

# Appendix A

## Professional Development Teams To Enhance Learning and Teaching

Teachers learn best by studying, doing and reflecting; by collaborating with other teachers; by looking closely at students' and their work; and by sharing what they see (Darling-Hammond & McLaughlin, 1995)

The need to integrate technology into a classroom might easily be seen as "just one more thing" to do for already overburdened teachers and administrators. Multiple innovations may pile up against each other, leaving little time for teachers to reflect on what's working and what's not and how to make effective change.

According to Michael Fullan, Dean of Education at the University of Toronto:

With change forces abounding, it is easy to experience overload, fragmentation, and incoherence. In fact, in education, this is the more typical state. Policies get passed independent of each other, innovations are introduced before previous ones are adequately implemented, the sheer presence of problems and multiple unconnected solutions are overwhelming. Many schools and school systems make matters worse by indiscriminately taking on every innovation that comes along—what Byrk et al. called "Christmas tree schools"—so many innovations as decorations, superficially adorned (1999, p. 27).

The last few years, however, have brought increasing recognition that teachers and teachers' knowledge gained from and embedded in their everyday work with children should be at the center of reform efforts and professional development activities (Darling-Hammond, 1994; Lieberman, 1995). The increased appreciation for practical knowledge enriched by critical reflection has produced a rich body of literature that supports teachers' need to become actively involved in their own learning process. Little (1997) suggests that the "test of effective professional development is whether teachers and other educators come to know more about their subjects, their students, and their practice, and to make informed use of what they know."

In schools designed as learning communities, all members work collaboratively to improve the learning process for both students and adults. The learning environment supports shared responsibility and leadership, risk taking, collaboration, asking and answering questions related to educational practices, and self-awareness.

Newmann and Wehlage (1995) describe three general features of a professional community:

- Teachers pursue a clear shared purpose for all students' learning
- Teachers engage in collaborative activity to achieve the purpose
- Teachers take collective responsibility for student learning

Collaborative inquiry can only thrive in a climate of mutual respect and interdependence. Key to the establishment of a community of learners is a principal who encourages teachers to examine teaching and learning, and implement ideas and programs that result from reflective practice (Reitzug & Burrello, 1995). Sagmiller explains:

Traditionally, principals have been thought of as managers; they have been trained to think in terms of “time to be allocated,” and classrooms to be designed. In this role, they often have thought of teachers and children as “things to manage,” rather than as rich sources of knowledge and expertise. In a community of learners, what counts are relationships, dialogue, facilitating joint inquiry, and building a climate of trust (1998, p. 132).

In such a climate, teachers are viewed and view themselves as professionals, who are able and expected to articulate their own beliefs about teaching and learning, as well as understand the latest theory, research, and current thinking in education. In addition, teachers engage in their own research (often in concert with students and families), creating new knowledge to inform instructional practices, and design authentic learning situations (Carr & Braunger, 1998).

### **Professional Development Teams**

Organizational structures that reduce isolation are critical to creating an environment that fosters collaborative inquiry and collective responsibility for students (Lieberman, 1995; Meier, 1995; Reitzug & Burrello, 1995). Structures such as study teams increase opportunities for teachers to share ideas, strategies, concerns, and students. Teaming leads to a sense of collective responsibility for one another and for students and provides an emotional and instructional support network, key characteristics of a learning community (Reitzug & Burrello, 1995).

Teams can take many forms, and include many activities, including examining student work, collaborative planning, sharing expertise and practices through demonstration, and visiting each others’ classrooms. Pasco, Washington’s, District bilingual specialist Liz Flynn notes:

Teachers are often not given the chance to stop, to sit down with what they’ve learned and integrate it into their own knowledge base and apply it in a systematic manner. They need to have time to sit down with their colleagues and say, “I have a child who just isn’t learning as much as I know she can. Can you give me some ideas to help motivate her?” Sharing strategies with colleagues usually works better than someone coming in and saying, “You should be doing these things.”

In addition to sharing expertise with each other, book groups provide opportunities for teachers to explore children’s and professional literature, “contributing to the rich, literate environment of classrooms” (National Council of Teachers of English, 1997). When professional development teams tie what is learned from book study to classroom practice and examining student work, teaching and learning is enhanced.

Schoenbach, Greenleaf, Cziko, and Hurwitz (1999) suggest that the process for enhancing professional conversations should include:

- Routines for reflection and exchange of ideas, resources, and problem solving
- Inquiry processes for exploring classroom issues and data
- A clear set of agreed-upon ground rules for the discussion and individuals prepared to facilitate conversation with these ground rules in mind

**Making time.** Of course, all these processes take time. The National Staff Development Council recommends that educators spend 20 percent of their work week engaged in learning and collaborative efforts—the equivalent of one day out of every week (Hirsch, 1997). “Reform efforts that rely on teachers donating additional time from their personal lives risk increasing teacher burnout, trading one resource for another,” Dzubay (2001) points out. Fortunately, a number of options exist to provide time for teachers to be actively engaged in their own learning process. Of course, to implement these options, support for professional development embedded in the everyday life of the school must be supported at the district and state level. Options include:

- Cluster specialized classes—art, music, physical education, and library—on the same day of the week, creating a “resource day” and freeing teachers for development activities
- Lengthen the school day on four days and have a shorter school day on the fifth
- Use regular faculty meetings for planning and growth, rather than informational or administrative purposes
- Schedule common planning periods for colleagues in study groups or other collaborative partnerships

## The Curriculum Inquiry Cycle

A commitment for continuous improvement means that it is second nature for teachers to continually assess what they are doing, why they are doing it, and how they can more effectively help children learn. The Curriculum Inquiry Cycle, developed at NWREL, is a process that supports teachers as inquirers into what they do and how they might do it better. According to authors Maureen Carr and Jane Braunger (1998), “Curriculum inquiry involves teachers in determining the critical experiences necessary to engage students in meeting challenging standards”

(p. 8). The recursive process involves examining current practice, making decisions, creating optimal learning environments, and researching classrooms. Carr and Braunger explain:

Through the curriculum inquiry cycle teachers can look deeply into their ideas about knowledge, the roles that students and teachers play in the development of knowledge, and the relationship between their conceptions of learning and teaching and the kind of learning that occurs in classrooms (p. 7).

The ongoing cycle of curriculum renewal is based on the premise that professional development should help teachers get in touch with their implicit theories or beliefs about teaching and learning to form coherent, rational theories based on evidence. A major goal of this NWREL process is to assist teachers and schools to create self-sustaining processes for improving curriculum and instruction. It is prompted by key questions central to teaching and learning:

- **Examining Current Practice**

What does my teaching look like?

Why do I work this way?

What does this tell me about how I think about curriculum?

Is my current practice making a difference in student learning?

- **Setting Priorities**

Are my practices consistent with what is known about how people learn? Are content and performance standards reflected in my teaching practice? Am I aware of alternative models of teaching to meet the needs of diverse learners?

- **Creating an Optimal Learning Environment**

What are the dynamics of an optimal learning environment for all children?

What learning experiences are essential?

What assessments are appropriate?

- **Expanding Teacher Knowledge Through Classroom Research**

What dilemmas, questions, or concerns about teaching and learning do I want to explore? How can I collaborate more with colleagues and community members? How will I share my research?

Some suggested questions to spur reflection on the role of technology in supporting early literacy include:

- How do I define technology?
- How do I use technology in my own life?
- How can we use technology to enhance student learning? Separate areas of focus might include: oral language, vocabulary, concept knowledge, and writing.
- How can technology be used to connect with families and the larger community?

When teachers reflect on their beliefs and practices, and generate and seek answers to their own questions, everyone in the learning community is both teacher and learner. Authors Carr and Braunger conclude:

Teachers actively involved in collaborative research open the doors of inquiry to their students. They model the importance of asking questions, looking beneath the surface of ideas to develop deeper understandings and the need to discuss and share what they learn. Students who operate in an atmosphere of reflective inquiry learn that knowledge changes as it is revisited and new meanings arise for learners as they review and research classroom questions with their teachers and peers (1998).

## Appendix B

### Annotated Bibliography of Print Publications

American Association for the Advancement of Science. (1999). *Dialogue on early childhood science, mathematics and technology education*. Washington D.C.: Author.

This collection of 11 papers was commissioned for the Forum on Early Childhood Science, Mathematics and Technology Education. The papers represent the latest thinking in these areas and range from early childhood learning and concept development, to first experiences in math, science, and technology, to an examination of professional development models for high-quality programs. Taken as a whole, they provide early childhood educators with sound information and insights into how pre-kindergarten children learn.

Bransford, J.D., Brown, A.L., Cocking, R.R., Donovan, S.M., & Pellegrino, J.W. (2000). *How people learn: Brain, mind, experience, and school* (Rev. ed.). Washington, DC: National Academy Press.

A project of the National Research Council, this book brings together a wealth of information from several fields including cognitive psychology, social psychology, anthropology, and neuroscience, to provide a clearer understanding of the new science of learning. This expanded edition includes information relating the research findings of the original study to teaching and learning, and how to apply the principles in practice.

Costantino, M., St. Charles, J., Tepper, S., & Baird, E. (1999). *Reading and second language learners: Research report*. Olympia, WA: Evergreen State College, Evergreen Center for Education Improvement.

This document provides a synthesis of the research on teaching and learning to read in English among second language learners. The report is a useful resource for educators and policy makers, and details strategies found to be effective and classroom practice that encourages success for ELL students.

*Educational Leadership*, 58(3).

The November 2000 issue of this journal is subtitled "The Science of Learning." Articles by experts from science and education provide a good overview of current information in this field, look at the implications for education, and suggest ways to use the knowledge in curriculum and classroom practice.

Gordon, D.T. (Ed.). (2000) *The digital classroom: How technology is changing the way we teach and learn*. Cambridge, MA.

This collection of articles from the Harvard Education Letter paints a picture of real people and programs dealing with new technologies and the changes they bring about. It features examples of innovation and, from a variety of perspectives, looks at the best uses and difficult issues of educational technology.

McNally, L., & Etchison, C. (2000–2001).  
Strategies of successful technology integrators.  
*Learning & Leading with Technology*, 28(2, 3,  
& 4).

Three consecutive issues of the International Society for Technology in Education's journal (October 2000, November 2000, and December/January 2000/2001) feature a three-part article on strategies for successful technology integration. Part 1 looks at using technology to streamline management tasks for both teachers and students; Part 2 looks at using software in the curriculum; and Part 3 considers online collaboration, scaffolding learning by using templates, and electronic portfolios.

Nelson, O.G., & Linek, W.M. (Eds.). (1997).  
*Practical classroom applications of language experience: Looking back, looking forward*.  
Needham Heights, MA: Allyn & Bacon.

A very readable set of articles by researchers and practitioners provides perspectives and personal stories of using the language experience approach in a variety of settings. Included are chapters specifically addressing beginning reading, beginning writing, and supporting the literacy development of second language learners with technology.

Papert, S. (1993). *The children's machine: Rethinking school in the age of the computer*.  
New York, NY: Basic Books.

Papert worked with Jean Piaget for five years, co-founded the Artificial Intelligence Laboratory at MIT, and was an early proponent of using computers with children as tools for learning and to enhance creativity. This book will lead you to reconsider the relationship between children and computers as he offers a vision of technology's potential for learning.

Snow, C.E., Burns, M.S., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

This comprehensive book from the National Research Council addresses the complex set of factors that contribute to literacy development. Written by a committee with a range of backgrounds, it presents effective practices for learning to get meaning from print and offers instructional strategies and recommendations for practice with children pre-kindergarten to third grade.

## Annotated Bibliography of Web Sites

**AskERIC Lesson Plan Collection.** Lesson plans relating to computer science from the federally-funded Educational Resources Information Center (ERIC), including a number for preschool, kindergarten, and the early grades.  
[http://ericir.syr.edu/cgi-bin/lessons.cgi/Computer\\_Science](http://ericir.syr.edu/cgi-bin/lessons.cgi/Computer_Science)

**Center for Children and Technology.** Founded in 1980 to address the issue of technology and learning, CCT's work covers a broad range of activities, and investigates the roles that technology can play in improving the circumstances of teaching and learning.  
<http://www2.edc.org/CCT/cctweb/index.html>

**Children and Computer Technology.** This issue of *The Future of Children* focuses on children's growing use of computer technology both in school and at home. The articles summarize the knowledge and research available on how computer use affects children's development, whether it increases or decreases disparities between rich and poor, and whether it can be used effectively to enhance learning.  
[http://www.futureofchildren.org/usr\\_doc/vol10no2.pdf](http://www.futureofchildren.org/usr_doc/vol10no2.pdf)

**Computer-Based Study Strategies.** The Center for Electronic Studying at the University of Oregon developed this set of Computer-Based Study Strategies. The strategies provide ways of accomplishing school-related tasks, and are based on research to help students become effective “studiers.”

<http://cbss.uoregon.edu>

**Computer Ergonomics for Elementary School Students.** This site, designed by the Oregon Public Education Network, shows simple and affordable ways to make sure that a student’s body is safe and comfortable while using a computer. Many suggestions can be modified for use in other early childhood settings.

<http://www.orosha.org/cergos/index.html>

**Computers and Young Children.** This ERIC Digest discusses questions about when children should start using computers; developmentally appropriate computer activities in preschool, kindergarten, and early primary classrooms; benefits of computer use; integration of computers into classrooms; and teacher training.

<http://ericece.org/pubs/digests/2000/haugland00.html>

**Connecting Technology With Brain Research.** This site identifies five important brain concepts, provides questions to consider when designing a learning environment, and offers suggestions for connecting technology and brain concepts to enhance student learning. Links to other resources include additional information and project examples.

<http://edservices.aea7.k12.ia.us/edtech/classroom/brain/>

**CyberGuides: Teacher Guides and Student Activities.** These supplementary, standards-based, Web-delivered units of instruction center on core works of literature for K–12 students, and are based on California Language Arts Content Standards from SCORE (Schools of California On-line Resources for Education).

<http://www.sdcoe.k12.ca.us/score/cyberguide.html>

**Early Childhood Technology Literacy Project.** This award-winning project from Montgomery County (Maryland) Public Schools integrates technology into instruction in K–2 to increase early childhood students’ skills in reading and writing. The Web site includes information and resources for parents and teachers.

<http://www.mcps.k12.md.us/curriculum/littlekids/>

**Early Connections: Technology in Early Childhood Education.** This joint project of NWREL and the Northwest Educational Technology Consortium examines how technology connects with the way young children learn. The Web site provides educators and care providers with information and online resources for the appropriate use of technology.

<http://www.netc.org/earlyconnections/>

**Integrate, Don’t Isolate!—Computers in the Early Childhood Curriculum.** This ERIC Digest examines how children gain the most valuable computer skill—the ability to use computers as a natural tool for learning—only when computers are integrated into the curriculum as a vital element for instruction, and applied to real problems for a real purpose.

<http://ericece.org/pubs/digests/1994/shade94.html>

**The Internet and Your Family.** The American Academy of Pediatrics offers practical information and guidelines on keeping your family safe on the Internet.

<http://www.aap.org/family/interfamily.htm>

**The Learning Space.** The mission of this teacher-led organization is to provide educators with opportunities and tools to develop, implement, and share effective uses of technology to improve student learning.

<http://www.learningspace.org/>

**Media Workshop New York.** Media Workshop focuses on connecting new media and technology to teaching and learning. The site provides resources including online workshops, suggested Internet Web sites for K–12 educators, and examples of student work and lesson plans integrating technology and new media.

<http://www.mediaworkshop.org/index.html>

**Myths and Realities About Technology in K–12 Schools.** This article in LNT (Leadership and New Technologies) Perspectives examines the misconceptions or myths about what is required to gain substantial educational returns and tries to answer the questions of whether and in what ways technology can improve education for large numbers of students.

<http://www.edc.org/LNT/news/Issue14/feature1.htm>

**National Educational Technology Standards (NETS) Project.** NETS for Students describes what students should know and be able to do with technology, and includes the National Educational Technology Standards and Performance Profiles for Students.

<http://cnets.iste.org/>

**Technology and Young Children—Ages 3 Through 8.**

A position statement on the topic from the National Association for the Education of Young Children, adopted 1996.

[http://www.naeyc.org/resources/position\\_statements/pstech98.htm](http://www.naeyc.org/resources/position_statements/pstech98.htm)

**Technology and Young Children.** The Technology & Young Children Interest Forum of the National Association for the Education of Young Children was established to lead discussions, share research and information, and to demonstrate best practices regarding technology so it can be used to benefit children through eight years of age.

<http://www.techandyoungchildren.org/index.shtml>

**Young Children and Technology.** From the book *Dialogue on Early Childhood Science, Mathematics, and Technology Education*, this paper reviews the research in three broad areas: social interaction, teaching with computers, and curriculum and computers; as well as describing a new project that illustrates innovative, technology-based curriculum for early childhood education.

<http://www.project2061.org/newsinfo/earlychild/experience/clements.html>

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