Charting a Course for Information and Communication Technology in Florida's Schools

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Building the Case for Preparing Students for the Global Economy

Information and communication technology (ICT)* has become a ubiquitous and indispensable part of the way we work and the way we live. Mobile computers, cell phones, and other portable devices, and broadband and wireless Internet access are a reality in the lives of many Floridians. To compete in an increasingly global economy, we must equip Florida's students with the skills, abilities, and dispositions necessary to harness the power of ICT, a critical task for all students competing in the global economy. We must transform the learning environment for students and educators to promote the dynamic, responsive, and innovative learning supported by appropriate technology tools.

As we move into the 21st century, it is time to re-examine the role of technology in Florida's schools and put forth a plan to improve students' rates of learning with the use of technology. It is a waste of time and money to continue to use technology to reinforce our traditional mindsets of the teacher/student relationship. If we continue to use technology in a manner that reinforces what has always been done in education, we will continue to receive the same results as in the past. Technology has the potential to empower students to increase their rates of learning in the classroom by reforming the instructional process of teachers. Rather than being the "sage on the stage," the teacher will become the facilitator for student learning.

Clear goals, focused efforts, and ongoing research will provide Florida the opportunity to become a leader among countries and states in realizing the potential of technology in the classroom. Effective use of technology can impact learning environments by:

- creating more dynamic, real-time and multifaceted interaction among students, teachers, and outside content experts,
- increasing collaboration and team work in problem-solving activities,
- stimulating creativity in both students and teachers,
- helping students to guide and monitor their own learning and
- extending learning beyond the walls of the classroom.

Review of International Technology Plans

With the goal of making Florida's students globally competitive, we must compare our educational data, not just with other states, but with the nations of the world. The Programme for International Student Assessment (PISA) is a triennial world-wide survey of 15-year-old school children's scholastic performance. In appendix A, you will find tables comparing Florida's eighth graders with international 15 year old students on the frequency of use and the comfort using technology tools. These data provide a starting point from which we may begin to draw comparisons. On several key indicators, Florida's students report comfort and frequency of use among the highest in the world.

In addition to examining the data from PISA, it was critical to examine the policy and plans that were developed by leading countries. The following chart summarizes the characteristics of the

* *In 2005, the Programme for International Student Assessment (PISA) defined ICT skills as an individual's ability to "appropriately use digital technology and communication tools to access, manage, integrate, and evaluate information, construct new knowledge, and communicate with others in order to participate effectively in society."*

technology plans reviewed to inform the process of writing the Florida Instructional Technology Plan (See Figure 1).

Figure 1: Review of International Technology Plans

Country	ICT Literacy	Digital Content	Teacher Training	Personal Learning Systems	Technology Based Assessments	Student Data
Australia	√	√	√	√	√	√
Finland	√		√			
Hong Kong	√	√	√	√	√	
Korea	√	√	√	√		√
New Zealand	√	√	√	√		√
Singapore	√	√	√	√	√	√
United States	√		√			
Florida Framework	√	√	√	√	√	√

After reviewing the international technology plans, specific themes began to emerge:

- **Information and Communication Technology (ICT) Literacy:** Each of the plans placed an emphasis on ensuring that students had the opportunities to develop ICT skills. For example, Hong Kong established learning targets for the skills and information that students should attain at certain grades.
- **Digital Content:** With the development of the Web, the traditional delivery of content in schools has moved from print to digital. In this method of delivery, content can be broken down into small units that can be easily distributed through a variety of methods. The majority of the plans emphasized the role digital content would play in the teaching and learning process.
- **Teacher Training**: Given the rapid development of new digital resources, ongoing support for effective teacher preparation and in-service training is a necessity. Effective teacher training leverages the use of innovative online tools and social environments. All of the plans emphasized the role of training educators on the utilization of technology as a tool for teaching and learning.
- **Personal Learning Systems**: Learners must have direct access to resources with the ability to set goals in conjunction with educators, thus constructing a personalized learning system. Again, the majority of the plans emphasized the need for ensuring these type of systems were available in the learning environment, with access to resources, data and tools.

- **Technology Based Assessments:** Utilization of technology based assessments has the potential to give all stakeholders faster access to better data. Response systems provide educators with immediate feedback from students on a given issue. Technology based assessments provide data to teachers in real-time or close to real-time which greatly increases the instructional value of data and allows teachers to use that data to drive instruction. Some of the plans addressed the utilization of technology based assessments in the learning environment to drive instruction.
- **Student Data**: Traditional means of student data management fail to provide adequate continuity of useful information to teachers. Subtle connections can be lost or obscured from year to year. Robust management of digital student data allows dynamic access to a breadth and depth of information which enables teachers to make insightful connections and better informed decisions

Why develop a technology plan?

For the last decade, Florida has begun to embrace the technological revolution in support of excellence in education. Florida was first in the nation to offer a statewide virtual school. The success of the Florida Virtual School demonstrates the effectiveness of statewide efforts to expand student learning opportunities utilizing the educational potential of technology. For Florida to more completely harness the power of technology for the educational excellence of all of its students, three essential conditions must be met:

- **Learning environment:** Every child is unique and to succeed, students and educators must be able to creatively choose digital content that is tailored to meet individual student needs, spark student interest, and allow every student to excel in his or her own way.
- **Access to tools, content, infrastructure, and data:** Students need ubiquitous access to those tools which they will be using in the global economy, including mobile computers, digital content, and tool-based software.
- **Training and support for educators, staff & leadership:** Professional development and support is needed to enable educators and their students to utilize digital tools effectively.

If Florida charts a coordinated path for an engaging learning environment, access to digital tools, and support for teaching excellence, then technology will be a key component in achieving the goals of the State Board of Education. Florida is uniquely positioned to lead an effort across the nation and beyond to coordinate and support the essential conditions outlined above. Without this leadership, various disjointed efforts to utilize technology in education will undoubtedly continue, but Florida is very likely to fall short of the shared vision of excellence we all hold for our students.

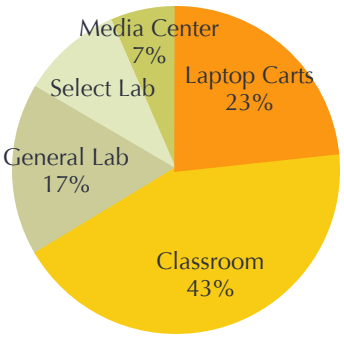
Current Status of Technology in Florida's Schools

Each fall the Florida Department of Education conducts the School Technology Resources Survey to determine the state of technology integration in Florida. The information is collected from schools and districts and is then made available for planning purposes.

Results presented here are from the Fall 2008 administration of the School Technology Resource Survey. The following analyses include only elementary, middle, high, and combination schools, N=3,001 out of 3,268, which is a 92 percent response rate.

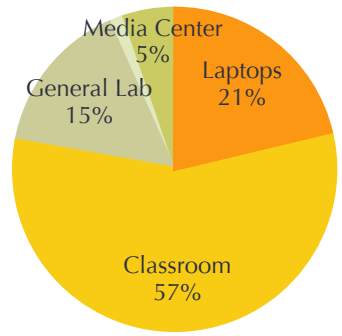
Access to Computers

Figure 5: Statewide computers



As we move to Web based delivery of assessments, courses, and digital content, students need sufficient access to computers. Data reveal that approximately 74 percent of the computers designated for student use are considered "modern." This means that they are Internet and multimedia capable and have been purchased within the past five years. The location of a student-use computer in a school is often an indicator of how that computer is primarily utilized during the school day. Statewide, almost half of all student computers are located in classrooms (See Figure 5). An additional 23 percent of the computers are located on mobile carts and can be moved into the classroom. The remaining computers are located in various types of labs.

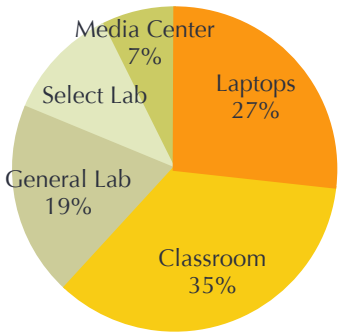
Figure 6: Elementary computers



Elementary Schools

A full 78 percent of the computers in Florida's elementary schools are located in classrooms or on mobile carts serving classrooms (See Figure 6). This arrangement provides students with access to tool-based software throughout the school day and allows teachers to more effectively integrate technology into all areas of the curriculum. In the fall of 2008, there was an average of 4:1 student to modern computer ratio for access in classrooms, laptops, general education labs, and library/media centers.

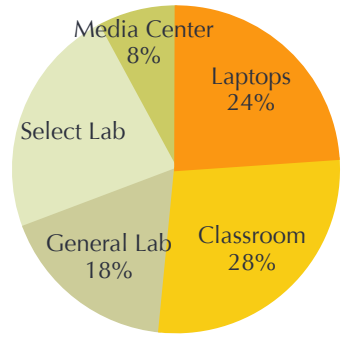
Figure 7: Middle School computers



Middle Schools

Just over half of the computers in Florida's middle schools are located in classrooms or on carts available to classrooms (See Figure 7). Many classrooms have limited student access to technology. Integration of technology into curriculum becomes more difficult with fewer computers in the classroom. In the fall of 2008, there was an average of 4:1 student to modern computer ratio for access in classrooms, laptops, general education labs, and library/media centers.

Figure 8: High School computers



High Schools

Computers are more likely to be located in career technical or general education labs than in regular classrooms (See Figure 8). Statewide, high school classrooms have limited access to technology to allow students genuine practice in utilizing technology to solve real world problems or to develop ICT skills. Technology integration into the curriculum becomes extremely difficult. In the fall of 2008, there was an average of 5:1 student to modern computer ratio for access in classrooms, laptops, general education labs, and library/media centers.

Technology Devices

Technology tools for the connected classroom range from computers to devices such as digital cameras, projectors, and whiteboards. In the workforce community, these tools are pervasive and essential for a valued and productive employee. Devices such as scanners, cameras, video cameras, and digital science probes allow students to be actively engaged in recording, selecting, analyzing, and sharing relevant digital content. Given the current numbers of these devices in Florida schools, widespread student engagement would be impossible. There is only one digital camera and one scanner for every ten instructional areas in the state. There is only one video camera for every 15 instructional areas; and a single science probe is shared among 25 instructional areas.

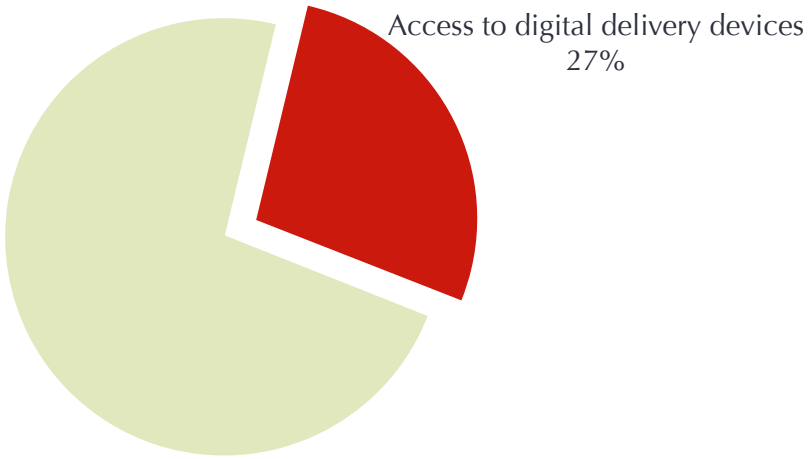
When asked the question "Which of the following devices are students permitted to bring and use at school?", just under 50 percent of the districts permit the following devices:

- 29.85 percent Laptop computer
- 14.93 percent iPod/Zune/MP3 player
- 28.36 percent Cell phone

Digital Content

A section of the survey was designed to gauge the readiness of schools and teachers for digital classrooms in which digital materials are used as opposed to traditional printed materials. Schools report that approximately **65 percent** of their teachers are prepared to teach with digital instructional materials. When asked to cite the single largest barrier to the digital classroom, 27 percent of schools indicate the number one barrier is access to digital devices for the delivery of instruction (See Figure 9).

Figure 9: Barriers to digital content

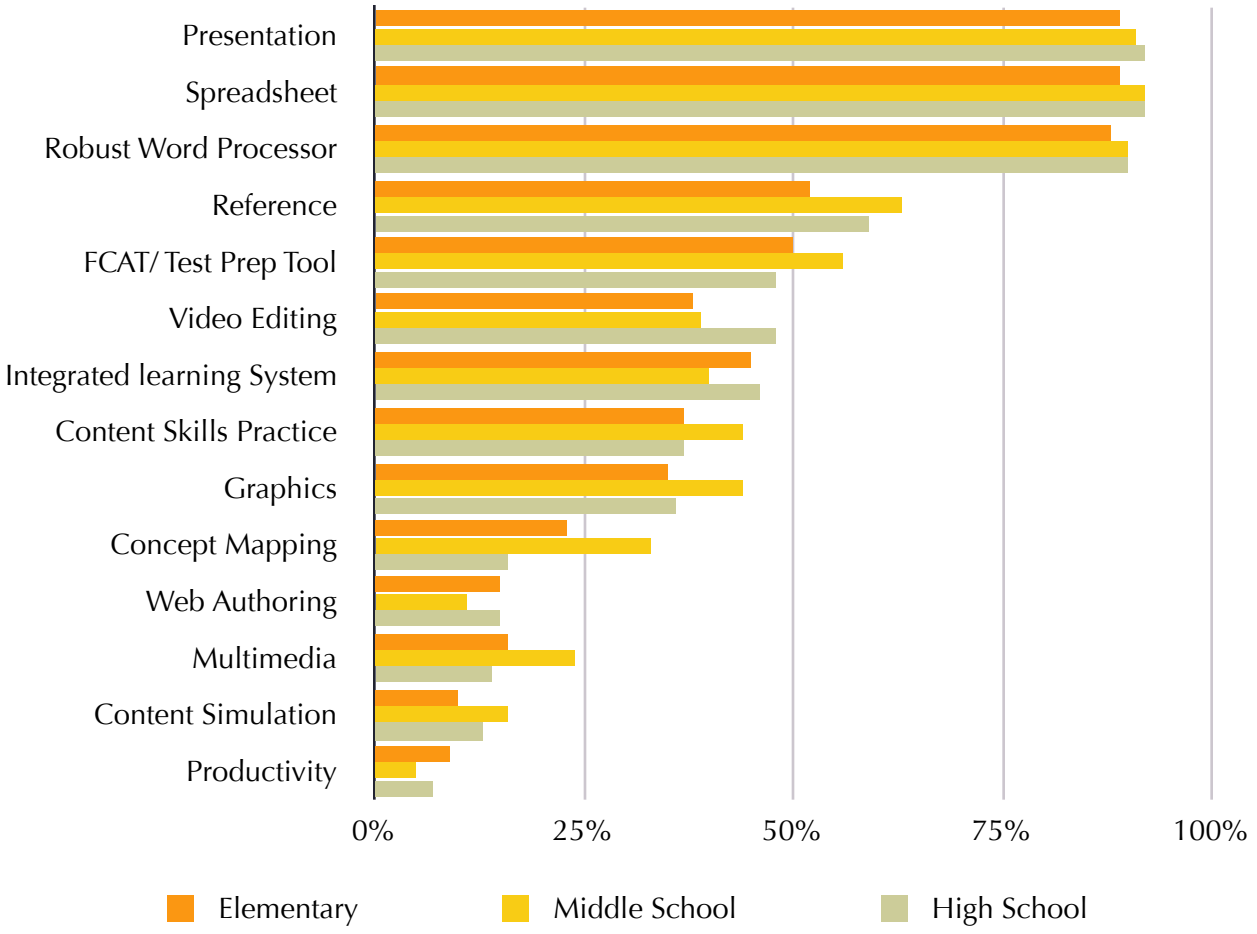


Software Type on Student Computers

Generally, student computers have a traditional suite of office applications, such as word processing, spreadsheets, and presentation tools. However, most student computers are less likely to have a fuller suite of software tools necessary to support the development of technology literacy skills. Tools such as concept mapping, which supports higher order thinking skills; multimedia and Web authoring, which support information and communication technology goals; or video editing, a primary contemporary communications medium, are much less likely to be available on student computers. Software availability is one indicator of the way computers are currently utilized to develop technology literacy skills with students and highlights an area that could be easily improved upon without a large additional expenditure of resources.

More than 90 percent of schools report having the following application software on more than half of their student computers: basic and robust word processing, spreadsheet, and presentation software (See Figure 10). The majority of schools also reported that 50 percent or more of their student computers had general reference tools, FCAT/standardized test preparation tools, integrated learning systems, content specific tutorials, and graphics software. Less than 25 percent of the schools reported having video editing, content specific simulation, and Web authoring tools installed on more than half of the student computers.

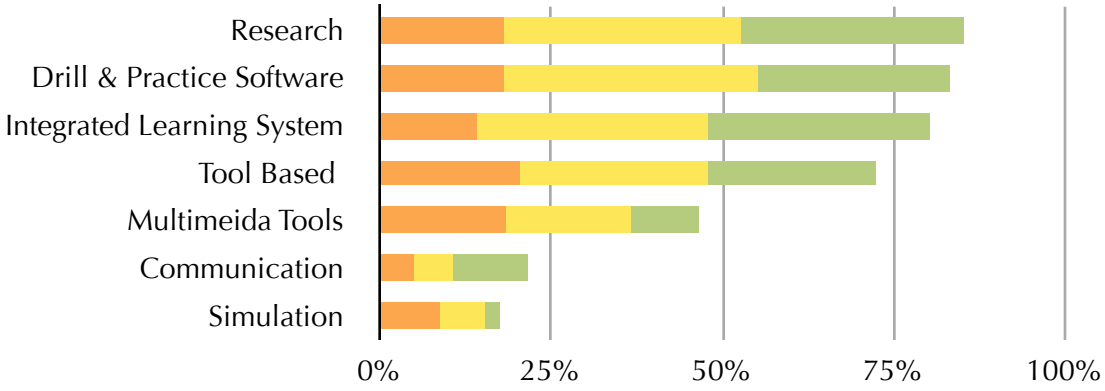
Figure 10: Software type on student computers



Frequency of Student Software Use

Over 50 percent of the schools in Florida report that for several days or more per week their students use electronic research information sources, integrated learning systems, drill and practice software, and tool-based software (See Figure 3). Approximately 50 percent of schools report that simulation software , multimedia (e.g., desktop video), and presentation software is used less than weekly.

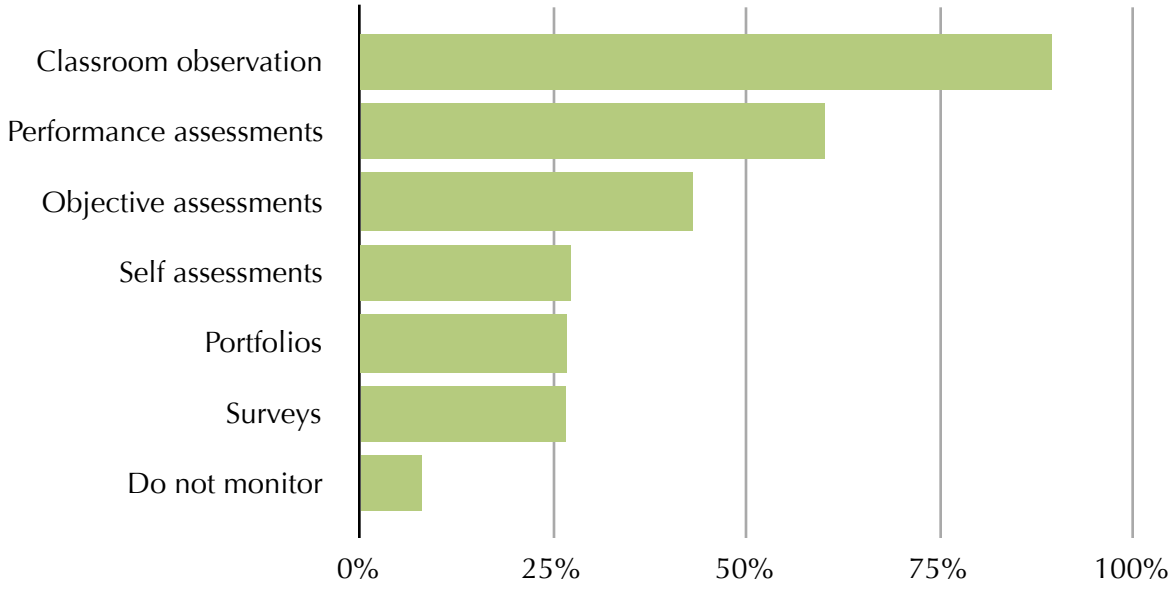
Figure 3: Frequency of student software use



Monitoring of Student Technology Literacy

Technology Literacy is defined as the ability to responsibly use appropriate technology to communicate, solve problems, and access, manage, integrate, evaluate, and create information to improve learning in all subject areas and to acquire lifelong knowledge and skills in the 21st century. To adequately assess the technology literacy of students, Florida schools use a variety of methods. Schools were asked to designate all of the methods that they use.

Figure 4: Monitoring of student technology literacy

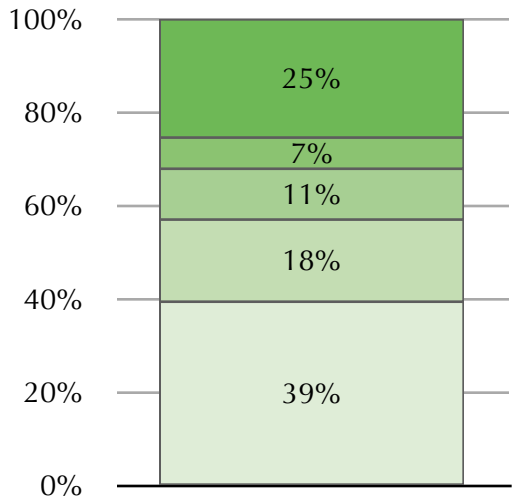


Technology Spending

The largest proportion of schools, 39 percent, indicate spending $5,000 or less on technology related initiatives during the 2008 - 09 school year (See Figure 12). Twenty-five percent of schools estimate spending more than $20,000, and 18 percent of schools report spending from $5,000 to $10,000. The remaining schools 18 percent of schools estimate having spent between $10,000 and $20,000 during the academic year.

When examining where schools allocate their revenues, the primary cost for technology related initiatives in Florida's schools is at 54 percent for hardware. As can be gleaned, two other areas of high expenditure include software at 18 percent followed by the costs associated with the professional development for instructional technology at 11 percent.

Figure 12: Technology spending

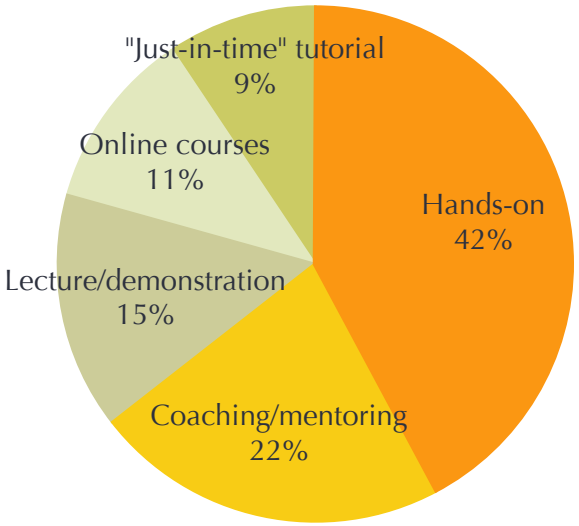


Professional Development

To effectively and seamlessly integrate technology, educators need support and professional development. All schools were asked to report the number of educators and the percentage of personnel in each job category who were involved in technology-related professional development opportunities. During the 2008-09 school year, in a typical school in Florida, the following percentages of educators in each position participated in technology related training opportunities: 76 percent of administrators, 72 percent of library/media specialists , 70 percent of teachers, and 69 percent of technology specialists.

Schools can determine technology-related professional development needs through a variety of methods; therefore, school districts were asked to designate all methods that they used to determine their need. Approximately 87 percent of school districts report that professional development needs were requests from teachers or administrators; 80 percent were software specific; about 75 percent of the school districts used the Inventory for Teacher Technology Skills and 63 percent used the District Professional Development needs survey. Districts based their technology-related professional development opportunities on a variety of models. Nearly half of professional development opportunities use hands-on instruction (See Figure 13).

Figure 13: Methods of professional development



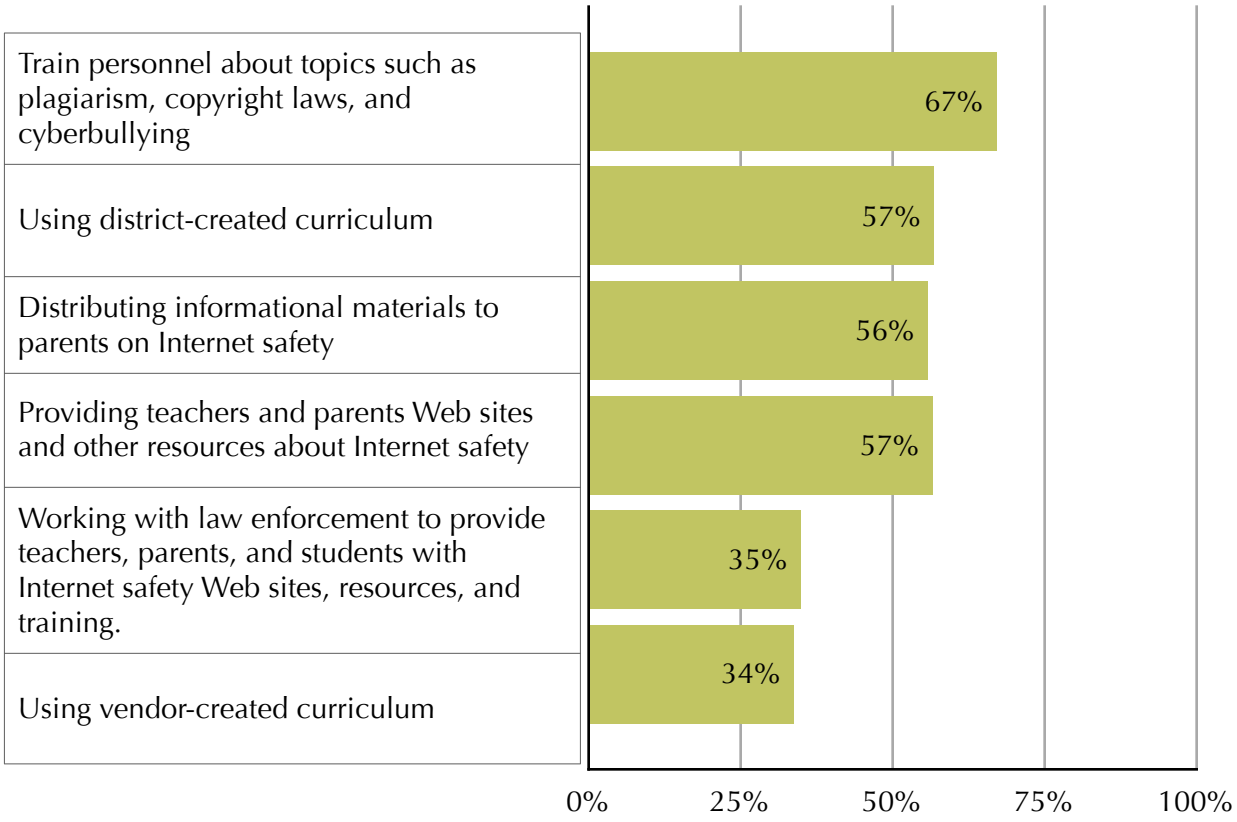
Community Technology Access

Seventy-eight percent of schools reported that they are making an effort to increase technology awareness in the community. For example, 42 percent of the schools allow parents to access technology at the school, 17 percent have options for community access, while 43 percent allow no outside access to school technology resources. Although 25 percent of the schools offer technology opportunities to parents and 20 percent for community members, the majority of at 57 percent do not include parents or the community in their technology training programs.

Internet Safety

Although a valuable instructional tool in the classroom, the Internet comes with some real dangers. Schools have been employing a variety of methods to ensure Internet safety with students, teachers, and parents. Sixty-seven percent of schools train personnel about topics such as plagiarism, copyright laws and cyberbullying. Over 50 percent of the districts distribute informational materials to parents on Internet safety (See Figure 14). While 35 percent of the schools are working with law enforcement to provide teachers, parents, and students information on Internet safety.

Figure 14: Training for Internet safety



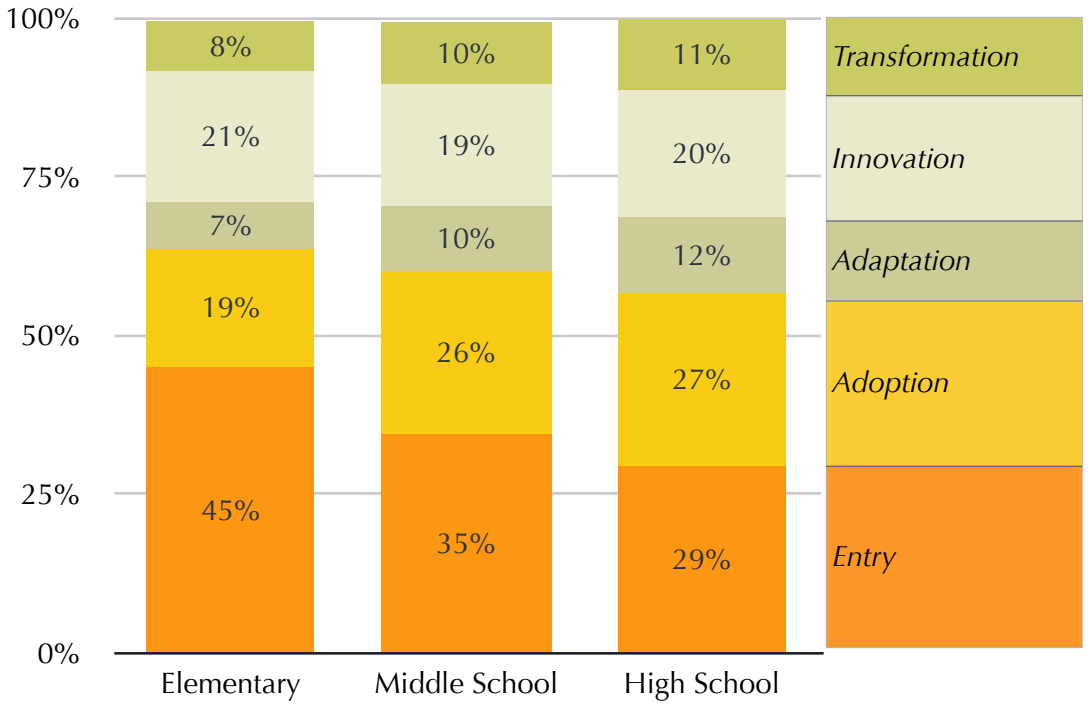
Extent of Technology Integration by Florida's Educators

Florida's teachers are making gains in the integration of technology, but much remains to be accomplished. The chart at the bottom of this page shows that although about 10 percent of Florida's educators are using technology at the transformational (highest) level and another 20 percent are using technology in the innovative level, a majority of teachers are still at the adoption or entry levels (See Figure 2). Particularly troubling is that nearly half of the elementary teachers are primarily using technology to deliver content and the only opportunity for their students is of the drill and practice variety.

As more access and support become available to Florida's teachers, we expect to see a clear movement of teachers from the lower levels of technology integration to the higher levels:

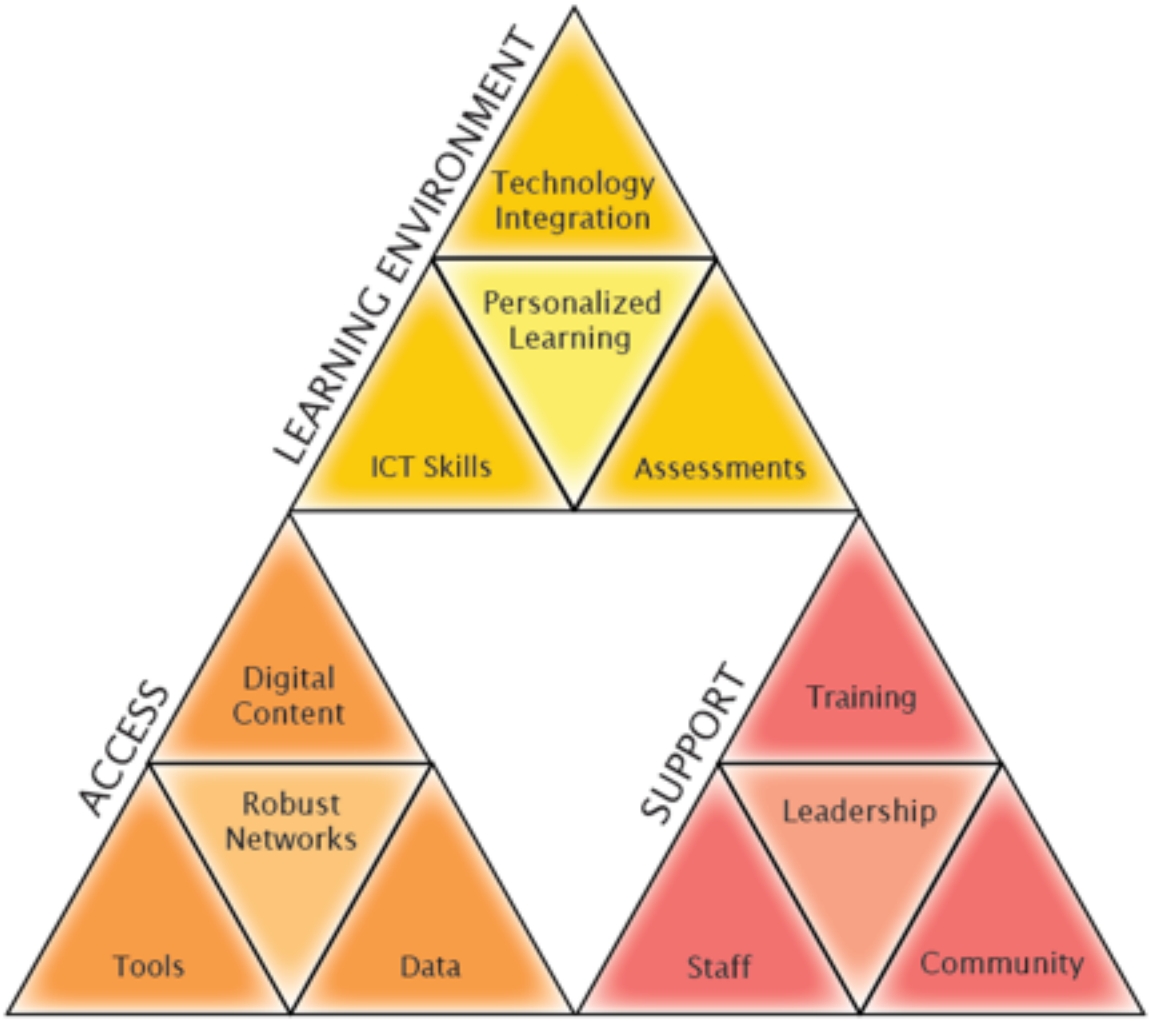
- **Transformation**. The teacher creates a rich learning environment in which students regularly engage in activities that would have been impossible to achieve without technology, such as global collaboration.
- **Innovation.** The teacher creates a learning environment that infuses the power of technology tools throughout the day and across subject areas.
- **Adaptation.** The teacher encourages adaptation of tool-based software by allowing students to select a tool and modify its use to accomplish the task at hand.
- **Adoption.** The teacher directs students in the conventional use of tool-based software, such as word processing, graphic organizing, or designing presentations and spreadsheets.
- **Entry.** The teacher uses technology to deliver curriculum content and students work independently on drill and practice and computer based training.

Figure 2: Educators level of technology integration



Florida's Instructional Technology Plan

In consultation with teachers, administrators, district personnel, university faculty, community college faculty, businesspeople, and parents, the Office of Technology Learning and Innovation has examined the data on current technology use in Florida schools and has developed a comprehensive plan that embodies the goals of the Florida Department of Education. This plan will prepare Florida's students to develop the skills necessary to succeed in the new global economy.



Florida's technology plan is built upon twelve goals. As illustrated above, the goals fall into three distinct categories:

- **Learning Environment:** Engaging students in their education in ways never before possible.
- **Access:** Expanding access to innovative digital technologies and learning opportunities.
- **Support:** Establishing the support necessary to improve students' rates of learning.

The successful learning environment rests upon the foundation of access and support. In this section, the twelve goals will be defined and provide strategies for achieving each.

Florida's Twelve Goals

Framework Section	Goal	Definition
Learning Environment	1. Strengthen student ICT skills	Student's develop skills to utilize technology as tool in all areas of the curriculum.
	2. Enhance the integration of technology in curricula	Educators apply technology appropriately in their content area to enhance instruction.
	3. Enable opportunities to personalize and extend student learning	Educators utilize technology to differentiate instruction to meet students' needs.
	4. Ensure utilization of technology based assessments	The use of formative and summative assessments is enhanced through technology.
Access	5. Increase access to digital tools	Students and educators have access to mobile computers, digital devices and tool-based software that makes instruction relevant and powerful.
	6. Provide access to reliable infrastructure	Internet access and bandwidth are sufficient to meet instructional technology needs.
	7. Improve opportunities to access digital content	Students and educators have access to content that enhances instruction from around the world.
	8. Enhance access to student data	The results of student assessments and other student data are available just in time and in a useful format.
Support	9. Ensure trained instructional technology staff	Expert technology support is available just in time at the school and district level.
	10. Improve community involvement	Technology enhances the ability of schools and teachers to communicate and increase parental involvement.
	11. Enable technology leadership	Technology standards for teachers and school leaders are integrated into preparation programs and professional development to ensure technology is purchased and used in meaningful instructional ways.
	12. Support ICT training for educators to enhance instruction	Professional Development for educators includes the use of appropriate technology integration to enhance instruction.

In the logic model beginning on the following page, the following components are identified for each of the twelve goals:

- **Funding/People/Resources on hand**: These are the resources needed to accomplish the desired activity.
- **Actions**: These are the actions that must be carried out to address the identified problem and reach the desired outcomes.
- **Measurable Outcomes**: Outcomes are the changes brought about by the activities in the first six years following the activity.
- **Impact on State Board of Education Goals:** Impact is the long term (perhaps 7-10 year) change resulting from the activity.

Goal 1: Strengthen student Information & Communication Technology (ICT) skills			
Funding/People/Resources	**Actions**	**Measurable Outcomes**	**Impact on SBOE Strategic Plan**

Funding:
• State level:
  • Ed Tech ARRA Technical Assistance Funds
  • Significant
• District level:
  • Minimal
People:
• Information & Communication Technology (ICT) standards committee
• Instructional Technology Specialists
• Assessment Coordinators
• Educators
Resources on hand:
• Student Tool for Technology Literacy (ST2L)
• Input system for standards
• Educational Technology Clearinghouse
• Florida iTunes U
• Teaching & Learning Institutes
	State:
	• Analyze baseline data for 8th grade student technology literacy.
	• Develop standards for student information and communication technology skills.
	• Expand the Student Tool for Technology Literacy to additional grades.
	• Develop tutorials and training for student ICT skills.
	District
	• Assess students' information and communication technology skills.
		Short Term 1-2 years:
		• Targets set for proficiency level and increases in percentage of students proficient.
		• All districts utilizing the ST2L to measure student ICT literacy.
		Long Term 3-5 years:
		• Adoption of student ICT skill standards.
		• Increase in the percentage of students meeting proficiency on all levels of ST2L.
		• Monitoring of students ICT skills at the appropriate grade levels.
			• Strengthen foundation skills
			• Improve college and career readiness
			• Expand opportunities for post secondary degrees and certificates

Goal 2: Enhance the integration of technology in curricula			
Funding/People/Resources	**Actions**	**Measurable Outcomes**	**Impact on SBOE Strategic Plan**

Funding:
• State level:
  • Ed Tech ARRA Technical Assistance Funds
  • Significant
• District level:
  • Minimal
People:
• Instructional Technology Specialists
• Educators
• Master Digital Educators
• Curriculum Specialists
Resources on hand:
• Technology Integration Matrix (TIM)
• School Technology Resources Survey
• District Technology Resources Survey
• Lesson Planner Tool
• Student Artifact Tool
• Action Research Tool for Technology Integration
• Florida iTunes U
	State:
	• Identify the attributes of a model lesson for integrating technology in the core curriculum areas.
	• Expand the TIM to profile educator's levels of technology integration in the core curriculum areas.
	• Develop an observation tool based on the TIM to measure the integration of technology in core curriculum areas.
	• Conduct a baseline analysis for educators levels of technology integration in each of the core curriculum areas.
	District:
	• Assure access to content area model lessons that demonstrate the integration of technology in the curriculum.
	• Assure access to technology resources and tools aligned with appropriate core curriculum standards.
		Short Term 1-2 years:
		• Publish a uniform definition of technology integration applicable to all core curriculum areas.
		• Collect baseline data from assessment tool and observation on educator's integration of technology in all core curriculum areas.
		• Targets set for increasing percentages of educators that integrate technology into the curricula.
		Long Term 3-5 years:
		• Increase in the percentage of educators that integrate technology in the core curricula.
		• Alignment of all technology resources and tools with curriculum standards.
		• Increase in the number of model lessons on the integration of technology in the core curriculum areas.
			• Strengthen foundation skills
			• Improve quality of teaching in the education system
			• Improve college and career readiness
			• Expand opportunities for post secondary degrees and certificates

Goal 3: Enable opportunities to personalize and extend student learning			
Funding/People/Resources	**Actions**	**Measurable Outcomes**	**Impact on SBOE Strategic Plan**

Funding:
• State level:
  • Ed Tech ARRA Technical Assistance Funds
  • Minimal
• District level:
  • Unknown
People:
• Instructional Technology Specialists
• Information Services
• Educators
• Curriculum Specialists
Resources on hand:
• School Technology Resources Survey
• District Technology Resources Survey
• Technology Integration Matrix (TIM)
	State
	• Identify the conditions that enable a personalized learning environment applicable to the core curriculum areas.
	• Determine the appropriate technology tools and resources that support students' personalized learning.
	• Identify the opportunities to extend student learning with virtual education.
	• Gather baseline data on student access to virtual opportunities that extend their learning.
		Short Term 1-2 years:
		• Publish information on best practices for personalized learning environments and virtual learning opportunities.
		• Targets set for increasing percentages of students in each district participating in virtual learning.
		Long Term 3-5 years:
		• Increase in the percentage of students participating in virtual opportunities to extend their learning.
			• Strengthen foundation skills
			• Improve quality of teaching in the education system
			• Improve college and career readiness
			• Expand opportunities for post secondary degrees and certificates

Goal 4: Ensure utilization of technology based assessments			
Funding/People/Resources	**Actions**	**Measurable Outcomes**	**Impact on SBOE Strategic Plan**

Funding:
• State level:
  • None/Realign
• District level:
  • Unknown
People:
• Instructional Technology Specialists
• Assessment Coordinators
• Curriculum Specialists
• Information Services
• Educators
Resources on hand:
• School Technology Resources Survey
• District Technology Resources Survey
• Readiness Gauge
	• Identify technology-based assessments applicable to core curriculum areas.
	• Gather baseline data on the current use of technology-based assessments at district level.
	• Gather baseline data on the current use of technology based assessments at school level.
	• Implement the Readiness Gauge for districts to use in preparing for computer based assessments.
	District:
	• Determine readiness for implementation of technology based assessments.
	• Identify and close gaps in readiness for implementing computer based testing.
		Short Term 1-2 years:
		• Publish technology based assessments applicable to core curriculum areas.
		• Targets set for district and school level use of technology based assessments in the core curriculum areas.
		• All districts meet readiness measures for beginning of computer based testing.
		Long Term 3-5 years:
		• Increase in the percentage of districts and schools utilizing technology based assessments in core curriculum areas.
		• Increase in the percentage of educators utilizing technology based assessments in the core curriculum areas.
		• Districts successfully implement computer based testing in increased number of subjects.
			• Strengthen foundation skills
			• Improve quality of teaching in the education system
			• Improve college and career readiness
			• Expand opportunities for post secondary degrees and certificates

Goal 5: Increase access to digital tools			
Funding/People/Resources	**Actions**	**Measurable Outcomes**	**Impact on SBOE Strategic Plan**

Funding:
• State level:
  • Ed Tech ARRA Technical Assistance Funds
  • Minimal
• District level:
  • Significant
People:
• Instructional Technology Specialists
• Master Digital Educators
• Curriculum Specialists
• Educators
Resources on hand:
• School Technology Resources Survey
• District Technology Resources Survey
• Readiness Gauge
• Educational Technology Clearinghouse
• Technology Integration Matrix
	State:
	• Identify the minimum and desired levels of specifications and functionalities for mobile computers in the classroom for all students.
	• Determine the appropriate ratio of student to mobile computers for the classroom.
	• Identify the appropriate digital devices applicable to the core curriculum areas.
	• Determine the minimum and desired levels of student access to digital devices in the core curriculum area.
	• Identify the appropriate tool-based software for the core curriculum areas.
	• Gather baseline data on the current student access to digital tools.
	• Identify the appropriate assistive technology tools.
	• Gather baseline data on access to assistive technology tools in the classroom.
		Short Term 1-2 years:
		• Establish a uniform student to mobile computer ratio.
		• Establish a uniform student to digital device ratio in core curriculum areas.
		• Set targets for districts to meet appropriate student to computer and student to device ratios and student use of tool-based software.
		Long Term 3-5 years:
		• Increase in student access to mobile computers.
		• Increase in student access to digital devices in core curriculum areas.
		• Increase in student access to tool-based software in core curriculum areas.
		• Regularly monitor appropriate use of assistive technology in the classroom.
			• Strengthen foundation skills
			• Improve college and career readiness
			• Expand opportunities for post secondary degrees and certificates

Goal 6: Provide access to reliable infrastructure			
Funding/People/Resources	**Actions**	**Measurable Outcomes**	**Impact on SBOE Strategic Plan**

Funding:
• State level:
  • None/Realign
• District level:
  • Significant
People:
• Instructional Technology Specialists
• Master Digital Educators
• Information Services
• Facilities Directors
Resources on hand:
• School Technology Resources Survey
• District Technology Resources Survey
• Readiness Gauge
	State:
	• Determine the appropriate bandwidth for student workstations.
	• Determine the network architectures to support advanced technologies listed under other goals.
	• Determine the appropriate networks to ensure safety at school facilities.
	• Gather baseline data on the current network architectures to support advanced technologies.
	• Gather baseline data on current systems utilized to ensure safety at school facilities.
		Short Term 1-2 years:
		• Establish infrastructure standards for schools and districts.
		• Set targets for districts to meet infrastructure standards.
		Long Term 3-5 years:
		• All districts will meet infrastructure standards.
		• All schools will meet infrastructure standards.
			• Align resources to meet strategic goals

Goal 7: Improve opportunities to access digital content			
Funding/People/Resources	**Activities**	**Measurable Outcomes**	**Impact on SBOE Strategic Plan**

Funding:
• State level:
  • Ed Tech ARRA Technical Assistance Funds
  • Minimal
• District level:
  • Unknown
People:
• Instructional Technology Specialists
• Curriculum Specialists
• Information Services
• Instructional Materials
• Educators
Resources on hand:
• School Technology Resources Survey
• District Technology Resources Survey
• Florida iTunes U
• Florida Digital Depot
• Educational Technology Clearinghouse
	State
	• Establish a common definition for digital content.
	• Identify and implement the international standard for tagging digital content.
	• Identify Open Educational Resources (OER) available for classroom use applicable to core curriculum areas.
	• Identify best practices for utilizing open digital content in core curriculum areas.
	• Gather baseline data on school and district policies for accessing digital content and OER tools.
	District:
	• Identify district protocols for vetting open digital content.
	• Train educators on policies for appropriate use of digital content in classroom practice.
		Short Term 1-2 years:
		• Publish uniform definition for digital content.
		• Publish the common tagging system for open digital content and provide districts with technical assistance to adopt it for their use.
		Long Term 3-5 years:
		• Model lessons in core content areas include the appropriate use of open digital content.
			• Strengthen foundation skills
			• Improve college and career readiness
			• Expand opportunities for post secondary degrees and certificates

Goal 8: Enhance access to student data			
Funding/People/Resources	**Activities**	**Measurable Outcomes**	**Impact on SBOE Strategic Plan**

Funding:
• State level:
  • Race To The Top
• District level:
  • Significant
People:
• Instructional Technology Specialists
• Information Services
• Assessment Coordinators
• Educators
Resources on hand:
• School Technology Resources Survey
• District Technology Resources Survey
	State:
	• Identify the specifications for accessing student data at the district level.
	• Collect baseline information on data that is available to teachers in all districts.
	• Collect baseline information on tools available for educators to access and manage student data.
	District:
	• Identify the types of data that teachers need to access.
	• Identify the specifications for accessing data at the school level.
		Short Term 1-2 years:
		• Establish uniform method for accessing student data at district level.
		Long Term 3-5 years:
		• Establish methods and tools for educators, district administrators, researchers and parents to access available data from the Data Warehouse.
		• All educators will have ability to access and manage student data.
			• Strengthen foundation skills
			• Improve quality of teaching in the education system
			• Improve college and career readiness

Goal 9: Ensure trained instructional technology staff			
Funding/People/Resources	**Activities**	**Measurable Outcomes**	**Impact on SBOE Strategic Plan**

Funding:
• State level:
  • Ed Tech ARRA Technical Assistance Funds
  • Significant
• District level:
  • Significant
People:
• Instructional Technology Specialists
• Master Digital Educators
• Professional Development Staff
Resources on hand:
• School Technology Resources Survey
• District Technology Resources Survey
• Inventory of Teacher Technology Skills
• Teacher Tool for Technology Skills
• Technology Integration Matrix
• Teaching & Learning Institutes
• Florida iTunes U
	State:
	• Publish best practices of roles and responsibilities of instructional technology support staff at district and school levels.
	• Publish best practices of roles and responsibilities of technical support staff at district and school levels.
	• Collect baseline information on instructional technology support and technical support staff at district and school levels.
		Short Term 1-2 years:
		• Publish model training program for instructional technology and technical support staff.
		• Targets set for district training of instructional technology and technical support staff.
		• Establish a ratio of instructional technology support staff members per number of students.
		• Establish a ratio of technical support staff per number of students.
		Long Term 3-5 years:
		• Implement a training program for district level technology and technical support staff.
		• All districts meet and maintain appropriate ratio of technology and technical support staff.
		• All district technology support staff participate in training program.
		• All school based technology support staff participate in training.
			• Align resources to meet strategic goals

Goal 10: Improve parent and community involvement			
Funding/People/Resources	**Activities**	**Measurable Outcomes**	**Impact on SBOE Strategic Plan**

Funding:
• State level:
  • None/Realign
• District level:
  • None
People:
• Instructional Technology Specialists
• Educators
• Community Partners
Resources on hand:
• School Technology Resources Survey
• District Technology Resources Survey
	State
	• Identify best practices for school and community partnerships.
	• Identify best-practices for communicating with parents.
	• Identify state level support for providing education information to parents.
		Long Term 3-5 years:
		• Districts report increases in community partnerships.
		• Districts report using best practices for communication with parents.
		• Implement state-level supports for providing education information to parents.
			• Align resources to meet strategic goals

Goal 11: Enable technology leadership			
Funding/People/Resources	**Actions**	**Measurable Outcomes**	**Impact on SBOE Strategic Plan**

Funding:
• State level:
  • Ed Tech ARRA Technical Assistance Funds
  • Significant
• District level:
  • Significant
People:
• Instructional Technology Specialists
• Master Digital Educators
• Professional Development Staff
Resources on hand:
• School Technology Resources Survey
• District Technology Resources Survey
• Inventory of Teacher Technology Skills
• Teacher Tool for Technology Skills
• Technology Integration Matrix
• Teaching & Learning Institutes
	State
	• Publish sample indicators for leadership standards on the purchase and use of technology.
	• Conduct a needs analysis of training for school-based leadership on integration of technology in the classroom.
	• Collect baseline information on policies and procedures for technology funding at school and district level.
	• Identify best-practices of district leadership in alignment of technology resources.
		Short Term 1-2 years:
		• Establish best practices for aligning school-based technology purchases with strategic goals.
		• Set targets for principal training in the facilitation of appropriate integration of technology into the classroom.
		Long Term 3-5 years:
		• All principals are trained on facilitating the appropriate integration of technology in the classroom.
		• University and district school leadership programs utilize the technology indicators in preservice leadership certification programs.
			• Improve quality of teaching in the education system

Goal 12: Support ICT training for educators to enhance instruction			
Funding/People/Resources	**Activities**	**Measurable Outcomes**	**Impact on SBOE Strategic Plan**

Funding:
• State level:
  • Ed Tech ARRA Technical Assistance Funds
  • Significant
• District level:
  • Significant
People:
• Instructional Technology Specialists
• Digital Educator Advisory Board
• Master Digital Trainers
• Professional Development Staff
Resources on hand:
• School Technology Resources Survey
• District Technology Resources Survey
• Inventory of Teacher Technology Skills
• Technology Integration Matrix (TIM)
• Teaching & Learning Institutes
• Florida iTunes U
• Action Research Tool for Technology Integration
	State
	• Identify research based attributes of training on the utilization of technology as a tool.
	• Define a protocol for training educators on the utilization of technology as tool.
	• Define a protocol for embedding technology in professional development and teacher training for core curriculum areas.
	• Identify methods to share research-based best practices on technology training.
	• Incorporate protocols into state reviews of district professional development systems.
		Short Term 1-2 years:
		• Protocols for technology training in core curriculum areas are published.
		Long Term 3-5 years:
		• Teacher and teacher candidate observations reflect the appropriate integration of technology into core curriculum lessons.
		• District professional development consistently includes technology embedded in core curriculum training.
			• Improve quality of teaching in the education system

18-Month Funding Plan

Funding is based on 18 month cycle to build and expand current tools.

Goals	State Level Funding Indicators	Funding Amount	Possible Funding Sources
Goal 1: Strengthen student ICT skills	Fully executable/ if all resources are accessed	Cut Score; Develop Standards; Expand ST2L; Tutorials - $250,000	Ed Tech ARRA Technical Assistance Funds
Goal 2: Enhance the integration of technology in curricula	Fully executable/ if all resources are accessed	Expand TIM; Observation Tool; Model Lessons - $200,000	Ed Tech ARRA Technical Assistance Funds
Goal 3: Enable opportunities to personalize and extend student learning	Fully executable/ if all resources are accessed	Surveys; Interviews; Online Tool Development- $50,000	Ed Tech ARRA Technical Assistance Funds
Goal 4: Ensure utilization of technology based assessments	Fully executable/ No change in funding		
Goal 5: Increase access to digital tools	Fully executable/ if all resources are accessed	Surveys; Analyze Data; Align Tools - $75,000	Ed Tech ARRA Technical Assistance Funds
Goal 6: Provide access to reliable infrastructure	Fully executable/ No change in funding		
Goal 7: Improve opportunities to access digital content	Fully executable/ if all resources are accessed	Tools; Database Tagging System - $175,000	Ed Tech ARRA Technical Assistance Funds
Goal 8: Enhance access to student data	Only executable with increases in funding.	Tools; Databases; Protocol Development- $300,000*	Race To The Top
Goal 9: Ensure trained instructional technology staff	Fully executable/ if all resources are accessed	Trainers; Support Resources; Training Modules- $250,000	Ed Tech ARRA Technical Assistance Funds
Goal 10: Improve community involvement	Fully executable/ No change in funding		
Goal 11: Enable technology leadership	Fully executable/ if all resources are accessed	Trainers; Support Resources; Training Modules- $175,000	Ed Tech ARRA Technical Assistance Funds
Goal 12: Support ICT training for educators to enhance instruction	Fully executable/ if all resources are accessed	Trainers; Support Resources; Profile Tool - $250,000	Ed Tech ARRA Technical Assistance Funds

* Denotes potential funding beyond the 18 month plan

District Level Funding

District funding levels will vary depending on the resources that each has previously invested in instructional technology.

Possible district funding sources are:

- Title IID
- Title I
- IDEA
- Capital Outlay
- E-Rate

Next Steps

- Collect baseline data required to set targets for outcomes
- Set targets for outcomes
- Project costs for remaining years
- Begin work on standards and other areas where no additional funding is required

Appendix A: Florida Comparison to other Countries

Programme for International Student Assessment (PISA) survey

Programme for International Student Assessment (PISA) survey collection process includes gathering data from students themselves. The PISA questionnaire has been rigorously analyzed to demonstrate both reliability and validity across diverse international populations (PISA, 2003). The most recent available PISA data was collected in 2006 and involved 400,000 students in 57 countries with a major focus on scientific literacy and Information and Communication Technology (ICT) Familiarity (OECD 2007).

Comfort Level

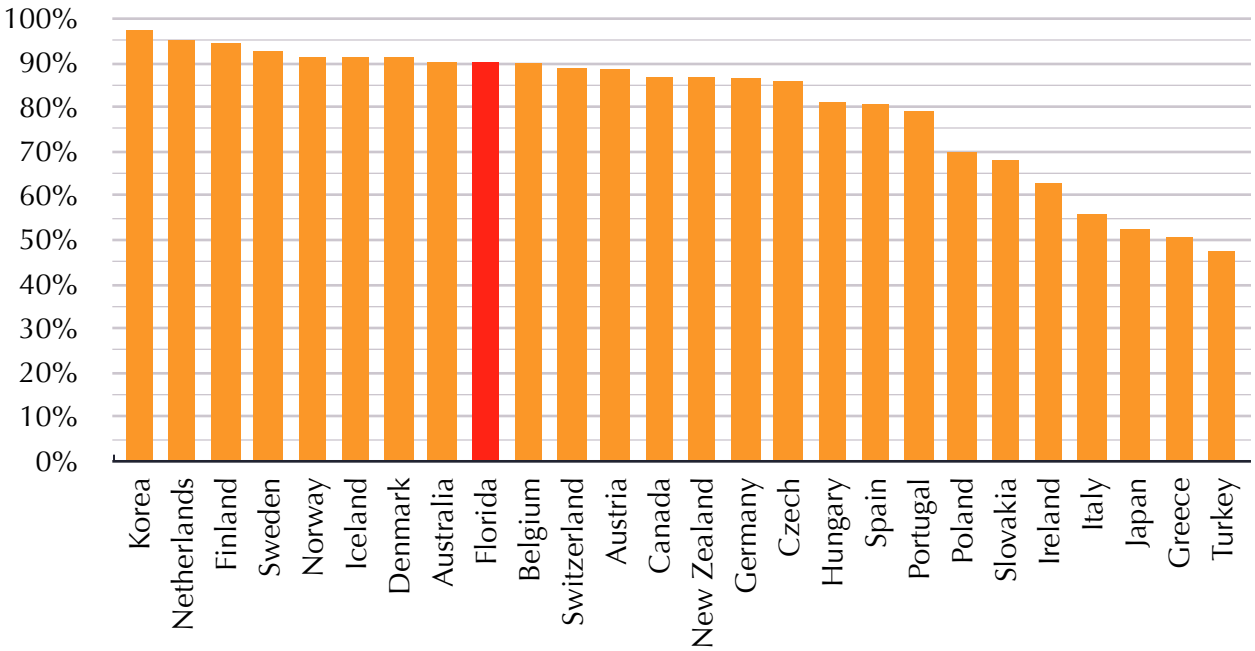
The ICT Familiarity student questionnaire data provides insight into the perceived comfort level of students with various computer-based tasks.

- I can do this very well by myself
- I can do this with help from someone
- I know what this means but I cannot do it
- I don't know what this means

Send E-mails

Student comfort level for writing and sending e-mail (See Figure 15)

Figure 15: Send E-mails

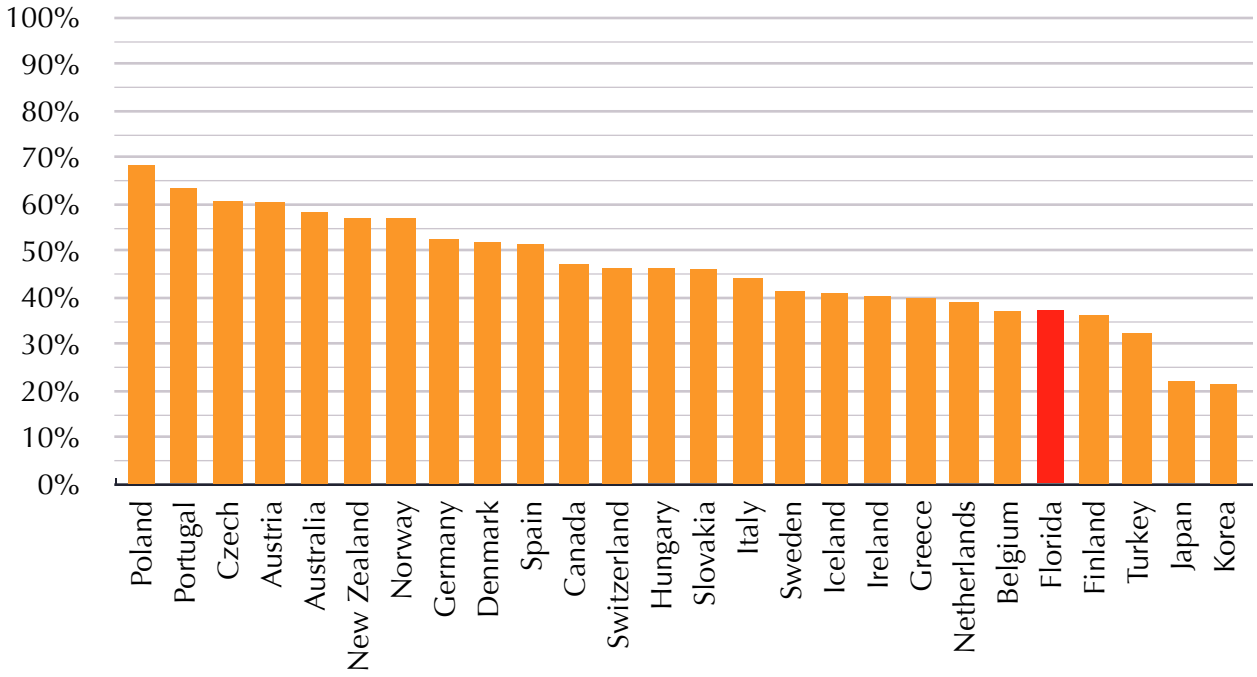


**PISA 2006 Student Questionnaire and Florida Student Questionnaire*

Search Internet

Student comfort level for searching a topic on the Internet (See Figure 16).

Figure 16: Search Intenet

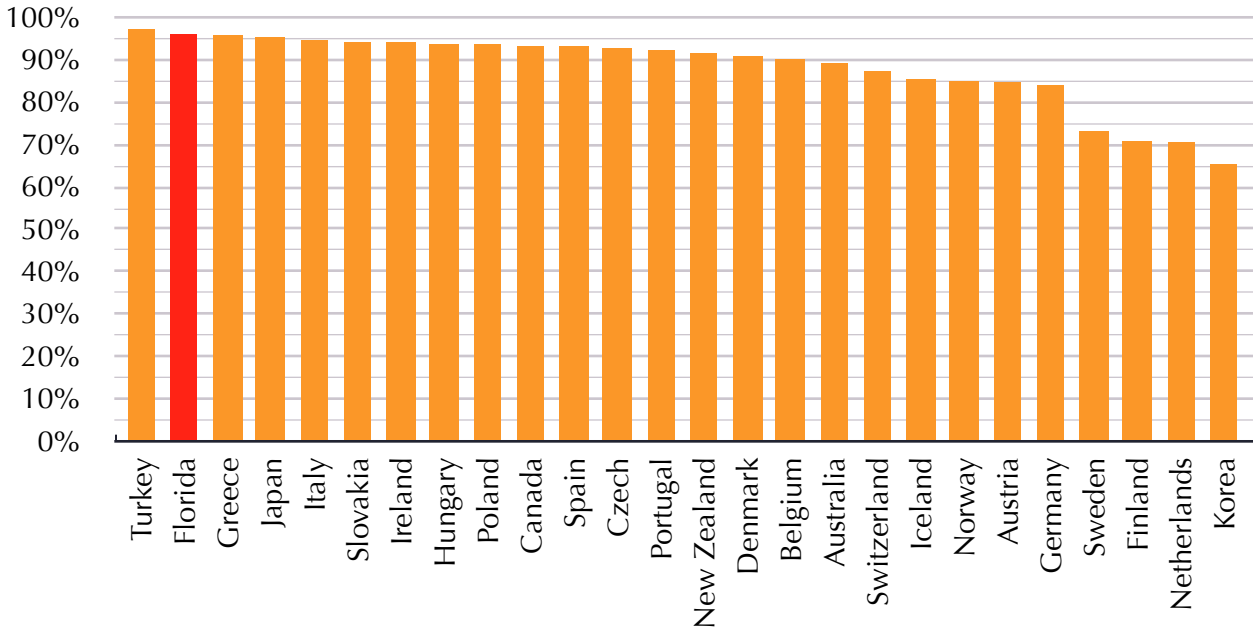


**PISA 2006 Student Questionnaire and Florida Student Questionnaire*

Word Processing

Student comfort level for creating/editing a document (See Figure 17).

Figure 17: Word processing

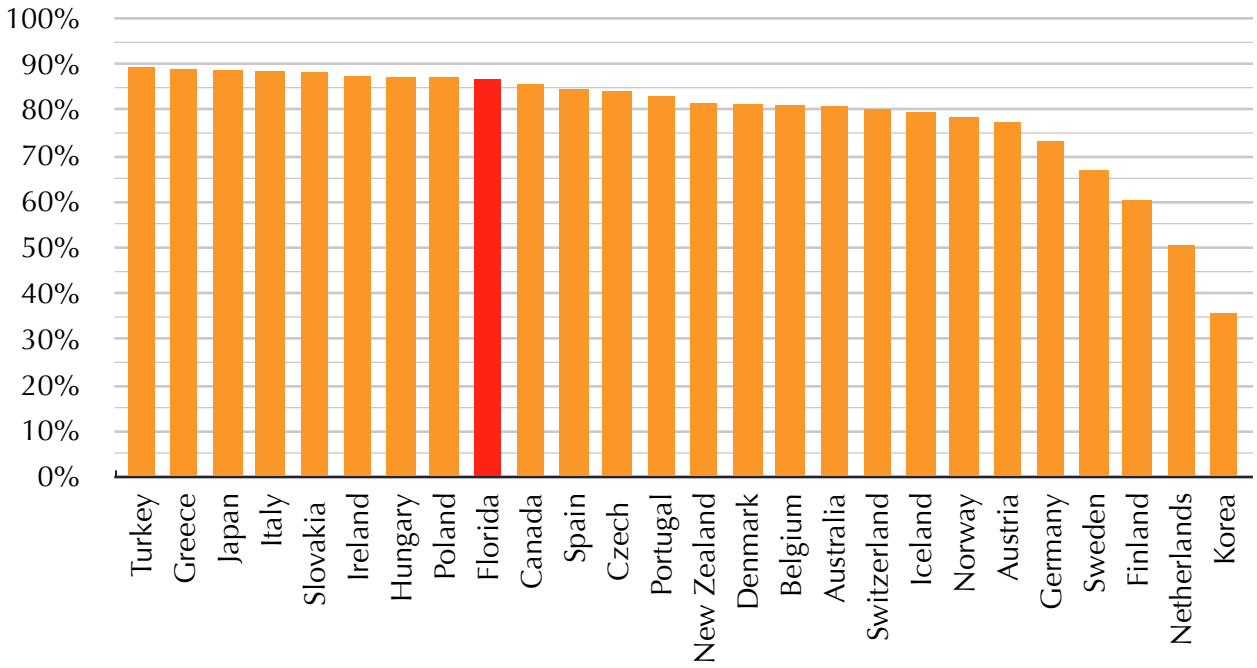


**PISA 2006 Student Questionnaire and Florida Student Questionnaire*

Spreadsheet

Student comfort level for creating a graph or plot in a spreadsheet (See Figure 18).

Figure 18: Spreadsheet

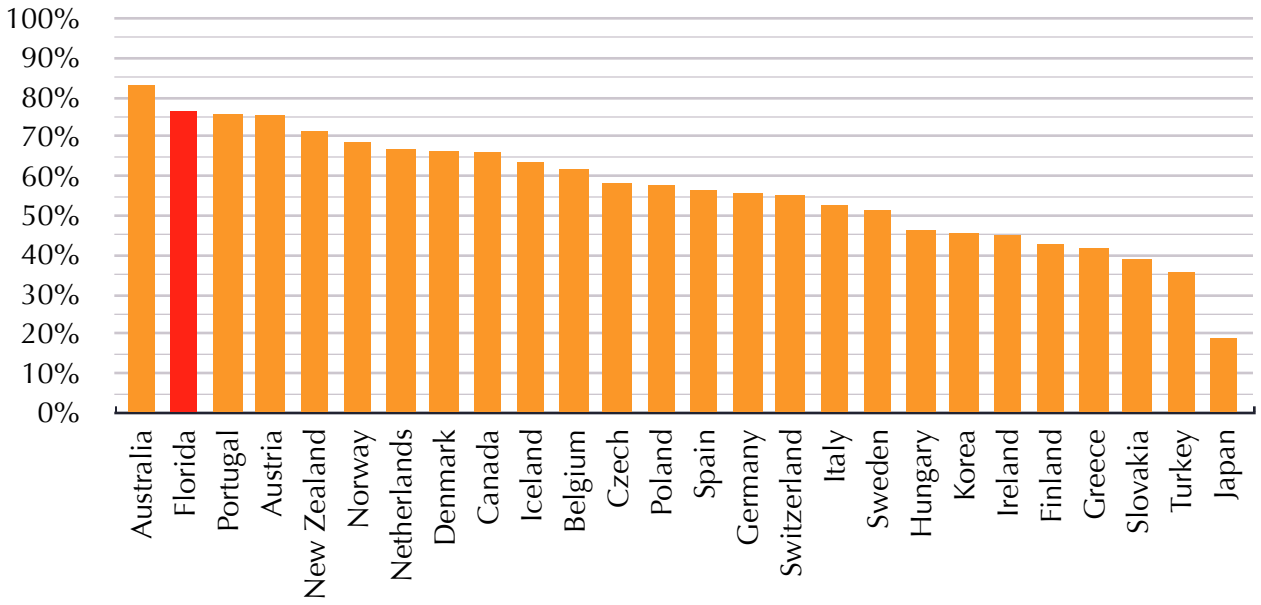


**PISA 2006 Student Questionnaire and Florida Student Questionnaire*

Presentation

Student comfort level for creating a presentation (See Figure 19).

Figure 19: Presentation



**PISA 2006 Student Questionnaire and Florida Student Questionnaire*

Frequency

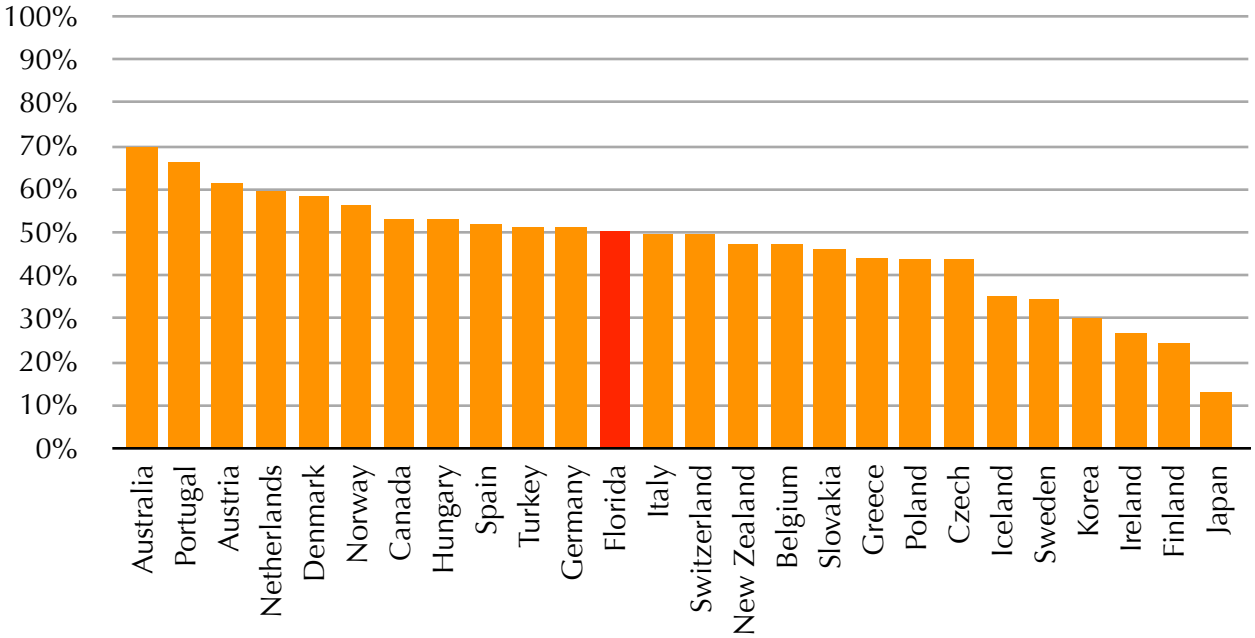
Programme for International Student Assessment (PISA) survey collection process includes gathering data from students themselves. The PISA questionnaire has been rigorously analyzed to demonstrate both reliability and validity across diverse international populations (PISA, 2003). The most recent available PISA data was collected in 2006 and involved 400,000 students in 57 countries with a major focus on scientific literacy and Information and Communication Technology (ICT) Familiarity (OECD 2007). The ICT Familiarity student questionnaire data provides insight into their frequency of use with various computer-based tasks.

- Almost every day
- A few times each week
- Between once a week and once a month
- Less than once a month
- Never

Word Documents

Student frequency of writing documents on a word processor (See Figure 20).

Figure 20: Word documents

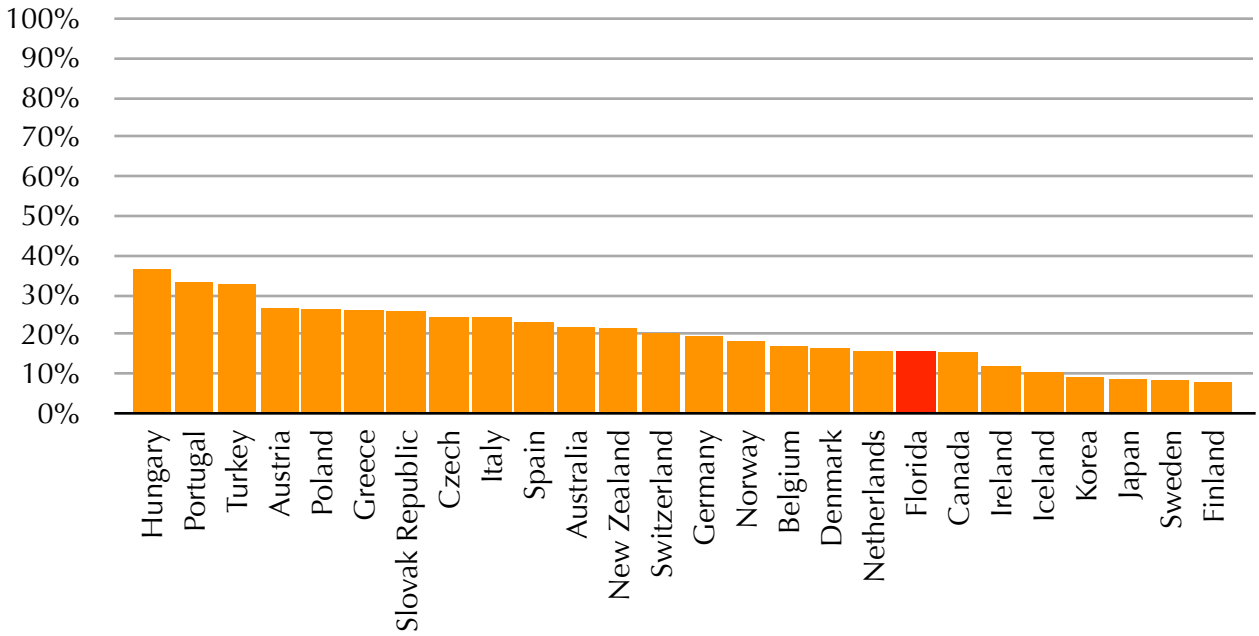


**PISA 2006 Student Questionnaire and Florida Student Questionnaire*

Spreadsheets

Student frequency of using spreadsheets (See Figure 21).

Figure 21: Spreadsheets

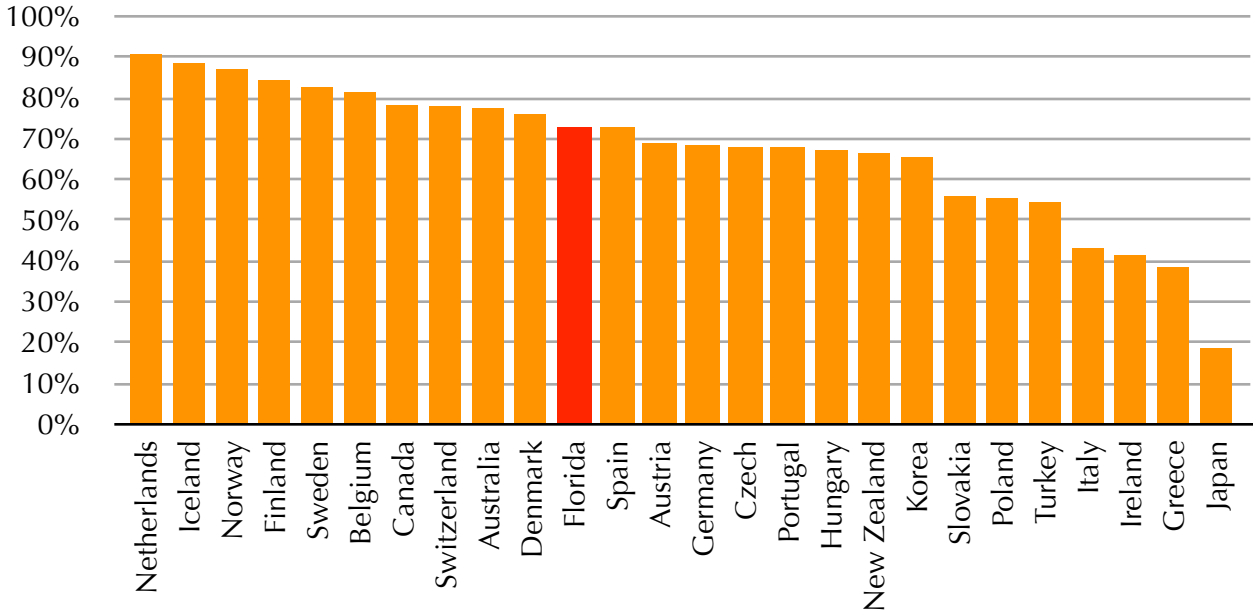


*PISA 2006 Student Questionnaire and Florida Student Questionnaire

Communication

Student frequency of communication (e.g. e-mail or "chat rooms") (See Figure 22).

Figure 22: Communication

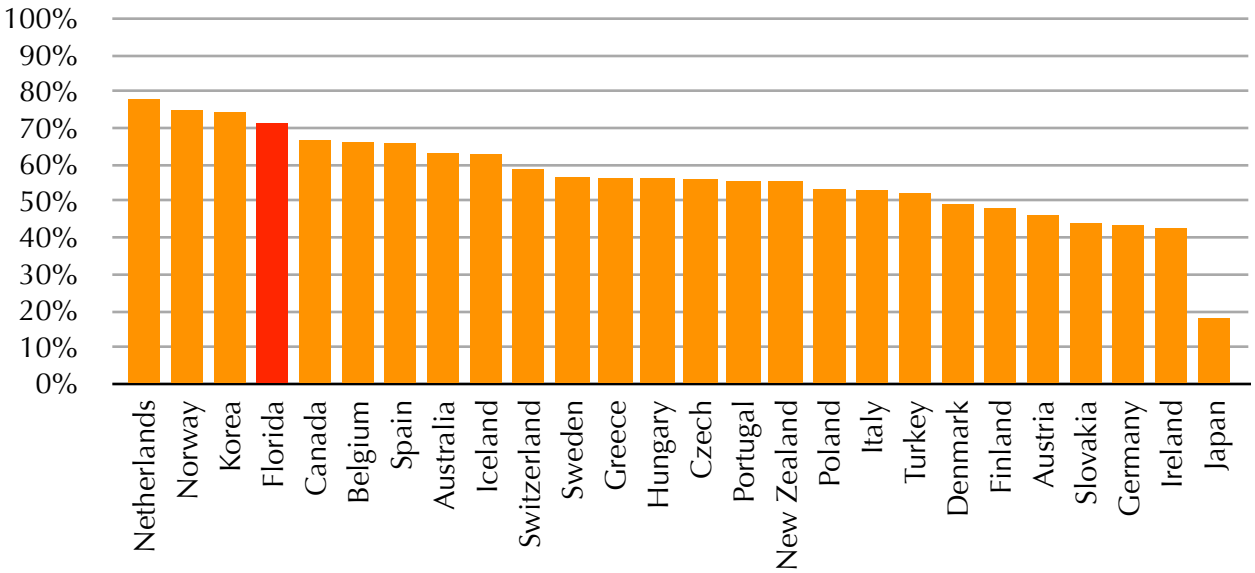


*PISA 2006 Student Questionnaire and Florida Student Questionnaire

Download Music

Student frequency of downloading music from the Internet (See Figure 23).

Figure 23: Download music

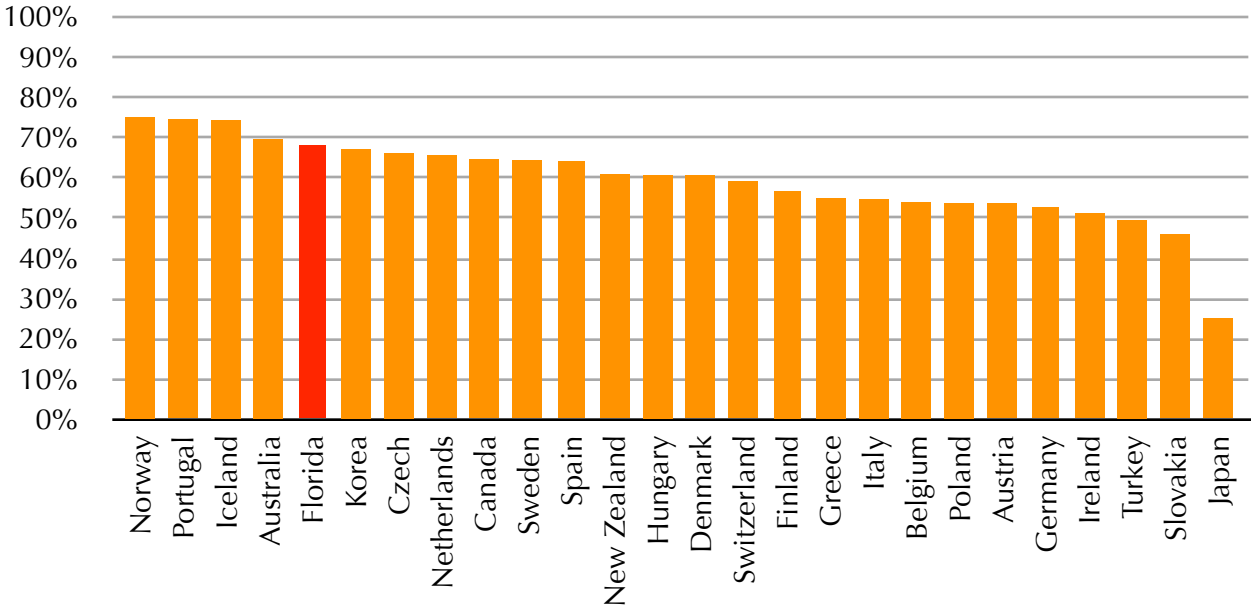


**PISA 2006 Student Questionnaire and Florida Student Questionnaire*

Browse Internet

Student frequency of browsing the Internet for information about people, things, or ideas (See Figure 24).

Figure 24: Browse Internet

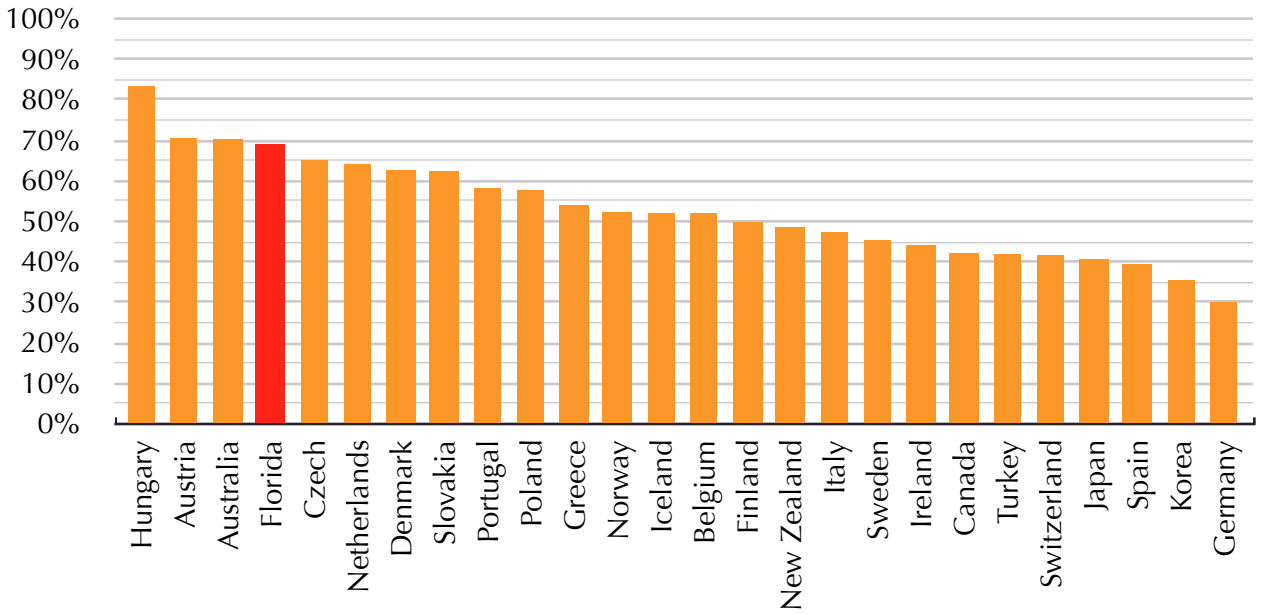


**PISA 2006 Student Questionnaire and Florida Student Questionnaire*

Computer Use at School

Student use of computer at schools on a daily to weekly basis (See Figure 25).

Figure 25: Computer use at school

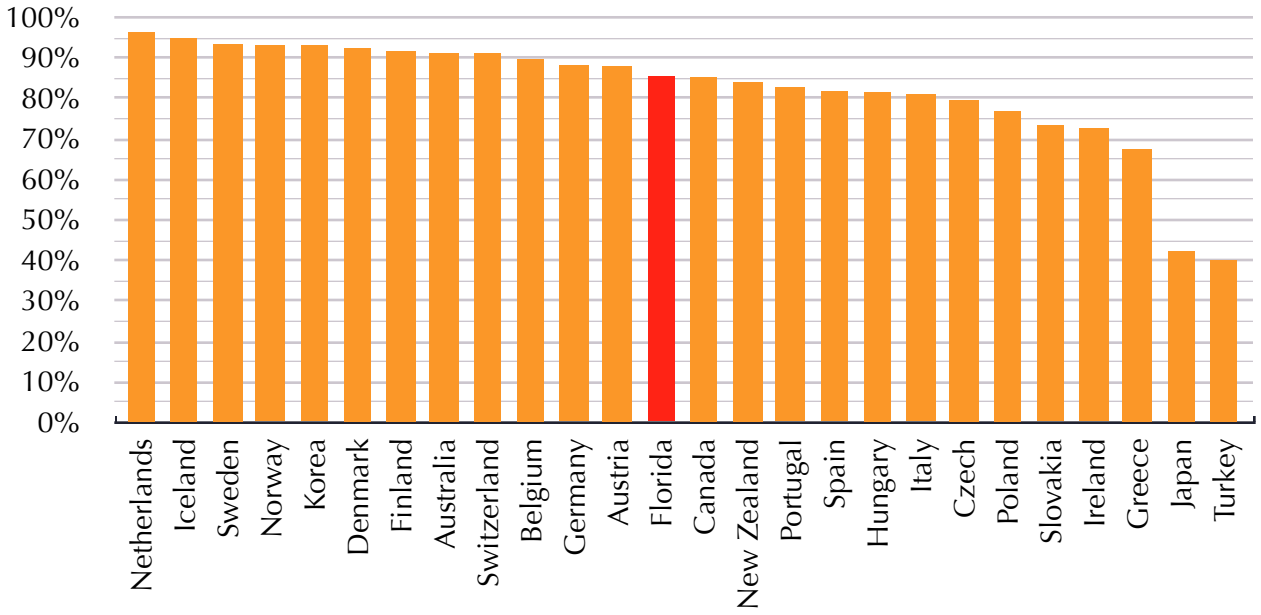


**PISA 2006 Student Questionnaire and Florida Student Questionnaire*

Computer Use at Home

Student use of computer at home on a daily to weekly basis (See Figure 26).

Figure 26: Computer use at home



**PISA 2006 Student Questionnaire and Florida Student Questionnaire*

Appendix B: Accountability Tools

Rigorous accountability is crucial if we are to ensure that our investment in technology provides the returns we expect. With vast sums of money being spent on technology in schools, there is a great need for increased accountability. When properly integrated, technology use should improve student achievement in core academic areas.

Over the past five years, Florida has developed a comprehensive system to assist schools in gauging their progress toward meeting technology-related achievement goals set forth in the No Child Left Behind (NCLB) Act of 2001. Florida Innovates is a suite of reporting tools that have been developed to ensure schools and districts are being held accountable to provide the foundation for technology integration, teacher technology skills, and student technology skills. The suite provides a snapshot of the development for Florida's districts, schools, teachers and students.

Technology Resource Surveys

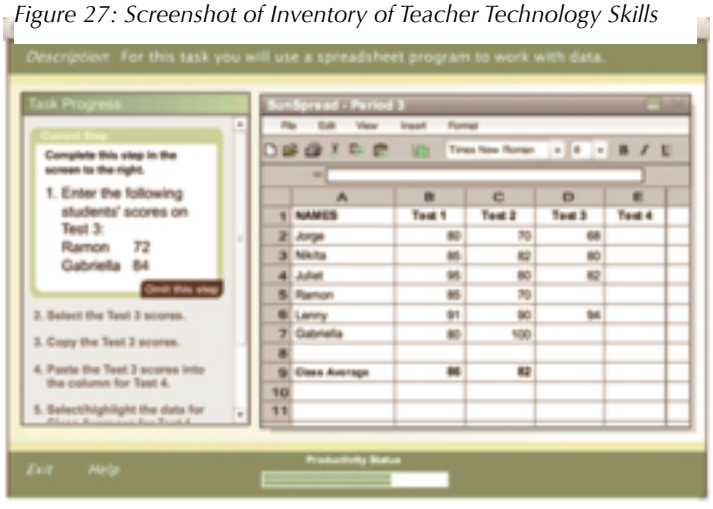
In response to the NCLB: Enhancing Education Through Technology (EETT) Act, the Office of Technology Learning and Innovation significantly revised its annual technology survey to provide more meaningful information about technology integration and capacity in Florida schools. In 2002, a set of benchmarks was created to provide schools with a tool, referred to as the School Technology and Readiness Chart, for use in goal setting and technology planning.

Survey revisions were based upon these benchmarks, and the survey was moved to Web-based delivery. Appropriate survey enhancements and adjustments were incorporated following completion of a pilot test and the fall 2004 administrations of the survey. Information provided by the survey is used to monitor goal achievement associated with the EETT program and to inform those interested in how technology is impacting instruction within Florida schools.

Inventory of Teacher Technology Skills

As Florida educators strive to meet the NCLB goal for full integration of technology in the curriculum, many face first the task of developing basic technology skills. With even the most basic of skills, a teacher can begin to incorporate digital technologies in both the delivery of lessons and in student activities within the classroom. Basic technology skills include the ability to responsibly use appropriate technology to communicate, solve problems, and access, manage, integrate, evaluate, and create information to improve learning in all subject areas and to acquire lifelong knowledge and skills in the 21st century.

Figure 27: Screenshot of Inventory of Teacher Technology Skills



The Inventory of Teacher Technology Skills (ITTS) (See Figure 27) is an online tool that evaluates teacher technology skills based on performance indicators. The ITTS is being utilized for low-stakes implementation, and is a useful tool for

districts to report aggregate data for NCLB purposes and for helping teachers and districts to target technology-related professional development needs. While the purpose of the ITTS is to provide teachers, schools, and districts with data on basic technology skills, further development will need to be done to determine integration of technology within the curricula.

An extensive, thorough process was followed for defining the indicators, which were developed within the framework of the ISTE-National Educational Technology Standards, basic operations; productivity; communications; research; planning, management, and instruction; and social, ethical, legal, and human issues. The inventory was designed within the framework of the six basic standards in which specific indicators were designed to measure these standards. The inventory items are well mapped to these indicators, and provide measurement of them in innovative, relevant, performance-based ways. Test quality criteria show reasonable item analysis, reliability, and validity results for a relatively short criterion-referenced test or mastery test.

Inventory of Teacher Technology Skill Indicators:

- **Basic Operations**: a basic understanding of software programs and their given tasks.
- **Productivity:** ability to construct and demonstrate knowledge of basic tool-based software programs.
- **Communication**: ability to communicate information with software programs.
- **Research:** ability to utilize software programs to gather data and manage information.
- **Planning, Management & Instruction**: identify basic uses of software programs for instruction.
- **Social, Ethical, Legal & Human Issues**: demonstrate an understanding of safety and security issues with various technology programs.

2007-08 Inventory of Technology Skills Results:

District	Basic Operations	Productivity	Communication	Research	Planning, Management & Instruction	Social, Ethical, Legal & Human Issues
Alachua	88%	88%	95%	85%	92%	90%
Baker	84%	89%	94%	86%	92%	90%
Bay	78%	81%	85%	73%	83%	80%
Bradford	87%	89%	97%	86%	95%	91%
Brevard	89%	89%	96%	86%	94%	91%
Broward	82%	87%	94%	82%	92%	88%
Calhoun	80%	81%	84%	76%	82%	79%
Charlotte	89%	89%	96%	85%	94%	91%
Citrus	85%	84%	88%	78%	86%	83%
Clay	84%	86%	94%	82%	92%	88%
Collier	92%	93%	98%	84%	96%	93%
Columbia	76%	76%	80%	66%	72%	71%
Miami-Dade	70%	72%	77%	64%	75%	71%
DeSoto	46%	49%	50%	46%	50%	50%
Dixie	NC	NC	NC	NC	NC	NC
Duval	82%	86%	94%	82%	92%	89%
Escambia	82%	84%	89%	80%	88%	85%
Flagler	87%	87%	95%	80%	91%	87%
Franklin	25%	34%	42%	29%	41%	48%
Gadsden	63%	47%	41%	34%	37%	38%
Gilchrist	NC	NC	NC	NC	NC	NC
Glades	81%	84%	95%	77%	86%	89%
Gulf	84%	85%	94%	80%	92%	90%
Hamilton	84%	86%	94%	83%	92%	89%
Hardee	85%	87%	95%	83%	93%	89%
Hendry	NC	NC	NC	NC	NC	NC
Hernando	91%	86%	92%	82%	90%	87%
Highlands	83%	86%	94%	82%	90%	89%

District	Basic Operations	Productivity	Communication	Research	Planning, Management & Instruction	Social, Ethical, Legal & Human Issues
Hillsborough	64%	62%	63%	59%	66%	63%
Holmes	90%	90%	97%	85%	95%	92%
Indian River	100%	100%	100%	100%	100%	100%
Jackson	86%	86%	95%	81%	91%	88%
Jefferson	NC	NC	NC	NC	NC	NC
Lafayette	92%	93%	97%	91%	96%	92%
Lake	85%	86%	94%	78%	91%	87%
Lee	80%	82%	86%	71%	83%	79%
Leon	88%	89%	95%	85%	93%	91%
Levy	94%	92%	98%	92%	96%	93%
Liberty	75%	72%	68%	62%	66%	70%
Madison	68%	71%	77%	69%	77%	76%
Manatee	83%	83%	90%	80%	89%	85%
Marion	86%	88%	95%	84%	93%	90%
Martin	92%	92%	98%	90%	96%	90%
Monroe	77%	59%	59%	52%	58%	60%
Nassau	NC	NC	NC	NC	NC	NC
Okaloosa	87%	88%	95%	82%	93%	90%
Okeechobee	87%	88%	94%	85%	93%	90%
Orange	89%	81%	95%	86%	94%	91%
Osceola	94%	93%	97%	91%	95%	95%
Palm Beach	87%	89%	96%	86%	94%	91%
Pasco	86%	90%	93%	88%	92%	87%
Pinellas	84%	86%	92%	82%	90%	88%
Polk	93%	92%	97%	90%	95%	94%
Putnam	92%	96%	98%	85%	96%	92%
St. Johns	84%	85%	91%	82%	89%	85%
St. Lucie	87%	88%	94%	84%	92%	89%
Santa Rosa	80%	81%	85%	77%	83%	83%
Sarasota	85%	88%	95%	84%	92%	91%
Seminole	37%	35%	35%	32%	35%	33%
Sumter	80%	84%	94%	79%	90%	88%
Suwannee	91%	90%	97%	87%	94%	91%
Taylor	85%	81%	90%	88%	85%	93%
Union	87%	90%	96%	85%	94%	90%
Volusia	91%	89%	97%	88%	95%	92%
Wakulla	71%	73%	80%	71%	77%	75%
Walton	91%	90%	96%	85%	94%	88%
Washington	50%	49%	44%	37%	50%	50%
FL School for the Deaf & the Blind	95%	94%	98%	90%	94%	92%

District	Basic Operations	Productivity	Communication	Research	Planning, Management & Instruction	Social, Ethical, Legal & Human Issues
FL Virtual School	92%	96%	99%	92%	100%	92%
FAU Lab School	89%	90%	97%	88%	94%	92%
FSU Lab School	82%	86%	96%	87%	94%	93%
FAMU Lab School	65%	89%	91%	82%	98%	82%
UF Lab School	89%	92%	97%	89%	96%	94%
	82%	**83%**	**88%**	**78%**	**86%**	**84%**

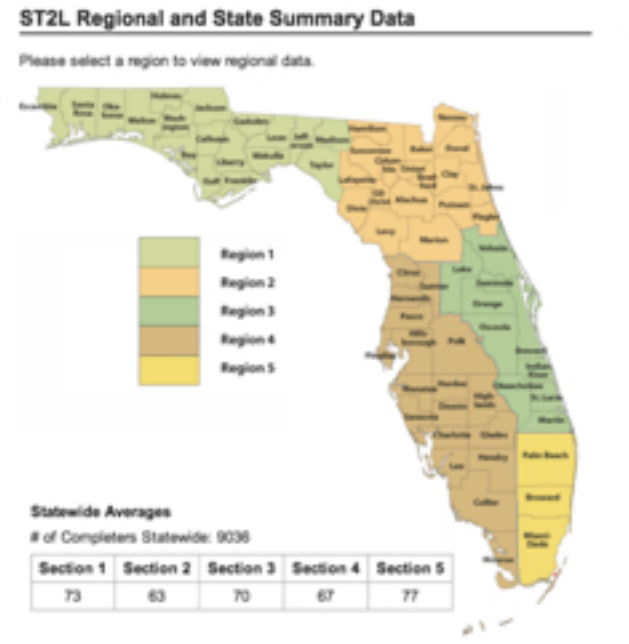
Student Tool for Technology Literacy

Eliminating the digital divide and ensuring that all students reach technology literacy by the end of 8th grade are key goals of the NCLB legislation. The state must show evidence of ongoing technology integration into all schools' curriculum. Although the legislation does not mandate an assessment, the Florida Department of Education has elected to show leadership and support development of a tool that can help with evaluating student technology literacy. The Student Tool for Technology Literacy (ST2L) provides districts, schools and teachers a snapshot of student technology literacy in the areas of technology operation and concepts, construction and demonstration of knowledge communication and collaboration, independent learning and digital citizenship .

The interactive and performance based ST2L is currently available for 8th grade students in Florida. The traditional, research based procedures for instrument development were followed in the development of this tool. The team of developers consisted of measurement experts who built and evaluated items. The advisory group consisted of education and technology experts throughout the state who assisted with evaluating items during the development process. The expert review panel worked closely with the development team to make final revisions and decisions on indicators.

The tool gauges students' existing level of technology skills. Teachers will be able to use the tool to gather data on students' current level of technology proficiency. Other applications include using the tool as a pre and post test in combination with classroom experiences to guide students' technology skill acquisition. The Website provides current statewide and regional data on usage and performance (See Figure 28).

Figure 28: Snapshot of Districts



Student Tool for Technology Literacy Indicators

- **Technology Operations and Concepts**: basic understanding of software programs and their given tasks.
- **Constructing and Demonstrating Knowledge**: ability to construct and demonstrate knowledge of basic tool-based software programs.
- **Communication and Collaboration:** ability to communicate and create information with software programs.
- **Independent Learning:** ability to utilize and manage information in a given software program.
- **Digital Citizenship**: demonstrate an understanding of safety and security issues with various technology programs.

2009 Student Tool for Technology Literacy Results

District	Users	Technology Operations & Concepts	Constructing & Demonstrating Knowledge	Communication & Collaboration	Independent Learning	Digital Citizenship
Alachua	19	90%	81%	90%	80%	89%
Baker	0	NC	NC	NC	NC	NC
Bay	60	78%	69%	75%	73%	81%
Bradford	1	72%	55%	67%	64%	76%
Brevard	3,721	77%	65%	72%	70%	80%
Broward	5	50%	38%	44%	50%	64%
Calhoun	111	78%	64%	70%	67%	79%
Charlotte	254	85%	74%	83%	80%	87%
Citrus	303	77%	66%	73%	70%	82%
Clay	0	NC	NC	NC	NC	NC
Collier	103	76%	65%	72%	72%	77%
Columbia	0	NC	NC	NC	NC	NC
Miami-Dade	712	68%	61%	67%	66%	73%
DeSoto	174	70%	56%	66%	63%	76%
Dixie	0	NC	NC	NC	NC	NC
Duval	171	82%	71%	77%	77%	84%
Escambia	163	82%	73%	77%	76%	85%
Flagler	0	NC	NC	NC	NC	NC
Franklin	0	NC	NC	NC	NC	NC
Gadsden	0	NC	NC	NC	NC	NC
Gilchrist	38	69%	59%	66%	66%	77%
Glades	34	81%	84%	95%	77%	86%
Gulf	165	68%	56%	65%	64%	77%

District	Users	Technology Operations & Concepts	Constructing & Demonstrating Knowledge	Communication & Collaboration	Independent Learning	Digital Citizenship
Hamilton	86	64%	57%	61%	59%	67%
Hardee	278	61%	46%	56%	50%	65%
Hendry	0	NC	NC	NC	NC	NC
Hernando	22	90%	81%	79%	88%	90%
Highlands	78	80%	70%	78%	72%	88%
Hillsborough	103	78%	67%	75%	73%	79%
Holmes	0	NC	NC	NC	NC	NC
Indian River	434	69%	60%	69%	66%	75%
Jackson	46	81%	66%	73%	72%	81%
Jefferson	0	NC	NC	NC	NC	NC
Lafayette	1,974	72%	63%	69%	67%	76%
Lake	466	77%	67%	75%	73%	80%
Lee	0	NC	NC	NC	NC	NC
Leon	79	70%	59%	68%	63%	73%
Levy	49	71%	60%	64%	63%	67%
Liberty	0	NC	NC	NC	NC	NC
Madison	170	85%	71%	80%	76%	87%
Manatee	0	NC	NC	NC	NC	NC
Marion	92	80%	68%	71%	69%	81%
Martin	0	NC	NC	NC	NC	NC
Monroe	0	NC	NC	NC	NC	NC
Nassau	27	88%	72%	75%	80%	89%
Okaloosa	173	75%	65%	74%	73%	81%
Okeechobee	0	NC	NC	NC	NC	NC
Orange	247	77%	64%	70%	68%	80%
Osceola	691	79%	70%	78%	72%	80%
Palm Beach	791	87%	89%	96%	86%	94%
Pasco	602	86%	90%	93%	88%	92%
Pinellas	2,451	84%	86%	92%	82%	90%
Polk	547	70%	56%	67%	62%	74%
Putnam	98	79%	65%	75%	69%	82%
St. Johns	2,000	81%	70%	77%	74%	84%
St. Lucie	314	77%	64%	74%	72%	81%
Santa Rosa	265	82%	73%	77%	76%	89%
Sarasota	150	87%	74%	82%	80%	89%
Seminole	830	77%	68%	74%	72%	78%

District	Users	Technology Operations & Concepts	Constructing & Demonstrating Knowledge	Communication & Collaboration	Independent Learning	Digital Citizenship
Sumter	0	NC	NC	NC	NC	NC
Suwannee	178	68%	54%	65%	56%	77%
Taylor	182	76%	62%	71%	65%	77%
Union	100	70%	58%	66%	64%	80%
Volusia	358	64%	56%	62%	58%	66%
Wakulla	140	74%	63%	73%	67%	82%
Walton	131	74%	60%	72%	65%	77%
Washington	183	78%	70%	72%	72%	80%
FL School for the Deaf & Blind	0	NC	NC	NC	NC	NC
FL Virtual School	0	NC	NC	NC	NC	NC
FAU Lab School	0	NC	NC	NC	NC	NC
FSU Lab School	0	NC	NC	NC	NC	NC
FAMU Lab School	1	81%	89%	92%	93%	90%
UF Lab School	65	85%	80%	80%	78%	84%
	20,435	**77%**	**67%**	**74%**	**71%**	**80%**

Appendix C: Professional Development

A classroom brimming with computers and other devices will have little impact unless the teacher knows how to effectively integrate the available technology into the curriculum. A key ingredient for effective integration of technology in the classroom is to provide professional development for teachers, administrators and staff with a focus on the utilization of technology as tools in the curriculum rather than just the specific hardware or software.

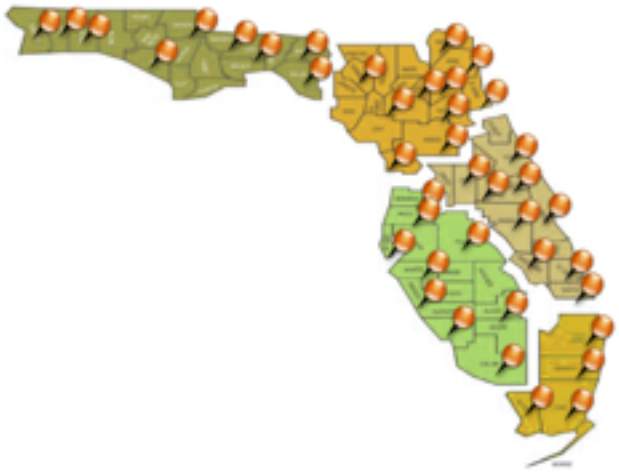
Florida Digital Educators

Florida Digital Educators (FDE) is a research-based professional development program focusing on the integration of technology across the K-12 curricula. The program is building a common vocabulary across the state of Florida among educators regarding technology integration and digital tools. Included in the program model are hands-on training, video based model lessons, action research and mentoring, lesson plan development, and student artifacts.

Master Digital Educators

Master Digital Educators (MDEs) are a part of the Florida Digital Educators programs. The MDEs are trained by the program staff with a focus on technology integration, project based learning, action research and large scale professional development for statewide impact. Master Digital Educators are also given the opportunity to participate in statewide research initiatives; local, state, regional and national advocacy through conferences and organizations/associations; creation, production and evaluation of digital media assets and technologies; and ongoing training and professional development opportunities.

Figure 29: Location of MDEs



Currently, 94 MDEs represent 40 Florida districts (See Figure 29). The additional training acquired by MDEs also serves to provide a catalyst for change at the district level, especially among smaller districts where professional development opportunities are more limited.

Digital Tools for Professional Development

A suite of digital tools have been developed for the FDE program to ensure the highest quality of professional development on the integration of technology in the classroom. Educators are first provided face-to-face training by MDEs on the use of technology as a cognitive tool. Materials utilized in the training sessions consist of open educational resources, such as maps, audio files, and clip art. During the training sessions educators are shown model lessons of technology integration in the curriculum. Upon completion of the training the participants develop an action research plan for systematically examining the impact of technology in the classroom, in which

MDEs are mentors in the process. In addition the educator develops a lesson plan on integrating technology that is reviewed by MDEs. Finally, the educator will demonstrate mastery on the utilization of technology as cognitive tool by providing evidence with student artifacts.

Teaching & Learning Institutes

The Institutes are regional training sessions across the state of Florida that focus on the use of technology as a tool for integration into subject areas. Each session is delivered in the "I do. We do. You do." model. Participants watch as trainers provide a snippet of instruction on how to achieve a task then trainers do that same task again with the participants following along step-by-step.

Florida Digital Depot

Funding from the EETT program supports the development of open education resources such as photographs, movies, maps, audio files, movie clips, and virtual reality files. These resources are cataloged, organized and stored in digital repositories so that users can have easy access to the digital content. Such open repositories are an extremely cost-effective way of making quality open educational resources available to educators and students. For example, the Florida Center for Instructional Technology reports that just three of their repositories, *Exploring Florida*, *Clipart*, and the *Holocaust Guide*, receive over 20 million hits per month during the school year.

Technology Integration Matrix

The Technology Integration Matrix (TIM) illustrates how teachers can use technology to enhance learning for K-12 students. The TIM incorporates five interdependent characteristics of meaningful learning environments: active, constructive, goal directed (i.e., reflective), authentic, and collaborative. Each cell of the matrix has a video that reflects the use of technology with a few computers in the classroom, and a video in which every student has access to a laptop computer. Currently, online tools are being developing to determine a teacher profile for technology integration, so that professional development can be targeted directly to specific teacher needs. Prototypes for the tools will be ready by the end of 2009.

Action Research Tool for Technology Integration

The Action Research Tool for Technology Integration (ARTI) allows teachers to capture evidence of the manner in which technology integration is impacting their classroom and student learning through action research. Teacher action research, also known as teacher inquiry, is a strategy for helping educators through a systematic study of their own professional practice. In general, action research engages teachers in the design, data collection, and interpretation of data around their questions. The ARTI tool was developed with input from researchers and educators during the 2007-08 school year and is now available for teacher use.

Lesson Planner Tool

The Educational Technology Clearinghouse Lesson Planner provides a structured format for teachers to develop and share lesson plans and any related supporting files they wish to upload. The tool is designed to provide two-way communication between the teacher and a mentor or researcher. "Classes" can also be opened to support district professional development opportunities, allowing participants to submit lesson plans and receive feedback as a part of a district professional development component.

Student Artifact Tool

This tool allows a teacher to upload a student artifact with a description for evaluation by remote researchers. During the 2008-09 school year, approximately 1,000 teachers participating in EETT grant projects uploaded one student artifact during the fall semester and one during the spring semester. These artifacts will be evaluated to gauge the effects of the various district technology interventions under their EETT grants.