

PART THREE

Transformation of Policy into Practice

CHAPTER 5

EDUCATIONAL TECHNOLOGY POLICY IN FLORIDA

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The goal should not be just to *improve* schools through the effective use of technology—it should be to *reinvent* the structure of schools, building into that structure the ability to quickly respond to societal changes, emerging technologies and promising research. Herein lies the linchpin for moving toward the vision—can state leaders craft policy agendas that guide, entice, induce and mandate changes in today’s system to evolve into tomorrow’s high-performance schools? (Milken Exchange on Educational Technology, 1999a, p. 60)

Visionary leadership and legislative support enabled Florida to develop a reputation as a national leader in educational technology during the 1980s and early 1990s. The state now must focus on developing a plan for “tomorrow’s high-performance schools” in the face of numerous challenges. Our society is changing rapidly but for the most part our schools are not. While many argue that technology is too expensive to use in public education, we argue that it is too costly not to use it. Our students

are the ultimate victims when technology is not integral to their educational experience. We don't believe educational technology provides a panacea for all the challenges that face Florida. However, we believe it can be used to advance student learning in the content areas, to prepare students for the world they will face upon graduation, and to help evolve our schools into high-performance schools of tomorrow. Instrumental in the process of altering education for the future will be statewide educational technology policies. We have written this chapter to serve as a catalyst for dialogue and action related to educational technology policy in Florida.

This chapter begins with a brief history of educational technology policy in Florida and a look at its current status. Recommendations for the development of future educational technology policy are made followed by a brief discussion of the state, regional, and national stakeholders in the educational technology arena. It is not our intent for this chapter to be perceived as a cookbook for effective and successful educational technology policy in the state. Successful policy development involves dialogue and debate among a wide range of people with diverse interests and agendas. We view this chapter as one component of this process.

A Look at Educational Technology in Florida: Past and Present

On July 1, 1977, the Florida Legislature began its journey to national recognition by funding the Florida Educational Computing Project with an allocation of 3 million dollars. While the project was developed primarily to support collaboration among school districts related to administrative uses of technology, forward-thinking members of this team recognized the importance of technology in classroom instruction and allocated money toward its exploration. This concept was on the cutting edge and the legislature funded the project from 1977 through 1981.

In 1981, Florida took another step that propelled the state to national recognition by making instructional technology a permanent division within the Department of Education. The main emphasis in the Bureau of Educational Technology was to support administrative

computing. However, within the department a full-time person was devoted to the use of technology in K-12 instruction. This bureau developed several key initiatives including: (1) statewide technology centers, (2) a statewide computing network, and (3) an annual statewide technology conference. The statewide technology conference, FETC (Florida Educational Technology Conference), has grown to be the largest educational computing conference in the nation. The Bureau of Educational Technology also initiated the Model Technology School Program that attracted national attention and prompted Secretary of Education Riley to visit the state. Likewise, the office helped Florida become one of the first states to recognize the importance of staff development by mandating that 30% of the Public School Technology Funds in each district be devoted to technology-related staff development.

In the early 1980s, many districts had concerns about what the use of educational technology would mean to students with disabilities. Consequently, Florida's Bureau of Education for Exceptional Students launched a major initiative which resulted in special project funding to add instructional technology resources and service capabilities to the existing Florida Diagnostic and Learning Resources System (FDLRS) Centers. In 1987 the legislature added instructional technology services to the FDLRS responsibilities. This set the stage for statewide uses of microcomputer applications and adaptive and assistive devices with exceptional students.

Many of these initial efforts provided the framework for educational technology policy in the state. For the purposes of clarity we will discuss some of these policies separately, although they are not mutually exclusive, as they are each related to infrastructure, hardware and software, and/or instruction.

Infrastructure

One of the first initiatives by the Bureau of Educational Technology was the development of a statewide computing network, the Florida Information Resource Network (FIRN). FIRN's primary mission was to provide for transmission of data within Florida's public educational community and by the late 1980s all 67 districts were connected to this

network. FIRN is currently “the primary data communications facility for the Department of Education, school districts, community colleges and universities within the State of Florida.” Its fundamental goal is to “provide Florida’s educators with equal access to the computing resources that serve public education” (Florida Department of Education, 2000, p. 1). To accomplish this goal FIRN support services are provided to educators throughout the state. The Florida Legislature continues to fund FIRN and to improve the infrastructure within the state.

Recognizing that many of the school buildings in Florida were not physically ready to take advantage of electronic resources such as FIRN, the legislature funded retrofitting grants during the early 1990s. Funds were specifically allocated to prepare school buildings for the networks and computers necessary to effectively use technology. Despite these efforts “approximately 30% of the schools in Florida do not have the wiring infrastructure in place necessary to access the Internet. In addition, approximately 50% of the schools do not have internal wiring school-wide” (Information Service Technology Development Task Force, 2000, p. 43).

Hardware and Software

Policy makers in Florida have dedicated state monies to the acquisition of computer hardware for public schools. The Public School Technology Funds from 1993-2000 totaled \$453,400,000. The majority of money is invested in hardware but funds were and continue to be allocated for training, networking resources, and other expenditures. Florida currently boasts a 1:7.4 ratio of *modern* instructional computers to students and a 1:4.3 ratio for all instructional computers to students (Martin, 2000).

In conjunction with hardware is the need for software and software upgrades. The Bureau of Educational Technology in the Department of Education maintains the Educational Software Catalog. This document currently contains over 150 software titles nominated by schools throughout the state and reviewed by a statewide committee. Through a bid and contract process the software is made available to Florida schools at reduced prices. The Bureau of Educational Technology collaborates

with two other state groups to correlate the software titles to the Sunshine State Standards and Gardner's multiple intelligences (Gardner, 1999) and to provide the catalog online as a searchable database. The DOE is currently exploring opportunities to collaborate with multiple states on this project.

Instruction

For the fiscal year 1990-91, the legislature established the Instructional Technology Grant program that allowed districts to develop district-wide instructional technology programs. At least 10% of the funds were to be used for teacher training and other related training. Florida districts have also used Public School Technology Funds for teacher training and substantial dollars (approximately \$60,000,000 from 1996-2000) have been awarded to districts and developmental research schools through the federally funded Technology Literacy Challenge grants. A portion of this funding has been used for professional development.

The inclusion of technology in the Florida Sunshine State Standards is also significant. The Florida Sunshine State Standards outline the content Florida students should master. Technology is embedded within the standards in each content area. This was done deliberately so teachers and students would recognize that technology is not a separate subject but integral to all subjects. The Florida Instructional Technology Resource Center (ITRC) at the University of Central Florida, with resources from the Department of Education, has identified these embedded standards and provides assistance to teachers in meeting them through a variety of online databases to support the Sunshine State Standards. The Florida Center for Instructional Technology (FCIT) at the University of South Florida also provides teachers with instructional computing resources to assist in meeting the Sunshine State Standards. Most recently, FCIT has developed online tools to help teachers prepare students for the FCAT.

Another significant instructional event occurred when the legislature allocated funds for the Internet-based Florida High School (<http://www.fhs.net>). Currently, over 2,000 students select from 52

courses. Course content meets the Florida Sunshine State Standards as well as the Secretary's Commission on Achieving Necessary Skills (SCANS) competencies. Over 60 counties in Florida, numerous private schools from Florida, and schools in West Virginia, Oklahoma, and Tennessee are affiliated with the Florida High School. The project mission is to place a complete high school online by the year 2001 and to include student services that empower students to successfully transition to postsecondary educational institutions and to the workplace. This initiative has brought national recognition to Florida.

Although not seen by many as a "technology project," the Florida Legislature has for several years funded a state database of school library media holdings. The project, called SUNLINK, uses technology to provide students and teachers equitable access to school library media materials through interlibrary loan. SUNLINK was the first K-12 school library media database to make its holdings accessible via the World Wide Web and continues to lead the nation in innovative uses of technology.

STATUS OF EDUCATIONAL TECHNOLOGY POLICY IN FLORIDA TODAY

Florida is entering a crucial period for educational technology. Many stakeholders and legislators have good intentions and the national tone is ripe for progress. It is necessary for educational technology to be recognized as an important statewide issue and for efforts to be coordinated throughout the state. The following recommendations dovetail nicely with many state and national educational technology reports (CEO Forum, 1999; Gibbons & Young, 1997; Information Service Technology Development Task Force, 2000; Milken Exchange on Educational Technology, 1998; Milken Exchange on Educational Technology, 1999b; Moursund, 1999; National Council on Accreditation of Teacher Education, 1997; Thomas, 1999). We hope these recommendations serve as platforms for dialogue about and recognition of the importance of educational technology policy in Florida.

**RECOMMENDATIONS FOR EDUCATIONAL
TECHNOLOGY POLICY IN FLORIDA:
PLATFORMS FOR DIALOGUE**

We have categorized our recommendations into four major areas we feel warrant dialogue:

Develop a shared vision of educational technology in Florida.

Create a long-term strategic policy plan that includes steps to reaching the vision.

Facilitate professional competence for educational technology.

Initiate a plan to deal with systemic issues such as support, hardware, software, and infrastructure .

While the need to facilitate professional competence and the need to deal with systemic issues should be components of the long-term policy plan, we have listed them as separate recommendations to call attention to their importance. In the following sections we discuss issues within each of these areas in general terms. We believe the specifics should be left for conversations among a larger group.

Develop a Shared Vision of Educational Technology in Florida

The shared vision developed for educational technology in the state needs to coincide with Florida's larger educational vision and should aim to describe tomorrow's high performance schools. This vision should be developed with the input of stakeholders in the state (see Table 1), educators (including teachers, administrators, and teacher educators), students, legislators, and members of the community at large. Current policies at the state and national levels should be examined while linking the vision to major issues in Florida's educational system.

Stakeholders and others should consider many questions when conceptualizing the vision and it should be written in broad terms. The vision should provide a basis from which more concrete plans may arise.

It should be flexible enough to adapt to technological changes yet precise enough to provide direction during the planning process. The following are some questions that may be addressed when developing the vision:

How is our state going to define educational technology?

How can technology be used to improve the quality of Florida's educational system?

What role should technology play in instruction and what will instruction look like in the future?

What will our classrooms of the future look like?

How can our vision promote equity and access to current technology for all students, including students with special needs, at all educational levels (K-16 through adult education)?

How can our vision help to minimize the digital divide in the state?

How do we portray our vision to the general public in a positive manner? What is the public's role in the vision?

How can our vision help promote life-long learning among the citizens of Florida?

How can our vision enable students to be meaningful members of the community?

How can our vision facilitate partnerships among business, industry, higher education, and K-12 education?

Developing a vision with the input of diverse people will be challenging. In the long run such strategies will lead to a *shared* vision rather than one viewed as forced from the top. For the shared vision to

become a reality in the Florida educational system, the legislature must also adopt the vision and provide resources enabling its success.

Create a Strategic Plan That Includes Steps to Reaching the Vision

Creating a new, shared vision is an essential first step to successfully utilizing educational technology in Florida. However, the real challenge lies in developing a long-term plan that will operationalize the vision. This plan should be developed by a diverse group of stakeholders and should be written as a guiding rather than regulatory document. Educational technology is constantly changing. For this reason the statewide plan should focus on reaching incremental goals en route to operationalizing the vision. Likewise, the statewide plan should be revisited a minimum of every five years. A group, compiled by the legislature and DOE, should oversee development and implementation of this statewide document. The legislature should formally adopt the statewide educational technology plan and should provide on-going resources for its implementation.

Many features of the plan will result from the shared vision. However, we will discuss several necessary features— professional competence, support, infrastructure, hardware, and software—in separate sections due to their importance. We also feel the following suggestions should be considered.

Create annual budgetary lines. The question can no longer be whether the state should invest in educational technology. Educational technology needs to be considered an essential component of the state budget. Waiting to see what is left each budget year is not sufficient. Appropriate organizations within various educational departments should receive a portion of this allocation each year, consistent with the educational technology vision and strategic plan. These organizations should be required to demonstrate how that money improves educational technology (and student learning) in the state.

Infuse into other educational issues. Educational technology can no longer be considered a stand-alone issue. Developers of the statewide plan

should think more broadly. For example, school building codes should require that all new schools and portable buildings be outfitted with the most current network capabilities throughout the building, not just in the library media centers (although currently many of those remain without Internet access). Likewise, statewide curriculum standards may need to be revisited taking into account the state's vision for educational technology.

Consider essential conditions. We recommend that plan developers consult the essential conditions outlined by Milken (see Table 1). Much like Maslow's Hierarchy of Needs, certain basic conditions are required before schools can effectively use technology. The statewide plan needs to take these conditions into account and devise a strategy to ensure all schools meet these conditions.

Develop local technology plans. K-12 districts, individual schools, teacher education, and educational leadership programs need individualized strategic plans to reach the statewide vision. We believe these plans should require accountability for technology use and include essential components similar to those outlined by the Bureau of Educational Technology in 1998-99 (see Table 2). Local plans should be reviewed on a three- to five-year cycle and all stakeholders should be involved in this process. The Bureau of Educational Technology should provide guidance, support, and model plans to districts. These plans should be an eligibility requirement for state level funding.

Table 1
Essential Conditions for Use of Technology

Essential Condition	Description
1. Vision for Learners	The academic standards for students that drive teaching and learning reflect our technological, knowledge-based society.
2. Vision Translated into Classrooms	Teachers are teaching and students are learning differently as a result of technology. Those differences translate into increased motivation, relevance, and understanding of content.
3. Technology-savvy Teachers	Teachers model the effective use of technology in their classrooms and use it to enrich the learning of their students.
4. High-performance System	Educators have established a dynamic, efficient school system with rules, regulations, policies, and funding priorities aligned to support technology-enriched academic standards.
5. Community	Technology enables parents and community members to communicate, exchange information, and share resources more efficiently.
6. Technology Capacity	The computers, technology, and network infrastructure are contemporary, well-supported, and adequate to meet the system's learning goals.
7. Accountability	Key stakeholders agree on what schools are expected to accomplish through the use of technology. There are reliable measures in place to track progress at all levels (student performance, educator proficiency, and system capacity) and report results.

Table 2
District Technology Plans Guidelines
as Outlined by Florida’s Office of Educational Technology

Section	Description
1. Mission Statement	Should include, but not be limited to, a summary of how the district’s incorporation of the technology in the educational program will promote the effective use of technology to implement the Sunshine State Standards to improve performance of all students.
2. General Introduction/ Background	Should include, but not be limited to: <ul style="list-style-type: none"> • District Profile with relevant social, economic, geographic and demographic factors influencing the district implement of technology. • Planning Process providing a description of technology plan development process to include, but not be limited to: <ol style="list-style-type: none"> 1. Development of partnerships with community, business, and industry. 2. Integration of technology in all areas of the curriculum, ESOL, and Special Needs including students with disabilities. 3. Collaboration with existing adult literacy service providers to maximize the use of such technologies and project resources.
3. Needs Assessment/Goal	Should include, but not be limited to: <ul style="list-style-type: none"> • A description of the information based processes used for determining district instructional and administrative telecommunications and technology needs. • Identification of telecommunications services and technology infrastructure, equipment, assistive technology, programming, replacement, training, and support needs. • District Technology Goals with short-term and long-term goals listed in priority order.

Table 2 (continued)

Section	Description
4. Funding Plan	<p>Should include, but not be limited to:</p> <ul style="list-style-type: none"> • Identification of major sources of funding for district-wide technology needs. Funding sources should be categorized as recurring or non recurring and include real and projected dollar amounts for the three- to five-year technology plan. • A sufficient budget to acquire and maintain the hardware, software, professional development, and other services that will be needed to implement the strategy for improved educational services. • Specifically identify the district’s planned allocation of funds from the 1998-99 Public School Technology Fund.
5. Technology Acquisition Plan	<p>Should include, but not be limited to:</p> <ul style="list-style-type: none"> • Identification of appropriate technologies to meet the goals of the district instructional program as identified by the needs assessment procedures. • District plans to acquire software and technology based educational materials which are usable by students with the widest range of abilities to deliver technology based instructional programs in support to the Sunshine State Standards. Timetable for acquisition of grade-appropriate, up-to-date technologies in sufficient quantities to accommodate student and staff needs for instruction and assessment. • Appropriate technology acquisition policies or procedures that address the following areas: <ol style="list-style-type: none"> 1. Consistency and interoperability with existing and planned technology delivery systems. 2. Upward migration to emerging technology standards. 3. Support and maintenance requirements. • Provision for technical guidance to school and district personnel responsible for making strategic technology related purchasing decisions.

Table 2 (continued)

Section	Description
6. Access	<p>Should include, but not be limited to:</p> <ul style="list-style-type: none"> • Equitable access to telecommunications and other technologies to support teaching and learning by providing: <ol style="list-style-type: none"> 1. Equitable distribution of resources to support the Sunshine State Standards. 2. Access for teachers, parents, and students to the best teaching practices and curriculum resources through technology. 3. Access for students with special needs including students with disabilities. 4. Appropriate access to external instructional service and programming providers, such as public libraries, charter schools, remote teaching sites, home school connections, online products, and other services. 5. Access to information for decision making by teachers and administrators. • District acceptable use policy for access to all systems including Internet/World Wide Web that: <ol style="list-style-type: none"> 1. Protects intellectual property rights, licensing agreements, and legal/ethical standards for sharing resources with other educational entities. 2. Maintains the integrity of systems, programs, and information resources.
7. User Support Plan	<p>Should include, but not be limited to:</p> <ul style="list-style-type: none"> • Network management and improved support for end-users in classrooms. • Development of district technical support options for equipment maintenance and replacement.

Table 2 (continued)

Section	Description
8. Staff Training Plan	Should include, but not be limited to: <ul style="list-style-type: none"> • Provisions for increasing the use of technology in the classroom and media center by development and acquisition of new programs and software that promote the integration of technology into everyday curricular needs. • The integration of technology as a meaningful district, such as state technology offices, intermediate educational support units, regional education training facilities, or institutions of higher learning component within all curriculum training. • District-level coordination of training and support. • Ensuring adequate facilities, instructors, materials, equipment, and funding for staff development. • Identification and acquisition of technology based staff training delivery systems that minimize teacher time away from the classroom and delivery of training in the most cost effective manner. • A list of sources of ongoing training and technical assistance available to school teachers and administrators served by the state.
9. Program Evaluation	Should include, but not be limited to, a description of the process for the ongoing evaluation of how the technologies are acquired: <ul style="list-style-type: none"> • Being integrated into the school curriculum. • Affecting student achievement and progress toward meeting the educational goals of the Sunshine State Standards.

Consider flexible-funding opportunities. School districts must be given an opportunity to get the most out of their technology allocations. Different schools are at different levels regarding educational technology. Some schools are very well equipped. Allocations that require them to invest in additional hardware may be unnecessary. Likewise, some schools

are barely network-ready and need to invest substantially in infrastructure. We do not envision flexible-funding plans as a free-for-all and the allocations for educational technology should be used on educational technology-related endeavors. In addition, the state should require that a certain percentage of these allocations be used to facilitate educational technology professional competence with accountability for funds received.

Assess results. Assessment strategies need to be created to ascertain whether the policy plan is working. We recommend a focus on longitudinal, contextually based assessment that looks beyond statistics to what is actually happening to student outcomes and teacher competencies because of these policies.

Support a transition to technology-based learning environments. As one of the country's largest states, Florida needs to collaborate with textbook and other private companies to ensure that they do more than simply insert a CD with their textbooks as tokenism to educational technology. State personnel need to take a proactive role, possibly in collaboration with other large states, to make changes in the way instructional materials are developed. For example, in the late '80s and early '90s the state legislature funded co-development projects. These co-development projects teamed Florida educators with private sector software companies to create up-to-date resources that better met the needs of diverse populations. Florida schools received these resources at a discount and our state received royalties from sales outside the state. Similar partnerships that address the needs of diverse learners need to be reconsidered as the state plan is written.

Two other issues must be considered as the statewide plan is developed, however, we believe they warrant their own section in this chapter. These issues are professional competence and a systemic plan for sufficient support, hardware, software, and infrastructure.

Facilitate Professional Competency

The plan for educational technology in Florida should ensure technology-related professional development opportunities for all educators, including in-service teachers, pre-service teachers, teacher educators, administrators, and administrator educators. The plan should also address ways to keep leaders in the state, such as members of the Bureau of Educational Technology and district level technology coordinators, abreast of current trends and issues in the field.

Training should be designed to facilitate the professional competence of educators at all levels of technology use from beginners to advanced technology-using educators. Training should also be designed while taking into account the vast amount of research available on how to effectively prepare teachers to teach with technology.

National standards for teachers are currently being developed by the International Society for Technology in Education (ISTE) (Thomas, 1999). Numerous states have teacher standards for technology. It seems appropriate for Florida to develop technology-related standards for teachers and administrators that would guide technology-related professional development. Development of these standards should include a multitude of voices throughout the state, consultation with other states, consideration of national policy and appropriate methods of assessment. These standards should address both professional productivity and instructional technology-related competencies. The ultimate goal of such standards should be the advancement of student learning via technology-related instructional strategies and pedagogical techniques. Technology-related standards for administrators should also address issues of leadership, support, and change theory.

Linking attainment of these standards to teacher licensure or licensure renewal and to administrative advancement should be considered. Likewise, development of state certifications for educators whose primary responsibility will be facilitation of technology integration should be considered. Many states claim to have this sort of certification, however, in most cases the certification more closely resembles a

computer science certification (i.e., learning programming languages) than an educational technology certification that would be useful in K-16 education. Although Florida administrative certification requires minimal computer proficiency, this area should be strengthened as well.

Collaboration among universities, K-12 schools, and community colleges to facilitate the development of professional competence among all educators should also be emphasized. For example, the Virginia Legislature recently passed a bill forming the Virginia Educational Technology Alliance (VETA) which mandates such partnerships and provides for flexibility in implementation. Reconceptualization of regional technology centers, such as those previously funded by the Florida Legislature, also seems a reasonable component of the plan to ensure all educators are competent in their use of educational technology, have adequate technical support, and can access resources developed to assist them in their efforts to improve student achievement.

A variety of training opportunities should be available to teachers as well as the opportunity to learn with technology in all content areas. Many teachers have never had the experience of learning with technology so they are not able to visualize what this type of learning would look like in their classrooms. All staff development should include the use of technology to deliver the instruction, to model content-specific uses, and to encourage professional collaboration.

Capitalizing on the popularity and success of the Florida High School, as well as making the best use of the dollars already invested in infrastructure and hardware, a statewide online teacher training effort should be considered. The effort should offer online staff development components not only for technology but also for the rapidly changing professional development needs of Florida teachers in all areas.

A formal system of recognition and incentives for principals whose efforts result in effective technology use, for teachers who demonstrate successful uses of educational technologies in their classrooms, and for teacher preparation programs that integrate technology throughout the

curriculum should also be developed and implemented. Opportunities to share success stories and best practices and to learn from the experiences of other teachers and administrators with regard to technology in instruction should be provided through a statewide online database and/or publication.

Plan for Systemic Support, Infrastructure, Hardware, and Software

Florida has already taken strides to develop the infrastructure and provide hardware and software for schools throughout the state. These efforts need to be recognized and revisited in the context of the shared vision and statewide plan to operationalize that vision. We urge avoidance of the traditional “one size fits all” model of resource allocation. Other related systemic issues we believe should be considered are:

annual budgetary lines to support infrastructure, hardware, software, and continued support and improvement of FIRN.

reconceptualization of the term “access” to include access for all students before, during and after school as well as at home and in community buildings such as libraries.

strategies to deal with the digital divide issue in our state.

support for the Florida High School and plans to work out the problematic issues related to FTE status.

emergence of more state contracts and state bids for educational materials of value to all members of the educational community such as the current Encyclopedia Britannica and Proquest partnerships.

support for personnel who will continually explore the cutting edge of educational technology.

Vision statements, statewide policies, staff development, infrastructure, hardware, and software will be wasted unless statewide

policies for technological support are also put into place. State personnel need to take a leadership position in encouraging and supporting classroom use of technology. The ratios of support personnel to computers (1:343) and of support personnel to students (1:1,471) have improved but are still unacceptable. Policies related to support need to address several different types including technical and curricular support. State policies need to ensure that every school in each district has adequate access to both these types of support as needed. Statewide certifications for support personnel should be developed to ensure a consistently high quality of support throughout the state. The current strategy of having principals select teachers to serve as support personnel is not only unrealistic but impossible given the other demands teachers face in their classrooms every day.

The recommendations in this chapter are not intended to be inclusive or conclusive. We hope they provide a platform for dialogue, discussion and debate among key players in the state.

EDUCATIONAL TECHNOLOGY: KEY PLAYERS IN FLORIDA

For these recommendations to come to fruition, stakeholders from around the state need to be involved in the dialogue and a wide array of resources need to be consulted. Table 3 provides for policy makers and legislative staff information about state, regional, and national organizations involved in educational technology initiatives.

**Table 3
State, Regional, and National Stakeholders**

Organization	Description	URL
State		
Florida Department of Education (DOE)	Provides statewide support for education.	http://ww.firn.edu/doe/
Florida Division of Technology	Houses five bureaus and offices.	http://www.firn.edu/doe/divtech
Florida Bureau of Educational Technology	Part of the Division of Technology.	http://www.doe.firn.edtech/home0009.htm

Table 3 (continued)

Organization	Description	URL
State (continued)		
Florida High School	An online high school whose mission is to take full advantage of current instructional technology and the rapidly expanding resources of the Information Age to provide comprehensive educational programs which will enable students to become productive, life-long learners.	http://fhs.net
Florida Information Resource Network (FIRN)	Extensive network which electronically links all of Florida's public entities to computing resources serving public education.	http://www.firn.edu
Florida Distance Learning Network (FDLN)	Mission is to improve student learning, achievement, and instructional strategies through increased access to distance learning.	http://www.firn.edu/fdln/
Florida Council of Instructional Technology Leaders (FCITL)	Promotes the enhancement of the instructional processes through the effective use and integration of technology.	http://www.pky.ufl.edu/FCITL/
Florida Association for Computers in Education (FACE)	State affiliate of the International Society for Technology in Education.	http://www.facenet.org
Florida Association for Media in Education (FAME)	State professional association for school library media specialists, charged with ensuring physical and intellectual access to information in schools.	http://www.firn.edu/fame
Florida Association for Educational Data Systems (FAEDS)	Professional association dedicated to the advancement of educational technology.	http://www.firn.edu/~faeds
Florida Educational Technology Corporation	Mission is to advocate and support the use of technology in education by providing an annual world class conference and other initiatives for the education community.	http://www.fetc.org

Table 3 (continued)

Organization	Description	URL
State (continued)		
Florida Division of Administration	Provides administrative support services to the Department of Education, as well as administering the state's Equal Educational Opportunity Program.	http://www.firn.edu/doe/bin00008/home0008.htm
Florida's Instructional Technology Resource Center (ITRC)	Provides leadership and support services to educational institutions with regard to the integration of technology in education. Housed at UCF.	http://www.itrc.ucf.edu/
Florida Center for Instructional Technology (FCIT)	Provides leadership and support services to educational institutions with regard to the integration of technology in education. Housed at USF.	http://fcit.coedu.usf.edu/
Florida Center for Interactive Media (FCIM)	Partners with agencies to create tools that excite and stimulate learning.	http://www.firn.edu/webfiles/others/fit/html/
Northeast Florida Educational Consortium (NEFEC)	Designed as a support unit to help small districts with limited NEFEC Member Districts include: Baker, Bradford, Columbia, Dixie, Flagler, Gilchrist, Lafayette, Levy, Nassau, Putnam, and Union counties, as well as P.K. Yonge Developmental Research School.	http://www.nefec.org
Heartland Tech. Prep. STW Consortium	Combines academic preparation and technical and career training.	http://www.firn.edu/schools/hardee/hardee_hs/techprep/cons1.html
Panhandle Area Educational Consortium (PAEC)	Provides educational and training services and administrative support services to school districts throughout north Florida.	http://www.paec.org/

Table 3 (continued)

Organization	Description	URL
State (continued)		
Florida Diagnostic and Learning Resources System (FDLRS)	A network of 19 Associate and 4 Specialized Centers in Florida, which provides support services for those who work with exceptional students.	http://fdlrs.brevard.k12.fl.us/fdlrs/index.html
Regional		
Florida Diagnostic and Learning Resources Services Technology (FDLRS/Tech.)	Purpose is to promote and support the use of instructional and assistive technologies for students with exceptionalities and to maximize the impact of effective delivery of technology services on student outcomes.	http://fdlrs.brevard.k12.fl.us/FDLRS_TECH/Index.html
Southeast and Islands Technology in Education Consortium (SEIR*TEC)	Promotes the use of technology to improve teaching and learning.	http://www.itrc.ucf.edu/other/seirtec/default.html
SERVE: Improving Learning through Research and Development	Promotes and supports the improvement of educational opportunities for all learners in six Southeast states.	http://www.serve.org/about.htm
Southern Regional Educational Board (SREB)	Provides information about elementary, secondary, and higher education for policy-makers and educational leaders.	http://www.sreb.org/
National		
United States Department of Education	Federal agency for education.	http://www.ed.gov
International Society for Technology in Education (ISTE)	Helps K-12 classroom teachers and administrators share effective methods for enhancing student learning through the use of new classroom technologies.	http://www.iste.org

Table 3 (continued)

Organization	Description	URL
National (continued)		
National Council for Accreditation of Teacher Education	Mechanism to help establish high quality teacher preparation.	http://www.ncate.org
Milken Exchange on Educational Technology	Promotes responsible uses of education technology in schools.	http://www.milkenexchange.org/
United States Distance Learning Association	Promotes the development and application of distance learning for education and training.	http://www.usdla.org/
No Excuses	Effort to mobilize public pressure on behalf of better education for the poor.	http://www.noexcuses.org
Heartland Institute	Nonprofit public policy research organization.	http://www.heartland.org

We firmly believe that legislative decisions regarding educational technology policy should involve members of the community most knowledgeable about and influenced by such initiatives. We encourage policy makers wishing to support educational technology policies with a true impact to consult the groups represented above.

A LOOK AT EDUCATIONAL TECHNOLOGY IN FLORIDA: THE FUTURE

Many promising possibilities related to educational technology in the State of Florida may be on the horizon. However, there is a need for the state to develop a shared vision and establish a long-term strategic plan that includes, among other things, attention to professional competence and systemic issues such as support, infrastructure, hardware, and software. If we have started a dialogue that may influence educational technology policy and the evolution of “tomorrow’s high-performance schools” in Florida then we have accomplished the intent of this chapter.

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CHAPTER 6

THE INFLUENCE OF CLASS SIZE ON STUDENT ACHIEVEMENT IN FLORIDA ELEMENTARY SCHOOLS

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The debate over the impact of class size on student achievement test scores continues to rage among academics and practitioners. Since 1996, the State of Florida has been appropriating approximately \$100 million a year specifically designed to reduce class size in the first few years of elementary school. More recently, the federal government has taken the position that reducing class size is an important priority. In July, the U.S. Department of Education distributed \$1.2 billion under its new Class Size Reduction (CSR) Program initiative to help communities hire 100,000 qualified teachers over seven years in order to reduce class size in grades 1 through 3 to a national average of 18 students. Over 20 states now have class size reduction initiatives in place. Reducing class sizes has strong political appeal because the presumed benefit seems both intuitive and is simple to understand.

However, the research findings regarding the positive impact of reduced class size are quite mixed. This chapter reviews some of this research and tests three exploratory relationships between class size and student achievement using data from elementary schools in Florida. Finally, the chapter focuses on the policy implications of this study and past research and recommends implementation strategies that the Florida Legislature and school districts may want to adopt.

AVAILABLE EMPIRICAL RESEARCH

Research on the factors that influence student achievement is both extensive and varied. Class size is one of the most commonly associated factors, but the literature suggests that student characteristics, resource investments, and teacher qualifications also influence student achievement. Each of these factors is considered in the following sections.

Support for the Positive Influence of Reduced Class Size on Student Achievement

The positive influence of reducing class size is intuitively obvious to the public. However, empirical analyses show only moderate support. Finn and Achilles (1990) studied the impact of smaller class sizes on student achievement scores in kindergarten and first grade. They found significant improvement in reading and mathematics achievement scores in smaller classes. While the authors believed the findings were “definitive” for the early two years of education, they make limited claims on the generalizability of their findings to other levels of schooling. Jarvis, Whitehurst, Gambert, and Schulman (1987) found a statistically significant relationship between class size and student achievement scores at the elementary school level, but there was a very weak effect size of only 0.09. Project STAR (Student/Teacher Achievement Ratios) in Tennessee was a four-year longitudinal study of student-to-teacher ratio on student achievement scores (Pate-Bain, Achilles, Boyd-Zaharais, and McKenna, 1992). The study found that small classes, with student-to-instructor ratios ranging between 13 and 17, had a positive effect on student achievement scores in the first year. Dennis (1986) concluded that the effect of smaller class sizes disappeared for the Project STAR participants as they advanced from first to second and third grades; however, several recent analyses of the STAR outcomes have reignited the debate over long-term positive effects (Hanusek, 1999; Krueger, 1999; Nye, Hedges and Konstantopoulos, 1999). Studies by the Indiana State Department of Public Instruction (1983) and Word et al. (1990) also confirmed the positive impact of significantly reducing class size on student achievement scores during the early years (K-3) of education.

On the other side of the debate, Tomlinson (1988) argued that if class size drives achievement scores, then the United States should be doing better now than a hundred years ago, since the national average class size has dropped from 38 in 1897 to 18 in 1987. Yet, achievement scores of students have not improved during this same period. Hanushek (1994) concluded that while class size is the cornerstone of education reform, reductions in class size are unlikely to yield discernible results in overall student achievement scores.

A strong case that class size has little impact on student achievement scores at elementary grade levels was made by an Indiana State's project PRIME TIME (Varble, 1990). This project covered 2,000 first grade classes with class sizes ranging from 4 to 43. Only 30% of study groups reported that as class size decreased, student achievement scores increased. Malloy and Gilman (1989) declared that the "long-term effects of PRIME TIME were negligible" (p. 172). Other longitudinal studies that extend from elementary up to the middle school also reveal disappointing results. (Alspaugh, 1993; Doss and Holley, 1982; Mueller, 1985; and Shapson, Wright, Eason, and Fitzgerald, 1980).

Aside from findings based on individual studies of student performance and class size, there are a number of research findings based on meta-analysis and clustering. Educational Research Service, Inc. (ERS) reviewed 39 studies covering different school levels (1978). The ERS found that class size has little impact on classes larger than 25. Glass and Smith's (1978) meta-analysis included 77 studies dating as far back as the early part of the 20th century. Their study concluded that student achievement scores improved when class size decreased, the impact being more evident when class size drops to below 20 students per class. However, this meta-analysis did not go unchallenged. Researchers have criticized Glass and Smith's methodology and generalizations (Robinson and Wittebols, 1986).

The above literature review suggests mixed support for the conclusion that class size, in general, has a positive impact on overall student achievement scores.

Socioeconomic Influences Are Universally Recognized

There is general agreement among researchers regarding the impact of socioeconomic status on student achievement scores. Socioeconomic status is defined by several variables, but the primary measures are poverty and race. Martin E. Orland's (1990) study concluded that student achievement scores varied with the economic status of students. He concluded that students who are subjected to long-term poverty or who attend schools with a high percentage of students in poverty have lower achievement scores. Stephen Schmitz's (1992) research on achievement level of students in public housing confirmed Orland's findings. Also, Fowler and Walberg's (1991) analysis of 293 public schools in New Jersey revealed a strong relationship between student achievement scores and the socioeconomic status of the neighborhood where students live. John Alspaugh (1991) found that half of the variance in achievement levels of students in the 39 schools he studied had to do with these socioeconomic measures.

Research also suggests that student achievement scores are not independent of race (Anick, Carpenter and Smith, 1981). There is an abundance of research suggesting that minority students tend to have lower scores on mathematics than White students. Milner's (1983) somewhat controversial research suggested that race and socioeconomic class combine to create the ultimate driver for under-achievement of students. Consistent evidence from prior research studies points to socioeconomic factors as key drivers of student achievement scores.

Increased General Expenditures for Schools Have Little Influence

Claims that increased expenditures lead to improved achievement scores are heavily contested. Educational expenditure as a percent of GNP increased from 1% in 1890 to 3.5% in 1990 without being accompanied by any significant positive changes in student achievement scores (Hanushek, 1994). Coleman et al. (1966) conducted one of the first nationwide analyses of the relationship between expenditure and student performance. They concluded that resource inputs (expenditures) did not influence student achievement. However, their findings are contradicted, in part, by a recent nationwide study (Wenglinsky, 1997) that concluded

that certain expenditures (direct instruction and district administration) do have a positive impact on achievement in mathematics. Dolan and Schmidt (1987) found little support for the impact of expenditure on student achievement scores in more than 128 school divisions in Virginia in a four-year study of elementary, middle, and high schools. Sebold and Dato (1981) investigated the relationship between student achievement scores and school funding among California schools. After controlling for socioeconomic variance, they found a statistically significant but small effect of increased school funding on student achievement scores. In contrast, a 1994 study by Cooper and Associates (1994) reports significant relationships between school spending and student achievement.

One of the most extensive and frequently cited meta-analyses is by Hanushek (1989). He reviewed over 38 studies with 187 equations representing the relationship between seven resource inputs and student achievement scores. Regarding expenditures, only 20% of the equations showed a positive relationship that was statistically significant. More recently, Hedges, Laine and Greenwald (1994) re-analyzed the same data as Hanushek but used “more sophisticated synthesis methods” (p. 5). They found significant relationships between global resource expenditures and student achievement. MacPhail-Wilcox and King (1986) found significant relationships between some specific directed expenditures and achievement in 67% of the studies they examined. Childs and Shakeshaft (1986) found positive relationships in only 31% of the 45 studies they analyzed. Laine, Greenwald and Hedges (1996) concluded that “school resources are systematically related to student achievement and that these relations are large enough to be educationally important” (p. 57).

In conclusion, while there is no consensus on the impact of expenditures per student on achievement scores, recent research tends to support a positive influence.

Teacher Qualifications Often Are Found to Influence Student Achievement

Teacher qualifications such as years of experience, advanced training and degrees, verbal achievement, and level of pay have long been

factors in education research (Cohn and Millman, 1975; Katzman, 1968). Ogawa, Houston, and Stine (1999) contend that “mounting evidence suggests that the knowledge and skills of teachers can have a profound impact on the academic performance of students” (p. 660). The most common surrogates for knowledge and skills of teachers have been years of experience and advanced degrees. King and MacPhail-Wilcox (1994) reviewed 30 studies on student achievement and found that years of experience and advanced degrees were significant factors in 24 studies. Ferguson’s (1991) study showed that 40% of the variation in students’ reading and mathematics scores was attributable to teachers with advanced degrees. The positive impact of teacher quality, experience and advanced education has recently been reinforced by Darling-Hammond (1998); Greenwald, Hedges, and Laine (1996); Hanushek (1992); and Rivkin, Hanushek, and Kain (1998). Hanushek (1999) states that “... the ultimate effect of any large scale program to reduce class size will depend much more importantly on the quality of new teachers than on the effects of class size reduction per se” (p. 159).

Recent State Class Size Reduction Efforts

Over 20 states now have class size reduction (CSR) initiatives in place. Iowa created the Class Size/Early Intervention Program to reduce class size in kindergarten through third grade to 17 students for basic skills instruction. Maryland established the Maryland Learning Success Program, an initiative to reduce class size in grades one and two, particularly for reading, to 20 students. The program envisions hiring approximately 1,000 teachers, while reserving additional funds for professional development, supplies, and other implementation costs. Utah began its CSR program in 1990 focusing on reading in grades K-4. It has recently expanded to seventh and eighth grades.

In the state of Washington, Tacoma has matched the federal class size reduction funds to support its “Great Start” program to reduce first grade class size to 15 or 16 students in one-third of its elementary schools. Minnesota significantly expanded its class size reduction program in 1999, adding more than \$100 million over two years to current funding levels of \$90 million annually. The state’s program, which began in 1995, strives to

reduce class size to 17 students in kindergarten through sixth grade, but requires districts to first target kindergarten and first grade. Nevada started its CSR program in 1989. It is a mandatory program, which focused initially on first grade and expanded to second grade and kindergarten in 1991-1992. Funds are primarily for hiring of new teachers. New York is implementing a voluntary CSR program, which targets funds for reducing average class size in kindergarten through third grade to 20 students. Funds may be used for teacher salaries and benefits, as well as for one-time start-up costs for each new classroom. However, funds may not be used for new buildings or professional development.

The most ambitious CSR programs are in Wisconsin and California. Wisconsin's class size reduction program, called the Student Achievement Guarantee in Education (SAGE), targets class size reduction in kindergarten through third grade in schools serving low-income populations. These schools participate in SAGE on a voluntary basis, signing contracts to reduce class size in kindergarten through third grade to 15 students. The SAGE program combines CSR with revised curricula, professional development, and strategies for increased involvement of students, teachers and parents. California has made a substantial investment in its CSR program. \$1.5 billion was appropriated in 1997-98 (Brewer, Krop, Gill, and Reichardt, 1999) to reduce class size to an average of 20 students per class. California targets first and second grades as top priority with third grade and kindergarten as secondary.

In all of the above, there is some anecdotal evidence that the programs are working, but no conclusive research results are available. Except for Tennessee's STAR program, no effort was taken in any of these programs to properly develop an experimental design that could be used to test the actual impacts of the reductions.

WHAT FACTORS POSITIVELY IMPACT STUDENT ACHIEVEMENT IN FLORIDA ELEMENTARY SCHOOLS?

The focus of this study is the influence of class size on student achievement in Florida elementary schools. However, data were available to test some of the other factors from the literature, including

socioeconomic characteristics, resource investments, and teacher qualifications. By using multiple factors it was possible to construct a mathematical model to run a series of tests to determine the relative impact of each of these factors. The results of these tests could form the basis for education policy formulation in Florida.

Data were collected from the *Florida School Indicator Report, 1997-1998*. The unit of analysis was individual elementary schools including grades from kindergarten to fifth. The sample consisted of 1,465 elementary schools. Data elements were chosen based on theoretical foundations in the literature and availability in the state database. Eight independent variables were selected and organized under three general categories:

1. Student characteristics: including poverty rate, promotion rate, mobility and in-school suspensions, all expressed as percentages
2. Resource investments: average class size and total operating expenses per student
3. Teacher qualifications: percentage with advanced degrees and average years of experience

The percentage of students at each school receiving free or reduced cost lunches was used as a surrogate for the poverty rate; otherwise all data elements were as defined in the *Florida School Indicator Report*. Data on race were not published in the report; however, a recent study of South Florida schools reported that poverty and minority status were highly interrelated (Nyhan and Alkadry, 1999). Mobility, in-school suspensions, and the promotion rate are also mentioned in the literature as negatively impacting student achievement scores but have not previously been the subject of empirical investigation.

Three dependent variables measured student achievement scores. These included scores on standardized reading, writing and mathematics

tests taken in the fourth grade. The reading and mathematics scores are measured as the percentage of students scoring above the median on district-administered tests. The writing scores are measured by the percentage of students scoring 3 or higher on the Florida writing assessment, Florida Writes!

Eight research hypotheses were developed, based on the literature review. It was assumed that the factors that *negatively* impact student achievement scores would be found in schools with:

1. Higher percentages of students in poverty,
2. Higher percentages of promotion rates,
3. Higher rates of mobility, and
4. Higher rates of in-school suspensions.

Factors that are assumed to *positively* impact student achievement scores are:

5. Lower class sizes,
6. Higher expenditures per student,
7. More teachers with advanced degrees, and
8. Higher average years of experience for teachers.

Table 1 presents the descriptive statistics for the study.

Table 1
Descriptive Statistics:
Study on Effect of Class Size on Student Achievement

	Min.	Max.	Mean	Std. Dev.
% Free Lunch Recipients	.20	99.40	53.51	23.80
% Mobility	3.20	84.10	33.13	13.47
% Promotion Rate	78.50	100.00	96.82	3.26
% Suspensions – In School	.00	28.30	1.54	3.29
Average Class Size	9.30	53.30	23.65	3.23
\$ Operating Cost/Student	2634	9379	4599	822
% Advanced Degrees	.00	73.40	30.92	12.06
Average Years Experience	.70	24.00	12.08	3.22
% Florida Writes (above 3)	19.00	100.00	68.65	15.44
% Mathematics Above Median	16.00	97.00	60.89	16.39
% Reading Above Median	4.00	92.00	49.94	17.63
Number of Schools	1465			

Model 1 — Reading Model

The first regression model included the eight independent variables and the percentage of students scoring above the median on the norm-referenced reading test as a dependent variable. It is assumed in all models that, based on the literature review, the poverty rate, promotion rate, mobility rate, and in-school suspension rate are inversely related to reading performance. Likewise average class size should vary inversely with test results since it is expected that as average class size is reduced, test scores will increase. However, the literature suggests that increased total operating expenses per student would positively impact reading performance. Furthermore, increased teacher qualifications in terms of more advanced degrees and longer experience should positively impact reading performance. The results from the first regression model are shown in Table 2.

The model has a high level of determination with an R square value of .675. This suggests that 67.5% of the variance in the reading variable can be explained by the independent variables. All of the independent variables, with the exception of in-school suspensions, have a statistically significant impact on the reading variable at the .05 confidence level. The resource investment variables (operating costs and average class size) and teacher qualifications (percentage with advanced degrees and average years of experience) are positively related as predicted. Class size is inversely related as expected indicating that lower class size is associated with higher test score in reading. The negative factors also are consistent with the study assumptions. Higher rates of suspensions, promotion, and mobility are negatively related to reading scores. However, the dominant factor in the model is the percentage of students in the free lunch program. The beta coefficient $-.761$ indicates that a one standard deviation increase in the number of students on free lunch would result in a decline of reading scores by $.761$ of one standard deviation. By comparison, each of the other factors in this analysis has an important but relatively small impact.

Table 2
Reading Model Results:
Study on Effect of Class Size on Student Achievement

	Standardized Coefficients Beta	t value	Significance
(Constant)		14.607	.000
% Free Lunch Recipients	-.761	-36.676	.000
% Suspensions - In School	-.029	-1.870	.062
% Promotion Rate	-.083	-4.961	.000
% Mobility	-.062	-3.163	.002
Average Class Size	-.082	-5.074	.000
\$ Operating Cost/Student	.058	3.130	.002
% Advanced Degrees	.063	3.725	.000
Average Years Experience	.092	5.942	.000

Model Summary

R Square .675
F value 377.621
Significance .000

Model 2 — Mathematics Model

The second regression model uses the same independent variables and percentage of students scoring above the median on the norm-referenced mathematics test as a dependent variable. The results are shown in Table 3.

Table 3
Mathematics Model Results:
Study on Effect of Class Size on Student Achievement

	Standardized Coefficients (Beta)	t value	Level of Significance
(Constant)		11.118	.000
% Free Lunch Recipients	-.666	-26.609	.000
% Suspensions – In School	-.054	-2.851	.004
% Promotion Rate	-.059	-2.920	.004
% Mobility	-.096	-4.108	.000
Average Class Size	-.022	-1.146	.252
\$ Operating Cost/Student	.021	.939	.348
% Advanced Degrees	.084	4.144	.000
Average Years Experience	.023	1.227	.220

Model Summary

R Square	.526
F value	202.109
Significance	.000

The mathematics regression model has a lower level of determination (.526), although it is a statistically significant model with a high F value of 202.109. All independent variables continue to affect the mathematics variable in the predicted direction. However, three variables fail to have a statistically significant impact on the mathematics variable: average class size, operating cost per student, and teacher experience. The poverty rate still dominates the model with a beta at -.666.

Model 3 — Writing Model

Finally, the eight independent variables were regressed against the percentage of students scoring 3 or higher on the Florida Writes!. The results are shown in Table 4.

The writing model offers the least explanatory value with an R square of only .269, however the F value is still significant (F = 67.125, p=.000). All of the student characteristics are significant and in the predicted direction. Class size and percentage of teachers with advanced degrees also remain significant. However, poverty continues to dominate the writing model with a beta of -.447.

DISCUSSION OF RESULTS

Mixed evidence of the impact of class size on student achievement scores from this study mirrors similar results in the literature. The results are summarized in Table 5.

Table 4
Writing Model Results:
Study on Effect of Class Size on Student Achievement

	Standardized Coefficients (Beta)	t value	Level of Significance
(Constant)		12.448	.000
% Free Lunch Recipients	-.447	-14.389	.000
% Suspensions - In School	-.090	-3.868	.000
% Promotion Rate	-.159	-6.344	.000
% Mobility	-.102	-3.503	.000
Average Class Size	-.058	-2.415	.016
\$ Operating Cost/Student	.031	1.131	.258
% Advanced Degrees	.056	2.228	.026
Average Years Experience	.006	.258	.796

Model Summary

R Square	.269
F value	67.125
Significance	.000

Table 5
Results Summary:
Study on Effect of Class Size on Student Achievement

	Reading Model	Mathematics Model	Writing Model
Negative Factors			
1. As student poverty rate increases, student achievement scores become lower.	Support	Support	Support
2. As promotion rate increases, student achievement scores become lower.	Support	Support	Support
3. As mobility rate increases, student achievement scores become lower.	Support	Support	Support
4. As in-school suspension rate increases, student achievement scores become lower.	Insufficient Support	Support	Support
Positive Factors			
5. As class size decreases, student achievement scores increase.	Support	Insufficient Support	Support
6. As operating expenditures per student increase, student achievement scores increase.	Support	Insufficient Support	Insufficient Support
7. As percentage of teachers with advanced degrees increase, student achievement scores increase.	Support	Support	Support
8. As average experience of teachers increases, student achievement scores increase.	Support	Insufficient Support	Insufficient Support

This study consistently supports previous findings that poverty is a primary determinant of student achievement scores. In all models, poverty accounts for the majority of the effect size on student achievement scores (beta = -.776; -.666; -.447), i.e., as the percentage of students in poverty

increases in schools, achievement scores go down. The results of the other student characteristics used in this study show similar negative impacts on student achievement. Schools with higher rates of promotion, mobility, and in-school suspensions tend to have lower rates of student achievement.

The preponderance of evidence supports a positive effect for advanced degrees among teachers and smaller class sizes. The relationship of class size to student achievement scores is inverse in all models; however, no significant relationship was found in the mathematics regression model. The models provide little support for the positive impact of expenditures per student and years of experience for teachers.

Limitations of Regression Models

The above models were exploratory and, therefore, the results are not conclusive. Regardless of their popularity, the use of regression-based production models is not universally accepted (e.g., Fortune and O'Neil, 1994). There exist problems with the method used to enter variables and shared variance. Perhaps the most noteworthy of these limitations is the Robinson effect (1950) of indiscriminately translating the aggregated data to the individual level. Correlation coefficients may increase as a result of aggregating the data at the school level. Therefore, the effect sizes may be exaggerated (Kreft and de Leeuw, 1988).

Beyond methodological and specification problems, one of the major issues is poor or missing data. In particular, this study was limited by the availability of data from the Florida Department of Education database. For example, family variables such as parents' education and parental involvement in the student's education were not available. Using test scores as a proxy of success also is not without controversy. Card and Krueger (1992) claim that test scores are predictive of future income. Ferguson and Ladd (1996) contend that test scores are "clearly an indicator of the probability of future schooling" (p. 267), which correlates strongly with future income. However, many see it as a poor or at least inadequate surrogate. Finally, percentage of students receiving free lunch is also an imperfect measure for poverty and years of experience and

advanced degrees are not necessarily an adequate measure of teacher quality. The empirical results, while exploratory, do provide a potential framework for more detailed and better specified data elements in future research.

CONCLUSIONS

This study provides a review of existing literature and an analysis of current data aimed at drawing specific policy recommendations for Florida. It reinforces the literature research finding that across-the-board increases in expenditures per student have little impact on student achievement scores. Furthermore, the results of the study models provide only moderate support for targeted expenditures, such as smaller class sizes, to achieve better student achievement outcomes. This finding is consistent with the Education Research Service (1980) finding that within a range of 24-30 pupils, class size appears to have little if any decisive impact on the academic achievement scores. The average class size in this analysis was 23.65 with a relatively small standard deviation (3.23).

This does not suggest that there are no benefits to lowering class sizes. Several studies have identified benefits to reducing class size beyond raising achievement scores (e.g., Carrington, 1981; Jarvis et. al., 1987; Whittington, Bain, and Achilles, 1985). Glass, Cahen, Smith, and Filby (1982) argued that smaller class size has a positive impact on teachers: "In smaller classes, their morale is better; they like their pupils better, have time to plan, and are more satisfied with their performance" (p. 65). Cooper's (1994) survey indicated that the most important impact of reduced class size is increased student and instructor morale. Research on Wisconsin's class size reduction effort (SAGE) shows that both teachers and students benefit from smaller classes (Molnar et al., 1999). Smaller classes also lead to better identification of students who need special help, increased student participation and engagement, improved student behavior and human relations skills, and generally improved school climate where students, teachers, and parents feel more comfortable.

However, Betts and Shkolnik's (1999) study found that when class size was reduced in over 2,170 mathematics classes, "teachers did not spend more time on new material, nor finish more of the assigned text" (p. 193). Slavin (1990) pointed out that "investment in facilities, programs, and reduced class sizes may be appropriate expenditures for policy makers, but it cannot be seen as an adequate policy for significantly accelerating student achievement" (p. 10). Therefore, policy makers must weigh all relevant factors, recognizing that reduced class size, by itself, may not translate directly into increased student achievement scores.

PUBLIC POLICY CONSIDERATIONS

The United States Department of Education has already begun distributing funding for class size reduction under the DOE Appropriation Act in 1999. The State of Florida has an allocation in excess of \$51 million. This federal program is proposed for the next seven years. Over 20 states have begun CSR programs and report anecdotal evidence of some success. Finally, the public responds positively to the intuitive logic of reduced class sizes.

One of the best tools for objectively evaluating public policy decisions is benefit-cost analysis. Unfortunately, much information is available on cost, and little or conflicting data is available on benefits. Estimates of the costs to reduce class sizes in Florida have been set at \$482.4 million with almost 10,000 new teachers needed and \$1.2 billion in new classrooms (Rado, 1999). A recent study by the Florida Department of Education, Office of Policy Research and Accountability (1998) concluded that "Florida has the largest elementary schools in the nation. Dramatically reducing class or school sizes in Florida will be expensive. Currently, evidence has not been collected to support that such an investment will result in improved student achievement" (p. 12).

Beyond these cost issues, some states have found that implementation of CSR is difficult. California encountered numerous problems with collective bargaining agreements. School districts reported significant union conflicts on issues related to financing, equity, workload, and preparation time. A major problem in most states is the availability of qualified teachers. Florida's school population continues to grow at a

record pace. Can an additional 10,000 qualified teachers be found over the already existing demand?

Finally, does the CSR program incur significant opportunity costs for Florida? Levin, Glass, and Meister (1987) evaluated four different public investment strategies to improve student outcomes. Of these, they found that peer tutoring and computer-assisted instruction were far superior to reduced class size or increased instructional time. The Florida Department of Education, Office of Policy Research and Accountability (1998) concluded that “research supports alternative measures to reduction in class and school size that do improve student achievement. These measures are related more to improving teaching practices than to the number of students in a classroom” (p. 12).

Before committing to reductions, policymakers should consider whether the required money might have greater impact if it were invested in improvements which are better supported by research findings, such as better curricula, more rigorous academic standards, improved teacher training, or new technology.

RECOMMENDATIONS

Assuming that the State of Florida will continue to support CSR initiatives, some lessons learned from the literature and the recent efforts of other states may help to maximize benefits for Florida students, teachers and parents.

1. Target economically disadvantaged schools. Most of the research on class size reduction shows that the greatest short-term and long-term positive impacts are in schools with large populations of poor and minority students. Finn and Achilles (1990) and Krueger (1999) find that the effect of smaller class size is twice as great among minority and economically disadvantaged students. Policy makers should strategically invest the state and federal funds in such schools where there is the greatest expectation of success. Spending the funds among all schools would significantly dilute the expected results.

2. Target elementary schools. Again most of the positive research findings are that K-3 grades show much higher potential for improvement compared with middle and high schools. Many states are focusing on first and second grades as priorities. This strategy and its results should be investigated further.

3. Set high reduction goals. Research studies suggest a reduction to 1:20 is appropriate only when the existing teacher student ratio is very high, i.e., 1:30 or more. Florida, with an existing ratio of approximately 1:24, should target a reduction to class sizes no larger than 1:18 if appreciable gains are to be seen. The highest standard was established by Alspaugh (1993) and Pate-Bain et al. (1992). They found significant benefits to small class sizes were based on class sizes of less than 15.

4. Invest in teachers. Overwhelming evidence points to the significant impact of improved quality in teaching on student achievement (Hanushek, 1992). Investing in training for teachers, including funds to seek advanced degrees, may be a key to improving the quality of education in the classroom. Changing teacher behavior also is important in improving student achievement scores; however, it may require alternatives to the rewards that currently are offered to teachers and administrators (Hanushek, 1997). Policy makers also should consider providing economic incentives to teachers who work at schools with high populations of poor and minority students to ensure equality in quality of education.

5. Combine increased number of teachers with innovative methods. New techniques of classroom presentation, use of technology, and flexible curricula are needed. Improvements also can be realized by supplementing teachers' efforts with strategies to increase volunteer and parental involvement, especially one-on-one tutoring, and cooperative learning and student peer teaching.

6. Establish research guidelines to meaningfully evaluate change. If policymakers are looking for definitive evidence on the impact of CSR, considerable effort needs to be expended in designing a comprehensive

research evaluation program. This requires the decision to support experimental designs, and empirical analyses as well as qualitative studies. Data should be collected at the individual student level and should be tracked to adequately determine the long-term impact of class size reductions.

7. Develop better measures of student success beyond standardized test scores. Class size reductions can potentially benefit students in more ways than just increased test scores. “Primary effects may be on delinquency, years of future education, future employment, and welfare utilization. These effects also carry direct costs to society that can ultimately be related to the cost of the intervention” (Grissmer, 1999, p. 243).

8. Develop strategies to address the multiple causes of poor student performance. Student achievement scores can be positively impacted by an integrated, holistic strategy at the community level. Prior research and this study point to the overwhelming impact of socioeconomic factors on student performance. This suggests that any effective strategies adopted to increase student achievement scores in communities must be grounded in improving the economic status of all citizens. All stakeholders including policy makers, students, parents, teachers, taxpayers, and local businesses must be engaged. Increased quality of education, together with economic development opportunities for all citizens, should be the cornerstone of the education strategy for the state of Florida.

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CHAPTER 7

TEACHERS' EXPERIENCES WITH THE FLORIDA READING INITIATIVE

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In October 1999, Florida Education Commissioner Tom Gallagher convened a first ever Reading Summit, "Every Child Reading: An Attainable Goal." The Summit demonstrated that literacy is indeed on the policy agenda in Florida, as it is in Texas and California, where the attention and resources of state policy makers have already improved the reading achievement of public school children. The summit provided a focus on literacy and an unprecedented opportunity for leaders within each of Florida's five regions to work together to identify their district's progress in implementing each of the critical elements of the Florida Reading Initiative. The Florida Reading Initiative Policy Framework (Florida Department of Education, n.d.) makes explicit a number of requirements: Curriculum must be based on current research, reflect the Sunshine State Standards, and represent a balance of decoding and comprehension strategies. District reading programs must emphasize pre-kindergarten and the primary grades but also make provisions for middle school and high school. Reading instruction must be diagnostic and prescriptive and evaluated in terms of student achievement on the Florida Comprehensive Assessment Test (FCAT) and locally selected standardized tests. District reading programs must be "coordinated, articulated, and consolidated" with other "reading efforts," School Improvement Plans, and the professional development of teachers.

In this chapter, I report on professionally active teachers' understandings of the Reading Initiative and their opportunities to learn

the pedagogy represented by the elements in the Policy Framework. New policies will not take hold without teachers' knowledge of state expectations and the research-based teaching proposed by policy makers. Because policies do not "land in a vacuum" but "on top of other policies" (Darling-Hammond, 1990), teachers interpret and implement reforms from what they know, including their experiences with past policies (McGill-Franzen, 2000).

RECENT POLICY BACKGROUND

The Florida Reading Initiative Policy Framework noted that each of the targeted elements are derived from and supported by the National Academy of Science's definitive report on reading, *Preventing Reading Difficulties in Young Children* (National Research Council, 1998). The NRC report, in fact, recommended most, if not all, of the strategies presented in the initiative. The NRC report listed students' grade level "accomplishments," a set of benchmark achievements that closely resembles the Sunshine State Standards for grades K through 3.

The Reading Initiative is further supported by the findings of the newly released Report of the National Reading Panel, the congressionally mandated study of the effectiveness of different approaches to teaching children to read (National Institute of Child Health and Human Development, 2000). The NRP, like the NRC report, provided research evidence for using particular instructional approaches, many of which were cited in the Florida Initiative, to build reading fluency and comprehension. The Florida Reading Initiative was launched only a few months after the Florida Legislature adopted two major reform packages—the A+ Plan and the School Readiness Act, both of which emphasized the importance of reading skills. The A+ Plan put in place many of the specific reforms—standards and accountability—that have been linked to improved reading test scores in Texas and North Carolina (Grissmer and Flanagan, 1998). The Sunshine State Standards provide markers of reading development for each grade in Florida—what each student should know and be able to do. The state not only rewards high-achieving schools with regulatory freedom, it also sanctions low-achieving schools. FCAT assessments must be reported to the public and

Opportunity Scholarships (vouchers) follow students in consistently low-performing schools. For low-achieving students, there is the threat of retention. Grade-level competence in reading is now required at the end of fourth grade for promotion. A passing score on a more rigorous assessment in high school will also be required for graduation starting with the freshman class of 1999.

**THE “LOGIC” OF SYSTEMIC REFORM
VS. “THE POWER OF THE BOTTOM OVER THE TOP”**

I assumed a “logic of implementation” in the study, that is, I assumed that the state of Florida intended to put into effect “a chain of events” leading to an intended outcome—improved reading achievement. Although comprehensive state reform seemed an intuitively sensible way to improve reading achievement, teacher knowledge is at the heart of educational change and the learning opportunities provided to students. In explaining the (often unsuccessful) outcomes of mandated reform, Elmore (1983) noted teachers are “the power of the bottom over the top.” Recent studies of policy implementation in mathematics suggested that central office supervisors interpret state policy in terms of their professional affiliations and beliefs, leading to very different local curricula in otherwise demographically similar districts (Spillane, 1998). Likewise, mathematics teachers may (or may not) align their practice with the goals of reform, depending not only on their prior content knowledge and beliefs about children, but also on the opportunities to learn new pedagogy presented by the district or other external agencies (Spillane).

Therefore, I sought the perspectives of influential teachers of reading whose practice and understandings are the objects of reform efforts. I wished to determine their knowledge of the Policy Framework and how they are interpreting the elements of the Reading Initiative and using this knowledge in schools. The questions that guided my study were:

1. *What is the nature of changes in classroom practice or student achievement experienced by these teachers in Florida and do they attribute these changes to the Reading Initiative or other reform efforts?*

2. *What are teachers' opportunities to learn about reading pedagogy?*
3. *Relatedly, what improved opportunities to learn are being made available to students as a result of the Reading Initiative?*

DATA SOURCES AND METHODOLOGY

Data sources for the study consisted of transcribed telephone or E-mail interviews of 20 policy participants (teachers and administrators) at local levels during the winter of 2000, and additionally, policy documents and media reports. In order to select a sample from which the most could be learned, I employed a procedure of purposive sampling (Patton, 1990). The logic and power of purposive sampling is in the selection of "information-rich cases from which one can learn a great deal about issues of central importance to the purpose of the research" (p. 169). Thus, the sample is composed of teachers and administrators who are professionally active in the field of reading education. Each participant is an officer or regional director of a local reading council in one of Florida's counties, elected by their peers, and includes the following professional organizations: the Council for Adult and Family Literacy, Council for Early Literacy, Teacher Educators in Reading, reading supervisors, the Secondary Reading Council, and college and university student groups. These local councils are affiliated with the Florida Reading Association, the professional organization representing over 9,000 elementary and early childhood teachers, reading educators, and reading supervisors across the State of Florida.

Each of the 20 policy participants represented a particular set of experiences, yet taken together, the sample represents the full range of professional experience in reading within the State of Florida. Two participants were university professors working in professional development public schools; three were district administrators with supervisory responsibilities that include reading instruction; five were teachers or administrators with school-wide responsibilities; two were primarily reading teachers. Finally, there were eight classroom teachers

represented in the sample (three primary grade teachers, three intermediate and middle grade teachers, one special education teacher and one teacher of the gifted). Of those participants involved in reading at the school level (as opposed to district-wide), at least 12 worked in schools that received a "grade" of "C" or "D" on the 1999 Florida school report cards and were struggling to meet the state standards. Several teachers reported that their schools are Title 1 schools; the majority of teachers reported that the school population was diverse in terms of children's socioeconomic and ethnic backgrounds.

I identified within these transcribed interviews information about changes in reading education, including probes for participants' specific knowledge of state initiatives, district or school in-service opportunities for teachers, and school-level support for struggling students. I then analyzed these identified segments of the transcripts for categories to describe participants' experiences with and thinking about recent changes in reading education. I paid particular attention across the participants' responses to patterns in their reported experiences, and particularly any relationship they reported between changes in practice and recently drafted state initiatives. In addition to the interview analysis, I drew upon other extant data sources available online from the Florida Department of Education to develop a context for understanding implementation issues within and across state sites that vary in poverty, ethnicity, achievement, curriculum, and opportunities for teacher development.

FINDINGS

Participants reported the following broad categories of change in reading education: increased in-service opportunities for primary grade teachers; direct instructional support for struggling readers in the form of extended day tutoring, summer school, or reading teacher support during the school day; instructional support for children at all ability levels in the form of improved diagnostic assessment and appropriate curriculum materials and uninterrupted blocks of classroom time scheduled for reading instruction; broad-, school- or district-level support for improved achievement in terms of reduced class size, program, and curriculum

adoptions, and/or system-wide adoption of curriculum and assessment frameworks that are consistent with state policy.

Increased In-service Education Opportunities for Teachers

With one exception, all reading professionals reported a level of district- and school-based in-service activity in reading pedagogy that was unprecedented in the past. Many in-service opportunities were voluntary and offered in the summer, in the evenings, and on Saturdays. Teachers who took advantage of voluntary in-service opportunities often earned points toward re-certification. What distinguished recent in-service from the past, however, was not only the focus on reading, but also the extent of mandated professional development in reading for which teachers were either released from teaching duties or paid to attend outside of the school day or school year. Mandated professional development typically represents substantive commitment to a program or course of action on the part of the school or district because of money spent on teacher stipends and substitutes, and the time teachers invest in learning a new curriculum. Rather than a one-hour, single-day workshop, districts, with one exception, were moving toward more intense training for teachers. Participants in my survey reported extensive in-service education, including, but not limited to the following: whole-day summer institutes of one day to two or more weeks, after-school and Saturday seminars similar in duration and intensity to university courses (from 6 to 12 weeks), long-term collaboration with university and college professors in teacher research and development projects, and year-long follow-up and coaching back in the classroom.

One large, urban district, for example, provided so much in-service for its primary grade teachers that the local newspaper commented on how many days teachers had been out of their classrooms. This county, guided by a locally developed comprehensive reading plan, provided in-service to first grade teachers in 1998-99, second grade teachers in 1999-00, and intends to provide three days of intensive staff development to kindergarten teachers during the summer of 2000 with on-going follow-up support in each school. Although all kindergarten teachers will be required to participate in the summer training, a different model of staff

development—that of “turn-key training”—was followed for the first and second grades.

Thus, in this district and in many of the other districts surveyed, professional development as a concept was evolving from a less costly to a more costly, but, in their view, a more effective model of teacher education. Turn-key training, which involved the professional development of a single teacher from a school, selected to represent an entire grade level of teachers, who then returned to teach her colleagues, was reported to be less effective in many districts than actually involving all targeted teachers. Another variation on turn-key training was the appointment of a “reading leader” or “achievement specialist” at each school. The specialist participated in the training herself and then taught the targeted teachers in her school, or she “gave” her professional development days to targeted teachers who directly participated in the desired training and then implemented these new ideas at the school.

Another component of professional development, increasingly viewed as critical to changing instruction, is that of follow up or “coaching” to help teachers implement new teaching strategies into classroom practice. Another district with large urban populations and widely dispersed rural populations used a combination of distance learning technology and school-level coaching to bring new knowledge to teachers:

Two years ago we did teacher training with a K-2 assessment. We had a lot of teachers and a short time to train them. So we tried to create, as best we could, what we called a system of resident experts or coaches at each of the school sites. We [central office supervisors] did the training on live broadcast over our in-house TV and the coaches at the school sites would facilitate the teachers' discussion. So they would watch the broadcast from their school site and the coaches would actually intervene at certain points.

Central office supervisors played a critical role regardless of whether all teachers or only turn-key teacher representatives participated in staff development. District-level supervisors defined the broad

parameters within which the in-service education of teachers took place. Even under site-based management, a point I return to later, in most cases the district supervisors put into place appropriate systems of assessment, mechanisms for monitoring and reporting of individual and school progress, and curriculum frameworks consistent with state content standards:

It is our plan, a pupil progression plan, that guides teachers on decisions about students. It is a consistent plan; it has created consensus on what is important. We took the state frameworks, the state mandates, and the parameters the state has given us, and we developed the policy for our county.

In addition, district supervisors defined reading as an instructional priority, a point that the informants in my study returned to again and again. District supervisors provided workshops by national and university consultants, conducted in-service education themselves on curriculum, instruction, and assessment in reading, and provided funds for site-based professional development.

Besides more in-service opportunities, the content of these in-service opportunities was intensely focused on primary grade reading curriculum, instruction, and assessment. Not only did the survey participants report that primary grade reading was a recent priority and the initial focus of in-service, but the knowledge of reading they displayed in their discussions was testimony to strong professional development in that area.

Performance-based Assessments

A striking feature of the transcribed interviews was the specificity of language these professionals used to describe the reading development of children, the ways such development was evaluated, and the knowledge teachers needed to provide appropriate opportunities for children to learn.

Rather than refer to only a standardized test, for example, the Terra Nova or the FCAT, to describe the achievement of children for whom they

were responsible, these professionals described in detail children's development on performance-based measures of progress in reading. Participants described children's early reading development in terms of phonological awareness, knowledge of print conventions, and accuracy and fluency on oral reading of passages of increasing difficulty. They referred to some assessments by publisher; district staff developed other assessments, and often the participants themselves had assisted in the creation of these performance-based measures of reading achievement.

The emphasis on performance-based measures in addition to multiple-choice, norm-referenced assessments in the early grades is productive because performance-based measures can inform teaching directly and be consistent with the Reading Initiative. A reading teacher, who was also responsible for school-wide staff development, noted that performance-based assessments help the different components of an effective literacy program "all flow together:"

Assessments have changed along with instruction. Teachers still give the standardized tests. That is something that comes from the state. But in the classrooms, the day-to-day assessment is more useful than in the past. The teachers do running records on the kids so instead of a percentile, they are determining the instructional reading level of the kids. They are getting useful information about how kids are reading, what strategies they are using and they are able to use their assessment to guide their instruction, something that was never possible before. Before, assessment provided only a number; now it is a tool.

Respondents reported that their schools and districts were using a variety of performance-based assessments: in-house oral reading inventories for determining instructional levels in reading and rubrics for evaluating writing development within different genres; commercially published informal reading inventories such as the Qualitative Reading Inventory, the Flint-Cooter Inventory, Silvoreli Reading Inventory, the Developmental Reading Assessment, Scholastic Reading Inventory, Accelerated Reader STAR; and assessments that accompany reading

programs, such as the assessments in Success for All school-wide program or the Houghton-Mifflin reading series.

Balanced Literacy Curriculum and Instruction

Much in-service education focused on the concept of “balanced literacy.” The Reading Initiative defined “balance” as “a mix of instruction and practice activities sufficient to build strong word reading skills as well as the ability to construct the meaning of text.” Only a few respondents specifically defined a balanced curriculum in the same terms as the policy document—a balance between “phonics” and “whole language”—but all respondents indicated that the focus of recent in-service and concomitant change in practice was toward more balance in their literacy programs:

To let you know, I am a resource teacher so I work out of the county office. So what I am seeing, as a result of that summit, is an in-depth look at the reading process and how we bring this information to our teachers. We have some initiatives in the works right now. We are focusing on a balanced instruction. And I see an intensity of dialogue and discussion of what that actually means.

Several survey respondents defined “balanced” in terms of particular commercial professional development programs, but others did not. Most respondents described balanced instruction in terms that were considerably more sophisticated than the definition presented in the policy document. Not only did the respondents note that “explicit, intensive phonics” or “decoding” was a part of a balanced literacy curriculum, but they also described the instructional components of such a curriculum. In other words, these professionals described the teaching strategies, ways of grouping children, and materials at appropriate levels of difficulty that would enable children to learn the skills that the policy document required—to be able to read words and construct the meaning of text. In general, then, the movement toward balance in the reading curriculum described by the reading professionals in the survey referred to movement away from whole class instruction using one reading text and movement

toward a more differentiated curriculum for the range of abilities found in primary grade classrooms. In-service education supported teachers' developing expertise in administering and using performance-based assessments to group students and select reading texts appropriate for different groups and for different instructional purposes. Thus, one reading teacher commented:

What kind of instruction do we have? We have balanced literacy instruction. The teachers do shared and guided reading and writing everyday. The children do independent reading and writing every day. The teachers model reading and writing every day. During guided reading, teachers use appropriately leveled books for every child in the room.

In addition to teacher development and curriculum programs developed in house, or in partnership with universities or national consultants, survey respondents identified a range of commercial in-service and curriculum programs that recently were made available to teachers to support balanced literacy. To name just a few, respondents cited programs developed in the 1960s, such as SRA or Direct Instruction; programs developed in the 1980s, such as ELIC or Early Literacy In-service Course; more recent programs, such as Literacy Backbone, and programs from New Zealand and Australia, such as Acquire Reading Power and First Steps, respectively; programs popular in the Southeast, such as Four Blocks, and the Midwest, such as Early Literacy Framework; and programs developed as part of the New Standards Project and the National Center on Education and the Economy, such as America's Choice.

Opportunities for Children to Learn

To a person, the survey respondents indicated that the emphasis on reading pedagogy and curriculum in professional development for teachers has enhanced the opportunities for all children to succeed in reading. A reading teacher and staff developer for a large urban county put it thus:

Just as there has been a lot more in-service education in the last two years than in a long time, the same thing is

happening in the classroom. Just as there seems to be more meat in the in-service training, and less fluff, teachers are trying to get more meat into the classroom. The kids are benefiting in the sense that reading is stressed more, they are reading more, and more critically, and they are getting a lot more instruction.

Professional development has provided teachers with information on how to implement teaching strategies such as guided reading. The statement from the Commissioner's Reading Summit (Florida Department of Education, 1999) defined guided reading as "the opportunity to read a wide variety of texts, problem solve while reading for meaning, use strategies on extended text, and attend to words in text" (p. 2). All respondents indicated that students in their schools participated in guided reading. In fact, one respondent suggested that a nationally implemented reading program, part of which is called guided reading, fell short of her county's expectations for instruction in reading:

We do not like what they call "guided reading." Their guided reading is just a shared reading. They are using a literature anthology with the whole class and reading the story of the week out loud and using comprehension questions with that story. Now that's shared reading and we also do that, but *we teach reading using guided reading*. In guided reading, we pick the appropriate level of books and we match the book with the children or the children with the books, whatever way you want to look at it, and teach children in small groups.

The majority of survey participants reported that reading instruction time was more "protected" than in the past, with specials scheduled outside the literacy block of time, and several reported that instructional time in reading was extended beyond the traditional hour. In addition, some schools had reduced class sizes in the early grades to fewer than 20 students and several reported that class sizes in first grade were even lower. Many Title 1 schools, and in some counties all schools, had

recently added reading specialists (called by various names, for example, curriculum resource teacher, reading achievement specialist, Title 1 teacher and so on) to their teaching faculty, thereby reducing the number of students in small group guided reading instruction even more.

Teachers reported using district allocations, Title 1 funds, Reading Initiative funds, Department of Education challenge grants and Eisenhower grants to purchase materials that supported children's reading. Even in counties with site-based management, central office supervisors were typically influential in the curriculum selected by schools, often providing information on materials and programs and workshops for teachers. On the other hand, even in counties with central office control of curriculum, schools were often given a choice of curriculum materials to purchase. Because 1999-00 was not an adoption year for reading textbooks, new materials were not at the heart of changes in classroom practice reported by participants in the survey. Rather, schools and counties invested in developing the expertise of teachers through participation in the professional development activities described in a previous section.

Diagnostic and Prescriptive Reading for Struggling Readers

All respondents reported that their districts and schools were meeting the requirements of the state to provide remediation to students who are performing below grade level and in danger of retention in fourth grade. Some counties and schools have supported below level readers by adding programs to the school day or beyond the school day and other localities have tried to strengthen the classroom program itself. Every respondent reported some type of assessment to identify below level readers and assistance to support their learning.

To illustrate that districts were indeed engaged in what the Elements of the Florida Reading Initiative called "diagnostic and prescriptive" assessment and remediation for low-achieving students, I detail the particular assessments administered by teachers in one large urban district. In addition to the Stanford Achievement Tests (SAT9), given pre-and postannually to grades 2 and above, and the FCAT, all

students in grades 1 and up take the Scholastic Reading Inventory (SRI) twice a year. Every nine weeks, all students are administered an oral reading test (a running record) and a comprehension test on a book that has been benchmarked to their reading level. Students who are reading below grade level on the benchmark book are administered the Diagnostic Reading Assessment (DRA) to determine their actual reading level. If students are reading six months or more below grade level as measured on the DRA, there is a tutoring intervention, such as America Reads or Intensive Care Unit. This district also extended the in-school learning time for all students by requiring that schools allocate a full two hours to instruction in reading each day.

In a different county, there was less testing but more specific interventions reported. Class sizes in low-achieving schools were reduced in kindergarten through grade 2, averaging about 18 students in each class. All children participated in four types (blocks) of literacy instruction, including one block that is guided reading. The county used Title 1 money to set up computer labs with remedial programs for daily use by all children in grades 1 through 5. Low-achieving children, that is, children who have an academic improvement plan, in addition, received 30 minutes of direct instruction in reading, and if they are in grades 3, 4 and 5, they are also eligible for after-school tutoring by a teacher in the building. In this second year of the tutoring, to improve attendance, the county is providing transportation. According to the survey participant, over the past two years extra funds have been allocated to her school, a "D" school. A reading initiative grant pays for the stipends that teachers receive for tutoring and transportation. Title 1 money funds her salary as a reading teacher assigned to kindergarten and grade 1, as it does the salary of the reading teacher assigned to grades 4 and 5. For two years, each Title 1 school in the county has had at least one reading teacher, and this teacher has been in the position for one year. The reading teacher teaches first grade children in flexible guided reading groups, further reducing the number of children in small group instruction. In addition to reading teachers, Title 1 funds instructional aides, one aide per grade level, who assist teachers in instructional groups.

As the two examples suggested, districts have supported below-level readers in different ways. In schools with large populations of low-income or ESOL children, participants reported increased emphasis on strengthening the classroom reading program. Districts and schools have attempted to accomplish this by hiring school-based reading specialists; by providing classroom teachers with in-service education in the administration of performance-based assessments that are appropriate diagnostic tools; and in-service education in teaching and grouping strategies, such as guided reading, that can accommodate the range of instructional needs of diverse learners. Additionally, districts and schools have extended the learning time of below-level readers by adding on commercially available and/or research-based programs such as computer-assisted instruction, direct instruction, Reading Recovery, or similar tutoring services within the school day and before- and after-school support and in a few cases by offering summer reading programs. The effectiveness of the extended-day tutoring was reported to vary widely, depending on the quality and training of the tutors, who could be volunteers, such as AmericaReads or AmeriCorps, Title 1 aides, teachers paid a stipend, Sylvan or Kaplan centers, state workers, or participants in various mentoring programs. Attendance at extended-day tutoring or summer school sessions was typically voluntary, and transportation was often not provided to students.

Leveraging Change: What Worked?

Without a doubt, teachers were responsive to the pressure for accountability. Teachers in many schools reported that they were required “to match lesson plans with the standards and turn in the lesson plans every week on Monday.” Survey participants reported acute dissatisfaction with the Governor’s A+ Plan for grading schools. Teachers thought that the plan was inequitable. Respondents found it galling that “A” schools, serving the most advantaged families, were rewarded, and schools serving families with the least resources were penalized. Yet, all reported that the school report cards had brought about some change, even changes in areas that teachers thought were “out of the school’s control,” such as high absenteeism and high incidences of tardiness. In the excerpt

that follows, the teacher noted *progress* in reducing absenteeism, and despite her protests, the school had developed tools to improve attendance:

I am not opposed to the accountability part, but I also think that a lot of things that they are grading schools on are out of the control of the child and the teacher. When a parent allows her child to stay home, or repeatedly be late, there is not a lot the school can do. Now I will tell you that we have two full-time behavior specialists, and we do home visits in my school, we chase down those families, and we are out and into those homes. I would say that we are doing better than we were five years ago, but we still are having problems in that area. It's not like, "Oh you stayed home, we'll mark you absent," but rather, "*Where is your child?*"

What prompted this change? Analysis of the responses of teachers at all levels—the district, school and classroom levels—suggested that there has been a fortuitous coming together of policy and the collective will to achieve the policy. Not only was the expectation for improved achievement in reading made explicit by state policy and understood by teachers ("When you are a 'D' school, you don't want to go the other way. I don't think we will, but we could."). But also, the investment in teachers' knowledge provided teachers with the pedagogical tools to improve achievement and ultimately to transform teachers' beliefs about their own efficacy. As an urban teacher observed, "All kinds of things have been happening over the last two or three years. Part of the change was knowing that the state mandates were going to get harder. Knowing that the county has such influx of different populations and our kids were more at risk than some others and knowing we needed more intervention. *And because our scores were not what they should have been or could have been.*"

If implementation of policy, in this case the Florida Reading Initiative, can be examined in terms of the professional learning that has taken place, then the responses of the participants in my survey were testimony to its successful enactment. However, as I pointed out in an

earlier section of the chapter, the respondents in the survey were selected because they are active professionals in the field of reading education. Because their professional affiliations take them beyond school, district, or county borders, these teachers participate in an “environment of professional ideas” (Knapp, 1997; Knapp, Bamberg, Ferguson, and Hill, 1998) that expands their knowledge of subject matter pedagogy and sustains their engagement with these issues. By encouraging teachers to continue to participate in such professional networks or communities, and by listening carefully to their views, policy makers may gain long-term commitment to reform goals from teachers as well as access to their expertise.

What Next? Mid-course Reflections

I asked the survey respondents what else was needed to achieve the goal of every child a reader. To a person, respondents replied that the children’s homes needed to be more supportive of literacy. Further, the teachers observed that children from low-income families often started school behind and never caught up. Rather than “blame” the schools and teachers for the low performance of some children, the teachers argued that policy makers should hold the home accountable.

As a matter of fact, recent research on school learning has documented the effects of summer reading loss by children from poor families, a reading loss that was exacerbated when the children were also low-achievers (Alexander and Entwisle, 1996). Likewise, children from poor families often start school at a disadvantage in terms of experiences with language and literacy (National Research Council, 1998). It is not difficult to envision the lack of resources that may make some low-income homes inhospitable to literacy development.

On the other hand, preschool programs do exist in low-income neighborhoods, often in the same school building as elementary classrooms. The survey teachers, however, reported little knowledge of the preschools, the curricula, or program congruence with the goals of primary grade literacy initiatives. The National Research Council Report suggested that existing preschool curricula were often poorly conceptualized in terms

of language and literacy development. Thus, in my view, preschool is an area that deserves more attention by both frontline professionals and policy makers.

A second concern, again in my view, is the lack of summer school as an option for students in need of remediation. In general, summer school was not provided to low-achieving readers, even those who faced retention in fourth grade. Given the well-documented achievement loss over the summer months, it seems imperative to fund summer programs. In a related vein, there did not appear to be consistency of quality in the interventions provided by schools, even during the school year, to below-level readers. Some schools relied on volunteers and provided no transportation, whereas others provided specially trained teachers and offered transportation and other incentives to keep students in attendance.

A third concern, mentioned by only one respondent, is the minimal support given to struggling readers in middle and high school. Even realizing that allocating scarce resources always involves trade offs, reading curriculum at the secondary level is where primary grade curriculum was about a decade ago: whole class instruction with a single textbook for all readers. Class size for secondary students needing intensive remediation hovers around 35 in at least one large Florida district, according to the district administrator responsible for secondary reading and language arts, yet at the elementary levels, every effort is made to provide one-to-one tutorial support to struggling readers. The Florida Reading Initiative clearly stated that although the focus of the initiative was on the early grade levels, the “needs at higher grade levels cannot be ignored.”

Finally, several of the respondents suggested that higher education needed to do its part to make sure that the teachers of tomorrow are prepared to teach reading. Many of the teachers who were surveyed do not have specialized education in reading but instead acquired knowledge through the opportunities presented by districts and professional associations such as the International Reading Association and its affiliate, the Florida Reading Association (FRA). These teachers reported that they

hoped that pre-service teachers will be more knowledgeable about reading—in particular, how to assess reading development and teach children with a range of achievement levels—than they were. Recent proposals by the Florida Legislature also called for increased coursework in reading pedagogy for pre-service elementary school teachers. An emphasis on reading pedagogy coursework as the content for elementary teacher education, it seems to me, is long overdue.

IMPLICATIONS OF FINDINGS

Florida has initiated what O'Day and Smith (1993) call “systemic” reform: The state assumed the lead, the reforms were driven by high standards in the content areas, curriculum and assessment are becoming aligned, and teacher certification and teacher professional development are being related to the new standards. Nonetheless, earlier studies of teachers' acceptance of state policy shifts (Chrispeels, 1997, for example), demonstrated that curriculum changes at the policy level or the state level do not necessarily mean a concomitant shift in local practice or that the intent of the reform—improved opportunity for students to learn—has been realized. By comparing teachers' understandings in this study with the intent of the Policy Framework, it is clear that my respondents' thinking is compatible with policy intentions. Further, sustained attention to teachers' professional learning and well-funded and conceptualized interventions for at-risk children likely will enable teachers and students to meet the expectation of the Reading Summit: “Every Child Reading: An Attainable Goal.”

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