

## Executive Summary

The Irving Independent School District (ISD) TIP Vertical Integration Laptop Project was evaluated during spring 2006 based on data gathered through six avenues:

- Surveys completed by 659 K-12 teachers
- Surveys completed by 656 students in grades 2-5
- Surveys completed by 3,449 students in grades 6-12
- Focus group interviews with educators in three TIP vertical integration schools
- Classroom observations of 32 classrooms
- Surveys completed by 309 parents of elementary, middle, and high school students.

Findings for each of these are contained in separate reports. This document contains an executive summary of the major findings across reports.

### Findings Regarding Teachers

Stage of Adoption of Technology. As of 2006, the most common stage of adoption of technology (44%) reported for high school teachers in Irving was stage 6, Creative Applications to New Contexts. The average stage of adoption of technology reported was 5.11 for 2006, up from 5.03 in 2005.

CBAM Level of Use. The most commonly reported (modal) level of technology use 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% in 2005 and 58% in 2004). The average level of use reported for 2006 was 5.89 (compared to 5.89 in 2005 and 5.88 in 2004).

Skills-based Confidence Measures. The Technology Proficiency Self Assessment (TPSA) has four scales: Email, World Wide Web, Integrated Applications and Teaching with Technology. 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, versus their comparison school counterparts.

Attitudinal Measures. Four scales of the Teachers' Attitudes Toward Computers (TAC) questionnaire were used to assess teacher attitudes. As of 2006, 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 from 2005 to 2006.

Years of Teaching Experience and Technology Attitudes. As of 2006, number of years of teaching experience was negatively correlated ( $p < .01$ ) with the Attitudinal measures of Comfort, Utility and Significance as well as Stages of Adoption plus Technology Proficiency with Email, WWW, Integrated Applications and Teaching with Technology. Interestingly there was no significant correlation between CBAM Level of Use or amount of computer use (CompUse) and number of years of teaching. The 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.

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. Major findings were:

- High school teachers reported less small group instruction than either the middle school or elementary school teachers
- Middle school and high school teachers reported 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 ( $p < .0005$ ) and CBAM Level of Use ( $p < .0005$ ) 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.

The most noticeable indicators that changed from 2005 to 2006 regarding the instructional activities were an increase in the use of electronic bulletin boards (Blackboard), an increase in working on projects that apply critical thinking and problem solving skills, and an increase in working on projects that gather data, conduct an experiment or carry out research.

The number of teachers who said they “never” have their students present as part of a group on projects or presentations decreased from 51.7% in 2005 to 35.9% in 2006 while there was also an increase in the number of times teachers have students present as a group on a weekly or daily basis. The percentage of teachers who have their students demonstrate their work to an audience increased 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 learning and assessment strategies have changed toward more group and presentation-based strategies with laptops.

Planning Time. 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.

Home Laptop/Computer Use. Sixty-seven percent (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 to 37% in 2006. Most Irving teachers average at least one hour per day on their computer at home.

Group Work. 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.

Professional Development. 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). The trend in types of training/assistance provided to the teachers for 2006 was similar to 2005. However, reported peer assistance increased while campus workshops and district workshops decreased in 2006.

Largest Barrier. The top barrier changed from 2005 to 2006 for middle school teachers, from lack of time for integrating laptops into the curriculum, to students not bringing their laptops to class. This middle school barrier became more like the high school in 2006.

Instructional Trends. The trends for instructional activities in 2006 were similar to 2005. Two exceptions were increased use of Blackboard in 2006 as well as an increase in students designing their own problems to solve.

Impact of Program. 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.

Frequency of Laptop Use for Instruction. When asked how often students use laptops for instruction in the classroom, more teachers reported using them every day and fewer reported never using them, compared to 2005.

Integration Training. More teachers reported being trained in integrating technology into the curriculum in 2006 than 2005 (51.8% in 2006 vs. 42.4% in 2005).

#### Findings for Students Grades 2 – 5

Student Attitudes Toward Computers and Learning Dispositions. The greatest differences between treatment and comparison schools at the elementary school level were in Computer Importance, Creative Tendencies and Attitudes Toward Computers – with the treatment school being higher on all three. These differences are all significant at the  $p < .05$  level. The other five attitudinal indices also showed the treatment school (Lively Elementary) to be higher but not at a statistically significant ( $p < .05$ ) level.

Grade Level Distinctions. There were significant differences by grade level for all dispositions measured. The general trend was toward less positive attitudes as grade level increased. These trends are consistent with findings from previous studies.

Gender Distinctions. Significant ( $p < .05$ ) differences were found between males and females for Computer Enjoyment, Study Habits, Motivation, Attitudes Toward School, Creative Tendencies, Attitudes Toward Computers and Motivation to Study with females being higher. In addition, females were also higher on Computer Importance although it was not statistically significant. In all cases, female attitudes were more positive than males, and in the case of Attitudes Toward School ( $ES = .64$ ) the difference is between 'moderate' ( $ES = .5$ ) and 'large' ( $ES = .8$ ) according to guidelines provided by Cohen (1969).

Effect of Laptop Initiative. An analysis of effect size indices for treatment versus comparison schools, within measurement scale and separated by gender, revealed several trends. First, treatment school ratings were more positive than comparison school ratings for males and females on most computer attitudes and learner dispositions. The effect was notably strong on Attitudes Toward Computers for both males and females, and males appear to have been somewhat more positively affected than females. For example, on the composite measure Attitudes Toward Computers, the treatment vs. comparison effect size was .40 for males versus .33 for females; in the subscale Computer Importance the effect size was .48 for males vs. .37 for females. These effects are in the small ( $ES = .2$ ) to moderate ( $ES = .5$ ) range according to guidelines provided by Cohen (1969) and may be deemed educationally meaningful according to the  $ES = .3$  cut-off often employed for judging the practical significance of an intervention.

Another trend is that the effect of the laptop treatment was consistently positive on most learner dispositions. This appears to have been somewhat stronger for females than males. For example, for Study Habits the effect size for females was .23 versus .09 for males, and for Creative Tendencies the Effect Size was .32 for females versus .20 for males.

A third trend is that Attitudes Toward School in general appears to have been more positively affected among males than among females, as indicated by treatment-comparison effect sizes of .15 for males versus .01 for females. Closer examination of this data revealed that Attitudes Toward School of the females in both the treatment and comparison school were high, whereas the attitudes toward school of the males rose closer to the females in the laptop school.

Another way to look at male and female Attitudes Toward School for the treatment school versus the comparison school is to compare the effect size of males to females at each school. At Lively/treatment the effect size between males and females was .58 (which is educationally meaningful) but for the comparison school, the effect size was .74 between males and females, which is moderately large. Both schools had females with more positive attitudes toward school, but the differences were less dramatic in the laptop school.

In summary, across all eight measures with separate indicators for males versus females, effect size was positive (treatment vs. comparison) for 15 of 16 indices ( $p < .001$ ). This indicates a positive effect overall of the laptop program on the students in the laptop school, for both males and females.

Home Access. Approximately 68% of the TIP treatment group and 55% of the comparison group reported having access to a computer at home (other than the laptop), while 52% of the treatment group and 45% of the comparison group reported access to the World Wide Web at home.

Impact of Home Computer Access. An analysis of effect size indices for treatment versus comparison schools, within measurement scale and presented separately by level of home computer access, revealed several trends. First, it appears the treatment school was more positive than the comparison school for students with home access to a computer as well as for those without home access to a computer. This was true for most computer attitudes and learner dispositions. The effect was strongest in Attitudes Toward Computers and in Creative Tendencies, with a positive ( $ES > .2$ ) impact on both groups in these areas.

In addition, there appears to have been a differential impact on those with versus without access to computers at home, in the area of attitudes toward computers. In particular, if students had access to computers at home but were not in the laptop program in school, their perception of the importance of computers was lower. If students in this type of home environment (computer access at home) were also in the laptop program in school, then their perception of the importance of computers was more positive and in fact comparable to the perceived importance of students without access to other computers at home. The implication of this finding is that just because students have access to other computers at home, this does not mean they perceive them as important (relevant) for school and careers. The laptop program in their school apparently influenced their perceived importance of computers in a positive manner.

A third trend emerged in the area of attitudes toward school. Attitudes Toward School was higher for students who did not have computer access at home. The difference was significant ( $p < .01$ ) for Lively Elementary and close to significant ( $p = .09$ ) for the comparison school. It is possible that having computer access at school when it is not available at home affects the students' attitudes toward school in a positive manner.

Impact of Home WWW Access. The trends for whether or not students had access to the WWW at home are very similar to the trends for home access to a computer. An interesting contrast is that Attitudes Toward School were higher at Lively Elementary if students did not have WWW access at home. Creative Tendencies were higher if students did have WWW access at home. Trends were similar for comparison school but not significant, probably because the comparison had a smaller number of students. These findings imply that WWW access in school (laptop program or not) may positively influence attitudes toward school among students who do not have WWW access at home.

Distinctions by Language Spoken at Home. An analysis of effect size indices for treatment versus comparison schools, within each measurement scale and reported separately by primary language spoken at home (English vs. other), revealed several trends. First, the overall finding was that the treatment school was more positive than the comparison school for non-English as well as English primary - language students, on most computer attitudes and learner dispositions.

Regarding home computer access vs. none, the effect was strongest in attitudes toward computers. For example, on the composite measure, Attitudes Toward Computers the treatment vs. control effect size was .42 for English primary language versus .33 for non-English; for Computer Importance the effect size was .46 for English primary language and .42 for non-English. These effects are educationally meaningful according to the  $ES = .3$  cutoff often employed for judging the practical significance of an intervention. It appears the laptop program had a positive effect on student perceptions of the importance (relevance to schooling and careers) of computers among English-first-language as well as non-English first language students.

Effect size was positive (treatment vs. comparison) for 15 of 16 measurements on eight indicators ( $p < .001$ ). This indicates a positive effect overall of the laptop program on the students in the laptop school.

The laptop program appears to have positively influenced elementary students' attitudes toward computers and other learning dispositions. The greatest differences between treatment and control schools were in Computer Importance, Creative Tendencies and Attitudes Toward Computers – with the treatment school being significantly ( $p < .05$ ) higher on all three. The other five attitudinal indices also showed the treatment school (Lively Elementary) being higher but not at a statistically significant ( $p < .05$ ) level. This effect appears to have been similar on males and females, home access versus non-home access students, and English versus non-English primary language speaking students.

One effect emerged for students without computer access at home across both treatment and comparison schools. Students without access to computers at home tended to have higher attitudes toward school.

#### Findings for Students Grades 6 – 12

Home Computer Access. For each year that data have been collected (2004, 2005, 2006) in Irving, the number of upper-level students with home computer access as well as Internet access has increased.

Sharing of Laptops at Home. As of 2006, more than one-fourth of the high school students still report that they shared their laptop with someone else at home. This is similar to previous years. In addition, however, for the treatment middle school in 2006, more than half of the students reported that someone else at home uses their laptop, an increase from one-fifth in 2005. More than half of these middle school students reported helping someone at home use their laptop.

Attitude Toward School was found to be significantly higher ( $p < .02$ ) in the treatment middle school with the laptop program. This is in comparison to attitudes in a similar Irving ISD middle school without laptops.

Treatment vs. Comparison Perceptions of Computers in School. A striking contrast regarding obstacles to student use of technology existed between the treatment middle school and comparison middle school. While the number one obstacle for the treatment school was slow access to the Internet, the top obstacles for the comparison school were not enough computers and lack of time in the day to access computers. Clearly, access to technology is not a problem at the treatment school with laptops for every student.

Interestingly, the comparison school was found to be higher ( $p < .05$ ) on Computer Enjoyment, Computer Importance, and (lack of) Anxiety. The negative effect size of  $-.41$  for Computer Enjoyment may indicate that middle school students in the treatment school perceived working with computers more as “work” than their comparison school counterparts, even as the positive effect size for Attitude Toward School appears to indicate the laptop-based initiative promoted a more positive Attitude Toward School.

Use of Technology. In the area of technology use, the three measures of home use, WWW use and school use were gathered. The treatment school was significantly higher ( $p < .0005$ ) in reported use than the comparison school on all three measures, with treatment effect sizes ranging from very large for school computer use ( $ES = 1.02$ ), to moderate for home computer use ( $ES = .52$ ), and small for WWW use ( $ES = .20$ ).

Gender Differences. There were not large differences by gender in most areas assessed on the Computer Attitude Questionnaire in 2006. This finding is unlike those found in similar school districts in recent years, and may imply that ubiquitous, equal access promotes removal of historical gender-based differences in attitudes and skills. This trend is a continuation of the pattern first noted in the following excerpt from the 2005 report:

Male versus female differences in perceptions of information technology are present in the Irving middle school students and are generally consistent with those from other published sources. However, in some cases (e.g. lack of significant differences in hours of use of the computer at home in the TIP project school) there are indications that ubiquitous access is leading to gender equality in the perception of and use of information technology. In the high school data, the overall trend is even stronger for this contention. The trends for both males and females from 2004 to 2005, across all high schools where all students have their own laptops, is that the two genders are coming closer together on many major indices where they were previously far apart (Christensen & Knezek, 2005, p. 31).

Detailed analyses were run to compare gender and grade on eleven indices regarding computer attitudes, computer use and attitudes toward school. Females were higher on

Computer Enjoyment and Computer Importance in Grades 6, 7, and 8. However by Grade 9, females began going down below the level of the males' attitudes on Computer Enjoyment. Then again, by Grades 11 and 12, it appears that attitudes for both males and females were similar.

#### Differences Across Grade Levels.

- For sixth graders, females were significantly higher ( $p < .05$ ) than males on three indicators (TP-IA, TP-Skills and Attitude Toward School) yet were higher on all 11 of the indicators.
- For seventh graders, females were significantly higher ( $p < .05$ ) than males on seven indicators but higher on all 11 although four were not statistically significant at the  $p < .05$  level.
- For eighth graders, females were significantly higher than males on three indicators (TP-email, TP-IA and Attitude Toward School) and higher on all 11 (eight were not significant at the  $p < .05$  level).
- Ninth grade males were significantly higher ( $p < .05$ ) on Computer Importance and close to significantly higher ( $p = .078$ ) on Computer Enjoyment. Females were higher on six indicators but not at a statistically significant ( $p < .05$ ) level.
- For tenth graders, males were higher on three indicators (Computer Joy, Computer Importance and WWW use) but they were not significant at the  $p < .05$  level. Females were significantly higher on four indicators (TP-email, TP-IA, TP-skills and Attitude Toward School).
- For eleventh graders, females were significantly ( $p < .01$ ) higher on two indicators (TP-email and Attitude Toward School). Males were higher on three indicators (Home Use, WWW use and School use) but they were not significantly different at the  $p < .05$  level.
- For twelfth graders, females were significantly higher ( $< .05$ ) on two indicators (TP-email and Attitude Toward School). Females were close to significantly higher on two more indicators (School use,  $p = .059$  and Home use,  $p = .073$ ).

By twelfth grade, males and females were very similar on most indicators.

New information that is especially encouraging is that female and male enjoyment of computers appears to equalize by Grades 11 - 12. This trend is displayed in Figure 1. This finding would be good news to most parents of teenage girls.

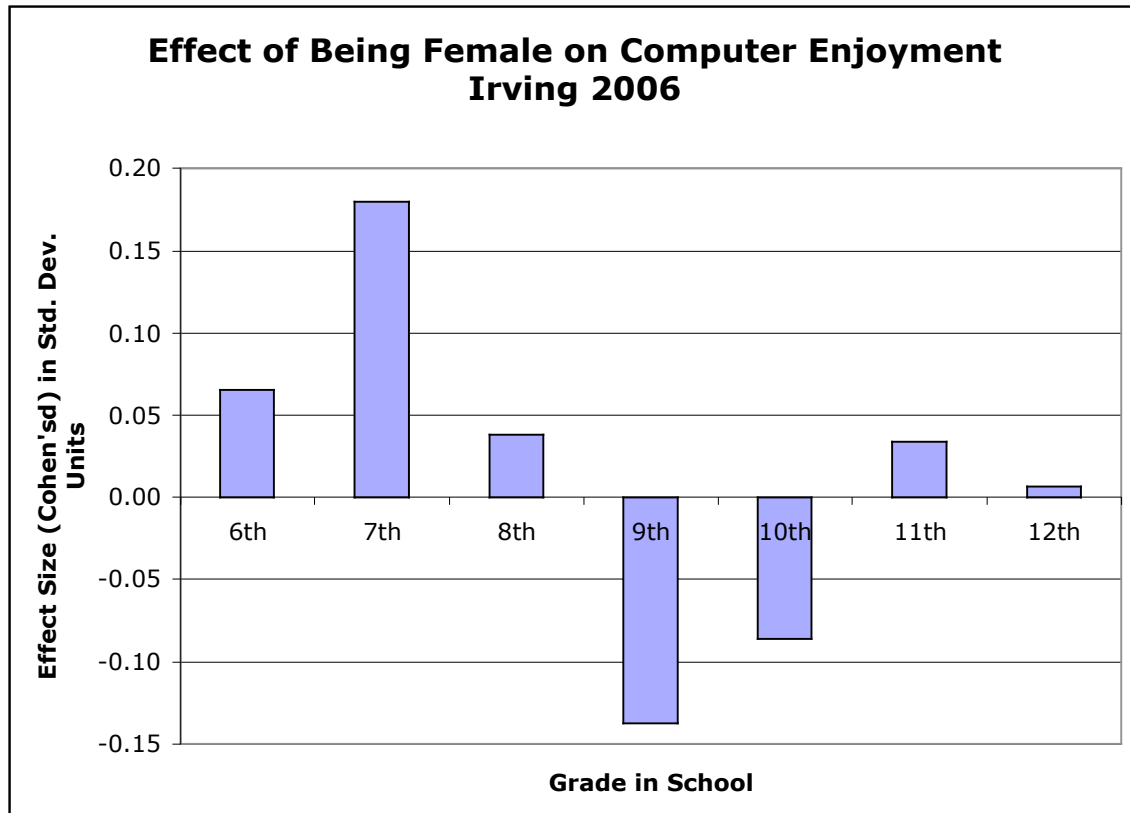


Figure 1. Effect sizes for female versus male self-reported ratings of Computer Enjoyment, grades 6 through 12 in Irving ISD, May 2006.

### Findings Based on Parent Surveys

Length of Attending School in Irving. Parents of students not in the laptop program reported their child had been attending Irving schools between 3-5 years on the average (mean value reported = 3.19; rating of 3 = 3-5 years), while parents of children in the laptop program schools reported their child had been attending Irving schools 2-3 years on the average (mean value reported = 2.78; rating of 2 = 2 years, rating of 3 = 3-5 years). This appears to support the observations of Irving ISD district personnel that parents are seeking to move into the areas served by the schools with laptops.

Contrasts Between Laptop Parents and Comparison Parents. Laptop school parents were “higher” than the parents of the non-laptop schools in the following areas:

- a) How often do you as a parent visit the district’s website?
- b) How often do you as a parent visit your student’s campus website?
- c) What kind (speed) of Internet access does your family have at home?
- d) Do you have email access at home or at work?

How often do you talk to your child about Internet safety? Most parents reported talking to their children at least a few times per year about Internet safety. This was true for

elementary school parents (59%), middle school parents (69%), and high school parents (96%). Apparently parents perceive this issue as more important when their children are older.

Do you set limits or rules for your student and the use of their laptop/AlphaSmart or home computer? Approximately two-thirds of the parents reported setting time limits for their children on use of their Irving laptop at home. Both the elementary (76%) and high school parents (72%) appear to be more diligent in this area than middle school parents, where only 60% of the parents reporting setting time limits.

Would you want to check your student's grades, tests, or homework online? Parents at all three levels of schooling were overwhelmingly in favor of wishing they could check their child's grades online. More than 90% of elementary and high school parents expressed this wish; the number for middle school was 82% in favor.

Would you like to be on an email list to receive campus or district information? A somewhat smaller but still significant percentage of parents said they wished to receive campus or district information via email. For the elementary school parents, 59% said they would like to receive email information while 42% of the middle school parents and 84% of the high school parents expressed this interest. Undoubtedly the fact that 21% of the elementary parents and 35% of the middle school parents said 'no because they have no access' kept the numbers in this category from being higher.

Would you be willing to support a bond referendum to provide continued funding for the laptop program? Elementary, middle school, and high school parents strongly agreed that they would be willing to support a bond referendum to continue the laptop project. The percentages in favor were 82% for elementary school parents, 71% for middle school parents, and 61% for high school parents.

How important do you think technology is for future job prospects/careers? Parents at all levels overwhelmingly agree that technology is important for future job prospects/careers. More than 90% in each category of schooling expressed this sentiment.

### Findings Based on Classroom Observations

Percentage of Students Without Laptops. Observers were asked to record the number of students in the classroom they were viewing, and the number of these students without laptops. This allowed researchers / external evaluators to calculate the typical percentage of students without laptops at the elementary, middle school, and high school level. Findings were that the number of students without laptops increased as the level of schooling increased. For the elementary level, the average number of students without laptops in a class was fewer than one (mean = .46) of 18, which translates into approximately 3% of the students in the elementary classrooms being without laptops. For the middle school level, the typical number of students without laptops was approximately 4 of 19, which represents 19%. At the high school level, the typical

number of students without laptops was approximately 7 out of 20 students, which represents 35% of the class being without a laptop. During the focus session interviews with teachers in previous years, many high school teachers raised the issue of having to prepare two lessons each day, one for laptops, and one for students without laptops. This year (2006) some middle school teachers also echoed the same complaint. Data gathered by the classroom observation team appears to corroborate the concerns raised by teachers.

Student Time on Task vs. Behavior Disruptions. The extent to which students stayed on task throughout the observation period was a function of the level of the school. Observers noted that very few off task behaviors occurred at Lively Elementary and “Little” disruptive behavior was recorded at de Zavala Middle School, with notable exceptions. At Irving High School, there was much more disruptive behavior with 5-20% of the observation time typically involving some form of off-task behavior. The nature of these disruptive behaviors appear to have changed in form and frequency compared to one year earlier. In particular, observers noted few off task behaviors that consisted mainly of emailing at inappropriate times, one year prior to the current report.

Nevertheless, there may have been strong external influences on behavior patterns during the 2006 observation period, in that apparently the observations were carried out near the high point of student protests over proposed immigration policies for the USA. At least three observations at the high school level and one at the middle school level strongly alluded to and / or specifically mentioned unrest and unsettling over discussion of immigration issues that prohibited focusing on the planned lesson for significant portions of the class. Probably 2006 was an unusual observation period with extensive influence on the typical classroom environment, simply because a large portion of the Irving student body is Hispanic with ties to those impacted by national decisions on immigration policies.

Teachable Moments with Technology. The disruptions reported in the previous section also appear to have spawned opportunities for rich, meaningful, ‘teachable moment’ activities in Irving ISD that would not have been possible without the kind of technologies Irving had in place. A detailed example of a teacher who turned a potentially explosive situation into an enriching “self-exploration of the facts” is well documented by an observer’s report. Brief excerpts are provided below:

The observation occurred one day after the protest over immigration legislation. The students either participated in the protest or knew someone who did. The instructor involved students in research that would allow them to separate the actual facts from inaccurate information. The assignments involved current events that were relevant and of high interest to the students. They were to begin work and progress through the assignments at their own pace while still meeting the deadline for completion.

The teacher directed the whole group, briefly explaining what students were to do and how they were to do it. Through interactive whole group discussion, he answered questions for clarification and provided advice for narrowing searches. For about 75% of the period, the instructor facilitated and coached. He periodically checked with students for understanding and assisted with their research progress.

Students were writing opinion and persuasive assignments using Word. Those who progressed to the last assignment were using PowerPoint presentation software for information on twentieth century Iraq. ... A few students were talking off-topic in group work. However, it was a very minor infraction of class time.

Students collected information from websites which they were to use to analyze, draw conclusions, and form opinions. The assignments required students to probe deeper into real-world situations creating authentic intellectual work that could have social significance.

The technology was essential to the content. Students would have had difficulty locating the amount of information and up-to-date information required for the assignments. The technology allowed for quick access to informative facts, articles, etc. that would be analyzed for forming opinions and obtaining the opinions of others on topics. Also, the technology provided information that was current, of interest to the students, and had real-world applications.

Possibly these students would have gained the same benefit from going home and watching the video commentary on the six o'clock news, but in the opinion of the evaluators, that is highly unlikely. Probably the lessons learned that day through laptops and the World Wide Web will stay with these Irving ISD students until they are voters and productive citizens. A skillful classroom observer has carefully documented a case of using technology in a constructivist manner, to have each student arrive at his or her own opinion on a sensitive issue. Most policy makers would probably agree this is educational content of the highest priority to assure a positive future for our democratic society.

Summary/Conclusions. Observations of technology use in Irving ISD classrooms took place during 2006 at a time of nationwide debate over immigration issues and when there were student marches in Dallas and other cities. Probably the notably high incidence of observed off-task behaviors at the high school were influenced by these events. On the other hand, it also appears that these events made possible the observation of superb "teachable moment" utilizations of technology in the classroom that illustrate ideal utilizations under the guidance of skilled teachers. The 2006 observations also documented an issue previously raised by teachers – that it is difficult to teach well in a technology intensive environment when many of the students do not bring their laptops to school. For the second year in a row, observers documented that students at all three schools displayed remarkable proficiency with whatever software they were using on the day the observers were present.