Florida Digital Educator Training Program

Evaluation of Year Two

Office of Technology Learning and Innovation

Florida Department of Education

Evaluation of the Florida Digital Educator Training Program

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EXECUTIVE SUMMARY

The Florida Digital Educator (FDE) Program is a Florida Department of Education initiative administered by the Florida Center for Instructional Technology (FCIT) at the University of South Florida. The FDE program was developed based on research in professional development and technology integration. It supports the integration of technology across the K-12 curricula through collaborative experiences with new technologies and digital tools. The program was piloted in 2005 and the initial implementation took place in 2006.

This report provides findings from the second year implementation (2007-2008) of the FDE training program, which included a four-day summer institute and follow-up activities during the subsequent academic year. Results from surveys (pre-institute and year-end) indicate that the FDE program was very successful.

This report is organized around the research data collected during the implementation of the professional development model, focusing on significant changes over time in the second year of implementation. In addition, similarities and differences between the first year results and second year results are noted.

Key Findings: Significant Changes in Perceptions and Practice

- *Following a four-day training workshop, teachers reported significant increases in their levels of confidence and comfort using technology.* Participants felt significantly more confident in their ability to create rubrics to assess multimedia projects, guide other teachers in planning and implementing lessons that incorporate technology, and use laptop computers in their classrooms.

- *Teachers who participated in the Florida Digital Educator program increased their use of software for instruction.* There was a notable growth in the frequency with which teachers used video editing, concept mapping, and presentation software for instruction.

- *By the end of the academic year, Florida Digital Educators reported significant changes in their classroom pedagogy.* Significant increases were noted in the frequency of implementing technology via cooperative groups, as a research tool for students, and as a problem-solving/decision-making tool.

- *Participants in the Florida Digital Educator program supported their peers in technology integration initiatives.* While participating in the FDE program, 96% of the educators reported actively sharing their knowledge and skills related to technology with their peers through workshops, mentoring activities, and sharing resources.

- *Over time, students in classrooms taught by Florida Digital Educators used a wider range of software.* Increased student use of video editing, concept mapping, and presentation software were noted.

- *Almost all participants reported valuable lessons learned from the Florida Digital Educator program.* Ninety-two percent of the respondents to the end-of-year survey remarked about how the FDE program had increased their skills, knowledge, and ability to integrate technology into their classroom.

- *Participants in the Florida Digital Educator program reported a substantial increase in the number of computers in their classrooms for instruction.* Although the average number of students per classroom did not increase between the pre-institute survey and the year-end survey, the number of computers increased from 8.9 per classroom to 10.1 per classroom.

Key Findings: Significant Changes in Digital Educators' Attributes

- *Participants in the FDE program perceived significant changes in their level of expertise related to the instructional attributes of a digital educator.* Increased leveraging of technology for instructional items, curricular items, and assessment items were noted by the participants.

- *Participants in the FDE program perceived significant changes in their level of expertise related to leadership roles in the support of technology integration.* Perceptions related to using technologies for personal growth and school-based leadership, as well as collaboration outside of school were all increased.

- *Participants in the FDE program perceived significant changes in their level of expertise related to implementing technology in the classroom.* Increased comfort was noted related to implementing activities wherein students can construct knowledge, collaborate with peers, and communicate with a global audience.

Key Findings: Barriers to Technology Integration

- *Access to hardware in the classroom was a major barrier for technology integration.* Thirty-eight percent of the respondents to the year-end survey noted lack of hardware and/or connectivity as the major barrier to technology integration.

- *Time to prepare and implement technology lessons was a barrier to technology integration.* Twenty-seven percent of the respondents to the year-end survey noted that time to prepare a technology-rich lesson as well as class time for students to complete the lesson were barriers.

INTRODUCTION

In the article *Professional Development for Transforming Education*, McAnear states "Teachers and other school personnel should engage in a process of using all of the tools and resources at their disposal in their own inquiry around how students learn and what learning environments and curricular look like that help students achieve deep inquiry-based learning and how that is supported by technology" (2008, p.5). With a similar goal, the Florida Department of Education (DOE) led an initiative to design a sustainable professional development program that could be implemented in Florida in an efficient, effective manner. After reviewing the literature related to professional development for technology integration (e.g., Harris, 2008) and other professional development models, the Florida DOE worked with content specialists and instructional technologists throughout the state to outline a professional development model that would support the integration of technology across the K-12 curricula through collaborative experiences with new technologies and digital tools. This model, titled the Florida Digital Educator Program (FDE), incorporated master teachers; intensive, hands-on institutes; and follow-up activities. A list of attributes that typify the profile of a "digital educator" was generated and formed the basis for the outcomes of the program.

The Florida Digital Educator Program is a Florida Department of Education initiative that is administered by the Florida Center for Instructional Technology (FCIT). The program was piloted in 2005 and implemented in 2006. This report focuses on the evaluation of the second year of the project, which encompasses the time period between April 2007 and May 2008.

Theoretical Framework

The Florida Digital Educator program was developed based on research related to professional development and instructional technology. The theoretical framework includes experiential learning (Rogers,1969; Rogers & Freiberg, 1994), adult learning theory (Cross, 1981; Knowles, 1984), and project-based learning (Blumenfeld, Soloway, Marx, Krajcik, Guzdial & Palincsar, 1991; Katz & Chard, 1989; Means & Olson, 1997).

According to Rogers (1969) and Rogers and Freiberg (1994), experiential learning is characterized by willing learners who participate in the learning process and contribute to the nature and direction of the training. Hands-on activities that are relevant to students' personal interests along with support of scaffolding and choice in their learning environment are also important elements of this tenet.

Adult learning theory (Cross, 1981; Knowles, 1984) suggests that adults learn better if their experience is capitalized and the instruction is immediately applicable to their job or personal life. Adult learners need to discover things for themselves and to be provided guidance when they make mistakes. Adult learning activities should be structured to promote collaborative efforts in small groups with support, feedback, and reflection from peers to promote integration, synthesis, and evaluation of new information. Providing different levels or types of experiences should accommodate the differences in the background of the learners.

With its roots based in the constructivist learning theory (Brunner, 1966, 1986, 1990, 1996), project-based learning is student-directed learning where the learner has decision-making power and the teacher/trainer plays the role of facilitator (Blumenfeld et al., 1991; Katz & Chard, 1989; Means & Olson, 1997). Project-based learning also requires that the project take place over an extended period of time and have connections to real world experiences.

Structure of the Florida Digital Education Training Program

The FDE program was designed to include intensive, hands-on workshops (at the summer institutes), followed by mentoring activities and coaching throughout the following academic year. To reach the largest number of teachers, several institutes were held at several different locations throughout Florida during the summer of 2007.

Master Digital Educators

The Florida Digital Educator program includes a cadre of master teachers (Master Digital Educators or MDEs). The MDEs are teachers and technology specialists who were already proficient with technology. They were recruited by FCIT and attended several weekend workshops that focused on technology integration, adult learning techniques, and professional development standards. After their training, the MDEs played key roles as trainers and support personnel throughout the implementation of the FDE program.

During the second year of the FDE program, 68 MDEs were involved (50% of these MDEs had participated during the first year also). The MDEs represented 34 different Florida school districts (out of 67 districts). Most of the MDEs were classroom teachers (n=39) or district technology staff (n=21). The remaining MDEs included a retired teacher, museum trainer, Florida DOE employee, university adjunct professor, and two school administrators. After their training, the MDEs assume a variety of roles to support the FDE program as well as to support the integration of technology within their Florida's school districts.

Summer Institutes

During the second year of implementation, FDE participants attended a four-day institute during the summer of 2007. The institutes were offered throughout Florida, with sessions that focused on classroom implementation of podcasting, digital video, presentation software, Web 2.0, graphic organizers, digital audio, and digital images. The sessions were designed to emphasize hands-on activities (each participant brought or was provided a laptop), group collaboration, and authentic project-based learning. Additional topics that were presented at the summer institutes included the following:

- Copyright in the digital age
- Student safe searches & Internet safety
- 21st Century Skills for the classroom
- Project-based learning

- Organizing and planning projects with students using technology
- Changes in Sunshine State Standards

Most of the institutes took place over four consecutive days (Monday – Thursday); however, to meet the needs of individual districts, a few of the institutes took place over two weekends. Although the agenda varied slightly, due to constraints imposed by the location, the number of resources, or the district, most followed the following sequence of events:

- Day 1 - Check-in, welcoming presentation, topic sessions.
- Day 2 - Concurrent hands-on sessions, each focusing on a different technology or technique.
- Day 3 - Whole group session on project-based learning, followed by collaborative work on a group project with a mentor.
- Day 4 - Group project presentations and reflections, whole group closing session, and overview of follow-up activities.

During the summer institutes, each participant was expected to participate in a group project (a cross-curricular project that is framed by the Sunshine State Standards and incorporates at least three digital tools). Each participant was also instructed to create and share a technology-based lesson plan.

Follow-up Activities

In order to provide ongoing support, several follow-up activities were planned to take place after the summer institutes. These activities included targeted face-to-face sessions with specific districts (Orange, Hernando, and Alachua) that had written additional workshops into their EETT grants. In addition follow-up was available for all attendees via synchronous online discussions and training sessions. After the summer institutes, every participant was invited to select a learning community of their choice. The learning communities were led (via Adobe Connect Server) by the MDEs and took place periodically throughout the following year. In most cases, participation in the learning communities was voluntary and sporadic.

Year-End Survey

At the end of the subsequent school year (May, 2008), participants who had responded to the pre-institute survey were contacted via e-mail and asked to complete a year-end survey. This survey was administered online and solicited information regarding the participants' experiences with technology integration in the classroom, as well as challenges they faced in their district and school.

Instruments

Several instruments were developed and implemented to evaluate the Florida Digital Educator program, including surveys and questionnaires.

Technology Perception Survey

Pre-Institute Survey. All participants at the summer institutes (N=475) were asked to complete the pre-institute survey. The survey (*Perceptions of Computers & Technology*) was designed to gain a better understanding of how educators perceive the use of technology in the classroom and their level of experience with computers. The sections on the survey included their perceptions of level of confidence and comfort, general school support, classroom technology integration, teacher use of software, and student use of software. In addition, there were three sections (instructional, leadership, and classroom) related to the attributes and practices of a digital educator (see Appendix A). The survey used a five-point Likert scale that ranged from “strongly disagree” to “strongly agree” for sections that included participants’ level of comfort, belief, and perceptions of support. A five-point Likert scale that ranged from “not at all” to “everyday” was used to measure frequency of instructional activities and types of software used. A five-point Likert scale that ranged from “unfamiliar” to “expert” was used to measure level of skill in digital instructional attributes, leadership, classroom activities. The Cronbach’s alpha score of the reliability of the total survey was found to be strong, $\alpha = .975$, CI_{95} *.971 to .980.*

Year-End Survey. After the participants had time to integrate technology in their classroom during the subsequent school year, they were asked to take the *Perceptions of Computers & Technology* post-survey again as a repeated measure in order to see if their perceptions changed. This year-end survey also included four open-ended questions to ascertain participants’ most valuable lessons from the FDE program, barriers to implementing technology in the classroom, avenues through which their knowledge and skills were shared, and suggestions for improvement of the program.

DEMOGRAPHICS

A total of 1166 participants from approximately 27 different public school districts and private school organizations, representing urban, suburban, and rural areas enrolled in the FDE program in 2007 and took part in the summer institutes. Eight of the districts were recipients of the EETT grants for 2007 (Alachua, Broward, Escambia, Hernando, Highlands, Oceola/Polk, Orange, and St. Johns). These grants provided funds for the FDE program and attendance was mandatory. The participants from the remaining districts attended voluntarily or at the request of their supervisor.

Administration of the pre-institute survey (which was available online) was the responsibility of each district. Approximately 331 participants completed the pre-institute survey. These same participants were contacted at the end of the following school year to complete the year-end survey. The participants who completed the surveys had diverse backgrounds and various levels of expertise with technology.

Gender, Race, Education

The FDE program included K-12 teachers, media specialists, instructional technology specialists and trainers, and administrators. Most participants who completed the pre-institute survey for the summer institutes were female (84.5%). Eighty percent of the participants were White/Non-Hispanic, 10% were African American, and 6% were Hispanic. The highest degree for most participants was a Bachelors Degree (43%) or Masters Degree (46%). However, nine percent had either a Doctorate or Educational Specialist degree (see Table 1).

A total of 331 participants completed a pre-institute survey, and 162 submitted the year-end survey. The demographics of the people who submitted the year-end survey were compared with the demographics of the whole sample set to determine if they were representative of the summer participants. As illustrated in Table 1, the demographics between the two groups were very similar.

Table 1. *Demographics of Pre-Institute and Year-End Survey Participants*

	Pre-Institute		Year-End	
Variable	Frequency	Percent	Frequency	Percent
Gender				
Female	278	84.5	141	87.0
Male	51	15.5	21	13.0
Race/Ethnicity				
African American	34	10.3	9	5.5
Hispanic	19	5.8	12	7.4
White/Non Hispanic	265	80.3	136	84.0
Other	12	4.7	5	3.1
Highest degree earned				
Bachelors	142	42.9	58	35.8
Doctorate	13	3.9	9	5.6

Table 1. *Demographics of Pre-Institute and Year-End Survey Participants*

Variable	Pre-Institute		Year-End	
	Frequency	Percent	Frequency	Percent
Masters	152	45.9	86	53.1
Other	7	2.1	2	1.2
Educational Specialist	17	5.1	7	4.3

Grade Levels

Almost half of the teachers (46%) who completed the pre-institute surveys taught middle school (grades 6-8). A similar percentage (45%) of the respondents for the year-end survey were middle school teachers. The next largest group (for both surveys) was upper elementary (grades 3-5), followed by high school (see Table 2). Please note that the results for the categories are not exclusive as some participants taught children at multiple grade levels. For instance, the three participants who taught children in PK through 12th grade also were included in every category. In addition, some participants were administrators, who did not directly teach any children, and were not included in this table.

Table 2. *Teaching Levels of Pre-Institute and Year-End Survey Participants*

Grades Taught	Pre-Institute		Year-End	
	Frequency	Percent	Frequency	Percent
Early Childhood (PK - 2)	56	16.9	26	16.1
Upper Elementary (3 - 5)	97	29.3	43	26.5
Middle School (6 - 8)	94	28.4	49	30.3
High School (9 - 12)	91	27.5	45	27.8
All Elementary (PK -5)	38	11.5	18	11.1
Secondary (6 - 12)	8	2.4	4	2.5
All Grades (PK - 12)	6	1.8	3	1.9

Subject Areas

Elementary education represented the most common subject area that was taught by the participants, followed by reading and social studies. The subject area distributions were relatively consistent in the pre-institute survey and the year-end survey (see Table 3).

Table 3. *Content Areas of Pre-Institute and Year-End Survey Participants*

Subject Area Taught	Pre-Institute		Year-End	
	Frequency	Percent	Frequency	Percent
Elementary Education	100	31.21	40	24.69
Art / Music	3	0.91	2	1.23
English	43	12.99	20	12.35
Math	42	12.69	21	12.96
Media / Technology specialist	31	9.37	23	14.20

Table 3. *Content Areas of Pre-Institute and Year-End Survey Participants*

Subject Area Taught	Pre-Institute Frequency	Pre-Institute Percent	Year-End Frequency	Year-End Percent
Physical Education	4	1.21	0	0
Reading	61	18.43	37	22.84
Science	40	12.08	19	11.73
Social Studies	50	15.11	26	16.05
Special Education	25	7.55	14	8.64
Vocational Education	7	2.11	3	1.85

Access to Computers

The average number of students per class (23) was the same for participants in the pre-institute and year-end survey. The average number of years that participants used computers for classroom instruction and the average number of hours each week that students used computers were also very similar (see Table 4). The number of computers in the classroom that were used for instruction increased from 8.87 in the pre-institute survey to 10.1 in the year-end survey.

Table 4. *Classroom Attributes of Pre-Institute and Year-End Survey Participants*

Attributes	Pre-Institute					Year-End				
	N	*Mean*	*SD*	*Min*	*Max*	*N*	*Mean*	*SD*	*Min*	*Max*
Average number of students per class	44	22.5	5.59	0	35	139	22.6	4.50	0	35
Number of computers in classroom used for instruction	250	8.87	10.7	0	46	140	10.1	11.2	0	46
Years using computers in classroom for instruction	260	7.05	6.12	0	30	146	7.77	6.27	0	27
Hours each week students use computers	238	4.43	5.17	0	30	138	4.89	5.60	0	30

FINDINGS: CHANGES IN SURVEY RESPONSES

Both qualitative and quantitative approaches were used for the analysis of the various data. The open-ended comments were analyzed with a qualitative approach, and the data from the surveys were analyzed quantitatively, with a statistical software package. Because the demographics of the respondents for the pre-institute and the year-end surveys were very similar (see Tables 1-4), both sets of data were used to examine the changes in perceptions that occurred between these time periods.

Significant Overall Changes in Teachers' Perceptions

Participants of the FDE summer institutes responded to the same survey, *Perceptions of Computers & Technology*, in the beginning of the summer institute and again at the end of the school year. This survey contained eight major sections:

- Confidence and Comfort with Computers
- General School Support
- Integration of Technology
- Teacher Software Use
- Student Software Use
- Digital Educator Profile: Instructional Activities
- Digital Educator Profile: Leadership Activities
- Digital Educator Profile: Classroom Activities

Significant changes were noted for five of these major areas (Confidence and Comfort; Teacher Software Use; Digital Educator Instruction; Digital Educator Leadership; and Digital Educator Classroom) between the pre-institute and year-end surveys. Significance is noted at the .01 and .05 levels by the asterisks in Table 5. All significant changes in the mean scores were in the positive direction and ranged from 0.14 to 0.57 on a 5 point scale.

In order to gain a better understanding of where the changes took place, the subscales obtained through exploratory and confirmatory factor analysis for the first year study were used to separate the major sections into subscales, and then the changes in the subscales were analyzed for significance. Note that two of the major areas that did not have significant differences overall (Integration of Technology and Student Software Use) had a significant difference in a subscale. In-depth analysis of significant changes for each scale and subscale are presented in this report.

Table 5. *Significant Changes in Perceptions of Computers & Technology Scales between Pre-Institute and End-of-the-Year Surveys*

Scale and Subscale	Pre	Year-End	Change	DF	t Value	Pr > |t|	
Confidence/Comfort w/Computers	4.00	4.31	0.31	154	4.31	<.0001	**
Comfort	3.79	4.20	0.41	154	4.86	<.0001	**
Belief	4.48	4.56	0.08	154	1.18	0.2411	
General School Support	3.80	3.83	0.03	151	0.34	0.7369	
Integration of Technology	3.01	3.17	0.16	140	1.70	0.0908	

Table 5. *Significant Changes in Perceptions of Computers & Technology Scales between Pre-Institute and End-of-the-Year Surveys*

Scale and Subscale	Pre	Year-End	Change	DF	t Value	Pr > |t|	
Learning of Groups of Students	2.81	3.05	0.24	140	2.14	0.0341	*
Learning of Individual Students	2.84	2.94	0.10	140	0.96	0.3369	
Teacher Instructional Activities	3.35	3.49	0.14	140	1.28	0.2012	
Teacher Software Use	2.40	2.54	0.14	147	2.07	0.0406	*
Teachers Use Advanced Production SW	1.88	2.07	0.19	147	2.41	0.0173	*
Teachers Use Content Delivery SW	1.89	1.93	0.04	147	0.42	0.6768	
Teachers Use Office SW	3.53	3.69	0.16	147	1.83	0.0690	
Student Software Use	1.98	2.12	0.14	137	1.82	0.0714	
Students Use Advanced Production SW	1.61	1.78	0.17	137	2.21	0.0287	*
Students Use Content Delivery SW	2.10	2.11	0.01	137	0.13	0.8967	
Students Use Office SW	2.62	2.80	0.18	137	1.65	0.1005	
Digital Educator Instruction	2.93	3.50	0.57	147	5.51	<.0001	**
Digital Educator Leadership	2.98	3.39	0.41	150	3.83	0.0002	**
Digital Educator Classroom	2.83	3.30	0.47	142	3.94	0.0001	**

*p<.05
**p<.01

Confidence and Comfort Using Technology

The first section of the *Perceptions of Computers & Technology* survey (Confidence and Comfort Using Technology) contained ten items (see Table). Overall, this section experienced significant changes at the .01 level. When investigating subscales, the Comfort subscale was significant, and the Belief subscale was not.

I feel prepared to use laptop computers in my classroom	3.01	3.48	0.46
I feel comfortable assigning multimedia projects to my students	2.92	3.29	0.38
I have had adequate training in technology use	2.60	2.93	0.33
I feel comfortable using computers for classroom instruction	3.20	3.52	0.32
I use computers effectively in my classroom.	2.71	3.01	0.29

Table 6. *Changes in Means of Items of the Confidence and Comfort Using Technology Section between Pre-Institute and Year-End Surveys*

Items	Pre	Year-End	Change
Belief			
I believe that student use of technology enhances student performance	3.52	3.61	0.10
I believe that technology enhances my teaching	3.45	3.54	0.08
I believe that my use of technology enhances student performance	3.47	3.52	0.05
Comfort Level			
I feel prepared to create rubrics to assess multimedia projects	2.60	3.17	0.57
I feel prepared to guide other teachers in planning and implementing lessons that incorporate technology	2.48	3.03	0.55

All of the items in the Confidence and Comfort with Computers section of the survey increased over time. The items with the greatest increases between the pre-institute and year-end surveys are illustrated in Figure 1.

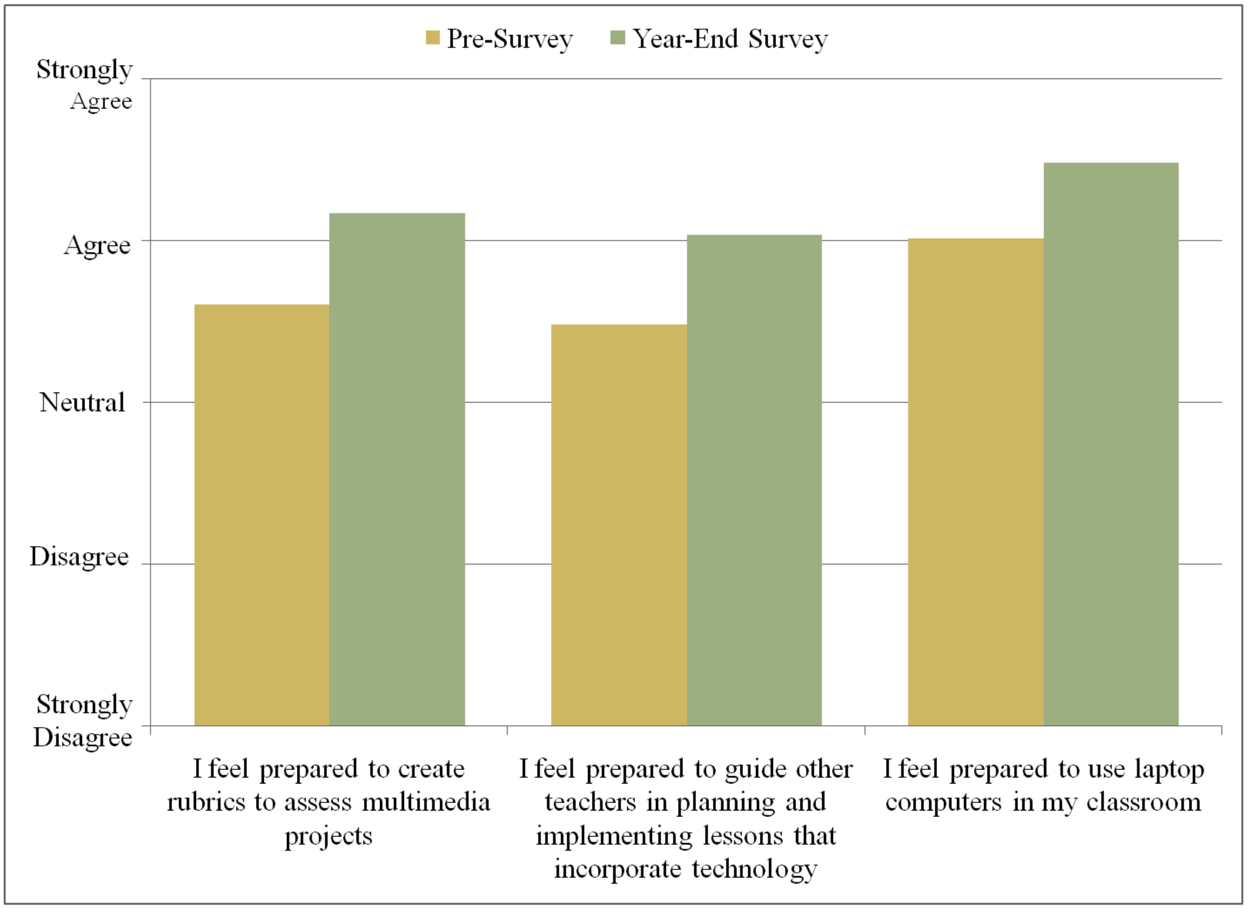

Figure 1. Greatest increases in items measuring Confidence and Comfort using Technology.

General School Support for Using Technology

The scores of the General School Support section (teachers' perception of the technical and administrative support available for integrating technology) did not experience significant change. Changes for all of the items used to measure general school support on the pre-institute and year-end surveys are included in Table 7.

Table 7. *Change in Means of Items of the General School Support Section between Pre-Institute and Year-End Surveys.*

Items	Pre	Year-End	Change
I have adequate time to learn computer skills.	1.99	2.24	0.24
Other faculty members encourage the use of computers.	2.52	2.70	0.18
I have a sufficient level of technical support at my school for technology.	2.70	2.70	0.01
I have sufficient access to the Internet at school.	3.32	3.33	0.01
The administration actively encourages the use of computers in the classroom.	3.20	3.20	0.01
I have sufficient access to computers at my school.	2.84	2.85	0.01
The computers at my school have sufficient software.	2.67	2.66	-0.01
My students have sufficient access to computers at school.	2.59	2.53	-0.07
The administration supports computer related training.	3.35	3.23	-0.12

Although the changes in the General School Support section scores were not significant, all except three of the items in the General School Support section of the survey increased over time. The items with the greatest increases between the pre-institute and year-end surveys are illustrated in Figure 2.

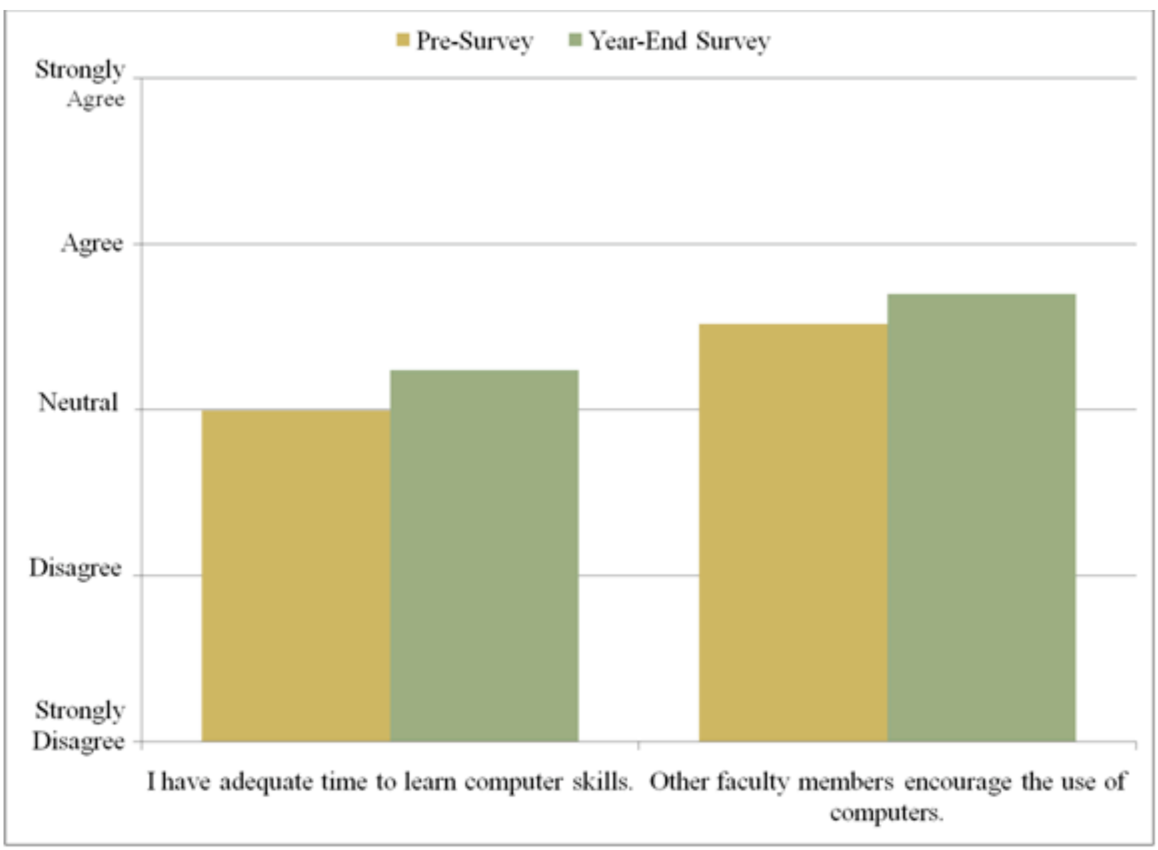

Figure 2. Greatest increases in items measuring perceptions of General School Support.

The changes in these items indicate that participants felt they experienced an increase in support by their peers and adequate time to learn computer skills.

Integration of Technology into the Classroom

The Integration of Technology into the Classroom section is an important area to measure because it relates directly to the focus of the FDE program. One subscale, Learning of Groups of Students had significant growth. Changes in the mean scores of all items of all subscales of the Integration of Technology into the Classroom section between the pre-institute and year-end surveys are depicted in Table 8. Note that this section has three subscales:

- Learning of Groups of Students
- Learning of Individual Students
- Teacher Instructional Activities

Table 8: *Change in Means of Items of the Integration of Technology into the Classroom Section between Pre-Institute and Year-End Surveys by Subscale.*

Subscale/ Items	Pre	Year-End	Change
Learning of Groups of Students			
Cooperative groups	1.72	2.01	0.29
As a research tool for my students	2.17	2.44	0.27
As a problem solving/decision making tool for my students	1.70	1.92	0.23
Small group instruction	1.67	1.87	0.20
Learning of Individual Students			
To promote student centered learning	2.06	2.33	0.27
Individual instruction	1.99	2.14	0.15
To tutor	1.74	1.82	0.09
Independent learning	2.34	2.40	0.06
As a reward	1.06	1.02	-0.04
Teacher Instructional Activities			
As a classroom presentation tool	2.56	2.94	0.38
To create web pages for instruction	1.29	1.52	0.23
As a communication tool (e.g., email, electronic discussion)	2.91	3.09	0.18
As a productivity tool (to create charts, reports or other products) for my instruction	2.37	2.35	-0.01
To assess student learning using technology (e.g., electronic portfolios, electronic gradebooks)	2.64	2.55	-0.09

Learning of Groups of Students

Items that had the greatest increases between the pre-institute and the year-end survey for the subscale that focuses on Learning of Groups of Students are depicted in Figure 3.

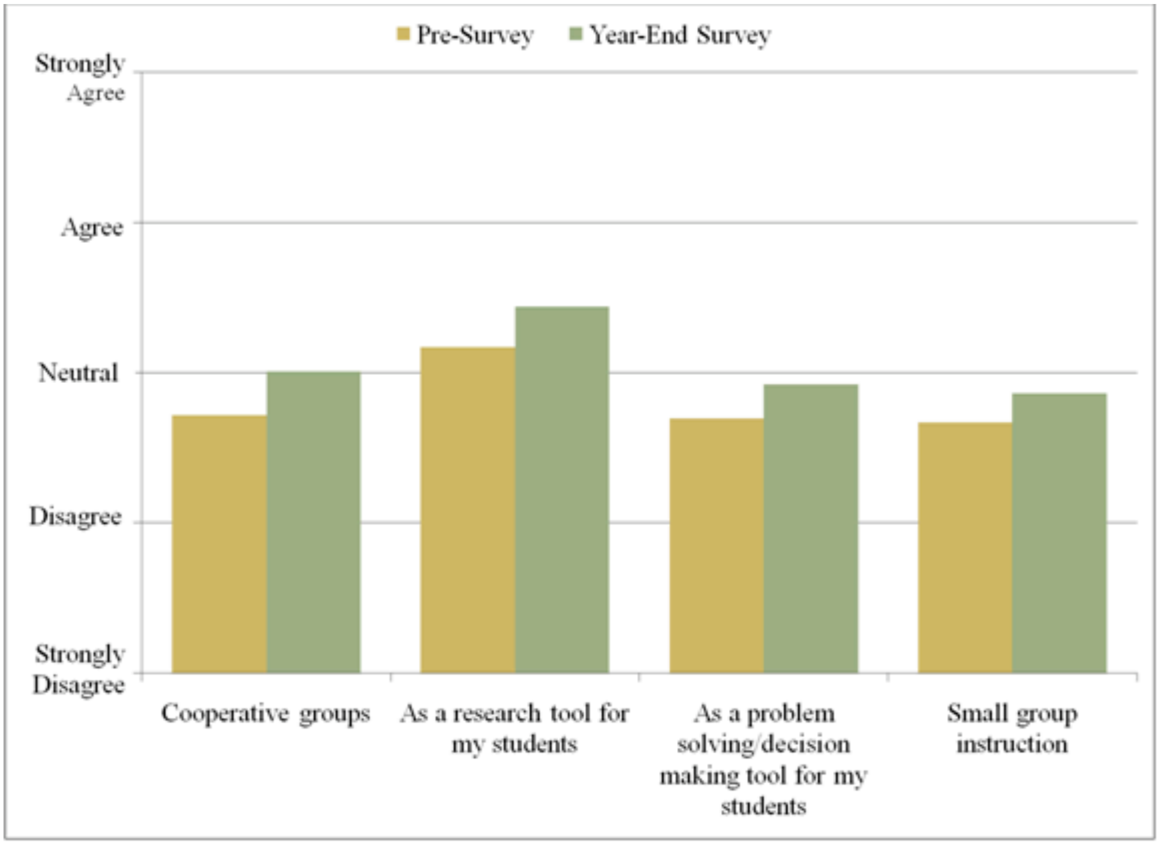

Figure 3. Items with greatest increases between the pre-institute and year-end surveys for the Learning of Groups of Students subscale.

The changes illustrated in Figure 3 seem to indicate that teachers increased the frequency that they had students working together and the frequency that they had students using technology as a tool for research and problem solving. These changes reflect the curriculum and focus of the activities used during the FDE Summer Institutes.

Learning of Individual Students

Although this subscale did not experience significant change, the mean scores on several items (*To Promote Student Centered Learning* and *Individual Instruction*) within the Learning of Individual Students subsection increased the most (see Figure 4); while other items experienced smaller increases or a decrease in (*As a Reward)*.

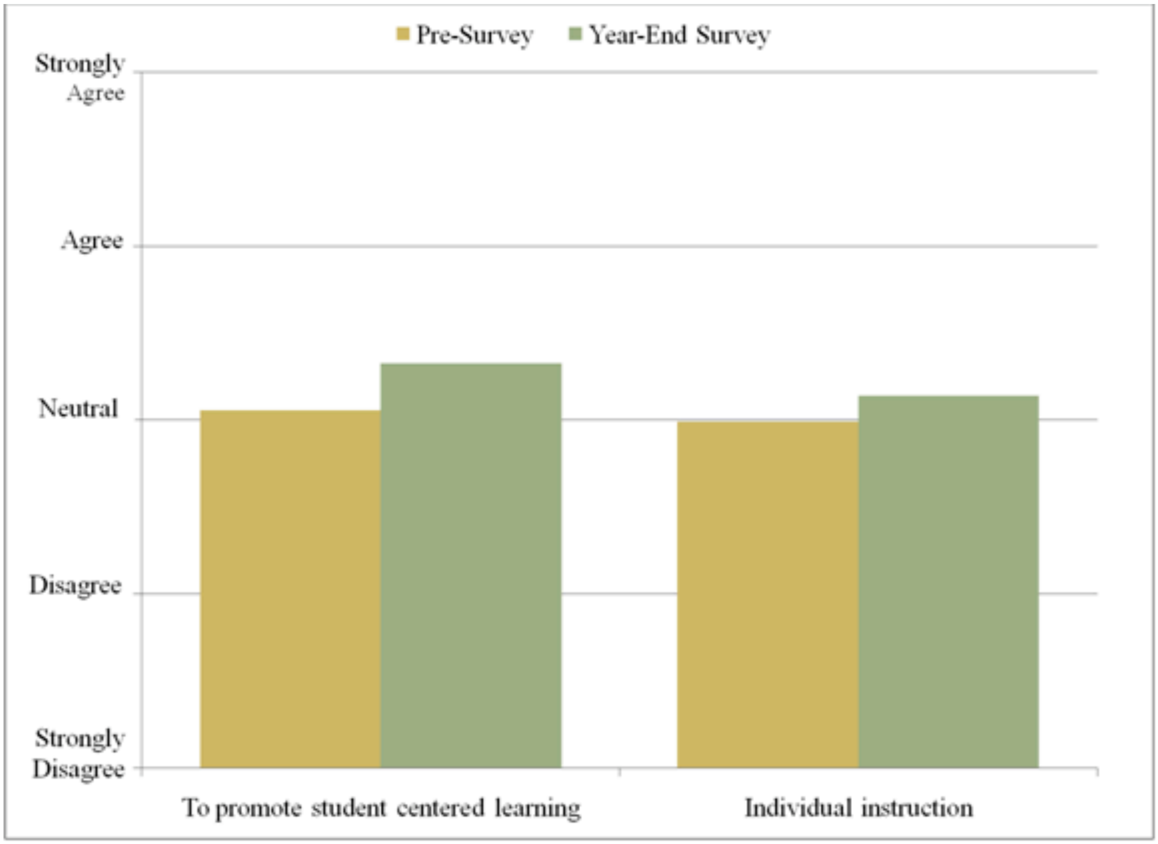

Figure 4. Items with greatest increases between the pre-institute and year-end surveys for the Learning of Individual Students subscale.

Teacher Instructional Activities

The items in the Teacher Instructional Activities subscale included classroom practices such as using technology as a presentation tool, productivity tool, or communication tool; creating web pages for instruction; and using technology to assess student learning. The greatest increases in mean scores between the pre-institute and year-end surveys for items in this section are depicted in Figure 5.

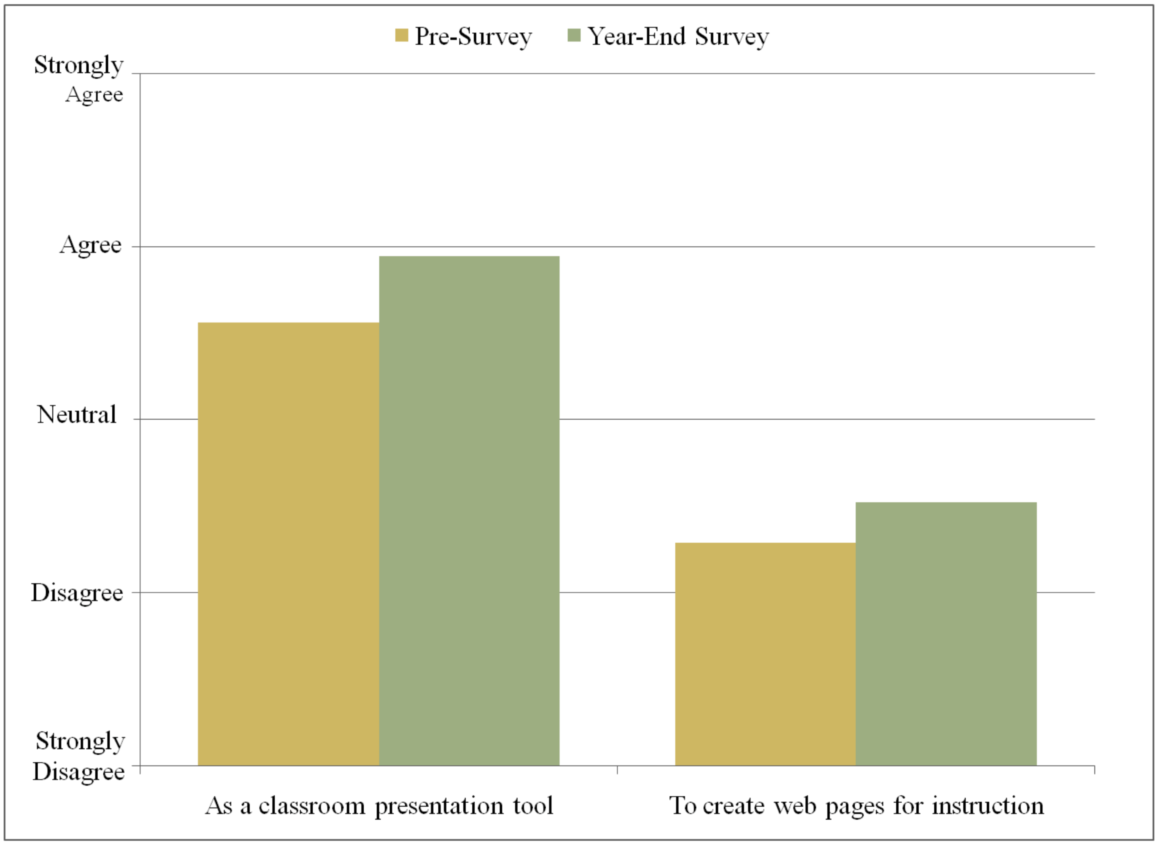

Figure 5. Items with greatest increases between the pre-institute and year-end surveys for the Teacher Instructional Activities subscale.

The item with the greatest increase between pre-institute and year-end surveys for this subscale was using for *As a classroom presentation tool* (see Figure 5). There were slight decreases in the use of technology as a productivity tool and for student assessment.

Teacher Software Use

The Teacher Software Use section of the survey contained three subscales (Advanced Production Software, Content Delivery Software, and Office Software). All changes in items in each subscale that measured the types of software used for school related activities by teachers are delineated in Table 9.

Table 9. *Change in Items on the Types of Software Used for School Related Activities by Teachers between Pre-Institute and Year-End Surveys by Subscale*

Items	Pre	Year-End	Change
Teachers Use Advanced Production SW			
Video editing (e.g., iMovie, MovieMaker, Premier)	0.77	1.44	0.67
Concept mapping (e.g., Inspiration, Kidspiration)	1.07	1.45	0.37
Graphics programs (e.g., PhotoShop, KidPix, ColorIt, Illustrator)	1.09	1.30	0.21
Desktop publishing programs (e.g., Pagemaker, Microsoft Publisher)	1.39	1.49	0.10
Simulations (e.g. frog dissections, science experiments)	0.56	0.64	0.08
Programming/authoring tools (e.g., Authorware, eZedia, HyperStudio)	0.36	0.39	0.03
Web publishing programs (e.g., FrontPage, DreamWeaver, Nvu)	0.90	0.80	-0.10
Teachers Use Content Delivery SW			
Instructional Games (e.g. Sim City)	0.66	0.78	0.12
Integrated Learning Systems (e.g., Josten, CCC)	0.74	0.79	0.05
Tutorials (programs that teach new concepts)	1.24	1.24	0.01
Drill and practice software (e.g. practice for spelling, math, etc.)	0.93	0.93	-0.01
Teachers Use Office SW			
Presentation software (e.g., PowerPoint, Persuasion, Keynote)	2.17	2.63	0.46
Web browsers (e.g., Netscape, Internet Explorer, Safari, Firefox)	3.36	3.49	0.13
Databases (e.g., FileMaker Pro, Access)	1.57	1.69	0.11
Spreadsheets (e.g., Excel, Lotus)	1.92	2.01	0.09
Word processors (e.g., AppleWorks, MS Word, ClarisWorks)	3.64	3.66	0.01

Although the overall section (Teacher Use of Software) was significant, only the Advanced Production Software subscale experienced a significant change between the pre-institute survey and the year-end survey. However, one item, *Presentation Software*, in the Teachers Use Office Software section of the survey had a large increase (.46). Individual items that had the greatest increases between the pre-institute and the year-end survey are depicted in Figure 6.

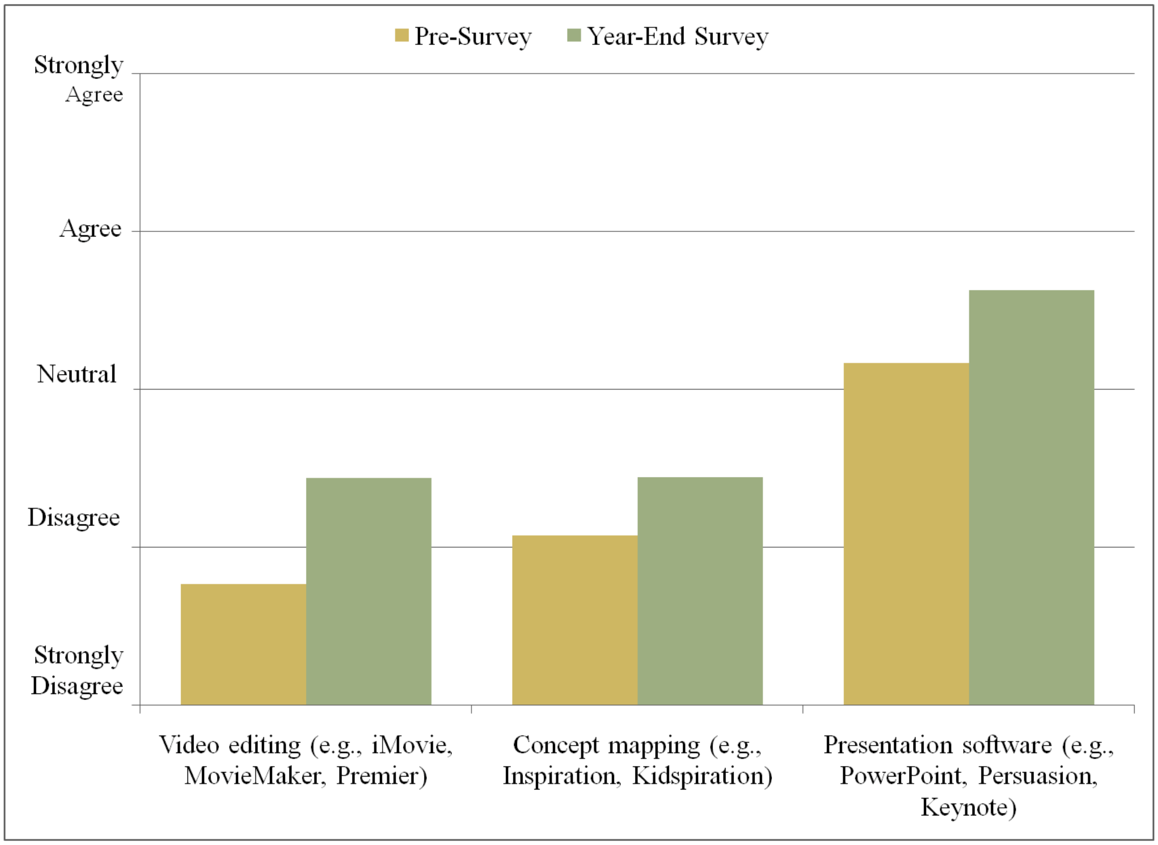

Figure 6. Greatest increases in items means on the types of software for Teacher Software Use section between pre-institute and year-end surveys.

The greatest increases in frequency of use for items in the Teacher Use of Software section were for Video Editing, Concept Mapping, and Presentation Software. These areas are all part of the focus on the FDE program; whereas, the use of technology for content delivery was not a focus.

Student Software Use

The Student Software Use section of the survey also included three subscales (Advanced Production Software, Content Delivery Software, and Office Software). All changes in items in each subscale that measured the frequency of software used for school related activities by students are delineated in Table 10.

Table 10. *Change in Items on the Types of Software Used for School Related Activities by Students Section between Pre-Institute and Year-End Surveys by Subscale*

Item	Pre	Year-End	Change
Students Use Advanced Production SW			
Video editing (e.g., iMovie, MovieMaker, Premier)	0.69	1.20	0.52
Concept mapping (e.g., Inspiration, Kidspiration)	0.93	1.24	0.30
Graphics programs (e.g., PhotoShop, KidPix, ColorIt, Illustrator)	0.80	0.98	0.17
Desktop publishing programs (e.g., Pagemaker, Microsoft Publisher)	0.71	0.83	0.12
Programming/authoring tools (e.g., Authorware, eZedia, HyperStudio)	0.29	0.38	0.09
Databases (e.g., FileMaker Pro, Access)	0.45	0.53	0.08
Web publishing programs (e.g., FrontPage, DreamWeaver, Nvu)	0.39	0.44	0.05
Simulations (e.g. frog dissections, science experiments)	0.58	0.62	0.04
Students Use Content Delivery SW			
Instructional Games (e.g. Sim City)	0.86	0.93	0.07
Tutorials (programs that teach new concepts)	1.16	1.22	0.06
Drill and practice software (e.g. practice for spelling, math, etc.)	1.43	1.41	-0.02
Integrated Learning Systems (e.g., Josten, CCC)	0.96	0.91	-0.05
Students Use Office SW			
Presentation software (e.g., PowerPoint, Persuasion, Keynote)	1.37	1.68	0.31
Web browsers (e.g., Netscape, Internet Explorer, Safari, Firefox)	2.33	2.56	0.22
Word processors (e.g., AppleWorks, MS Word, ClarisWorks)	2.01	2.13	0.12
Spreadsheets (e.g., Excel, Lotus)	0.77	0.85	0.08

The overall changes in the Student Use of Software section were not significant; however, there was a significant increase in the Students Use Advanced production Software section. This is also consistent with the focus of the FDE program, which is on using technology as a learning tool; not on using technology to deliver content. Items that had the greatest increase in frequency of use (between the pre-institute and the year-end survey) by students are depicted in Figure 7.

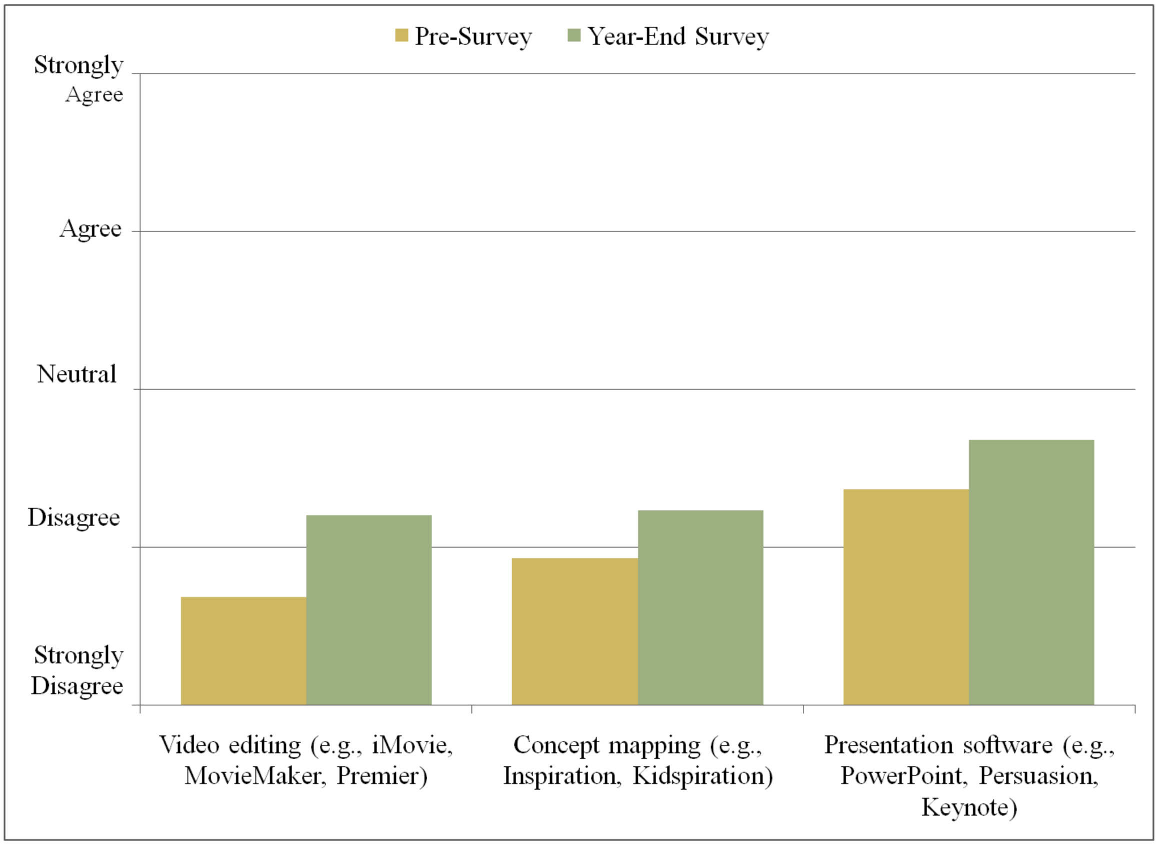

Figure 7. *Greatest increases in items on the types of software in Student Software Use section between pre-institute and year-end surveys*

The greatest increases for items measuring Student Use of Software were for video editing, concept mapping, and presentation software (see Figure 7). These were the same areas that experienced the greatest changes in the teacher use of software.

Digital Educator Profiles: Instructional Activities

The final three sections of the survey focused on attributes related to a profile of a digital educator. The attributes were categorized as Instructional Activities, Leadership Activities, and Classroom Activities.

The Instructional Activities section asked respondents how comfortable they were with various aspects of classroom technology. There were ten items in this section – some pertained to the students; some to the curriculum; and others to the use of technology for assessment. Table 11 outlines the mean score of items in this category for both the pre-institute survey and the year-end survey. Note that all changes in this section of the survey were .36 or greater, contributing to the overall significant changes in the Instructional Activities category, and reflecting the increase in teachers' perceptions to serve as digital educators in the classroom.

Table 11: *Changes in Mean Score of Items in the Digital Educator Profile for Instructional Attributes between the Pre-Institute and Year-End Surveys*

Item	Pre	Year-End	Change
Items that focus on the learner			
Incorporating digital technologies to meet the needs of all learners, including those with diverse backgrounds, characteristics and abilities	1.73	2.45	0.72
Leveraging digital technology as a way to increase student motivation and engagement	1.91	2.49	0.59
Facilitating learner-centered instruction	1.96	2.50	0.54
Maintaining classroom management when infusing digital tools in the classroom	2.25	2.76	0.51
Items that focus on the curriculum			
Infusing digital technology into a curriculum that is aligned with the development of 21st century skills	1.84	2.50	0.66
Infusing rigorous and relevant tasks that incorporate the use of digital technologies	1.72	2.36	0.64
Promoting the legal and ethical uses of digital resources	2.06	2.59	0.53
Selecting appropriate digital content, tools, and other resources to support the curriculum	2.06	2.54	0.48
Items that focus on assessment			
Using digital tools for authentic assessment of student work	1.82	2.48	0.67
Using digital technology to gather, assess, and analyze student data to design effective instruction	1.98	2.34	0.36

Instructional Items

The first four items listed in Table 11 focus on the learner. The three items with most growth are illustrated in Figure 8. Note that in all cases, the mean scores increased from "Comfortable" toward "Very Comfortable." The greatest growth was obtained in the area of *incorporating digital technologies to meet the needs of all learners, including those with diverse backgrounds, characteristics, and abilities*. Teachers also appear to have more skills in facilitating *learner-centered instruction* and *utilizing technology to expand meaningful and personalized access to the curriculum for all learners, while maintaining a positive learning environment.*

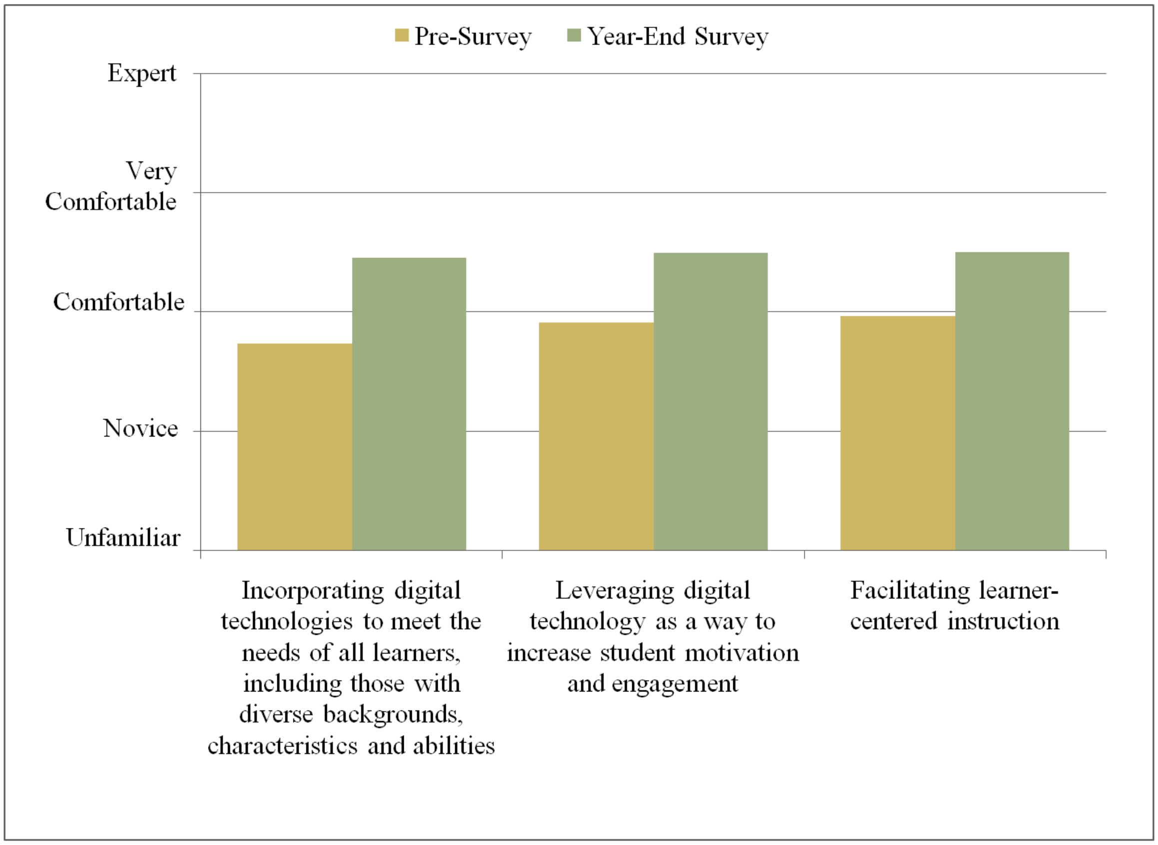

Figure 8. Items with greatest growth in the Digital Educator Profile for Instructional Attributes pertaining to the learners.

Curriculum Items

The next four items in the Instructional Attributes section reflect issues related to the curriculum. As depicted in Figure 9, teachers perceived the greatest changes in their abilities to *infuse digital technology into a curriculum that is aligned with the development of 21st century skills* and to *infuse rigorous and relevant tasks that incorporate the use of digital technologies*. In addition, teachers felt more comfortable with *promoting the legal and ethical uses of digital resources* and with *selecting appropriate digital content, tools, and other resources to support the curriculum.*

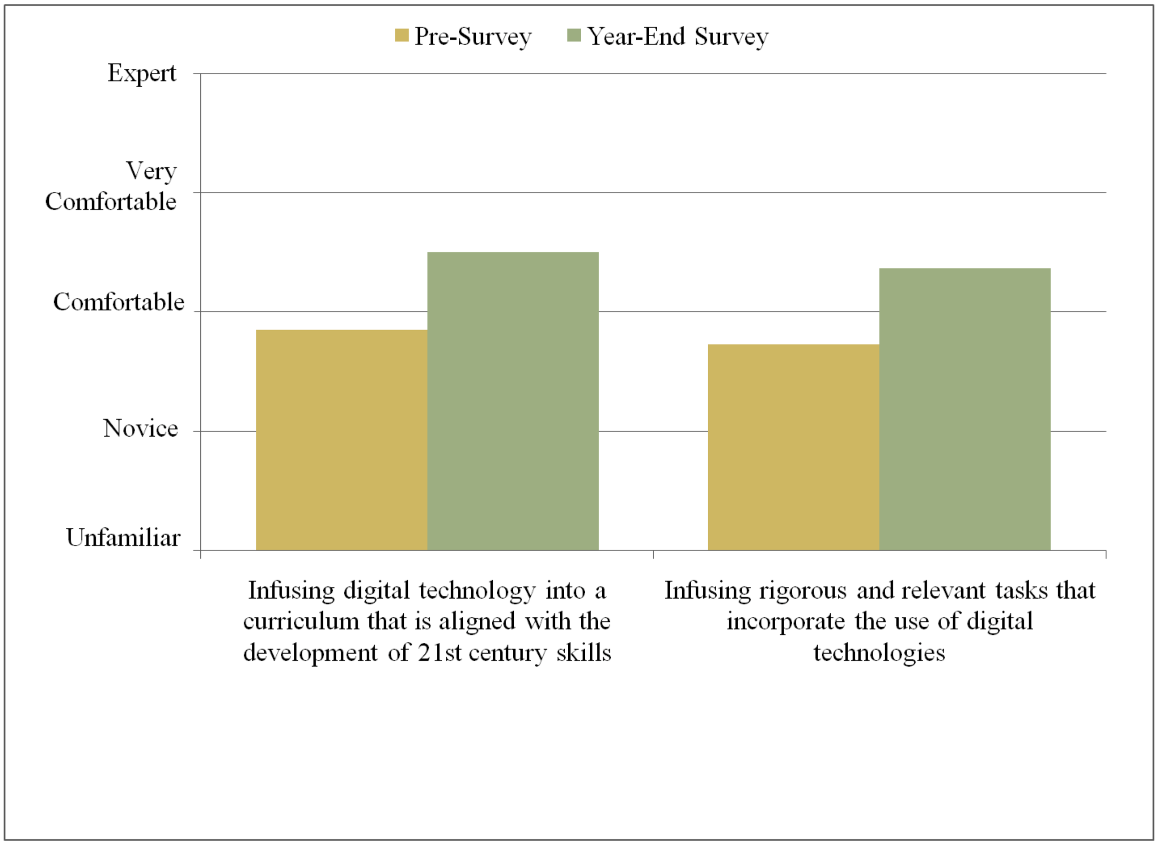

Figure 9. Items with greatest growth in the Digital Educator Profile for Instructional Attributes pertaining to curriculum.

Assessment Items

The final two items in the Instructional Attributes area focused on the use of technology for assessment. As teachers integrate technology into their daily instructional practices, they must also incorporate technology into their assessment practices. As illustrated in Figure 10, teachers have become more proficient in *using digital technologies to for authentic assessment of their students' work*. Teachers made the least gains in *using digital technology to gather, assess, and analyze student data to design effective instruction*, which is a much more complex task that involves the merging of multiple information sources.

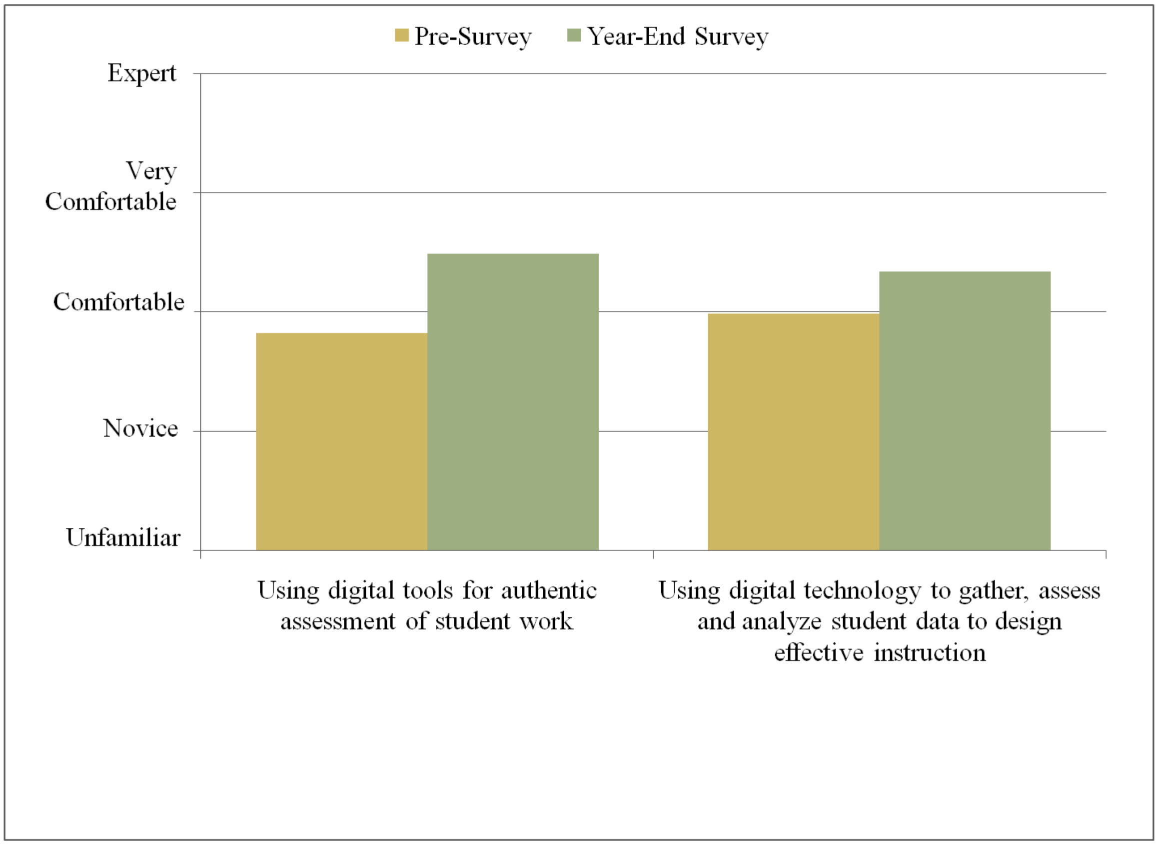

Figure 10. Items with greatest growth in the Digital Educator Profile for Instructional Attributes pertaining to assessment.

Digital Educator Profiles: Leadership Attributes

There were six items in the Leadership Attributes section – three pertained to personal growth and school based leadership and three related to collaboration outside of school. Table 12 outlines the mean score of items in this category (the overall growth in the Leadership category was significant) between the pre-institute survey and the year-end survey.

Table 12: *Changes in Mean Score of Items in the Digital Educator Profile for Leadership Attributes between the Pre-Institute and Year-End Surveys*

Item	Pre	Year-End	Change
Modeling, mentoring, and promoting the infusion of digital technologies in their school	2.04	2.50	0.46
Gathering qualitative and quantitative data to assess the impact of digital resources on student learning and achievement	1.54	1.99	0.45

Table 12: *Changes in Mean Score of Items in the Digital Educator Profile for Leadership Attributes between the Pre-Institute and Year-End Surveys*

Item	Pre	Year-End	Change
Maintaining awareness of current research, trends and best practices on the use of digital technologies	1.85	2.28	0.43
Using digital technologies to collaborate with other educators	2.11	2.52	0.40
Using digital tools to communicate with parents, experts and larger community	2.31	2.68	0.36
Sharing lessons, best practices, and reflections through websites, journal articles, and/or presentations at conferences	2.02	2.38	0.36

Personal Growth and School-Based Leadership

The first three items in the Leadership Attributes section are illustrated in Figure 11. The teachers experienced increased comfort with *modeling, mentoring, and promoting technology infusion in their schools*, as well as their *awareness of current research, trends, and best practices*. They were also more comfortable with the *collection and use of data to assess the impact of digital resources on student learning and achievement*.

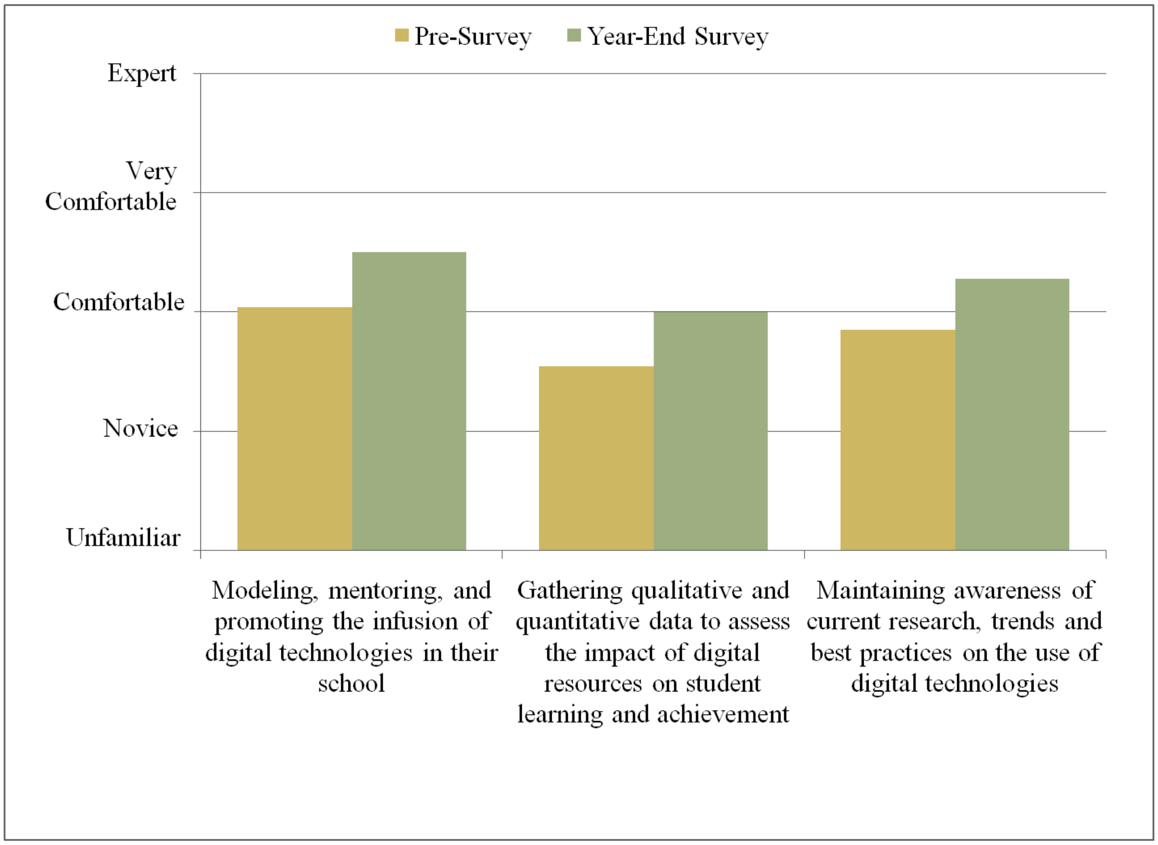

Figure 11. Changes in items related to personal growth and school-based leadership in Leadership Attributes section.

Collaboration Outside of School

Items that reflect changes in the Leadership Attributes related to collaboration outside of the school are illustrated in Figure 12. The greatest increases occurred in *using digital technologies to collaborate with other teachers* and *communicating with parents, the community, and outside experts*. Teachers also indicated increased professional contributions outside their own schools through *sharing their lesson plans and lessons learned about best practices on school websites and through published journal articles and presentations at conferences*.

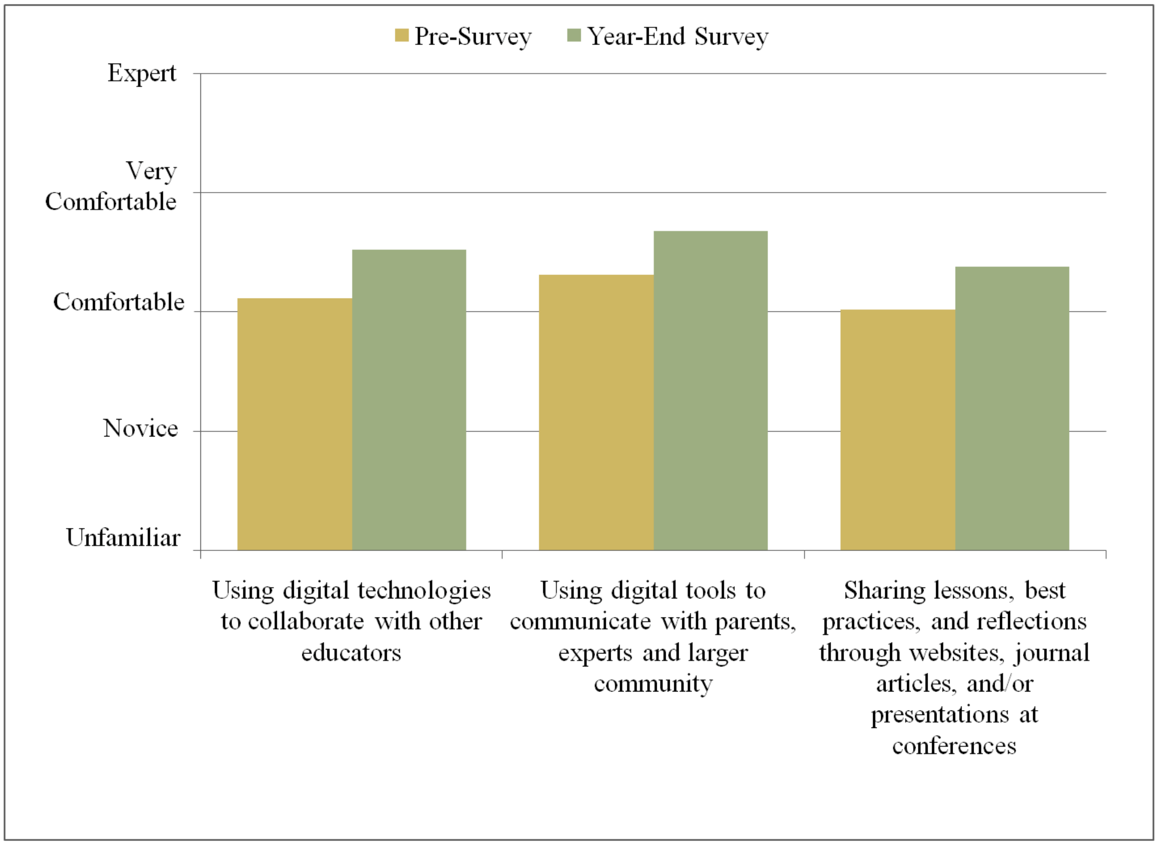

Figure 12. Items in the Leadership Attributes section for collaboration outside of school.

Digital Educator Profiles: Classroom Activities

The last section in the digital educator profile, which also experienced significant growth, was focused on Classroom Attributes. Changes for all items in this area are delineated in Table 13.

Table 13: *Changes in Mean Score of Items in the Digital Educator Profile for Classroom Attributes between the Pre-Institute and Year-End Surveys*

Item	Pre	Year-End	Change
Implementing activities where students communicate conceptual understanding rather than just recall or superficial understanding of the curriculum standards through the use of digital technologies	1.84	2.34	0.50
Implementing activities where students use digital tools to engage in substantive conversation to build knowledge while developing critical thinking skills	1.75	2.23	0.48

Table 13: *Changes in Mean Score of Items in the Digital Educator Profile for Classroom Attributes between the Pre-Institute and Year-End Surveys*

Item	Pre	Year-End	Change
Implementing activities that offer opportunities for students to construct knowledge through the use of digital tools to solve complex problems, discover new meaning, and develop understanding	1.83	2.30	0.46
Implementing activities where students use digital tools to collaborate, communicate and contribute with a larger community as a global learner	1.72	2.15	0.43
Implementing activities where students collaborate with peers to share knowledge, complete projects, and/or critique their work	2.03	2.45	0.43

Constructing Knowledge

The first three items in the Classroom Attributes section focus on constructing knowledge; they are illustrated in Figure 13. Teachers made substantial gains in their levels of comfort related to *implementing activities where students communicate conceptual understanding rather than just recall or superficial understanding of the curriculum standards through the use of digital technologies* and to *implementing activities where students use digital tools to engage in substantive conversation to build knowledge while developing critical thinking skills.*

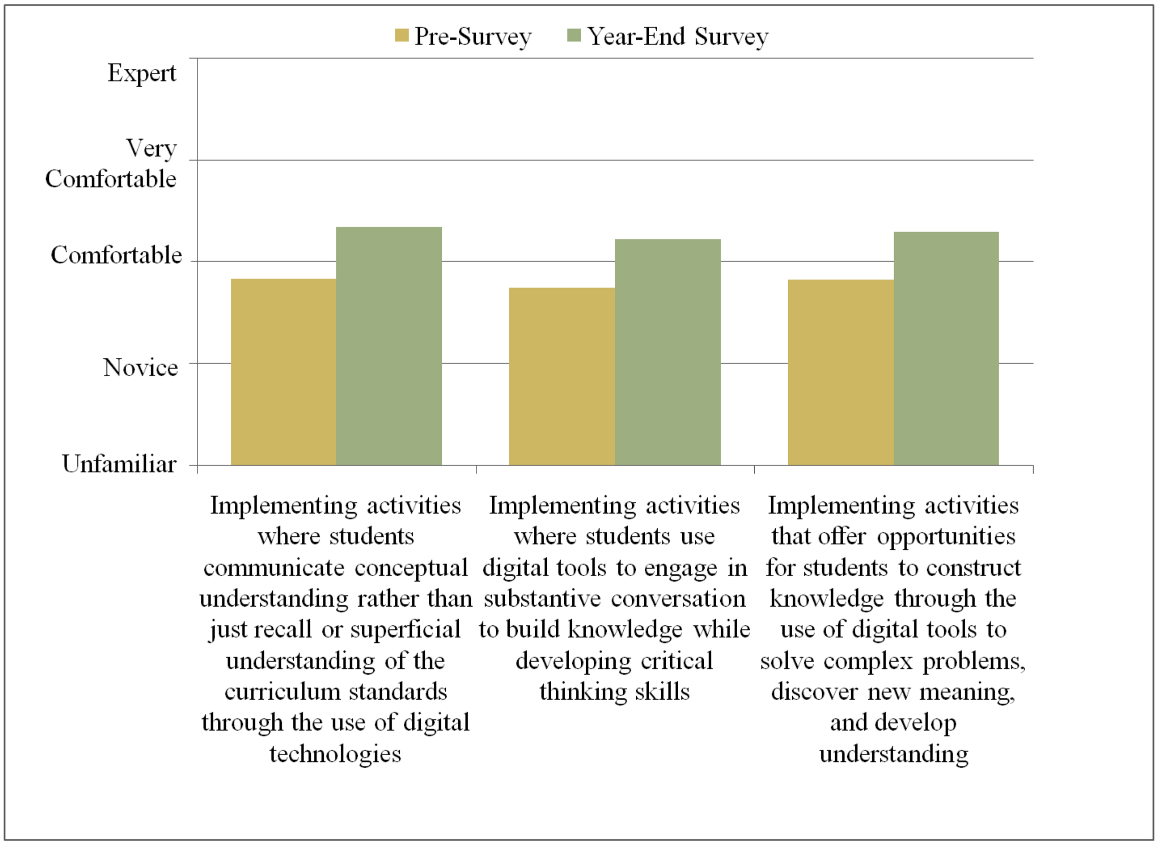

Figure 13. Items in the Classroom Activities section related to constructing knowledge.

Student Communication/Collaboration

Figure 14 illustrates the gains in items in the Classroom Attributes section that pertain to student communication and collaboration. Teachers have increased their comfort with *implementing activities where students collaborate with peers to share knowledge, complete projects, and/or critique their work* and *where students use digital tools to enhance their global learning through communication and collaboration with the community* and by providing learning opportunities beyond the confines of the classroom inside of the school.

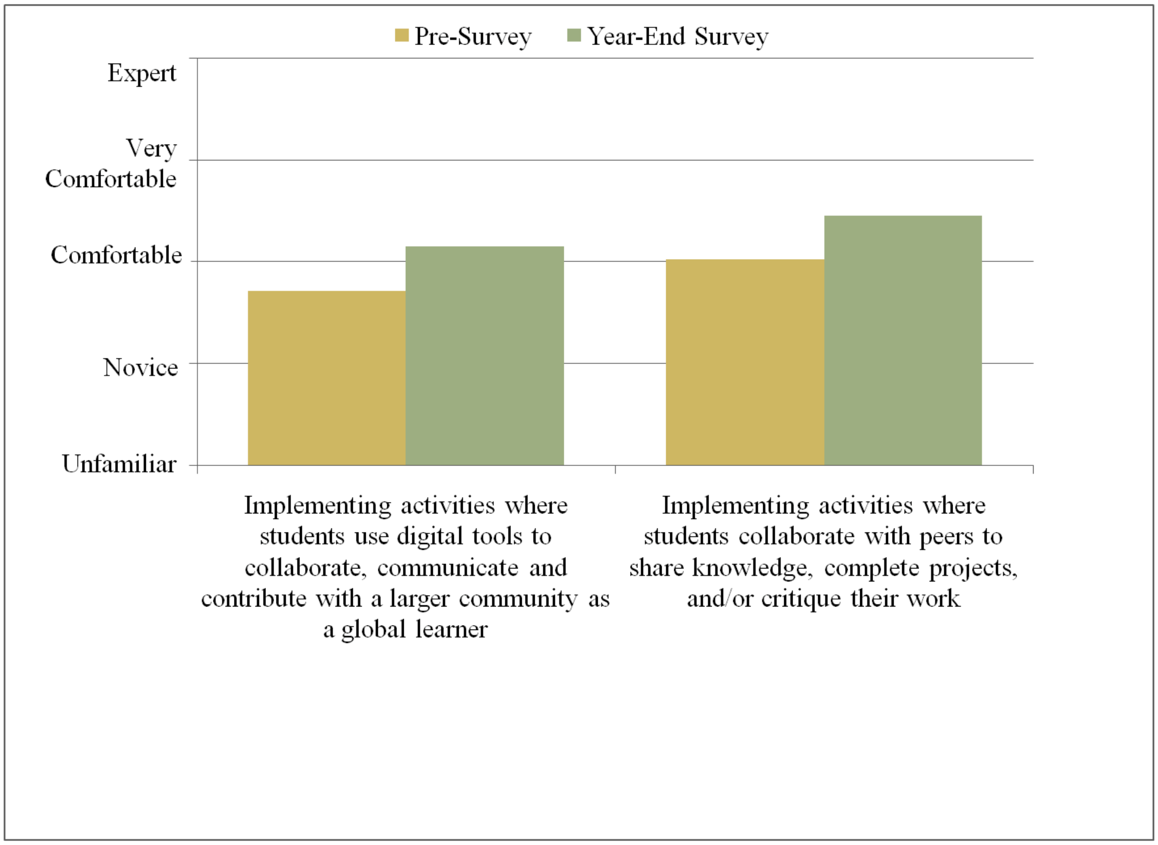

Figure 14. Items in the Classroom Activities section related to student communication and collaboration.

FINDINGS: PARTICIPANT DIALOGUE

In addition to the selected response items in the *Perceptions of Computer & Technology* survey, participants provided constructed responses to open-ended questions in the year-end survey.

Open-Ended Comments in Year-End Survey

Four open-ended questions were added to the year-end administration of the *Perceptions of Computers & Technology* survey. The responses to each question were analyzed qualitatively.

Q1. As you integrated technology into your classroom this year, what did you find were the most important valuable lessons you learned from being involved in the Summer Institutes last year?

One hundred twenty-two participants, who attended the summer 2007 institute, responded to this question – some included more than one response. Ninety-two percent of the responses were very positive, expanding on how the training program had increased their skills, knowledge, and ability to integrate technology into their classroom. Many of the participants (46%) emphasized the strategies and techniques they learned relative to integration ideas and classroom management. For example, one teacher wrote her most valuable less was: "Students love working with technology in small group situations – even those students who are at risk – and that they learn a great deal from their experiences."

Another theme that appeared in 29% of the responses focused on the benefits of learning about new technology tools at the summer institutes (such as iMovie, Smart Boards, Audacity, etc.). One participant wrote, "The most valuable lesson was gaining the knowledge of what programs are out there and how they can be used within the classroom environment."

The most valuable "lesson" for many of the teachers (23%) included personal attributes such as patience, confidence, flexibility, motivation, and perseverance. One teacher summed it up in this manner: "You'll never learn it if you don't try. Just go for it! It's okay not to know and to ask for help from those who do."

Q2. What barriers did you experience this year while integrating technology in the classroom?

The majority of the responses to this item centered on two issues -- lack of hardware (38%) and lack of time (27%). The hardware issue focused on insufficient access to laptops, desktops, and other hardware ("The lack of equipment at the school level. I only have 4 computers in my classroom (I have more than most. Some of our classrooms only have one). Our lab is outdated and SLOW. Half of the computers in the lab don't work").

Barriers related to time constraints included teachers having time to prepare a lesson ("The need for time to practice and create lessons") and students having class time to complete a lesson ("There wasn't enough time per class period. 55 minutes is not enough time to get the students going").

Other barriers that were mentioned included problems with technology (11%) and insufficient technical support within the schools (10%). Several teachers also mentioned barriers in the level of their (the teachers') skills or students' skills with technology. For example, one respondent stated that she realized that her "students for the most part are not 'digital natives.' They needed more time to play and learn programs."

Q3. How have you shared your technology training with your fellow teachers in your school?

A major objective of the Florida Digital Educator program is to create a cadre of teachers and technology specialists who can serve as mentors and coaches for other teachers. In response to a query about how they shared their training with fellow teachers, 96% (127 out of 132) participants replied that they have had the opportunity to either mentor other faculty members or share projects via lesson plans, blogs, etc. Sharing their knowledge and skills through collaboration with peers (either formal or informal) was listed by 76% of the teachers. In addition, 23% of the respondents conducted formal workshops, in-service training sessions at their school/district, or conference presentations.

Q4. If you could redesign the training that you experienced last summer for the next cohort this summer, how would you change the training?

Thirteen percent of the 133 respondents for this item felt that no changes were necessary. One teacher remarked: "I found the training to be exactly what I needed, a 'boot camp' with excellent follow up and support."

Constructive comments from other participants provided a wide array of suggestions, including the following:

- Allow more time for each technology -- more depth; less breath (29%)
- Separate participants by level of technology expertise (13%)
- Make sure the software and connectivity works during the summer institutes (8%)
- Be less Macintosh-centric; expand training on Windows (8%)
- Allow participants to select technology sessions that are of most interest/value to them rather than rotating everyone through the same sessions (5%)

DISCUSSION

Based on a study by SRI International, professional development activities can have a positive impact on teachers' use of educational technology:

> Both formal and informal forms of professional development in educational technology appear to influence teachers and their classroom practice. The number of professional development activities experienced, the degree to which the activities were aligned with research-based features of high-quality professional development, and a focus on integrating technology into teaching appear to exert positive effects on whether or not teachers use technology during instruction (Adelman, Donnelly, Dove, Tiffany-Morales, Wayne, and Zucker, 2002, p. 5).

The structure of the FDE program provides both formal (summer institutes) and informal (follow-up activities and mentoring) forms of professional development. In addition, research and practice related to adult learning principles, experiential learning, and project-based learning were used to frame the curriculum and are woven throughout the program's activities. The FDE program is solidly focused on the integration of technology, as a learning tool, to improve teaching and learning.

Summary of Year Two Results

Findings from the evaluation of the Florida Digital Educator program suggest that Florida's investment in professional development has resulted in significant increases in teachers' comfort and confidence in using technology in the classroom. This increased comfort level manifested itself in action, as in teachers' reported significant increases in their use of instructional applications and in students' use of technology as a tool for learning.

Specifically, teachers reported a significant increase both in their use and their students' use of advanced production software (such as video editing, web pages, concept mapping, and graphics programs). In addition, within the Integration of Technology into the Curriculum section of *Perceptions of Computers & Technology Survey*, the item with the greatest increase focused on teachers using presentation software in their instructional activities. In addition, twenty-nine percent of the responses to the open-ended questions in the year-end survey focused on the benefits of learning about new technology tools. These results align with the specific activities that were modeled at the summer institutes. The software skills were embedded in the broader projects of developing curriculum, as teachers planned and developed technology infused lesson plans aligned with Sunshine Standards. Specifically, project-based learning (Blumenfeld, Soloway, Marx, Krajcik, Guzdial & Palincsar, 1991; Katz & Chard, 1989; Means & Olson, 1997) was the major theoretical tenet underpinning these professional development activities.

Other indicators of the success of the program include a significant increase in student-centered learning activities (cooperative groups, as a research tool for my students, as a problem solving/decision making tool for my students, and small group instruction). Themes extracted from the responses to the open-ended questions in the year-end survey indicated that (46%) of the participants felt that the strategies and techniques they learned relative to integration ideas and classroom management were the most valuable lessons. The methods used for the professional development activities of the FDE were selected based on experiential learning theory (Rogers,1969; Rogers & Freiberg, 1994). The participants were involved in the nature and direction of the learning process as they applied and practiced skills learned in developing personally meaningful, inter-disciplinary, instructional units that they would use with their students and share with their colleagues in their home schools.

Although the increase in the section for General School Support was not significant in the second year implementation, the items with the greatest positive changes were the perception of adequate time to learn computer skills and the perception of support from the faculty to use computers. These increases in perception are interesting movements that may be a result of the collaborative atmosphere of the summer institutes and follow-up activities. However, the implementation of the follow-up activities may confound the measurement of these changes. Some districts and schools provided on-going formalized follow-up support for integrating technology into the curriculum after the summer institutes, while for other participants, the follow-up support was totally voluntary. Themes extracted from the open-ended questions in the year-end survey indicated that the implementation of many of the voluntary follow-up activities was sporadic and inconsistent. Formalized follow-up may be an important aspect to include in the plan for professional development. Supporting collegial activities among faculty members may be very important for promoting the supportive atmosphere that enhances the integration of technology throughout the curriculum. Fluent computer skills may take extended time to develop. Future research studies should examine the relationship of follow-up activities and the successful infusion of technology.

Some of the largest significant changes over time occurred in the three sections related to the attributes of a Digital Educator: Instruction, Leadership, and Classroom. These attributes were based on national standards and expectations, such as the NETS for teachers, technology facilitators, and leaders (ISTE, 2007). For example, the level of comfort for all ten items in the instruction section increased from just under “comfortable” toward “very comfortable.” The items with the greatest increase in this section were for *incorporating digital technologies to meet the needs of all learners, including those with diverse backgrounds, characteristics, and abilities* and for *using digital tools for authentic assessment of student work.* The significant growth in how participants view themselves as Digital Educators in Instruction demonstrates that teachers view the infusion of technology as an important component for instructing and supporting the success of all students.

The level of comfort for all six items in the Digital Educator: Classroom increased from just under “comfortable” to just over “comfortable.” The significant increase in Digital Educator: Classroom suggests that teachers are increasing students’ use of technology within the classroom to develop deep understanding of concepts, to solve complex problems, to collaborate with others, and to participate in global experiences outside of the walls of the traditional classroom. The Summer Institute’s activities in which teachers participated may have stimulated their deep understanding of the pedagogy for infusing technology. Then, throughout the year, the teachers applied this pedagogy to their infusion of technology into the daily learning experiences of their students.

The increases in participants' comfort with being a Digital Educator: Leadership was significant, although the changes for each of these items were not as large as the increases in items in the other sections for attributes of a Digital Educator. The items with the greatest positive changes were for *modeling, mentoring, and promoting the infusion of digital technologies in their school* and for *gathering qualitative and quantitative data to assess the impact of digital resources on student learning and achievement.* These increases seem to be directly tied to the formalized follow-up activities of some of the participants. These educators were involved in action research projects, on-going individualized mentoring, and technology infusion study groups. As indicated in themes from the open-ended year-end survey questions, 97% of the participants actively shared their lessons and resources and collaborated with peers. Many presented in workshops and delivered staff development sessions; some even presented the results of their action research at conferences. Based on the theoretical frameworks for experiential learning (Rogers, 1969; Rogers & Freiberg, 1994) and adult learning (Cross, 1981; Knowles, 1984), the formal follow-up activities included the participants in the design and delivery of the instruction with small groups of collegial compatriots. These groups of individuals provided the support, structure for activities, and feedback that stimulated professional reflection. Future research is needed to further examine the elements of effective follow-up activities and support structures.

In addition to noting significant changes in their perceptions, the participants enjoyed the professional development activities that were provided for them (98% percent reported a positive experience in the FDE program).

Year Two vs. Year One Results

The results of this evaluation of both the first year and second year implementation of the Florida Digital Educator program were very positive. The design and implementation of the programs produced significant changes in numerous factors related to technology integration.

For instance, the increases in the Confidence and Comfort with Computers section, specifically the Comfort subsection, were significant for both years (see Table 14). Increases in the Teacher use of Software, specifically the subsection for Teacher Use of Advanced Software, were significant for both years. In addition, increases in the three sections for Digital Educator attributes (Instruction, Leadership, and Classroom) were significant for both years. These consistent results suggest that the design of the FDE Program (based on the theoretical frameworks of experiential learning, project-based learning, and adult learning) may consistently support positive changes in educators' comfort with computers, their use of software, and their perceptions of their digital educator profiles.

In addition, increases in Student Use of Advanced Software were significant for both years. This suggests that teachers' participation in the FDE may also have a positive relationship with their students using advanced software. The focus of the Summer Institutes was on creating project activities that used these advanced software. Another major focus of the activities of the Summer Institutes was on planning and developing collaborative project-based learning experiences. The success of the FDE for supporting students' collaborative activities was confirmed by significant increases in the Learning of Groups of Students subsection for both years.

There were also several differences in the results obtained from the first and second year implementation of the FDE. For instance, for the General School Support section, the changes were significant and positive in the first year, and not significant in the second year. The scores of several items on the pre-institute survey for the second year were higher than those during the first year. These were *the computers at my school have sufficient software, the administration supports computer related training, the administration actively encourages the use of computers in the classroom*, *and my students have sufficient access to computers at school*. In addition, the second year began the Summer Institutes with a lower score in *I have adequate time to learn computer skills*. A possible explanation for why the items had higher pre-institute scores for the second-year cohorts was that the second year participants observed and were influenced by the support of the administration for purchasing hardware and supporting the training of the first year participants.

Another difference was for Teacher Instructional Activities subsection of the Technology Integration section. This was significant for the first year but not significant for the second year. Overall, Teacher Instructional Activities were similar or lower for the pre-institute survey during the second year. In addition, the increases in use obtained from the year-end survey were lower in the second year. Perhaps on average, the educators with more technology knowledge attended the first year Summer Institutes. The focus of teachers after the Summer Institutes in the second year may have been on students using the technology for project-based instruction as opposed to teachers using technology for instructional activities.

The last difference between the two years was for the Student Software Use. During the first year, increases in the Student Software Use section were significant, but they were not significant for the second year. This may be due to differences in the Students Use of Office Software subsection. During the first year, increases in Students Use of Office Software were significant, but not in the second year. When individual items within these categories were examined, the pre-institute survey scores were similar for the two years, but the increases in the scores on the year-end survey for the second year were lower than the increases for the first year. This may suggest that there was less emphasis on the positive aspects of student use of office software during the second year. Changes in the delivery of the summer institutes during the second year may have placed more emphasis in utilizing advanced software for producing projects than on the more traditional software available.

Table 14. *Significant Changes in Perceptions of Computers & Technology Scales between Pre-Institute and End-of-the-Year Surveys for Year One and Year Two Evaluation*

Scale and Subscale	Year One Change	t Value	Pr > |t|		Year Two Change	t Value	Pr > |t|	
Confidence/Comfort w/Computers	0.34	3.77	0.0003	**	0.31	4.31	<.0001	**
Comfort	0.49	4.69	<.0001	**	0.41	4.86	<.0001	**
Belief	0.06	0.78	0.4388		0.08	1.18	0.2411	
General School Support	0.26	2.93	0.0041	**	0.03	0.34	0.7369	
Integration of Technology	0.26	2.75	0.0069	**	0.16	1.70	0.0908	
Learning of Groups of Students	0.27	2.15	0.0335	*	0.24	2.14	0.0341	*
Learning of Individual Students	0.21	1.74	0.0844		0.10	0.96	0.3369	
Teacher Instructional Activities	0.31	2.78	0.0064	**	0.14	1.28	0.2012	
Teacher Software Use	0.18	2.34	0.0207	*	0.14	2.07	0.0406	*
Teachers Use Advanced Production SW	0.27	2.97	0.0036	**	0.19	2.41	0.0173	*
Teachers Use Content Delivery SW	0.15	1.25	0.2131		0.04	0.42	0.6768	
Teachers Use Office SW	0.09	1.00	0.3217		0.16	1.83	0.0690	
Student Software Use	0.17	2.15	0.0338	*	0.14	1.82	0.0714	
Students Use Advanced Production SW	0.16	2.02	0.0461	*	0.17	2.21	0.0287	*
Students Use Content Delivery SW	0.05	0.36	0.7183		0.01	0.13	0.8967	
Students Use Office SW	0.32	2.59	0.0110	*	0.18	1.65	0.1005	
Digital Educator Instruction	0.71	5.60	<.0001	**	0.57	5.51	<.0001	**
Digital Educator Leadership	0.62	4.79	<.0001	**	0.41	3.83	0.0002	**
Digital Educator Classroom	0.65	4.68	<.0001	**	0.47	3.94	0.0001	**

*p<.05
**p<.01

Sustaining the Momentum

The success of the Florida Digital Educator program is due to several factors, including the curriculum and intensive, hands-on strategy of the summer institutes, the support of the Master Digital Educators, and the follow-up activities in the subsequent academic year (Harris, 2008).

The curriculum of the summer institutes emphasizes the use of digital tools to enhance learning. Through a series of short sessions, participants are introduced to various tools (such as podcasting or digital video) in the context of K-12 lessons. The summer institutes model a student-centered, project-based approach, with ample opportunities for collaboration. Examples of technology-rich lesson plans in various content areas are woven throughout the summer institutes.

"While new digital technologies make a learning revolution possible, they certainly do not guarantee it. To take full advantage of new technologies, we need to fundamentally rethink our approaches to learning and education – and our ideas of how new technologies can support them" (Resnick, 2002, p. 32). A major focus of the Florida Digital Educator program has been the effective use of technology as a classroom learning tool. Continued support, resources, and professional development will enable Florida's teachers to empower their students to succeed in the digital age.

Limitations

The results of this evaluation of the second year implementation of the Florida Digital Educator program are very positive. The design and implementation of the program produced significant changes in numerous factors related to technology integration.

However, the results must be interpreted with consideration for the limitations of this study. Out of 1166 attendees at the summer institutes, only 331 completed the pre-institute survey, on which this evaluation is based. It seems probable that some of the districts did not convey the importance of completing the survey. In addition, a sampling bias may also be a factor since the pre-institute and year-end surveys were administered online; participants, who were uncomfortable responding in this format, may have chosen not to respond to the survey.

Another limitation is that the participants came to the summer institutes for a variety of reasons; some were required to attend by their districts because of grant requirements, and some chose to attend for personal reasons. In addition, the follow-up activities and treatments throughout the school year were not uniform and consistent for all participants.

The Florida Digital Educator Program was a statewide initiative with a variety of factors that are particular to the state of Florida; therefore, the results of this study may not generalize to other professional development initiatives in other states.

RECOMMENDATIONS

Based on the data presented in this report, the following recommendations are offered for future implementations of the Florida Digital Educator program and similar professional development initiatives.

- *Ensure that all participants are encouraged to complete the pre-institute survey*. In the second year of implementation (2007), the districts were responsible for asking their teachers to complete the pre-institute surveys prior to attending the summer institutes. Since the completion rate was only 331 out of 1166 participants, there was obviously a lack of communication about the importance of the survey and the related research. This low "return" rate then impacts the data and the results of the research.

- *Continue offering hands-on summer institutes*. The decision to ensure that all participants at the summer institutes have access to a laptop (either bringing their own or using a loaner) has worked out very well. Qualitative analysis of the responses from the participants who attended these institutes showed 92% had a positive experience, with many remarking about how valuable it was to learn to use the new tools. It seems evident that the hands-on nature of the institutes, wherein teachers could actively practice the skills as they learned them, was instrumental in the success of the institutes.

- *Continue to leverage the support of the Master Digital Educators*. During the 2007 FDE program there were 68 MDEs available to assist with the design and delivery of the summer institutes. In addition, the MDEs played a major role in the follow-up activities. The MDEs represented 34 different Florida school districts, providing a network of trainers throughout the state. This "train the trainers" model has been extremely successful.

- *Collect consistent data for the evaluation of the Florida Digital Educator professional development program*. Effective professional development includes evaluation to assure that the training is meeting the specific needs of the participants (Rodrigues, & Knuth, 2000). As the FDE program continues into its third year, it is essential that consistent data continue to be collected and analyzed to ensure the ability to measure trends and contrast results from year to year. In Year One, three surveys were conducted (pre-institute, post-institute, and year-end); whereas, in Year Two, only the pre-institute and year-end surveys were conducted.

- *Improve skill-based assessment of participants in FDE program*. One of the recommendations at the end of Year One was the implementation of skill-based assessments in addition to the surveys, interviews, open-ended comments, etc. In Year Two, each participant was required to submit a lesson plan, which was assessed by the MDEs. Of 640 lesson plans that were submitted, 5 were judged to be outstanding; 486 were good and 149 were unsatisfactory. For future years, an online lesson plan database (with virtual submissions) should make the process and the analysis more seamless.

- *Incorporate more depth and less breadth into the summer institutes.* A recurring theme in the year-end survey was to address fewer topics in the summer institutes, but allow more time per session so that the teachers can master the skill/technology before moving on to another topic. As one participant suggested, " …less surface training and more in depth training. I would sooner know one thing very well than three things a little."

- *Allow more participant choice (in topics) during the summer institutes*. Several respondents expressed the sentiment that participants should be allowed to select topics that would be most beneficial for their environment and interests. For example, one respondent suggested "Perhaps instead of having a little snap-shot of everything out there, maybe we could have people sign up for different software/hardware sessions THEY would like to see."

- *Consider grouping strategies based on participants' level of expertise or content area for the summer institutes*. With attendees from such a wide variety of backgrounds and levels of expertise, it is almost impossible to structure a "one size fits all" program. Many respondents suggested grouping strategies at the summer institutes, such as separating by expertise level and by content area. A recommendation included: "First and foremost, I would separate the trainees into different levels based on their computer knowledge. We had a lot of people in the class who knew nothing. A lot of time was wasted showing them how to log on and do basic skills that many of us already had. We needed a lot more training on how to teach with the computers rather than just doing projects to practice with the software."

- *Encourage participation in follow-up activities during the subsequent school year (after the summer institutes).* "As teachers develop their core technology skills, they need on-going support through a professional development environment that is consistently interwoven with hands-on use of technology to reinforce their efforts and learning" (Cunningham, 2003, p.1). Although Year Two incorporated more follow-up activities than Year One, many of the participants did not take part in the activities. All districts need to encourage consistent, continual participation.

- *Make the summer institutes (and the FDE program) less Macintosh-centric*. Several participants remarked that the summer institute should have additional options and topics related to PCs. Although many of the laptop initiatives focused on Macintosh computers, several of the schools or districts are heavily invested in PC technologies. " I would separate the PC users from the MAC users. There was too much time spent sitting and listening while the different platform was explained."

- *Allow participants from schools or districts to work together on group projects at the summer institutes*. Many districts have on-going technology initiatives, such as peer coaching. Many respondents felt that it would be more beneficial for them to be able to focus on specific school or district goals during the group projects. "I would have teachers from the same location work together. They know the needs of their school and working together will give them an opportunity to discuss ways in which they can best implement what they are learning and put the things together."

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APPENDIX A: PERCEPTIONS OF COMPUTERS & TECHNOLOGY SURVEY (PRE-INSTITUTE)

Perceptions of Computers & Technology

This survey is being conducted to help evaluate the Summer Institutes. It will take approximately 15 minutes to complete. Although you will not be paid for your participation in this study, you can receive a copy of the results.

You will not directly benefit from participating in this study, and there are no known risks connected with participation in this study. All records will be kept confidential to the extent of the law. Authorized research personnel, employees of the Department of Health and Human Services, and the USF Institutional Review Board and its staff, and any other individuals acting on behalf of USF, may inspect the records from this research project. If this study is published, the information will be presented in aggregate form only. It will not include any information that would identify you in any way.

Your decision to participate in this research study is completely voluntary, and you are free to withdraw at any time. If you have any questions about this research study, contact Ann Barron at (813) 974-1631. If you have questions about your rights as a person who is taking part in a research study, you may contact the Division of Research Compliance of the University of South Florida at (813) 974-5638.

Please let us know if you are a first time user or a returning user:

First time user | Returning user

Perceptions of Computers & Technology

Please enter in your email address and a password and click "Login" to continue your survey!

If you have problems logging in, please contact technical support at mailto:survey@fcim.org?subject=Perceptions Survey Help.

Email:

Password:

Login | Cancel

Forgot your password?

Perceptions of Computers & Technology

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Confidence And Comfort Using Technology

Key

1=strongly disagree
2=disagree
3=neutral
4=agree
5=strongly agree

Directions: Please read the following statements and select the one response that best reflects your level of agreement.

1. I have had adequate training in technology use.	1	2	3	4	5
2. I use computers effectively in my classroom.	1	2	3	4	5
3. I believe that technology enhances my teaching.	1	2	3	4	5
4. I believe that **student use** of technology enhances student performance.	1	2	3	4	5
5. I believe that **my use** of technology enhances student performance.	1	2	3	4	5
6. I feel prepared to use laptop computers in my classroom.	1	2	3	4	5
7. I feel prepared to create rubrics to assess multimedia projects.	1	2	3	4	5
8. I feel prepared to guide other teachers in planning and implementing lessons that incorporate technology.	1	2	3	4	5
9. I feel comfortable using computers for classroom instruction.	1	2	3	4	5
10. I feel comfortable assigning multimedia projects to my students.	1	2	3	4	5

Continue >

Perceptions of Computers & Technology

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General School Support

Key
1=strongly disagree
2=disagree
3=neutral
4=agree
5=strongly agree

Directions: Please read the following items and select the one response that best represents your level of agreement.

1. I have adequate time to learn computer skills.	1	2	3	4	5
2. I have sufficient access to computers at my school.	1	2	3	4	5
3. I have a sufficient level of technical support at my school for technology.	1	2	3	4	5
4. I have sufficient access to the Internet at school.	1	2	3	4	5
5. My students have sufficient access to computers at school.	1	2	3	4	5
6. The administration supports computer related training.	1	2	3	4	5
7. The administration actively encourages the use of computers in the classroom.	1	2	3	4	5
8. The computers at my school have sufficient software.	1	2	3	4	5
9. Other faculty members encourage the use of computers.	1	2	3	4	5

Continue >

Perceptions of Computers & Technology

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Integration Of Technology Into The Classroom

Key

1=not at all

2=once a month or less

3=once a week

4=several times a week

5=every day

Directions: Listed below are teaching modes in which computers may be used. Indicate how often you use computers in each teaching mode.

1. Small group instruction	1	2	3	4	5
2. Individual instruction	1	2	3	4	5
3. Cooperative groups	1	2	3	4	5
4. As a reward	1	2	3	4	5
5. Independent learning	1	2	3	4	5
6. To tutor	1	2	3	4	5
7. To promote student centered learning	1	2	3	4	5
8. As a research tool for my students	1	2	3	4	5
9. As a problem solving/decision making tool for my students	1	2	3	4	5
10. As a productivity tool (to create charts, reports or other products) for my instruction	1	2	3	4	5
11. As a classroom presentation tool	1	2	3	4	5
12. As a communication tool (e.g., email, electronic discussion)	1	2	3	4	5
13. To create web pages for instruction	1	2	3	4	5
14. To assess student learning using technology (e.g., electronic portfolios, electronic gradebooks)	1	2	3	4	5

Continue >

Perceptions of Computers & Technology

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Types Of Software Used To Complete School Related Activities

Key
1=not at all
2=once a month or less
3=once a week
4=several times a week
5=every day

Directions: For each type of software select your response to indicate how often **YOU (THE TEACHER) USE** the software to complete school related activities.

You (the teacher) use:

1. Word processors (e.g., AppleWorks, MS Word, ClarisWorks)	1	2	3	4	5
2. Spreadsheets (e.g., Excel, Lotus)	1	2	3	4	5
3. Databases (e.g., FileMaker Pro, Access)	1	2	3	4	5
4. Desktop publishing programs (e.g., Pagemaker, Microsoft Publisher)	1	2	3	4	5
5. Presentation software (e.g., PowerPoint, Persuasion, Keynote)	1	2	3	4	5
6. Web publishing programs (e.g., FrontPage, DreamWeaver, Nvu)	1	2	3	4	5
7. Graphics programs (e.g., PhotoShop, KidPix, ColorIt, Illustrator)	1	2	3	4	5
8. Drill and practice software (e.g. practice for spelling, math, etc.)	1	2	3	4	5
9. Instructional Games (e.g. Sim City)	1	2	3	4	5
10. Simulations (e.g. frog dissections, science experiments)	1	2	3	4	5
11. Tutorials (programs that teach new concepts)	1	2	3	4	5
12. Integrated Learning Systems (e.g., Josten, CCC)	1	2	3	4	5
13. Video editing (e.g., iMovie, MovieMaker, Premier)	1	2	3	4	5
14. Concept mapping (e.g., Inspiration, Kidspiration)	1	2	3	4	5
15. Web browsers (e.g., Netscape, Internet Explorer, Safari, Firefox)	1	2	3	4	5
16. Programming/authoring tools (e.g., Authorware, eZedia, HyperStudio)	1	2	3	4	5

Continue >

Perceptions of Computers & Technology

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Types Of Software Used To Complete School Related Activities

Directions: For each type of software please select your response to indicate how often **YOUR STUDENTS USE** the software to complete school related activities.

Your students use:

Key

1=not at all
2=once a month or less
3=once a week
4=several times a week
5=every day

1. Word processors (e.g., AppleWorks, MS Word, ClarisWorks)	1	2	3	4	5
2. Spreadsheets (e.g., Excel, Lotus)	1	2	3	4	5
3. Databases (e.g., FileMaker Pro, Access)	1	2	3	4	5
4. Desktop publishing programs (e.g., Pagemaker, Microsoft Publisher)	1	2	3	4	5
5. Presentation software (e.g., PowerPoint, Persuasion, Keynote)	1	2	3	4	5
6. Web publishing programs (e.g., FrontPage, DreamWeaver, Nvu)	1	2	3	4	5
7. Graphics programs (e.g., PhotoShop, KidPix, ColorIt, Illustrator)	1	2	3	4	5
8. Drill and practice software (e.g. practice for spelling, math, etc.)	1	2	3	4	5
9. Instructional Games (e.g. Sim City)	1	2	3	4	5
10. Simulations (e.g. frog dissections, science experiments)	1	2	3	4	5
11. Tutorials (programs that teach new concepts)	1	2	3	4	5
12. Integrated Learning Systems (e.g., Josten, CCC)	1	2	3	4	5
13. Video editing (e.g., iMovie, MovieMaker, Premier)	1	2	3	4	5
14. Concept mapping (e.g., Inspiration, Kidspiration)	1	2	3	4	5
15. Web browsers (e.g., Netscape, Internet Explorer, Safari, Firefox)	1	2	3	4	5
16. Programming/authoring tools (e.g., Authorware, eZedia, HyperStudio)	1	2	3	4	5

Continue >

Perceptions of Computers & Technology

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Digital Educator Profile

Key
1=unfamiliar
2=novice
3=comfortable
4=very comfortable
5=expert

The following attributes can be used to define a *Digital Educator*. At this point in your career, please assess your level of expertise by selecting unfamiliar, novice, comfortable, very comfortable, or expert.

Instructional Attributes (Please indicate your level of comfort with the following instructional activities)

1. Using digital technology to gather, assess and analyze student data to design effective instruction	1	2	3	4	5
2. Selecting appropriate digital content, tools, and other resources to support the curriculum	1	2	3	4	5
3. Infusing digital technology into a curriculum that is aligned with the development of 21st century skills	1	2	3	4	5
4. Infusing rigorous and relevant tasks that incorporate the use of digital technologies	1	2	3	4	5
5. Leveraging digital technology as a way to increase student motivation and engagement	1	2	3	4	5
6. Incorporating digital technologies to meet the needs of all learners, including those with diverse backgrounds, characteristics and abilities	1	2	3	4	5
7. Facilitating learner-centered instruction	1	2	3	4	5
8. Promoting the legal and ethical uses of digital resources	1	2	3	4	5
9. Maintaining classroom management when infusing digital tools in the classroom	1	2	3	4	5
10. Using digital tools for authentic assessment of student work	1	2	3	4	5

Continue >

Perceptions of Computers & Technology

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Digital Educator Profile

The following attributes can be used to define a *Digital Educator*. At this point in your career, please assess your level of expertise by selecting unfamiliar, novice, comfortable, very comfortable, or expert.

Key
1=unfamiliar
2=novice
3=comfortable
4=very comfortable
5=expert

Leadership Attributes (Please indicate your level of comfort with the following leadership activities.)

1. Modeling, mentoring, and promoting the infusion of digital technologies in their school	1	2	3	4	5
2. Maintaining awareness of current research, trends and best practices on the use of digital technologies	1	2	3	4	5
3. Gathering qualitative and quantitative data to assess the impact of digital resources on student learning and achievement	1	2	3	4	5
4. Using digital technologies to collaborate with other educators	1	2	3	4	5
5. Using digital tools to communicate with parents, experts and larger community	1	2	3	4	5
6. Sharing lessons, best practices, and reflections through websites, journal articles, and/or presentations at conferences	1	2	3	4	5

Classroom Attributes (Please indicate your level of comfort implementing the following classroom environments.)

7. Implementing activities where students use digital tools to collaborate, communicate and contribute with a larger community as a global learner	1	2	3	4	5
8. Implementing activities that offer opportunities for students to construct knowledge through the use of digital tools to solve complex problems, discover new meaning, and develop understanding	1	2	3	4	5
9. Implementing activities where students use digital tools to engage in substantive conversation to build knowledge while developing critical thinking skills	1	2	3	4	5
10. Implementing activities where students collaborate with peers to share knowledge, complete projects, and/or critique their work	1	2	3	4	5
11. Implementing activities where students communicate conceptual understanding rather than just recall or superficial understanding of the curriculum standards through the use of digital technologies	1	2	3	4	5

Finish >