

Findings from the Spring 2006 Irving Laptop Surveys for Teachers¹

July 2006

Introduction

This report contains findings for one the components² of the Irving Independent School District (ISD) spring 2006 initiative to gather information that would aid in the refinement of the integration of laptops into the curriculum. Findings in this report are based on surveys completed by 659 teachers representing all four Irving high schools, two middle schools and two elementary schools.

The following surveys were administered to each teacher:

- Demographics
- Stages of Adoption of Technology (Stages)
- Teachers Attitudes Toward Computers (TAC) (4 scales)
- CBAM Level of Use of Technology (CBAM-LoU)
- Technology Proficiency Self Assessment (TPSA)
- Apple Classroom of Tomorrow (ACOT)- modified
- Items Specific to Laptops and Teaching/Learning

Stages of Adoption (Christensen, 1997) and the TAC (Christensen & Knezek, 1996) were developed by the authors of this document, while CBAM-LoU was adapted by Griffin and Christensen (1999) from the work of Hall, Loucks, Rutherford, and Newlove (1975). TPSA was created by Ropp (1999). ACOT was developed by researchers at Apple Computer Inc. (Dwyer, 1994). A new instrument was compiled specifically for this project. It included items previously used by the evaluators as well as new ones developed cooperatively with Irving ISD personnel. The survey instrument was altered for the non-laptop teachers, leaving out items that were not applicable to them. A copy of each survey may be found in the Instrument section of this report.

Measurement Indices

Stage of Adoption (Christensen, 1997) is a self-assessment instrument of a teacher's level of adoption of technology, based on earlier work by Russell (1995). There are six possible stages in which educators rate themselves: Stage 1 - Awareness, Stage 2 - Learning the process, Stage 3 - Understanding and application of the process, Stage 4 - Familiarity and confidence, Stage 5 - Adaptation to other contexts, and Stage 6 - Creative application to new contexts.

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² The other components are findings from student surveys; findings from focus group interviews with school personnel; and classroom observations, findings for each of which are contained in separate reports.

The Teachers' Attitudes Toward Computers questionnaire measures attitudes toward computers in nine areas using a Likert scale of 1 = Strongly Disagree to 5 = Strongly Agree:

- Interest – enjoyment and satisfaction in using computers
- Comfort – lack of anxiety; comfortable using technology
- Accommodation – acceptance of computers; willingness to learn
- Email – usefulness of email with students
- Concern – fear that computers will have a negative impact on society
- Utility – belief that computers are useful for productivity and instruction
- Perception – overall feeling toward computers (Semantic Differential from 1 to 7)
- Absorption – belief that computers are a part of many areas of work and leisure
- Significance – belief that computers are important for student use.

Level Of Use (Griffin & Christensen, 1999) is a self-assessment instrument adapted from the Concerns-Based Adoption Model (CBAM) Level of Use (Hall, et al., 1975) designations for adoption of an educational innovation. There are 8 levels (coded for analysis as 1 – 8): 1 - Level 0 Non-use, 2 - Level 1 Orientation, 3 - Level 2 Preparation, 4 - Level 3 Mechanical Use, 5 - Level 4 A Routine, 6 - Level 4 B Refinement, 7 - Level 5 Integration, and 8 - Level 6 Renewal.

The Technology Proficiency Self-Assessment Instrument (TPSA) developed by Ropp (1999) was administered to determine the educators' self efficacy of their perceived technology skills. Four of Ropp's measurement scales (with 5 items each) were included: Email, Integrated Applications (IA), Teaching with Technology (TT), and the World Wide Web (WWW).

The Apple Classroom of Tomorrow (ACOT) instrument was developed by researchers at Apple Computer Inc. as a tool in a research project that spanned more than a decade (Dwyer, 1994). The descriptors for each of the levels has been modified from the original version. Educators are asked to estimate their current level of understanding and use of technology. The levels are ACOT1 - Entry, ACOT2 - Adoption, ACOT3 – Adaptation, ACOT4 – Appropriation, and ACOT5 – Invention.

Subjects

Six hundred fifty-nine teachers from the four Irving high schools, two middle schools and two elementary schools completed the online surveys. The high schools have been in the laptop program for at least three years and some as many as five years. The number of responses by school ranged from 45 to 122, which was deemed to be an adequate sample to represent the perceptions of teachers in each of the participating schools in the district. Responses from 659 teachers represents an high return rate for the school teachers with regular instructional duties. As shown in Table 1, the responses were well-distributed across the schools from which data were requested.

Table 1.*Number of Teacher Survey Responses by School, Spring 2005*

School	Frequency	Percent
Irving HS	122	18.5
McArthur HS	121	18.4
Nimitz HS	120	18.2
Academy of Irving	70	10.6
Comparison Elem.	45	6.8
Lively Elem. (Treatment)	65	9.9
Comparison MS	70	10.6
De Zavala MS (Treatment)	46	7.0
Total	634	100.0

Demographic Information

Gender. As shown in Table 2, the teachers who responded were approximately 69% female and 31% male. This indicates both genders were adequately represented in the responses to the survey. A higher percentage of female returns was anticipated since a higher proportion of teachers in Irving are female.

Table 2.*Distribution by Gender for Teachers Responding to 2006 Irving Laptop Survey*

Gender	Frequency	Percent
Male	204	31.0
Female	455	69.0
Total	659	100.0

Age. As shown in Table 3, the ages of high school teachers responding from Irving were nearly equally spread across the <30, 30-40, 40-50, and 50+ age brackets. This indicates a healthy distribution for the district as a whole, not heavily weighted toward very young or older teachers.

Table 3.*Distribution by Age for Teachers Responding to 2006 Irving Laptop Survey*

Age	Frequency	Percent
21-29	151	22.9
30-39	172	26.1
40-49	139	21.1
50+	197	29.9
Total	659	100.0

Highest Degree. As shown in Table 4, 61% of the teachers responding from Irving indicated that a bachelor’s degree was their highest degree earned, while 33% indicated they had a masters’ degree. Interestingly, 1% reported having a doctorate, and 2% reported having only a high school diploma.

Table 4.

Distribution by Highest Degree for Teachers Responding to 2006 Irving Laptop Survey

Highest Degree	Frequency	Percent
HS	13	2.0
BA/BS	399	60.5
MA/MS	220	33.4
PhD/EdD	9	1.4
Other	18	2.7
Total	659	100.0

Primary Subject Taught. As shown in Table 5, the largest percentage of teachers reported teaching English/Language Arts followed by Mathematics.

Table 5.

Distribution of Teachers Responding to 2006 Irving Laptop Survey by Primary Subject Taught

Primary Subject Taught	Frequency	Percent
Eng/LA	138	20.9
Math	81	12.3
Science	61	9.3
Social Studies	76	11.5
Languages Other Than English	30	4.6
Health Ed	9	1.4
Phys Ed	19	2.9
Fine Arts	40	6.1
TA	28	4.2
Other	177	26.9
Total	659	100.0

Years in Laptop Project. As shown in Table 6, respondents were bi-modally distributed regarding those who were first, second, third or fourth year participants in the Irving Laptop Project. Approximately 17% reported not being participants in the project, representing the comparison groups for the elementary and middle schools. There were significant differences ($p < .05$) between teachers who had been in the program four years and those who were currently in their first year. The significant differences were in two technology integration measures – Stages ($p = .000$) and CBAM Levels of Use ($p = .000$) as well as the proficiency measure of Teaching with Technology ($p = .031$). Teachers who had been in the program for four years were higher on all three measures.

Table 6.

Distribution of Teachers Responding to 2006 Irving Laptop Survey by the Number of Years in the Laptop Project

Years in Laptop Project	Frequency	Percent
One	150	22.8
Two	136	20.6
Three	64	9.7
Four	199	30.2
Not in Project	110	16.7
Total	659	100.0

Home Laptop Use. As shown in Table 7, 67% of the Irving teachers reported that they make weekly (29.6%) or daily (37.2%) use of their laptop at home. The reported daily use is up from 28% in 2005.

Table 7.

“How often do you use your laptop at home?”

	Frequency	Percent
Never	113	17.1
One time a month	106	16.1
One time a week	195	29.6
Daily	245	37.2
Total	659	100.0

Home Access to WWW. As shown in Table 8, 90% of the Irving teachers reported having access to the World Wide Web at home, up from 86% last year.

Table 8.

“Do you have access to the WWW at home?”

	Frequency	Percent
Yes	590	89.5
No	69	10.5
Total	659	100.0

Home Computer Use. Most Irving teachers average at least an hour a day on their computer at home.

Table 9.

“How many total hours per week do you currently use a computer at home (laptop or

others - including standalone and WWW access)?”

	Frequency	Percent
0 hours	20	3.0
1 hour	57	8.6
2-3 hours	149	22.6
4-7 hours	176	26.7
8-15 hours	143	21.7
16-31 hours	71	10.8
More than 31 hours	43	6.5
Total	659	100.0

Teachers’ Use of Technology

As shown in Table 10, the most common stage of adoption of technology reported for high school teachers in Irving is stage 6, Creative Applications to New Contexts: “I can apply what I know about technology in the classroom. I am able to use it as an instructional tool and integrate it into the curriculum”. Forty-four percent reported being in this category. Close to 76% are in either Stage 5 or Stage 6 compared to 73% in 2005. In the 2005 data, three teachers reported being in Stage One. However in 2006, no teachers reported being in Stage One. The other five stage frequencies are similar to 2004 and 2005. The average for Stage of Adoption of Technology was reported as 5.11, up from 5.03 in 2004 and 2005. The distribution in Table 10 is for high school teachers only so it could be compared to previous years of data. However, the distribution for the entire sample of teachers from the eight schools is almost identical. The mean Stage for the teachers from each school reporting data can be found in Table 11 and is graphically displayed in Figure 1.

A more detailed examination of Stages of Technology Integration for treatment vs. comparison school teachers revealed that teachers in the TIP laptop schools had higher levels of integration of technology. This was true for the elementary school level (Effect size = +.03 for treatment mean = 5.05, std = 1.02, n = 65 vs. comparison mean = 5.02, std. = .84, n = 45) and quite a bit stronger for the middle school level (Effect size = +.21 for treatment mean = 5.20, std = 1.19, n = 46 vs. comparison mean = 4.97, std. = 1.04, n = 70).

Table 10.

Distribution of Teachers Responding to 2006 Irving Laptop Survey by the Perceived

Stage of Adoption, High School Teachers

Stage	Frequency	Percent
1 – Awareness	0	0
2 - Learning the process	8	1.8
3 - Understanding and application of the process	23	5.3
4 – Familiarity and confidence	74	17.1
5 - Adaptation to other contexts	137	31.6
6 - Creative application to new contexts	191	44.1
Total	433	100.0

Table 11.

Mean Stages of Adoption of Technology Integration by School, 2005 and 2006

Schools	2005 Stages	2006 Stages
Irving HS	4.98	4.98
MacArthur HS	4.76	5.02
Nimitz HS	5.17	5.06
Academy	5.37	5.57
Elem Comparison	4.96	5.02
Lively Elem	4.82	5.05
MS Comparison	4.85	4.97
DeZavala MS	4.91	5.20

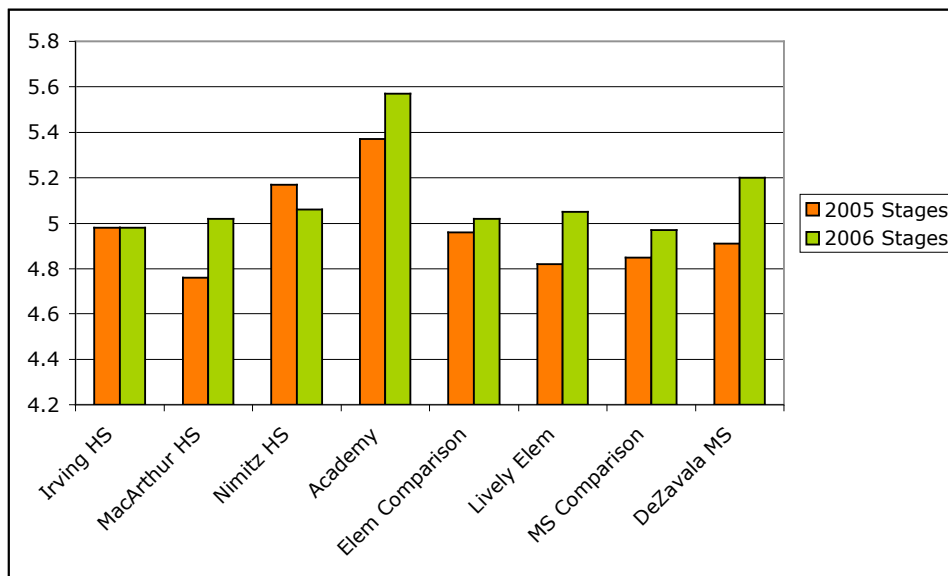


Figure 1. Mean Stage of Adoption of Technology Integration by school for 2005 and 2006.

CBAM Level of Use. As shown in Table 12, the most commonly reported (modal) level of technology integration for Irving high school teachers was level 6, (4B) Refinement: “I

vary the use of information technology in education to increase the expected benefits within the classroom. I am working on using information technology to maximize the effects with my students”. Seventy percent reported being at this level or higher (compared to 67% last year and 58% in 2004). The average level of use reported was 5.89 (compared to 5.89 last year and 5.88 in 2004). A more detailed examination of CBAM LoU for treatment vs. comparison school teachers revealed that teachers in the TIP laptop schools had higher levels of use of technology. This was true for the elementary school level (Effect size = +.35 for treatment mean = 6.17, std = 1.35, n = 65 vs. comparison mean = 5.67, std. = 1.55, n = 45) as well as the middle school level (Effect size = +.10 for treatment mean = 5.93, std = 1.16, n = 46 vs. comparison mean = 5.80, std. = 1.33, n = 70). Table 13 includes the mean CBAM Levels of Use for teachers from each of the schools. They are graphically displayed in Figure 2.

Table 12.

Distribution of Teachers Responding to 2006 Irving Laptop Survey by the Perceived CBAM Levels of Use, High School Teachers

CBAM LoU	Frequency	Percent
1 - Level 0: Non-use I have little or no knowledge of information technology in education, no involvement with it, and I am doing nothing toward becoming involved.	4	.9
2 - Level 1: Orientation I am seeking or acquiring information about information technology in education.	10	2.3
3 - Level 2: Preparation I am preparing for the first use of information technology in education.	10	2.3
4 - Level 3: Mechanical Use I focus most effort on the short-term, day-to-day use of information technology with little time for reflection. My effort is primarily directed toward mastering tasks required to use the information technology.	37	8.5
5 - Level 4 A: Routine I feel comfortable using information technology in education. However, I am putting forth little effort and thought to improve information technology in education or its consequences.	68	15.7
6 - Level 4 B: Refinement I vary the use of information technology in education to increase the expected benefits within the classroom. I am working on using information technology to maximize the effects with my students.	163	37.
7 - Level 5: Integration I am combining my own efforts with related activities of other teachers and colleagues to achieve impact in the classroom.	92	21.2
8 - Level 6: Renewal I reevaluate the quality of use of information technology in education, seek major modifications of, or alternatives to, present innovation to achieve increased impact, examine new developments in the field, and explore new goals for myself and my school or district.	47	10.9
Total	431	100.0

Table 13.

Teacher Means for CBAM Levels of Use by School

School	2005 CBAM	2006 CBAM
Irving HS	6.03	5.83
MacArthur HS	5.60	5.74
Nimitz HS	5.91	5.79
Academy	6.14	6.44
Elem Comparison	5.68	5.67
Lively Elem	5.80	6.17
MS Comparison	5.44	5.80
De Zavala MS	5.70	5.93

Comparative Results from Integration Instruments. Stages of Adoption (Mean = 5.03) and CBAM Level of Use (Mean = 5.89) were both high for the typical Irving teacher on an absolute scale. The average teacher reported being able to “think about the computer as a tool to help me, and I am no longer concerned about it as technology. I can use it in many applications and as an instructional aid” (Stage 5). This indicates the laptop initiative continues to foster a high level of technology professional development among Irving teachers.

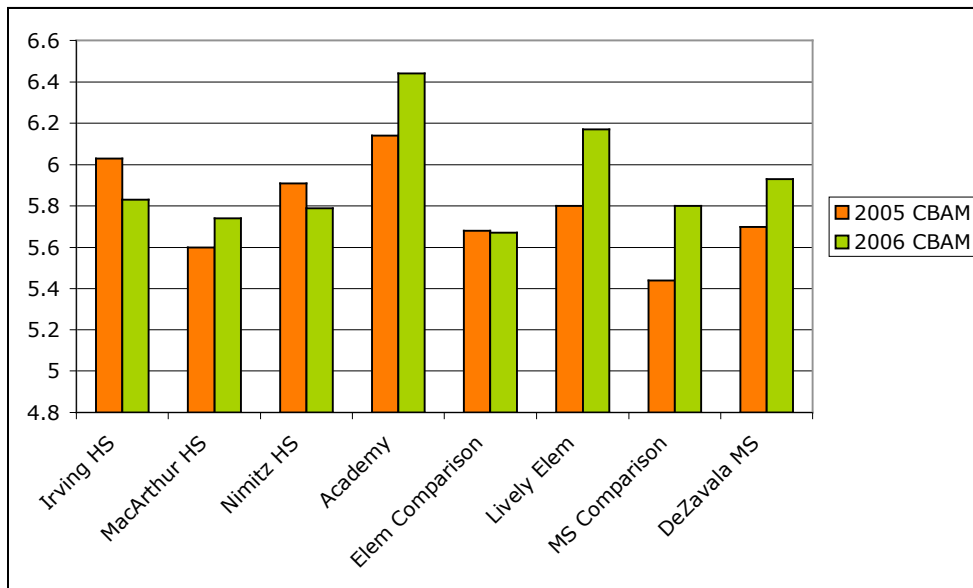


Figure 2. Mean CBAM Level of Use for each school for 2005 and 2006.

Skills-based Confidence Measures. The Technology Proficiency Self Assessment (TPSA) has twenty items that comprise four scales: Email, World Wide Web, Integrated Applications and Teaching with Technology. Educators self-rate themselves on perceived confidence in each of these areas. Table 14 contains the mean scores for each of the four scales. For the high school teachers there were no changes on these measures from 2004 to 2005 but all four of the measures went up for 2006. Among elementary and middle schools, seven of the eight measures were higher for the teachers involved in the TIP vertical integration laptop program, compared their comparison school counterparts. The

binomial probability of seven or more being in the intended direction is $p = .03$. This implies that the professional development provided for the TIP initiative was effective in raising the technology skills of teachers in the program.

Table 14.
Technology Proficiency Self Assessment (TPSA) Scale Mean Scale Scores for Irving Teachers

TPSA Measure	HS		MS Treatment		MS Comparison		Elem. Treatment		Elem. Comparison	
	2005	2006	2005	2006	2005	2006	2005	2006	2005	2006
TP-email	4.54 (.65)	4.64 (.53)	4.54 (.62)	4.68 (.46)	4.53 (.55)	4.64 (.51)	4.58 (.51)	4.51 (.76)	4.54 (.47)	4.70 (.47)
TP-WWW	4.27 (.71)	4.37 (.62)	4.35 (.72)	4.40 (.61)	4.26 (.70)	4.34 (.65)	4.33 (.66)	4.30 (.79)	4.32 (.45)	4.30 (.57)
TP-Integrated Applications	3.87 (.97)	4.04 (.83)	4.01 (.83)	4.19 (.82)	3.86 (.93)	4.01 (.96)	3.91 (.92)	4.04 (.81)	3.78 (.91)	3.92 (.96)
TP-Teaching with Tech.	3.85 (.93)	4.01 (.83)	3.88 (.75)	4.00 (.64)	3.74 (.86)	3.95 (.89)	3.79 (.81)	3.96 (.88)	3.86 (.56)	3.83 (.83)
n	410	433	57	46	61	70	61	65	45	45

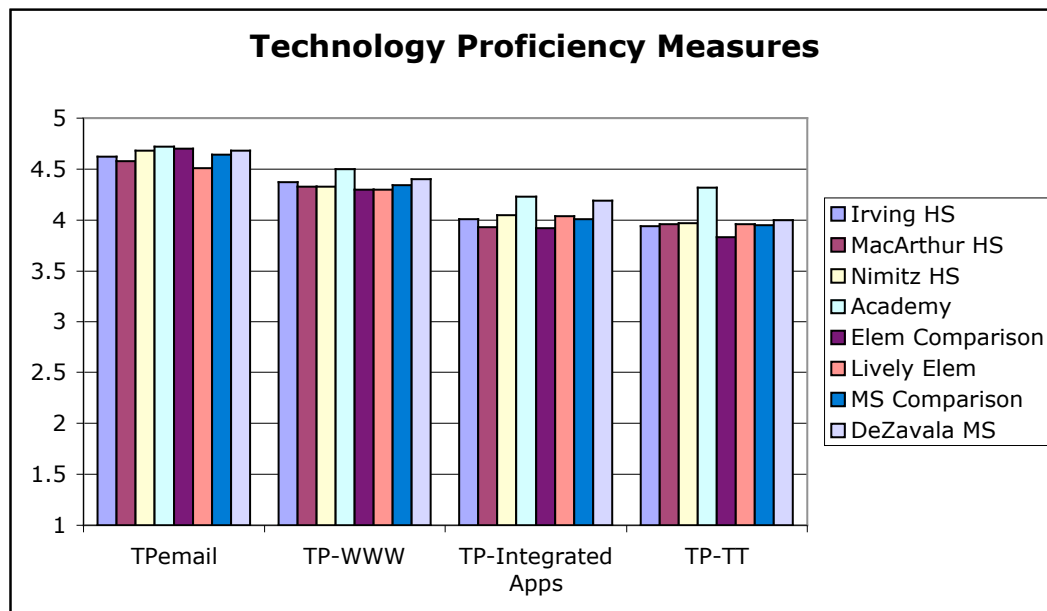


Figure 3. Means for four technology proficiency measures by school.

Attitudinal Measures. The Teachers' Attitudes Toward Computers questionnaire measures attitudes toward computers in nine areas using a Likert scale of 1 = Strongly

Disagree to 5 = Strongly Agree. Only 4 of the 9 scales were chosen to include in this survey. Those scales are:

- Interest – enjoyment and satisfaction in using computers
- Comfort – lack of anxiety; comfortable using technology
- Utility – belief that computers are useful for productivity and instruction
- Significance – belief that computers are important for student use.

As shown in Table 15, it appears that the Irving teachers feel comfortable using computers. This is a good indicator that they have little anxiety toward the actual use of technology. No evidence was found in the analysis of TAC data to indicate that treatment teachers differ from their comparison school counterparts in computer attitudes. There were increases on all four attitudinal indices for each of the schools.

Table 15.

Teachers' Attitudes Toward Computers (TAC) Mean Scale Scores for Irving Teachers

TAC Measure	HS 2004	HS 2005	HS 2006	MS Treatment	MS Comparison	Elem. Treatment	Elem. Comparison
Interest	4.00 (.72)	4.01 (.79)	4.17 (.69)	4.32 (.55)	4.22 (.69)	4.29 (.69)	4.25 (.68)
Comfort	4.22 (.80)	4.29 (.76)	4.35 (.74)	4.36 (.80)	4.30 (.83)	4.37 (.71)	4.40 (.69)
Utility	3.91 (.77)	3.94 (.78)	4.16 (.64)	4.33 (.596)	4.34 (.60)	4.26 (.63)	4.31 (.49)
Significance	4.21 (.62)	4.18 (.65)	4.33 (.58)	4.51 (.51)	4.54 (.57)	4.49 (.55)	4.52 (.53)
n	365	410	432	46	70	65	45

Differences in Technology Indicators by Teaching Experience and Computer Use

As shown in Table 16 for all teacher subjects in this study, number of years of teaching experience is negatively correlated ($p < .01$) with the Attitudinal measures of Comfort, Utility and Significance as well as Stages of Adoption, Technology Proficiency with email, WWW, Integrated Applications and Teaching with Technology. Interestingly there is no correlation for CBAM Levels of Use or amount of computer use (CompUse) for number of years of teaching. The high negative correlation with Stages is possibly an indication that younger teachers (with fewer years of experience) are coming in to Irving with higher technology skills than those employed in the past. The lack of significant correlation with CBAM LoU may be the result of required high level of use by all teachers. (Stages of Adoption is a measure that assesses more of what teachers are able to do, while CBAM LoU is more of an indicator of the technology activities actually performed by teachers on a daily basis.)

Table 16.

Correlations for Technology Proficiency, Teaching Experience, and Use of Technology

		Teach Exp	Comp Use	Stages	CBA M	TPema il	TP- WWW	TP-IA	TP-TT	INTER EST	COMF ORT	UTILI TY	SIGNI FIC
Teach Exp	Pearso n Corr	1	-.080	-.102	-.006	-.277	-.326	-.324	-.216	-.080	-.216	-.150	-.129
	Sig. (2- tailed)	.	.040	.009	.888	.000	.000	.000	.000	.041	.000	.000	.001
	N	659	659	659	657	659	659	659	659	658	659	659	659
Comp Use	Pearso n Corr	-.080	1	.228	.277	.215	.221	.248	.262	.307	.226	.222	.169
	Sig. (2- tailed)	.040	.	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	659	659	659	657	659	659	659	659	658	659	659	659
Stages	Pearso n Corr	-.102	.228	1	.557	.370	.473	.499	.531	.316	.505	.270	.249
	Sig. (2- tailed)	.009	.000	.	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	659	659	659	657	659	659	659	659	658	659	659	659
CBAM	Pearso n Corr	-.006	.277	.557	1	.246	.371	.401	.510	.356	.400	.368	.303
	Sig. (2- tailed)	.888	.000	.000	.	.000	.000	.000	.000	.000	.000	.000	.000
	N	657	657	657	657	657	657	657	657	656	657	657	657
sub_e mail	Pearso n Corr	-.277	.215	.370	.246	1	.736	.611	.576	.279	.461	.274	.308
	Sig. (2- tailed)	.000	.000	.000	.000	.	.000	.000	.000	.000	.000	.000	.000
	N	659	659	659	657	659	659	659	659	658	659	659	659
SUB_ WEB	Pearso n Corr	-.326	.221	.473	.371	.736	1	.727	.685	.317	.513	.297	.290
	Sig. (2- tailed)	.000	.000	.000	.000	.000	.	.000	.000	.000	.000	.000	.000
	N	659	659	659	657	659	659	659	659	658	659	659	659
SUB_ APPS	Pearso n Corr	-.324	.248	.499	.401	.611	.727	1	.743	.332	.538	.299	.299
	Sig. (2- tailed)	.000	.000	.000	.000	.000	.000	.	.000	.000	.000	.000	.000
	N	659	659	659	657	659	659	659	659	658	659	659	659
SUB_ TECH	Pearso n Corr	-.216	.262	.531	.510	.576	.685	.743	1	.361	.484	.344	.342
	Sig. (2- tailed)	.000	.000	.000	.000	.000	.000	.000	.	.000	.000	.000	.000
	N	659	659	659	657	659	659	659	659	658	659	659	659
INTER EST	Pearso n Corr	-.080	.307	.316	.356	.279	.317	.332	.361	1	.436	.709	.590
	Sig. (2- tailed)	.041	.000	.000	.000	.000	.000	.000	.000	.	.000	.000	.000
	N	658	658	658	656	658	658	658	658	658	658	658	658
COMF ORT	Pearso n Corr	-.216	.226	.505	.400	.461	.513	.538	.484	.436	1	.399	.394
	Sig. (2- tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.	.000	.000
	N	659	659	659	657	659	659	659	659	658	659	659	659
UTILI TY	Pearso n Corr	-.150	.222	.270	.368	.274	.297	.299	.344	.709	.399	1	.764

	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	N	659	659	659	657	659	659	659	659	658	659	659	659
SIGNIFICANCE	Pearson Correlation	-.129	.169	.249	.303	.308	.290	.299	.342	.590	.394	.764	1
	Sig. (2-tailed)	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.
	N	659	659	659	657	659	659	659	659	658	659	659	659

* Correlation is significant at the 0.05 level (2-tailed).
 ** Correlation is significant at the 0.01 level (2-tailed).

A correlation was also run on the indicators shown in Table 16 and whether or not teachers were participants in the laptop program. The only indicator that was consistently correlated with laptop program participation at a significant ($p < .01$) level was Significance (an attitudinal measure). It appears that teachers who are in the laptop program believe more strongly that the computers are important for students to use.

Implementation of Instruction with Laptops

A series of questions regarding instructional strategies, instructional activities, teacher and student roles in the classroom, assessment with laptops, reflections of the use of laptops, professional development and overall perceptions of the use of laptops were also asked to the teachers. The responses were analyzed in three groups of laptop initiative teachers – the sample of 65 teachers from Lively Elementary, 46 teachers from de Zavala Middle School and 433 teachers representing all four high schools. Highlighted findings are listed below. The complete tables by group are included after the report summary to allow readers to view this information in greater detail.

- High school teachers report less small group instruction than either the middle school or elementary school teachers
- Middle school and high school teachers report more frequent direct teaching/lecture than elementary teachers
- All teachers reported that they agree or strongly agree that they learn along with their students more often now that they have laptops.
- Elementary teachers reported that students work as independent learners more often than did the middle school and high school teachers.
- About 90% of all teachers reported that they agree or strongly agree that their computer skills have improved because of the laptop initiative.
- The elementary and middle school teachers tend to feel more strongly that their schools have developed effective policies and procedures for the laptop program.
- Most of the teachers in all three groups feel that they have had adequate professional development opportunities
- While the number of teachers who reported planning to be more difficult has decreased, most teachers still report that planning with laptops takes more time.
- When asked how often their students used laptops for instruction in the classroom, elementary teachers reported a higher frequency for daily than either the middle school or high school teachers.

- Middle school teachers feel a more immediate need for professional development in classroom management using laptops than do elementary or high school teachers.
- While most teachers agree that the laptop initiative has had a positive impact on their teaching, they also agree that it has added additional duties for classroom management to their workload.
- The majority of teachers also agree or strongly agree that the laptop initiative has had a positive impact on their own professional development.

Summary of Findings Across Teaching Levels and Laptop Utilizations

As a whole, the Irving teachers surveyed have maintained a high level of technology proficiency during the 2005-2006 school year. The overall averages for spring 2006 are nearly identical to the ratings for spring 2004 and spring 2005. Given that some of the schools represented in the 2006 survey are comparison sites without laptop computers, this indicates a healthy situation for educator professional development in the district as a whole.

Quasi-experimental research findings indicated that the TIP program has been effective in enhancing technology skills among teachers. Treatment teachers as a group were higher on seven of eight technology proficiency self-assessment categories spanning elementary and middle schools. This event is unlikely by chance ($p = .03$).

There were significant differences ($p < .05$) between teachers who had been in the program four years and those who were currently in their first year. The significant differences were in two technology integration measures – Stages of Adoption of Technology ($p = .000$) and CBAM Levels of Use ($p = .000$) as well as the proficiency measure of Teaching with Technology ($p = .031$). Teachers who had been in the program for four years were higher on all three measures.

Teachers in the TIP laptop schools had higher levels of integration of technology (Stages) as well as higher levels of use (CBAM LoU) than did their comparison school teachers. Based on correlations between whether or not teachers participated in the laptop program and perceived computer importance, it appears that teachers who are in the laptop program believe more strongly that the computers are important for students to use.

Implementation of Instruction Tables for Lively Elementary Teachers³

Instructional strategies: In class(es) where my students use laptop computers. . . .
Indicate how often you use this strategy

	Never	Once a Month	Once a Week	Every Day
Whole class instruction.	14.5%	16.1%	37.1%	32.3%
Small group projects or presentations.	14.1%	35.9%	25.0%	25.0%
Direct teaching/lecture.	15.6%	17.2%	42.2%	25.0%
Analyzing and interpreting information.	20.6%	28.6%	33.3%	17.5%
Organizing, summarizing or displaying information.	18.8%	14.1%	34.4%	32.8%
Guiding/facilitating student learning.	9.4%	14.1%	31.3%	45.3%
Cooperative learning.	17.2%	14.1%	32.8%	35.9%
Specific TEKS instruction.	9.4%	21.9%	29.7%	39.1%

As shown in the Table below, the most noticeable indicators that changed from last year regarding the instructional activities were an increase in the use of electronic bulletin boards (Blackboard), increase in working on projects that apply critical thinking and problem solving skills and working on projects that gather data, conduct an experiment or research project.

Instructional activities. In class(es) where my students use laptop computers, students . .

	Never	Once a Month	Once a Week	Every Day
Access online databases, reference materials, newspapers & periodicals.	28.1%	25.0%	31.3%	15.6%
Access online libraries.	42.2%	21.9%	21.9%	14.1%
Use email to communicate with other students.	87.5%	4.7%	1.6%	6.3%
Use email to communicate with experts in a particular field.	79.7%	4.7%	6.3%	9.4%
Use electronic bulletin board (ex. Blackboard) to discuss academic content, issues, assignments.	64.1%	7.8%	17.2%	10.9%
Compared to 75.9%, 12.1%, 8.6% and 3.4% from 2005				
Work on projects that take one (1) week or more to complete.	28.6%	50.8%	12.7%	7.9%
Work on projects that apply critical thinking and problem solving skills.	29.7%	31.3%	20.3%	18.8%
Compared to 39.7%, 29.3%, 19.0%, and 12.1% from 2005				

³ N = 65

Work on a project, gather data, conduct an experiment or research project.	29.7%	45.3%	17.2%	7.8%
Compared to 47.5%, 28.8%, 22.0% and 1.7% from 2005				
Design their own problems to solve.	51.6%	23.4%	20.3%	4.7%

Teachers and student roles:

Now that we use laptop computers in the classroom...

	SD	D	U	A	SA
I learn along with my students more often.	3.1%	7.8%	17.2%	42.2%	29.7%
71.9% agree compared to 69.5 in 2005					
Students carry responsibility for their learning more often.	1.6%	10.9%	21.9%	40.6%	25.0%
65.6% agree compared to 57.6% in 2005					
Students suggest or plan classroom activities more often.	4.7%	17.2%	28.1%	34.4%	15.6%
50% agree compared to 33.9% in 2005					
Students work as independent learners more often.	1.6%	7.8%	21.9%	46.9%	21.9%
68.8% agree compared to 61% in 2005					

When looking at how teachers assess their students when they use laptops, the number of teachers who said they “never” have their students present as part of a group on projects or presentations went from 51.7% in 2005 to 35.9% in 2006 while there was also an increase in the number of times they have them present as a group on a weekly or daily basis. As shown in the table below, the percentage of teachers who have their students demonstrate their work to an audience went from 8.9% weekly in 2005 to 14.3% weekly in 2006 and 3.6% daily in 2005 to 6.3% daily in 2006. It appears assessment strategies have changed toward more group and presentation-based assessment with laptops.

When assessing students who use laptop computers, I have students . . .

	Never	Once a Month	Once a Week	Every Day
evaluate and improve their own work.	25.4%	25.4%	23.8%	25.4%
present as part of a group on projects or presentations.	35.9%	34.4%	21.9%	7.8%
confer with other students about their work.	23.4%	28.1%	23.4%	25.0%
write an essay.	32.8%	29.7%	29.7%	7.8%
present as individuals.	39.7%	36.5%	20.6%	3.2%
prepare a research paper on an assigned or approved topic.	46.9%	39.1%	7.8%	6.3%
make a product.	30.2%	50.8%	14.3%	4.8%
demonstrate their work to an audience.	31.7%	47.6%	14.3%	6.3%
take a test or quiz.	41.3%	20.6%	33.3%	4.8%

Compared to before the laptop project, students who use laptop computers. . . .

	SD	D	U	A	SA
master new skills better than students who did not use laptop computers.	1.5%	9.2%	27.7%	32.3%	29.2%
61.5% agree compared to 42.4% in 2005					
remediate the skills they have not mastered better than students who did not use laptop computers.	0%	7.7%	27.7%	41.5%	23.1%
64.6% agree compared to 49.0% in 2005					
express themselves in writing better than students who did not use laptop computers.	0%	9.2%	43.1%	27.7%	20.0%
47.7% agree compared to 32.2% in 2005					
communicate with other people better than students who did not use laptop computers.	3.1%	10.8%	43.1%	26.2%	16.9%
43.1% agree compared to 27.1% in 2005					
find out about ideas and information better than students who did not use laptop computers.	0%	4.6%	18.5%	43.1%	33.8%
76.9 agree compared to 54.3% in 2005					
analyze information better than students who did not use laptop computers.	1.5%	6.2%	35.4%	43.1%	13.8%
56.9% agree compared to 37.3% in 2005					
present information to an audience better than students who did not use laptop computers.	0%	6.2%	30.8%	46.2%	16.9%
63.1% agree compared to 44.0% in 2005					
learn to work collaboratively better than students who did not use laptop computers.	0%	7.8%	34.4%	40.6%	17.2%
57.8% agree compared to 40.7% in 2005					
learn to work independently better than students who did not use laptop computers.	0%	4.8%	31.7%	44.4%	19.0%
63.4% agree compared to 52.6% in 2005					

Reflections

Thinking about possible impacts of the laptop program, I believe:

	SD	D	U	A	SA
My computer skills have improved.	0%	1.5%	7.7%	40.0%	50.8%
90.7% agree compared to 86.9% in 2005					
The school has developed effective laptop policies and procedures for the laptop program.	0%	1.5%	13.8%	35.4%	47.7%
83.1% agree compared to 73.3% in 2005					
The school climate has changed.	0%	0%	15.4%	41.5%	43.1%

84.6% agree compared to 68.8% in 2005					
I have had adequate professional development opportunities.	0%	4.6%	9.2%	49.2%	36.9%
86.1% agree compared to 75% in 2005					
The curriculum in my class has changed.	1.5%	10.8%	26.2%	36.9%	24.6%
61.5% agree compared to 55% in 2005					
My role in the classroom has changed.	4.6%	12.3%	29.2%	29.2%	23.1%
52.3% agree compared to 49.1% in 2005					
Student achievement in my classes has improved.	0%	6.2%	38.5%	30.8%	23.1%
53.9% agree compared to 38.3% in 2005					
My understanding of how people learn has changed.	1.5%	12.3%	27.7%	38.5%	20.0%
58.5% agree compared to 45% in 2005					
My beliefs about teaching and learning have changed.	1.5%	15.4%	26.2%	36.9%	20.0%
56.9% agree compared to 40% in 2005					
At school, my thoughts and opinions about teaching and learning are heard and considered.	4.6%	4.6%	33.8%	38.5%	18.5%
57% agree compared to 50.9% in 2005					
Planning has become more difficult (harder) now that students use laptop computers.	16.9%	36.9%	26.2%	13.8%	6.2%
20% agree compared to 17.2% in 2005					

For 2006, the hours of planning were similar to those reported in 2005, indicating that teachers still feel they spend on average more time planning for instruction since they have laptops. As reported in the focus groups, teachers feel they have to plan two lessons at times – for the students who bring their laptops to class and for the ones who do not bring their laptops to class.

Now that I teach students who use laptop computers, I spend, on average, ____ hours each week planning for instruction.

Hours per week	Frequency in Percentages
0	4.8%
1	14.5%
2-3	53.2%
4-7	22.6%
8-15	3.2%
16-31	0%
More than 30 hours	1.6%

Before teaching students who use laptop computers, I spent, on average, ___ hours each week planning for instruction.

Hours per week	Frequency in Percentages
0	6.9%
1	13.8%
2-3	51.7%
4-7	17.2%
8-15	8.6%
16-31	1.7%
More than 30 hours	0%

During 2006, and consistent with 2005 data, teachers reported that students typically work in groups more now that they have laptops. This finding supports the indications of assessment that students are presenting and working more in groups.

Now that I teach students who use laptop computers, students typically work in groups:

	Frequency in Percentages
Never	9.7%
Once a month	14.5%
Once a week	32.3%
Every day	43.5%

Before working with students who use laptop computers, students typically worked in groups:

	Frequency in Percentages
Never	11.7%
Once a month	16.7%
Once a week	38.3%
Every day	33.3%

How often do your students use laptops for instruction in your classroom?

	Frequency in Percentages
Never	11.5%
Once a month	16.4%
Once a week	31.1%
Every day	41.0%

How often do you use your computer for instructional purposes?

	Frequency in Percentages
Never	3.3%
Once a month	11.7%
Once a week	30.0%
Every day	55.0%

On average, I teach students who use laptop computers as a whole class __ times each week.

Times per week	Frequency in Percentages
0	27.2%
1	7.9%
2-3	28.6%
4-7	25.4%
8-15	11.1%
More than 15 times per week	4.8%

Before working with students who use laptop computers, on average, I taught students as a whole class __ times each week.

Times per week	Frequency in Percentages
0	15.0%
1	13.3%
2-3	15.0%
4-7	33.3%
8-15	13.3%
More than 15 times per week	10.0%

Professional Development

Instructions: Rate each of the following according to your professional development needs.

	Already Trained in This	Feel Some Need	Need it Immediately	Not Ready for this Yet
Basics of Computer Operation	93.8%	4.6%	1.5%	0%
PowerPoint Basics	90.8%	7.7%	1.5%	0%
Excel Basics	70.8%	27.7%	0%	1.5%
Blackboard Basics	73.8%	26.2%	0%	0%
Excel Intermediate	27.7%	64.6%	0%	7.7%
Blackboard Intermediate	35.4%	60.0%	0%	4.6%
Outlook Intermediate	63.1%	35.4%	0%	1.5%
E-communication in the Classroom	29.7%	57.8%	0%	12.5%
Shared Folders	44.6%	47.7%	0%	7.7%
Classroom Management Using Laptops	50.0%	34.4%	0%	15.6%
Integrating Technology into the Curriculum	53.1%	42.2%	3.1%	1.6%

Lively Elementary teachers appear to have attended more Irving ISD laptop training than the previous year, as shown in the table below comparing 2006 to 2005.

How many days of laptop training offered by Irving ISD did you attend?

Number of Days	2005 Percentages	Frequency in Percentages 2006
None	22.4%	6.3%
1-2 days	36.2%	23.8%
3 days	19.0%	25.4%
4 days	5.2%	7.9%
5 days	3.4%	4.8%
More than 5 days	13.8%	31.7%

What types of training/assistance in addition to the laptop sessions have you completed? (Check all that apply)

Type of Training	Frequency in Percentages
Individual assistance from technology specialist	69.2%
Peer assistance (other teachers)	89.2%
Campus workshops	56.9%
District workshops	15.4%
Other district training	3.1%
Training outside the district (please specify)	Only one comment – Palm training at ETAC

What other kinds of training do you need to support teaching with laptops? (Check all that apply)

	Frequency in Percentages
Online research techniques	41.5%
Troubleshooting/maintenance	32.3%
Content area training	32.3%
Electronic journaling	27.7%
Engaging reluctant learners	16.9%
Classroom management	24.6%
Cooperative learning / flexible grouping	1.5%

Overall Perceptions

	SD	D	U	A	SA
The laptop initiative has had a positive impact on my teaching.	1.5%	6.3%	12.5%	37.5%	42.2%
79.7% agree compared to 65% in 2005					
The laptop initiative has had a positive impact on student learning.	1.6%	-	14.1%	37.5%	46.9%
84.4% agree compared to 68.3% in 2005					
The laptop initiative has had a positive impact on my own professional development.	1.6%	3.1%	12.5%	40.6%	42.2%
82.8% agree compared to 74.6% in 2005					
The laptop initiative has added additional duties for classroom management to my workload	14.3%	25.4%	31.7%	19.0%	9.5%
28.5% agree compared to 37.3% in 2005; a good change					

What do you consider to be the #1 barrier to using laptops in instruction?

Barrier	2005	2006
I do not feel properly prepared to use it for instruction.	5.1%	4.6%
I see no need to use it in my curriculum.	28.8%	9.2%
I do not have time to plan new lessons to integrate the laptops in my teaching.	28.8%	18.5%
Students do not bring their computers to class.	23.7%	7.7%
We experience technical difficulties too often.	13.6%	13.8%

Other comments regarding barriers are included in the Appendix.

Implementation of Instruction Tables for de Zavala Middle School Teachers⁴

Instructional strategies: *In class(es) where my students use laptop computers. . . .*

Indicate how often you use this strategy

	Never	Once a Month	Once a Week	Every Day
Whole class instruction.	4.3%	26.1%	41.3%	28.3%
Small group projects or presentations.	8.7%	60.9%	28.3%	2.2%
Direct teaching/lecture.	10.9%	26.1%	34.8%	28.3%
Analyzing and interpreting information.	8.7%	43.5%	28.3%	19.6%
Organizing, summarizing or displaying information.	10.9%	32.6%	32.6%	23.9%
Guiding/facilitating student learning.	0%	32.6%	34.8%	32.6%
Cooperative learning.	10.9%	37.0%	37.0%	15.2%
Specific TEKS instruction.	6.5%	32.6%	26.1%	34.8%

Instructional activities. *In class(es) where my students use laptop computers, students . .*

	Never	Once a Month	Once a Week	Every Day
Access online databases, reference materials, newspapers & periodicals.	13.0%	50.0%	23.9%	13.0%
Access online libraries.	34.8%	34.8%	19.6%	10.9%
Use email to communicate with other students.	52.2%	10.9%	17.4%	19.6%
Use email to communicate with experts in a particular field.	71.7%	13.0%	13.0%	2.2%
Use electronic bulletin board (ex. Blackboard) to discuss academic content, issues, assignments.	41.3%	8.7%	34.8%	15.2%
Work on projects that take one (1) week or more to complete.	10.9%	71.7%	13.0%	4.3%
Work on projects that apply critical thinking and problem solving skills.	6.5%	60.9%	26.1%	6.5%
Work on a project, gather data, conduct an experiment or research project.	17.4%	60.9%	15.2%	6.5%
Design their own problems to solve.	54.3%	23.9%	17.4%	4.3%

Regarding teacher and student roles at de Zavala, even more teachers reported learning along with their students and that their students are more independent learners.

⁴ N=46

Teachers and student roles:

Now that we use laptop computers in the classroom...

	SD	D	U	A	SA
I learn along with my students more often.	0%	8.7%	6.5%	65.2%	19.6%
84.8% agree compared to 74.5% in 2005					
Students carry responsibility for their learning more often.	6.5%	23.9%	19.6%	39.1%	10.9%
Students suggest or plan classroom activities more often.	6.5%	37.0%	32.6%	19.6%	4.3%
Students work as independent learners more often.	4.3%	13.0%	21.7%	52.2%	8.7%
60.9% agree compared to 48.1% in 2005					

When assessing students who use laptop computers, I have students . . .

	Never	Once a Month	Once a Week	Every Day
evaluate and improve their own work.	19.6%	45.7%	19.6%	15.2%
present as part of a group on projects or presentations.	17.4%	58.7%	19.6%	4.3%
confer with other students about their work.	21.7%	32.6%	32.6%	10.9%
write an essay.	43.5%	41.3%	15.2%	0%
present as individuals.	28.3%	54.3%	15.2%	2.2%
prepare a research paper on an assigned or approved topic.	52.2%	41.3%	6.5%	0%
make a product.	19.6%	60.9%	15.2%	4.3%
demonstrate their work to an audience.	23.9%	65.2%	10.9%	0%
take a test or quiz.	23.9%	47.8%	26.1%	2.2%

When comparing students to before the project, most of the indicators below increased in agreement from between 5 and 10 percentage points. The exceptions were the last two (working cooperatively and independently) in which case they went down about 5 percentage points in agreement.

Compared to before the laptop project, students who use laptop computers. . . .

	SD	D	U	A	SA
master new skills better than students who did not use laptop computers.	4.3%	19.6%	37.0%	26.1%	13.0%
remediate the skills they have not mastered better than students who did not use laptop computers.	4.3%	13.0%	41.3%	32.6%	8.7%
express themselves in writing better than students who did not use laptop computers.	4.3%	13.0%	39.1%	37.0%	6.5%
communicate with other people better than students who did not use laptop computers.	6.5%	13.0%	34.8%	37.0%	8.7%
find out about ideas and information better	0%	4.3%	15.2%	60.9%	19.6%

than students who did not use laptop computers.					
analyze information better than students who did not use laptop computers.	4.3%	15.2%	34.8%	34.8%	10.9%
present information to an audience better than students who did not use laptop computers.	4.3%	6.5%	23.9%	47.8%	17.4%
learn to work collaboratively better than students who did not use laptop computers.	4.3%	13.0%	32.6%	37.0%	13.0%
learn to work independently better than students who did not use laptop computers.	6.5%	8.7%	34.8%	32.6%	17.4%

COMMENTS: *What would you like to tell us about your instructional practice that we have not asked?* – See Appendix for open-ended comments.

Regarding the reflections on the laptop program, the 2006 responses are very similar to the 2005 responses with the exception of the last item regarding planning. Fewer teachers think that planning is more difficult yet report spending more time planning compared to prior to using laptop computers. For other laptop use questions, the reported percentages are similar to last year’s trends.

Reflections

Thinking about possible impacts of the laptop program, I believe:

	SD	D	U	A	SA
My computer skills have improved.	0%	0%	0%	54.3%	45.7%
99% agree compared to 94.7% in 2005					
The school has developed effective laptop policies and procedures for the laptop program.	6.5%	6.5%	10.9%	47.8%	32.6%
The school climate has changed.	2.2%	0%	23.9%	41.3%	32.6%
I have had adequate professional development opportunities.	2.2%	2.2%	4.3%	54.3%	37.0%
The curriculum in my class has changed.	0%	8.7%	21.7%	52.2%	17.4%
My role in the classroom has changed.	0%	13.0%	15.2%	56.5%	15.2%
Student achievement in my classes has improved.	6.5%	17.4%	41.3%	26.1%	6.5%
My understanding of how people learn has changed.	2.2%	17.4%	21.7%	54.3%	4.3%
My beliefs about teaching and learning have changed.	0%	21.7%	30.4%	39.1%	8.7%
At school, my thoughts and opinions about teaching and learning are heard and considered.	2.2%	10.9%	26.1%	43.5%	17.4%
Planning has become more difficult (harder) now that students use laptop computers.	10.9%	23.9%	30.4%	17.4%	17.4%
34.8% agree compared to 51.8% in 2005					

Now that I teach students who use laptop computers, I spend, on average, ___ hours each week planning for instruction.

Hours per week	Frequency in Percentages
0	2.2%
1	4.4%
2-3	40.0%
4-7	33.3%
8-15	15.6%
16-31	2.2%
More than 30 hours	2.2%

Before teaching students who use laptop computers, I spent, on average, ___ hours each week planning for instruction.

Hours per week	Frequency in Percentages
0	2.4%
1	14.6%
2-3	29.3%
4-7	31.7%
8-15	12.2%
16-31	7.3%
More than 30 hours	2.4%

Now that I teach students who use laptop computers, students typically work in groups:

	Frequency in Percentages
Never	8.7%
Once a month	32.6%
Once a week	41.3%
Every day	17.4%

Before working with students who use laptop computers, students typically worked in groups:

	Frequency in Percentages
Never	15.9%
Once a month	40.9%
Once a week	27.3%
Every day	15.9%

How often do your students use laptops for instruction in your classroom?

	Frequency in Percentages
Never	2.2%
Once a month	28.3%
Once a week	39.1%
Every day	30.4%

How often do you use your computer for instructional purposes?

	Frequency in Percentages
Never	2.3%
Once a month	6.8%
Once a week	27.3%
Every day	63.6%

On average, I teach students who use laptop computers as a whole class _____ times each week.

Times per week	Frequency in Percentages
0	7.3%
1	12.2%
2-3	46.3%
4-7	24.4%
8-15	4.9%
More than 15 times per week	4.9%

Before working with students who use laptop computers, on average, I taught students as a whole class _____ times each week.

Times per week	Frequency in Percentages
0	5.0%
1	10.0%
2-3	27.5%
4-7	35.0%
8-15	12.5%
More than 15 times per week	10.0%

Professional Development

Rate each of the following according to your professional development needs.

	Already Trained in This	Feel Some Need	Need it Immediately	Not Ready for this Yet
Basics of Computer Operation	89.1%	10.9%	0%	0%
PowerPoint Basics	87.0%	13.0%	0%	0%
Excel Basics	58.7%	30.4%	6.5%	4.3%
Blackboard Basics	65.2%	30.4%	2.2%	2.2%
Excel Intermediate	41.3%	41.3%	4.3%	13.0%
Blackboard Intermediate	34.8%	56.5%	6.5%	2.2%
Outlook Intermediate	54.3%	37.0%	8.7%	0%
E-communication in the Classroom	41.3%	50.0%	6.5%	2.2%
Shared Folders	28.3%	65.2%	4.3%	2.2%
Classroom Management Using Laptops	43.5%	39.1%	17.4%	0%
Integrating Technology into the Curriculum	34.8%	52.2%	13.0%	0%

While a few more teachers reported that they attended no laptop training (4.3% in 2006 versus 0% in 2005), more teachers also reported attending five or more days of district laptop training than last year (43.5% in 2006 versus 30.9% in 2005).

How many days of laptop training offered by Irving ISD did you attend?

	Frequency in Percentages
None	4.3%
1-2 days	23.9%
3 days	21.7%
4 days	6.5%
5 days	15.2%
More than 5 days	28.3%

The trend in types of training/assistance provided to the teachers for 2006 was similar to 2005. However, reported peer assistance increased (from 68.4% in 2005) while campus (91.2% in 2005) and district (56.1% in 2005) workshops decreased in 2006.

What types of training/assistance in addition to the laptop sessions have you completed?
(Check all that apply)

	Frequency in Percentages
Individual assistance from technology specialist	71.7%
Peer assistance (other teachers)	80.4%
Campus workshops	54.3%
District workshops	13.0%
Other district training	11.0%

What other kinds of training do you need to support teaching with laptops? (Check all that apply)

	Frequency in Percentages
Online research techniques	43.5%
Troubleshooting/maintenance	43.5%
Content area training	29.0%
Electronic journaling	51.0%
Engaging reluctant learners	47.8%
Classroom management	37.0%
Cooperative learning / flexible grouping	2%

Overall Perceptions

	SD	D	U	A	SA
The laptop initiative has had a positive impact on my teaching.	2.2%	4.3%	19.6%	47.8%	26.1%
73.9% agree compared to 60.7% in 2005					
The laptop initiative has had a positive impact on student learning.	4.3%	4.3%	34.8%	37.0%	19.6%
56.6% agree compared to 44.6% in 2005					
The laptop initiative has had a positive impact on my own professional development.	0%	0%	8.7%	58.7%	32.6%
91.3% agree compared to 82.2% in 2005					
The laptop initiative has added additional duties for classroom management to my workload	0%	21.7%	21.7%	37.0%	19.6%
56.6% agree compared to 61.8% in 2005 (positive change)					

The top barrier changed from 2005 to 2006 for de Zavala Middle School teachers, from lack of time for integrating laptops into the curriculum, to students not bringing their laptops to class.

What do you consider to be the #1 barrier to using laptops in instruction?

Barrier	2005	2006
I do not feel properly prepared to use it for instruction.	11.1%	4.9%
I see no need to use it in my curriculum.	3.7%	0%
I do not have time to plan new lessons to integrate the laptops in my teaching.	24.1%	14.6%
Students do not bring their computers to class.	18.5%	46.3%
We experience technical difficulties too often.	18.5%	14.6%

Other barriers were listed and are included unedited in the Appendix.

**Implementation of Instruction Table for
Irving High Schools⁵ (four schools combined)**

Instructional strategies: *In class(es) where my students use laptop computers. . . .
Indicate how often you use this strategy*

	Never	Once a Month	Once a Week	Every Day
Whole class instruction.	12.7%	18.2%	40.8%	28.3%
Small group projects or presentations.	14.6%	45.2%	30.8%	9.4%
Direct teaching/lecture.	15.6%	16.7%	36.8%	30.9%
Analyzing and interpreting information.	15.3%	23.0%	34.3%	27.5%
Organizing, summarizing or displaying information.	12.1%	21.9%	31.1%	34.9%
Guiding/facilitating student learning.	10.8%	16.9%	27.5%	44.8%
Cooperative learning.	17.6%	24.7%	34.6%	23.1%
Specific TEKS instruction.	16.2%	19.8%	30.4%	33.6%

The trends for instructional activities in 2006 were similar to 2005. Two exceptions were the use of Blackboard (15.6% weekly and 13.8% daily last year) as well as students designing their own problems to solve (9% weekly and 4.4% daily last year). Both categories increased for 2006.

Instructional activities. *In class(es) where my students use laptop computers, students . .*

	Never	Once a Month	Once a Week	Every Day
Access online databases, reference materials, newspapers & periodicals.	17.6%	32.6%	32.9%	16.9%
Access online libraries.	29.0%	37.3%	26.1%	7.6%
Use email to communicate with other students.	27.5%	13.4%	16.7%	42.4%
Use email to communicate with experts in a particular field.	49.1%	24.1%	13.4%	13.4%
Use electronic bulletin board (ex. Blackboard) to discuss academic content, issues, assignments.	36.1%	24.3%	22.9%	16.7%
Work on projects that take one (1) week or more to complete.	23.1%	53.3%	15.0%	8.6%
Work on projects that apply critical thinking and problem solving skills.	17.7%	38.5%	26.8%	17.0%
Work on a project, gather data, conduct an experiment or research project.	22.5%	48.9%	18.0%	10.6%
Design their own problems to solve.	49.5%	31.0%	12.4%	7.1%

⁵ N = 433

Teachers and student roles:

Now that we use laptop computers in the classroom...

	SD	D	U	A	SA
I learn along with my students more often.	3.7%	9.6%	14.8%	49.2%	22.7%
71.9% agree compared to 65.9% in 2005					
Students carry responsibility for their learning more often.	8.2%	17.6%	22.1%	39.9%	12.2%
52.1% agree compared to 40.4% in 2005					
Students suggest or plan classroom activities more often.	11.8%	25.6%	30.4%	25.4%	6.8%
32.2% agree compared to 23.2% in 2005					
Students work as independent learners more often.	8.7%	13.0%	20.3%	43.6%	14.4%
58.0% agree compared to 45.2% in 2005					

The assessment trends for the high school teachers are similar to last year.

When assessing students who use laptop computers, I have students . . .

	Never	Once a Month	Once a Week	Every Day
evaluate and improve their own work.	25.0%	28.6%	33.1%	13.3%
present as part of a group on projects or presentations.	22.8%	53.9%	19.0%	4.3%
confer with other students about their work.	19.0%	27.1%	32.3%	21.6%
write an essay.	35.2%	42.9%	19.0%	2.9%
present as individuals.	34.7%	48.8%	12.2%	4.3%
prepare a research paper on an assigned or approved topic.	36.2%	54.2%	6.0%	3.6%
make a product.	33.7%	43.1%	16.3%	6.9%
demonstrate their work to an audience.	32.7%	50.5%	14.2%	2.6%
take a test or quiz.	31.4%	34.0%	30.7%	3.8%

Compared to before the laptop project, students who use laptop computers. . . .

	SD	D	U	A	SA
master new skills better than students who did not use laptop computers.	5.7%	12.0%	35.6%	35.2%	11.5%
46.7% agree compared to 35.8% in 2005					
remediate the skills they have not	5.3%	12.3%	36.5%	35.6%	10.3%

mastered better than students who did not use laptop computers.					
45.9% agree compared to 35.6% in 2005					
express themselves in writing better than students who did not use laptop computers.	9.3%	17.2%	38.0%	27.0%	8.4%
35.4% agree compared to 26.2% in 2005					
communicate with other people better than students who did not use laptop computers.	7.0%	16.8%	32.7%	32.9%	10.6%
43.5% agree compared to 32.9% in 2005					
find out about ideas and information better than students who did not use laptop computers.	3.3%	2.4%	18.4%	54.3%	21.5%
68.4% agree compared to 75.8% in 2005					
analyze information better than students who did not use laptop computers.	5.8%	12.2%	36.7%	34.8%	10.6%
45.4% agree compared to 34.5% in 2005					
present information to an audience better than students who did not use laptop computers.	4.5%	9.8%	25.8%	42.6%	17.2%
59.8% agree compared to 49.7% in 2005					
learn to work collaboratively better than students who did not use laptop computers.	6.5%	12.7%	34.9%	35.6%	10.3%
45.9% agree compared to 33.9% in 2005					
learn to work independently better than students who did not use laptop computers.	7.7%	10.3%	28.1%	42.7%	11.3%

COMMENTS: What would you like to tell us about your instructional practice that we have not asked – See Appendix for open-ended comments.

Reflecting on the possible impacts of the laptop program, the largest changes reported by the high school teachers were in more effective laptop policies and procedures, and in understanding how people learn and develop beliefs about teaching and learning. While agreement was higher on all other reflections, many were small changes.

Reflections

Thinking about possible impacts of the laptop program, I believe:

	SD	D	U	A	SA
My computer skills have improved.	.8%	1.6%	4.1%	42.6%	50.8%
93.4% agree compared to 89.8% in 2005					
The school has developed effective laptop policies and procedures for the laptop program.	6.6%	10.7%	18.9%	38.5%	25.4%

63.9% agree compared to 44.9% in 2005					
The school climate has changed.	1.7%	5.0%	24.0%	38.0%	31.4%
69.4% agree compared to 79.5% in 2005					
I have had adequate professional development opportunities.	2.5%	4.1%	10.7%	47.5%	35.2%
82.7% agree compared to 72.4% in 2005					
The curriculum in my class has changed.	2.5%	13.2%	23.1%	41.3%	19.8%
61.1% agree compared to 52.0% in 2005					
My role in the classroom has changed.	1.7%	17.6%	21.8%	39.5%	19.3%
58.8% agree compared to 51.6% in 2005					
Student achievement in my classes has improved.	6.6%	19.8%	44.6%	20.7%	8.3%
29.0% agree compared to 29.1% in 2005					
My understanding of how people learn has changed.	5.7%	11.5%	30.3%	37.7%	14.8%
52.5% agree compared to 40.5% in 2005					
My beliefs about teaching and learning have changed.	5.0%	17.4%	26.4%	34.7%	16.5%
51.2% agree compared to 38.7% in 2005					
At school, my thoughts and opinions about teaching and learning are heard and considered.	8.3%	15.0%	28.3%	35.8%	12.5%
48.3% agree compared to 41.3% in 2005					
Planning has become more difficult (harder) now that students use laptop computers.	7.4%	22.3%	25.6%	30.6%	14.0%
44.6% agree compared to 43.6% in 2005					

As with the other grade level teachers, the high school teachers reported spending on average more hours planning for instruction each week compared to prior to laptops.

Now that I teach students who use laptop computers, I spend, on average, ___ hours each week planning for instruction.

Hours per week	Frequency in Percentages
0	5.1%
1	8.3%
2-3	36.9%
4-7	32.5%
8-15	13.6%
16-31	3.2%
More than 30 hours	.5%

Before teaching students who use laptop computers, I spent, on average, ___hours each week planning for instruction.

Hours per week	Frequency in Percentages
0	8.2%
1	9.2%
2-3	32.8%
4-7	34.1%
8-15	11.3%
16-31	3.6%
More than 30 hours	.8%

Now that I teach students who use laptop computers, students typically work in groups:

	Frequency in Percentages
Never	10.7%
Once a month	30.3%
Once a week	47.9%
Every day	11.1%

Before working with students who use laptop computers, students typically worked in groups:

	Frequency in Percentages
Never	13.7%
Once a month	37.0%
Once a week	39.5%
Every day	9.9%

When asked how often students use laptops for instruction in the classroom, more teachers reported using them every day and fewer reported using them never compared to 2005 (12.5% never in 2005 and 26.0% every day in 2005).

How often do your students use laptops for instruction in your classroom?

	Frequency in Percentages
Never	9.7%
Once a month	20.5%
Once a week	35.3%
Every day	34.5%

How often do you use your computer for instructional purposes?

	Frequency in Percentages
Never	7.3%
Once a month	11.9%
Once a week	23.7%
Every day	57.1%

On average, I teach students who use laptop computers as a whole class _____ times each week.

Times per week	Frequency in Percentages
0	14.8%
1	17.0%
2-3	33.0%
4-7	24.8%
8-15	2.9%
More than 15 times per week	7.5%

Before working with students who use laptop computers, on average, I taught students as a whole class _____ times each week.

Times per week	Frequency in Percentages
0	9.3%
1	8.5%
2-3	28.1%
4-7	40.4%
8-15	6.3%
More than 15 times per week	7.5%

The reported percentages for professional development needs are similar to 2005. More teachers reported being training in integrating technology into the curriculum in 2006 than 2005 (51.8% in 2006 vs. 42.4% in 2005).

Professional Development

Rate each of the following according to your professional development needs.

	Already Trained in This	Feel Some Need	Need it Immediately	Not Ready for this Yet
Basics of Computer Operation	91.8%	7.5%	.2%	.5%
PowerPoint Basics	77.3%	21.1%	.5%	1.2%
Excel Basics	62.4%	32.9%	2.3%	2.3%
Blackboard Basics	58.6%	34.6%	5.1%	1.6%
Excel Intermediate	37.5%	48.3%	3.5%	10.6%
Blackboard Intermediate	32.1%	52.7%	7.3%	8.0%
Outlook Intermediate	57.3%	34.5%	3.0%	5.1%
E-communication in the Classroom	46.5%	42.5%	5.0%	6.1%
Shared Folders	42.1%	47.0%	5.2%	5.7%
Classroom Management Using Laptops	52.0%	37.0%	6.6%	4.4%
Integrating Technology into the Curriculum	51.8%	39.1%	7.3%	1.9%

The number of days high school teachers reported attending laptop training in Irving ISD was similar to the prior year.

How many days of laptop training offered by Irving ISD did you attend?

Days of Training	Frequency in Percentages
None	7.8%
1-2 days	22.1%
3 days	22.6%
4 days	4.9%
5 days	5.9%
More than 5 days	36.7%

The types of training assistance for the high school teachers closely mirrored last year's reported training/assistance.

What types of training/assistance in addition to the laptop sessions have you completed? (Check all that apply)

	Frequency in Percentages
Individual assistance from technology specialist	70.4%
Peer assistance (other teachers)	67.4%
Campus workshops	75.5%
District workshops	59.8%
Other district training	17.6%
Training outside the district (please specify)	15.0%

What other kinds of training do you need to support teaching with laptops? (Check all that apply)

	Frequency in Percentages
Online research techniques	20.3%
Troubleshooting/maintenance	37.9%
Content area training	37.5%
Electronic journaling	15.9%
Engaging reluctant learners	40.9%
Classroom management	29.8%
Cooperative learning / flexible grouping	30.5%
Other (please specify):	4.2%

Overall Perceptions

	SD	D	U	A	SA
The laptop initiative has had a positive impact on my teaching.	2.1%	9.6%	19.7%	42.6%	26.0%
68.6% agree compared to 51.2% in 2005					
The laptop initiative has had a positive impact on student learning.	4.7%	12.1%	23.7%	38.1%	21.4%
59.5% agree compared to 43.7% in 2005					

The laptop initiative has had a positive impact on my own professional development.	1.4%	6.1%	14.3%	49.5%	28.7%
78.2% agree compared to 67.5% in 2005					
The laptop initiative has added additional duties for classroom management to my workload	2.8%	13.0%	23.6%	35.6%	25.0%
60.6% agree compared to 70.4% in 2005 – a good change					

What do you consider to be the #1 barrier to using laptops in instruction?

	Percent
I do not feel properly prepared to use it for instruction.	4.7%
I see no need to use it in my curriculum.	5.1%
I do not have time to plan new lessons to integrate the laptops into my teaching.	10.3%
Students do not bring their computers to class.	33.6%
We experience technical difficulties too often.	16.2%
Other (most commonly “off-task behavior” followed by “students don’t bring laptops to class”)	30.1%

The last item also allowed for additional open-ended comments that can be found in the Appendix.