharing their practical knowledge publicly --a critical development if practical wisdom is to be shared and codified. The Network participants are not only learning new content, they are learning new roles as seekers and deliberators. They are realizing the benefits of two-way interaction between researchers and practitioners; both groups are learning about the importance and use of their particular expertise to the other group.

Perhaps what has been most detrimental to the impact of educational research on schools is the lack of interaction between general and specific, between generalized findings and specific situations, between that which is universal about teaching and learning and that which is unique. Current structures in schools and in information-providing institutions do too little to facilitate this critical interaction. The computer network appears to provide one structural model for this interaction. True research-practice interaction requires the learning of new roles and skills, content relevant to both researcher and practitioner, contributions from both groups, and a willingness to take risks. As the Network matures, it will be important to observe how natural differences between the groups are accommodated in dialogue. As such, observation of Network activity may prove significant in understanding elements of effective research-practice dialogue and the structural elements that support it.

In conclusion, the second wave of school reform focuses on school-level decision making, collegial, participatory environments, personalization, and learning beyond memorization (Michaels, 1988). If this wave of reform is to succeed and the growing body of educational research is to make a difference, structures for generation, dissemination, and use of research must take on second wave characteristics: they must become more practitioner-oriented and accessible; attend to the school-level decision making process; become more personalized; reflect information needs that focus on higher order learning and thinking; and facilitate authentic interaction between general and specific, between research and practice, between researchers and practitioners. Thus, knowledge will empower teachers and, more importantly, their students.

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Footnotes

[1]For the sake of brevity, Project (designated with a capital) will represent The Mastery In Learning Project.

[2]In order to provide clarity for the specific meaning of the word "network," references to the IBM/NEA Mastery In Learning School Renewal Network will be designated by capitalizing Network.

Table 1

Topics of TRaK Packets and Notebooks

MIL Project Initiation Notebook
Critical Thinking
Cooperative Learning
Effective Schools
Empowerment
Student Motivation
Underachievement
Parent Involvement
Teacher Expectations
Grouping
Class Size
Scheduling
Discipline
Student Self-Esteem
Writing
Computers in Education
Curriculum Development
Curriculum Integration
Learning and Teaching Styles
Faculty Communication
Community Involvement
Dropouts
Self-Directed Learning
Homework
Study Skills
Teachers as Advisors
Teachers Helping Teachers
Language Development
Teacher Planning
Standardized Testing and Its Alternatives
Communication Activities Notebook
Action Research
Minority Achievement
At-Risk Students and School Culture

Note: Listed in order of completion.

Table 2

Percent of Total Request Received / Responses Submitted Per Provider Per Year

PROVIDER OF INFORMATION		PILOT %	YEAR1 %	YEAR2 %	YEAR3 %	YEAR4 %
Mastery In Learning Staff	Requests	15.00	17.96	16.17	12.94	10.82
	Responses	18.51	18.63	16.54	11.94	10.23
Site-Based Consultant	Requests	12.50	20.06	17.66	11.47	3.61
	Responses	11.11	18.63	17.04	10.75	2.33
ERIC	Requests	3.75	6.59	6.72	3.82	2.58
	Responses	.00	6.21	6.27	3.58	2.33
Regional Educational Labs	Requests	3.75	8.38	7.71	5.00	4.12
	Responses	3.70	5.88	7.77	6.57	6.05
Centers	Requests	2.50	.90	1.24	1.76	1.55
	Responses	2.47	1.31	1.00	2.06	1.40
Other Teachers	Requests	27.50	20.66	22.39	22.35	26.80
	Responses	27.16	21.24	22.06	22.09	25.12
Principals	Requests	16.25	13.17	11.94	13.82	14.95
	Responses	19.75	15.36	13.28	14.03	15.81
Central Office Personnel	Requests	7.50	4.49	6.72	5.59	6.70
	Responses	7.40	4.56	6.27	4.48	9.30
Computer Network	Requests	(unavailable to MILP)			12.65	16.50
	Responses				14.03	16.74
Other	Requests	11.25	7.78	9.45	10.59	12.37
	Responses	9.88	8.17	9.77	10.45	10.70

Table 3

Responses to the Inquiry: "To what extent did the information you used come from (name of provider)?"

	PROVIDER OF INFORMATION		
	ERIC	REGIONAL EDUCATIONAL LABS	CENTERS
	%	%	%
NONE	56.98	44.19	55.81
SOME	27.91	38.37	23.26
ALOT	1.16	4.65	2.33
MOST	1.16	1.16	.00
NO RESPONSE	12.79	11.63	18.60

Table 4

Response to the Inquiry: "Do you have access to ERIC through (name of source)?"

SOURCE	POSITIVE RESPONSE %	DID NOT KNOW %
Your School	10.47 *	3.49
Your District	19.77 *	5.81
Local University	72.09	4.65

NOTE:

12.79% of the teachers did not respond to this question.

* 31.58% of the sites had teachers reporting conflicting information regarding the availability of ERIC within their school or their district.

Table 5

Topics Over Time by Relative Frequency

Higher Frequency Topics:	New Curricular Focus
	Faculty Issues
	School & Classroom Organization
	Curriculum Subject Areas
	Student Learning/Styles/Motivation
	Parent/Community Involvement
	Restructuring/Reform/Change Process
Medium Frequency Topics:	At-Risk/Low Achieving Students
	New Instructional Strategies/Cooperative Learning
	Student Behavior/Discipline
	Student Assessment/Reporting
Lower Frequency Topics:	Site-Based Decision-Making
	Student Self-Esteem
	Linking Research and Practice
	Teacher Characteristics (development, knowledge, expectations)
	New Technologies
	Multicultural Issues
	MIL Activities/Documentation
	Preparation for Instruction/Planning
	Individual Teacher Roles
	Exceptional Students
	Developmentally Appropriate Education

Table 6

Importance of Topics Over Time and By Year

Topic	Year 1	Year 2	Year 3	Year 4				
New Curricular Focus		1 *		2		0		4
New Instructional Strategy	*						*	
Student Assessment/Reporting						3 *		
School/Classroom Organization		3 *				4		3
Exceptional Students						*		*
At-Risk/Low Achieving Students							2 *	
Equity Issues								*
Multicultural Issues							*	
Out-of-School Issues						*		
Censorship								*
Parent/Community Involvement		4		3 *				
Student Self-Esteem		*						
Student Behavior/Discipline		*						
Student Learning		2 *		4				
New Technologies				*				
Restructuring/Reform/Change						1 *		5
Site-based Decision-Making						*		
Faculty Issues					5 *		2	1
Linking Research and Practice						5 *		
MIL Activities/Documentation						*		
Funding/Grant Writing				*				
Individual Teacher Roles		*						
Curriculum Subject Areas		5		1 *		5		
Teacher Characteristics				*				
Preparation for Instruction			*					
Teacher Effectiveness						*		
Effective Schools		*						
Developmentally Appropriate Educ.				*				
Total		516		637		426		613

Notes: Asterisks (*) indicate the year in which each topic received the most requests/responses (reading across). Numbers (1 - 5) indicate the most frequent topic within each year (reading down); 1 = highest frequency.

Table 7

Network Topics in Order of Relative Frequency

Higher Frequency Topics:	Dialogue/Faculty Involvement
Medium Frequency Topics:	OERI grant-Related Issues/Activites
	Technical Issues
Lower Frequency Topics:	Student Use

Table 8

Sources of Information Over Time In Order of Relative Frequency

Source	Year 1	Year 2	Year 3	Year 4	Total	
TRaK Packets/Notebooks	1	1	2	2	1	
Articles/Papers/Readings	2	2	1	1	2	
Books	3	3	3	5	3	
MIL Publications/Papers	4	5	5		4	
Workshops			4			4
ERIC Searches				4	4	5
ERIC Digests				3	5	
Conference Announcements						6
Catalogs	5					7

Note: 1 = Highest Frequency.

Table 9

Topics Related and Unrelated to Identified Priorities

Year 1		Year 2		Year 3		Year 4	
P	N	P	N	P	N	P	N
212	236	163	117	88	108	72	42

Note: P = Priority-related request; N = Non-related request.

Table 10

Network Contributions across Time by Primary User Groups

	Activity Frequency							
	J '89		A '89		O-N '89		J '90	
Role Group	n	%	n	%	n	%	n	%
	Messages Sent							
MIL Practitioners	149	32	115	34	271	48	175	32
Researchers	6	1	5	1	25	4	120	22
MIL Staff	262	57	183	55	233	42	201	36
IBM	33	7	25	7	7	1	29	5
Network Total	459		334		561		551	
	Papers Sent							
MIL Practitioners	49	61	71	72	50	52	89	43
Researchers	2	3	9	9	5	5	57	27
MIL Staff	26	33	16	16	38	40	55	26
IBM	2	3	3	3	2	2	1	-
Network Total	80		*99		96		209	

Note: *99 includes 31 papers sent by students to their penpals

Table 11

Number and Percentage of Papers by Type and Time Period

	J '89		A '89		O-N '89		J '90	
	n	%	n	%	n	%	n	%
Request	33	46	24	39	20	22	37	19
Response	11	15	14	23	15	16	51	26
Information	18	25	21	34	35	38	72	36
Discussion	9	13	3	5	22	24	40	20
Total		71		62		92		200
				*93				

Notes:

*93 represents the count including the 31 papers sent by students to their penpals

Table 12

Conversation Development over Time

	Conversations			
Number of links	J '89	A '89	O-N '89	J '90
1	6	13	11	23
2	1	1	1	7
3	1		4	7
4	1			
5			1	4
over 5			3	

Table 13

Overall Content of Network Papers over Time

	J '89	A '89	O N '89	J '90
New Curricular Focus	6	4	8	14
New Instructional Strategy	2	1	2	16
Student Assessment/ Reporting	10	3	-	11
School/Classroom Organization	-	4	7	23
Exceptional Students	7	2	-	11
At-Risk or Low [illegible]hieving Students	1	8	10	25
[illegible]ues	-	-	3	2
[illegible]dicultural Issues	1	-	6	1
Out-of-school Issues Impacting Schools	3	1	5	
Consorship	-	-	-	7
Parent/Community Involvement	-	1	5	8
Student Self-Esteem	1	-	1	2
Student Behavior/ Discipline	2	3	1	8
Student Learning/ Learning Styles	-	1	1	11
Resources/Programs/ Workshops	9	19	8	48
Current Instructional Practices: What we do	4	2	7	26

Table 13 (Continued)

	J '89	A '89	O-N '89	J '90
Examination of Current Practice	-	1	-	7
Classroom Use of New Technologies	2	2	-	9
RE Student Use of PSInet	2	2	1	2
PSInet Technical Issues	12	7	13	16
Electronic Dialogue/ Faculty Involvement	8	10	21	18
OERI Grant-Related Activities/Issues	-	-	38	6
General Restructuring/ School Reform	3	8	4	18
Site-Based Decision Making	5	5	-	9
Faculty Issues--Roles, Collegiality, Climate	2	3	9	9
Linking Research and Practice	2	-	14	-
MIL Activities	7	5	2	2
Funding	-	2	1	1
Misc.	4	1	3	17

Table 14

Content of Network Papers from All Users by Paper Type over Time

	J '89			A '89			O-N '89			J '90		
	Q/R	A/D	I	Q/R	A/D	I	Q/R	A/D	I	Q/R	A/D	I
New Curricular Focus	6	-	-	1	2	1	3	4	1	2	4	8
New Instructional Strategy	1	-	1	-	-	1	1	-	1	2	7	7
Student Assessment/ Reporting	5	2	3	1	1	1	-	-	-	3	6	2
School/Classroom Organization	-	-	-	1	-	3	3	3	1	5	14	4
Exceptional Students	4	2	1	1	-	1	-	-	-	3	7	1
At-Risk or Low Achieving Students	1	-	-	5	2	1	4	2	4	2	7	16
Equity Issues	-	-	-	-	-	-	1	1	1	-	1	1
Multicultural Issues	1	-	-	-	-	-	1	2	3	-	-	1
Out-of-school Issues Impacting Schools	2	1	-	-	1	-	1	2	2	-	-	-
Censorship	-	-	-	-	-	-	-	-	-	1	5	1
Parent/Community Involvement	-	-	-	1	-	-	4	-	1	1	1	6
Student Self-Esteem	1	-	-	-	-	-	1	-	-	-	1	1
Student Behavior/ Discipline	1	1	-	1	2	-	1	-	-	1	5	2
Student Learning/ Learning Styles	-	-	-	-	-	1	-	-	1	4	6	1
Resources/Programs/ Workshops	3	3	3	5	5	9	1	3	4	1	15	32
Current Instructional Practices: What we do	3	1	-	2	-	-	-	-	7	-	6	23

Table 14 (Continued)

	J '89			A '89			O-N '89			J '90		
	Q/R	A/D	I	Q/R	A/D	I	Q/R	A/D	I	Q/R	A/D	I
Examination of Current Practice	-	-	-	1	-	-	-	-	-	1	4	2
Classroom Use of New Technologies	1	-	1	1	1	-	-	-	-	2	3	4
RE Student Use of PSInet	1	1	-	-	-	2	1	-	-	1	1	-
PSInet Technical Issues	2	7	3	2	1	4	3	8	2	3	11	2
Electronic Dialogue/ Faculty Involvement	1	2	5	2	3	5	2	17	2	1	12	5
OERI Grant-Related Activities/Issues	-	-	-	-	-	-	2	24	12	3	3	-
General Restructuring/ School Reform	-	1	2	2	2	4	-	2	2	1	6	11
Site-Based Decision Making	1	4	-	-	-	5	-	-	-	2	6	1
Faculty Issues–Roles, Collegiality, Climate	1	-	1	-	1	2	-	7	2	3	8	1
Linking Research and Practice	2	-	-	-	-	-	1	10	3	-	-	-
MIL Activities	3	1	3	3	1	1	-	1	1	1	-	1
Funding	-	-	-	2	-	-	-	-	1	-	-	1
Misc.	-	-	4	-	-	1	1	-	2	5	6	6

Note: Abbreviations for paper type: Q/R--question or request, A/D--answer or discussion, I--information (not in response to a question or request)

Table 15

Content of Network Papers from Practitioners by Paper Type over Time

	J '89			A '89			O-N '89			J '90		
	Q/R	A/D	I	Q/R	A/D	I	Q/R	A/D	I	Q/R	A/D	I
New Curricular Focus	6	-	-	-	1	-	2	2	-	2	4	3
New Instructional Strategy	1	-	1	-	-	1	1	-	-	1	3	1
Student Assessment/ Reporting	4	-	1	1	-	-	-	-	-	3	3	1
School/Classroom Organization	-	-	-	1	-	2	3	-	-	5	1	3
Exceptional Students	4	2	1	1	-	1	-	-	-	3	4	-
At-Risk or Low Achieving Students	1	-	-	5	1	-	3	-	2	2	2	4
Equity Issues	-	-	-		-	-	-	1	-	-	-	-
Multicultural Issues	1	-	-	-	-	-	-	2	2	-	-	-
Out-of-school Issues Impacting Schools	1	-	-	-	1	-	1	1	1	-	-	-
Censorship	-	-	-	-	-	-	-	-	-	-	3	-
Parent/Community Involvement	-	-	-	1	-	-	2	-	1	1	-	-
Student Self-Esteem	1	-	-	-	-	-	1	-	-	-	-	-
Student Behavior/ Discipline	1	1	-	1	1	-	1	-	-	1	5	-
Student Learning/ Learning Styles	-	-	-	-	-	-	-	-	1	4	-	-
Resources/Programs/ Workshops	3	2	-	4	3	6	1	1	1	1	6	3
Current Instructional Practices: What we do	3	1	-	2	-	-	-	-	7	-	6	10

Table 15 (Continued)

	J '89			A '89			O-N '89			J '90		
	Q/R	A/D	I	Q/R	A/D	I	Q/R	A/D	I	Q/R	A/D	I
Examination of Current Practice	-	-	-	1	-	-	-	-	-	1	-	2
Classroom Use of New Technologies	-	-	1	1	1	-	-	-	-	2	1	3
RE Student Use of PSInet	1	1	-	-	-	2	1	-	-	1	-	-
PSInet Technical Issues	2	-	-	2	-	1	2	8	-	2	4	1
Electronic Dialogue/ Faculty Involvement	1	1	2	1	2	3	2	11	-	1	5	2
OERI Grant-Related Activities/Issues	-	-	-	-	-	-	2	17	-	3	1	-
General Restructuring/ School Reform	-	-	-	2	-	1	-	-	1	-	2	3
Site-Based Decision Making	1	1	-	-	-	-	-	-	-	1	3	-
Faculty Issues--Roles, Collegiality, Climate	1	-	1	-	-	-	-	5	1	1	2	1
Linking Research and Practice	2	-	-	-	-	-	-	3	3	-	-	-
MIL Activities	1	-	1	2	1	-	-	1	-	1	-	-
Funding	-	-	-	2	-	-	-	-	-	-	-	-
Misc.	-	-	1	-	-	1	1	-	2	3	5	-

Note: Abbreviations for paper type: Q/R--question or request, A/D--answer or discussion, I--information (not in response to a question or request)

Figure 1

NEA MASTERY IN LEARNING PROJECT

Phases in School Renewal

	Profiling the School Inventorying the Faculty	Building Capacity for Renewal		Cultivating Comprehensive Change
1985-1986	1986-1987	1987-1988	1988-1989	1989-1990
PILOT YEAR	YEAR 1	YEAR 2	YEAR 3	YEAR 4

Figure 2

NEA MASTERY IN LEARNING PROJECT

Chronology of Events Impacting Use of Educational R & D

Printed knowledge base resources disseminated

Pilot Activities

Project Consultant Conference–Sept.

MIL Fall Conference Computer network training–Oct.

OERI Grant–Oct.

Regional Training Sessions–Fall

Symposium at Scanticon; Prototype Computer Network–Oct.

MIL Fall Conference Network Topic Definitions–Oct.

Network Conference for Researchers and Practitioners–Dec.

Data gathering and analysis: Faculty Inventory/School Profile

IBM-NEA-MIL School Renewal Network

Application process

Identification of 27 Project Schools

Documentation and Site-Based Data Analysis

1985-1986	1986-1987	1987-1988	1988-1989	1989-1990
PILOT YEAR	YEAR 1	YEAR 2	YEAR 3	YEAR 4

Figure 3

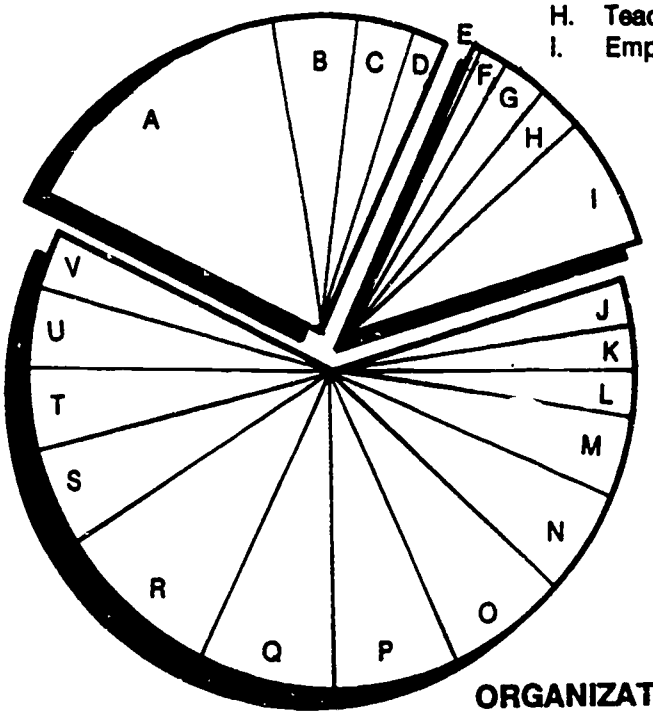
TOPICAL CONCERNS ACCORDING TO FUNCTIONS OF TEACHING

EXECUTIVE FUNCTIONS - 21%

A. Planning for instruction ---------- 14%
B. Building a productive learning environment ---------- 4%
C. Managing classroom groups------- 2%
D. Developing multicultural and mainstreamed classrooms---- 1%

INTERACTIVE FUNCTIONS - 12.5%

E. Teaching for higher thinking------- .5%
F. Use of standardized tests ---------- 1%
G. Teaching with cooperative learning ---------- 2%
H. Teaching through presentation---- 2%
I. Empowering students ---------- 7%



ORGANIZATIONAL FUNCTIONS - 66%

J. Curriculum concerns ---------- 2%
K. Schoolwide scheduling ---------- 2%
L. Fundraising ---------- 2%
M. Parent/community involvement---- 4%
N. Facilities---------- 5%
O. Communication skills---------- 7%
P. Organizational functions---------- 8%
Q. Skills for teachers ---------- 9%
R. Student concerns ---------- 11%
S. Restructuring---------- 4%
T. Schoolwide grouping---------- 4%
U. Programming for at-risk students ---------- 5%
V. Public relations/networking ------- 3%

NOTE: Amounts will not total 100% because each category was rounded to the nearest percent.

SOURCES OF INFORMATION UTILIZED BY M.I.L. TEACHERS

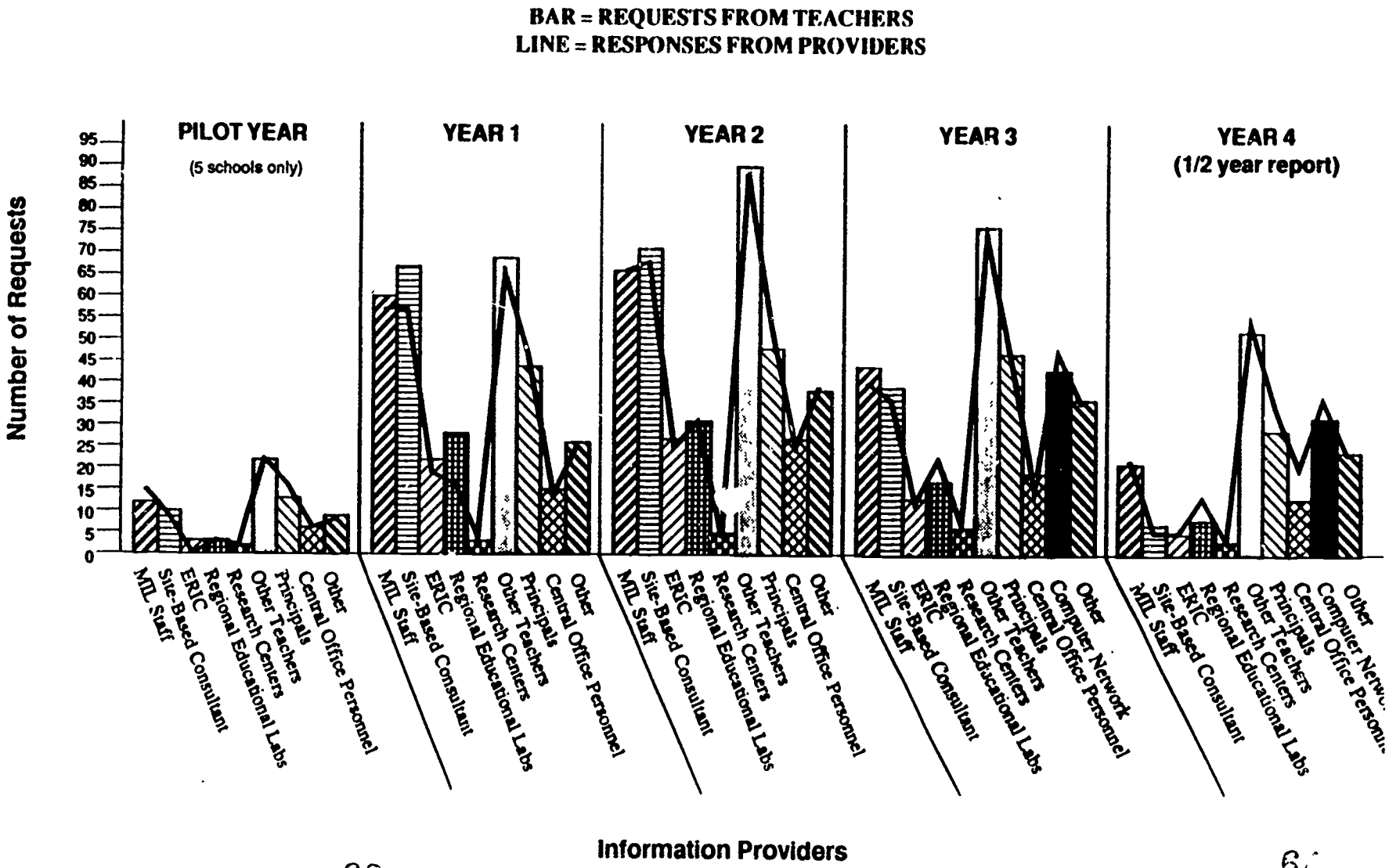


Figure 4

Average Requests Received/Responses Submitted Per Provider Per Year

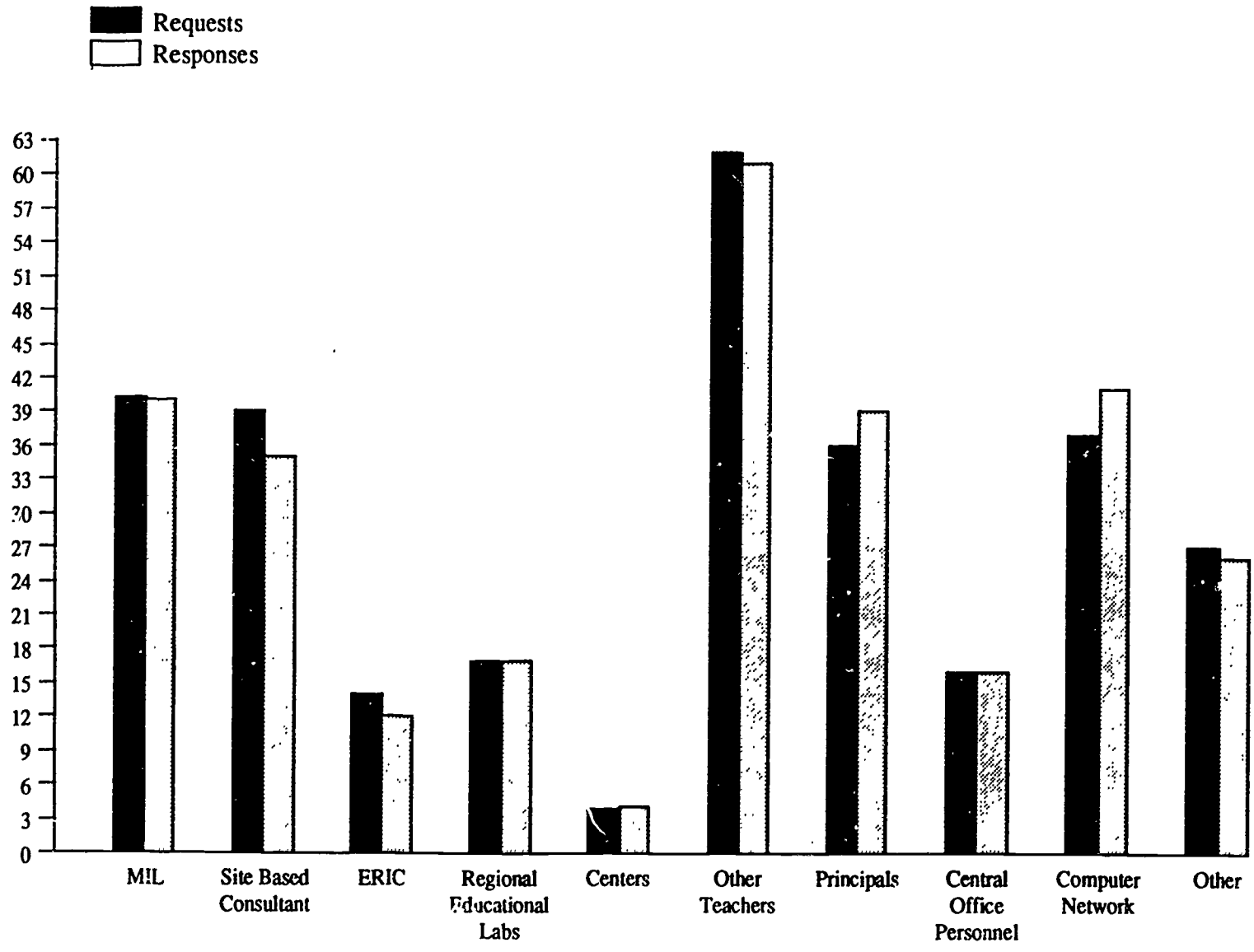


Figure 5

IBM/NEA - MASTERY IN LEARNING PROJECT SCHOOL RENEWAL NETWORK

INITIAL CONCEPTUAL OVERVIEW

This overview was created in the MIL office so that we would have content to begin working with at the October meeting. From this point on, the network conferences and sessions will be generated by the participants. You may begin a conference or session on any topic you wish to discuss.

CONFERENCES:

INFORMATION **	ROLE GROUPS	TEACHING	LEARNING	CURRICULUM	SCHOOL CULTURE	RESTRUCTURING
SESSIONS:						
MIL Bulletin *	Consultants	Cooperative Learning	Evaluation	Critical Thinking	Visions	Exemplars
Net Bulletin **	Steering Committee Chairs	Discipline	Grouping	Curriculum	Empowerment	Documenting
Discussion *	Network Coordinators		Self-Directed Learning	Integration		
Circuit *	Principals			Writing		
Newsletter *	Documentors					
Network	Sub Committee Chairs					
(DC Tourist)						

** - Required of All Sites

* - Required of MILP Sites

( )- For Annual Meeting Only

Appendix A

IBM/NEA MASTERY IN LEARNING SCHOOL RENEWAL NETWORK

PSI-NET CONFERENCE AND SESSION STRUCTURE
&
CRITICAL TOPICS IN DEPARTMENT OF EDUCATION GRANT

INFORMATION	
MIL	
NETWK-WIDE	(Network-Wide)
NETWORK-USE	
KEY-WORDS	
*AT-RISK-STU	(At-Risk Students)
ECHILD-ELEM	(Early Childhood/Elementary)
SECONDARY	
OTHER	
*CURRICULUM	
REDESIGN	
MATERIALS	
*ASSESSMENT	(Authentic Student Assessment)
OTHER	
*POS-SCH-CLI	(Positive School Climate)
DISCIPLINE	
STU-AS-WRKR	(Student As Worker)
OTHER	
*RESTRUCTUR	(Restructuring)
SITE-B-DEC	(Site-based Decision Making)
COLLEGIAL	(Collegiality)
VISIONS	
OTHER	
INSTR-STRAT	(Instructional Strategies)
*COOP-LNG	(Cooperative Learning)
*THINKING	(Critical Thinking/Metacognition)
OTHER	
*NET-TECH	
NETWORKING	
TECHNOLOGY	
*PAR-COM-INV	(Parent/Community Involvement)
PARTNERSHIP	
VOLUNTEERS	
HOME-HELP	
OTHER	
*SCH-CR-ORG	(School/Classroom Organization)
GROUPING	
CLASSRM-ORG	(Classroom Organization)
SCH-ORGANIZ	(School Organization)
STUDENT-USE	

*OERI Grant Critical Topics

Appendix C

RESTRUCTURING TOPICS SURVEY
MIL 1985-1990

PLEASE HAVE ONE SURVEY COMPLETED FOR EACH SUB-COMMITTEE THAT HAS FUNCTIONED IN YOUR SCHOOL DURING MIL (1985 - 1990). Distribute one copy to the chair of each current or former subcommittee (or to a member). If possible, a collaborative effort would be most welcome. If not, one-person responses are acceptable.

Responses can be sent through the US mail or via the computer network.
SURVEYS SHOULD BE IN THE MAIL NO LATER THAN FRIDAY FEBRUARY 16, 1990.
or
SURVEYS SHOULD BE PSInetted NO LATER THAN MONDAY FEBRUARY 19, 1990.

Please answer the following questions, thinking across the entire time your sub-committee was active.

School:_____
Sub-Committee: _____
Years Active:_____
Chair(s):_____

Appendix D

IBM/PEP-MIL School Renewal Network

Interviewer_____Date_____

1. Respondent:_____

2. Topic(s):_____

3. When did your workstation first sign-on to the server?_____

4. Have you joined all the conferences?_____

5. Do you know how?_____

6. Location of workstation?_____

7. Reason for location?_____

8. Who decided location?_____

9. Do you have a PSInet workstation at home?_____

10. Did you get it since joining PSInet?_____

Do you wish you had one?_____

11. How is working at home different?_____

12. Workstation useage: How many people use it?_____

13. What % of faculty/staff:_____

14. For PSInet only?_____

15. If no, what else is it used for?_____

16. Who trained the PSInet users?_____

17. When?_____

18. How are you using OERI money?_____

19. How was the decision made?_____

20. Are other staff members involved in using/contributing to the new db, base?_____

21. What info/RRNC structures do you use for collecting and disseminating information?_____

22. What % of papers do you insert?_____

23. What % of papers do you print?_____

24. What % of messages to you insert?_____

25. What % of messages do you print?_____

26. Have you sent messages to other sites?_____

27. Researchers?_____Schools?_____MIL office?_____

28. Have you sent papers requesting information?_____

29. Have you received answers to requests?_____

30. Have you contributed information to others?_____

31. Any thoughts on paper length? _____

32. Are you familiar with other electronic networks?_____

33. Which ones? _____

34. If you currently do use one? _____

35. What factors FACILITATED USE of the computer network?
During year 1 (88-89):_____

During year 2 (89-90):_____

36. What factors INHIBITED USE of the computer network?
During year 1 (88-89):_____

During year 2 (89-90):_____

37. Did the computer network FACILITATE use/generation of the knowledge base?_____

How, year 1:_____

How, year 2:_____

38. Are you comfortable with PSInet?_____

39. Questions?_____

40. What would you change about PSInet?_____

41. What would you change about other aspects of the network?_____

42. Other comments, recommendations, concerns?_____