

K-12 Computing Blueprint Webinar

Your Resource for One-to-One Computing

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K12 Computing Blueprint Education Webinar

One-to-one: Data, Metrics and Results

November 18, 2008
4:00 EST (1:00 PST)

K-12 Computing Blueprint Webinar

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K-12 Computing Blueprint

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Visit us to read case studies, learn about research, access resources, and keep up on recent news about laptop learning, other forms of one-to-one computing, and K-12 ed tech issues including funding, curriculum, leadership and professional development.

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Introductions



Moderator: Judy Salpeter
Tech & Learning



Welcome: Eileen Lento
Intel



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Welcome



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Today's Speakers

Tom Greaves

Co-Author

America's Digital Schools



Fred Morton

Superintendent

Henrico County Public Schools

Dr. Kelly Shapley

Principal Investigator, Texas

Technology Immersion Program



1:1 Computing

Large-Scale 1:1 Implementations Are Alive and Well

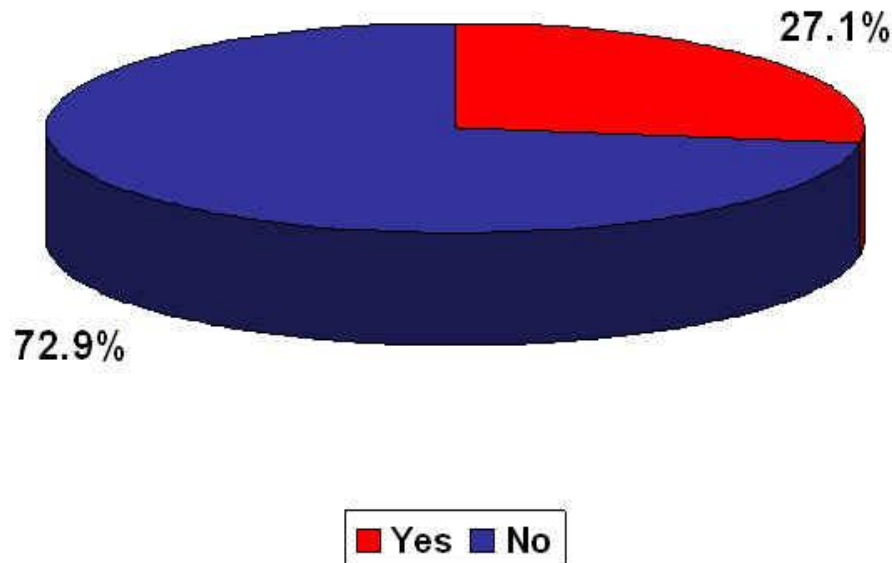


Tom Greaves
America's Digital Schools

Definition of 1:1 Computing

- America's Digital Schools 1:1 Definition
- Each student and teacher has one Internet-connected wireless computing device
- Used in the classroom **and** at home
- No Carts or occasional 1:1 use
- Why? The differences are analogous to cell phones vs. pay phones.

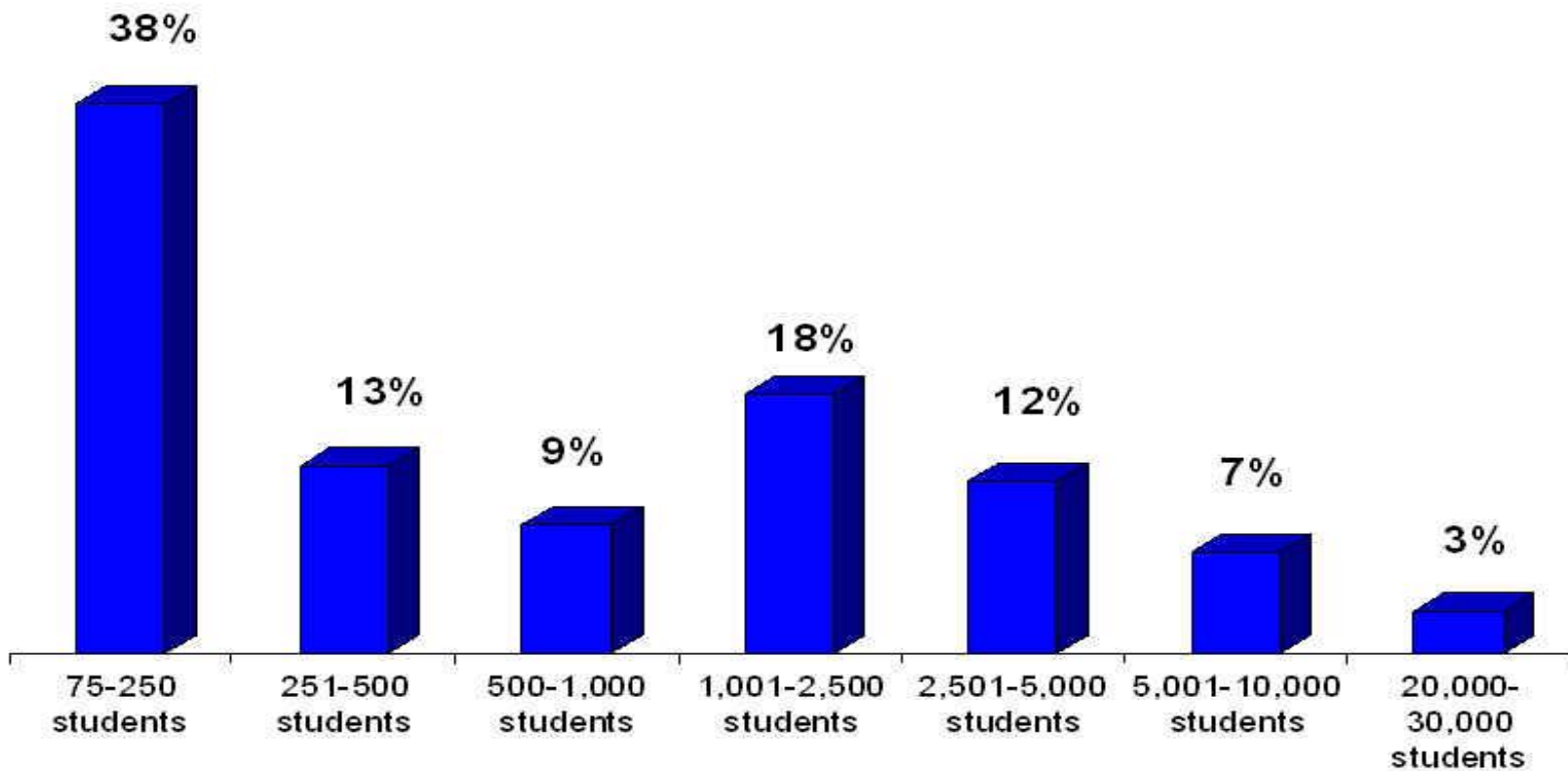
One-to-One Computing Implementation



Are you currently implementing 1:1 in at least one full grade in one school and in at least a pilot environment?



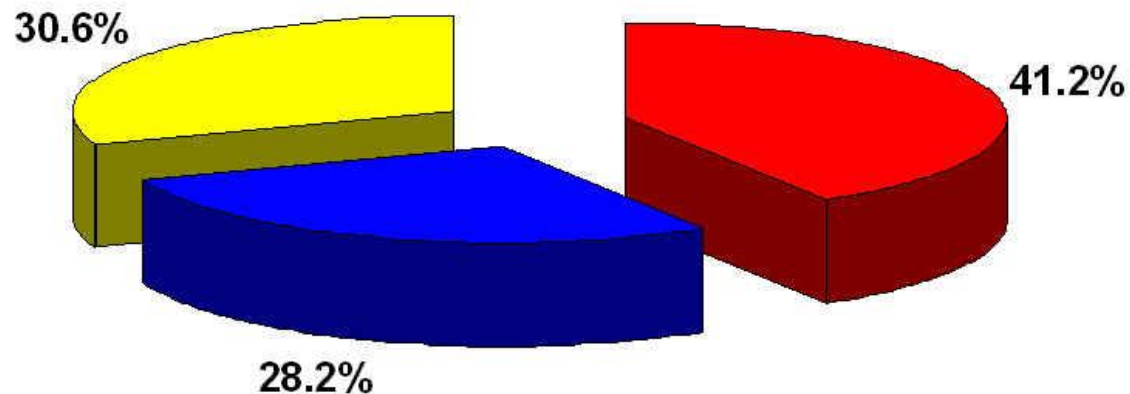
Number of Students Involved in 1:1



Average: 1,631 Students

How many students are involved in your 1:1 program implementation?

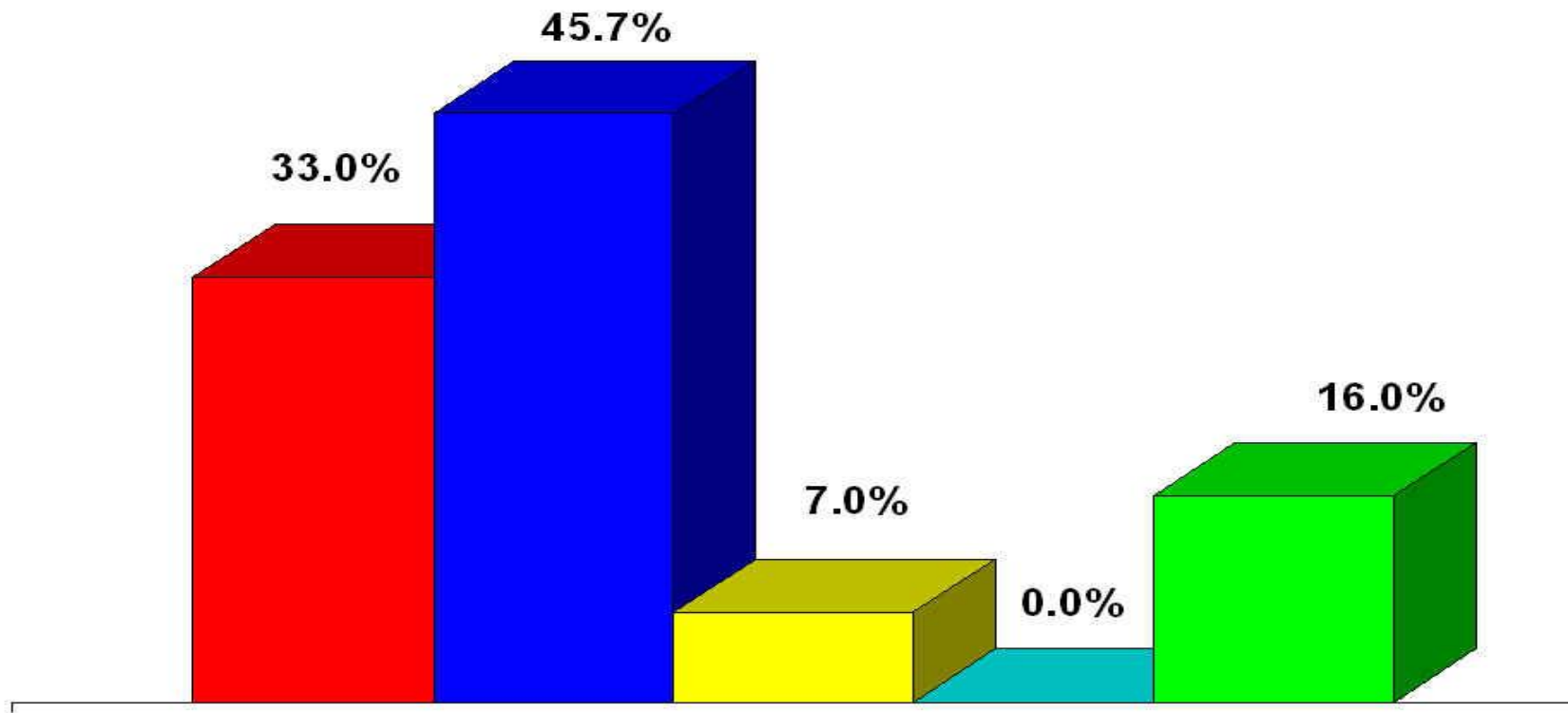
No. of Schools Per District in 1:1



■ One School ■ Two Schools ■ Three or More

How many schools in your district are currently implementing a 1:1 program?

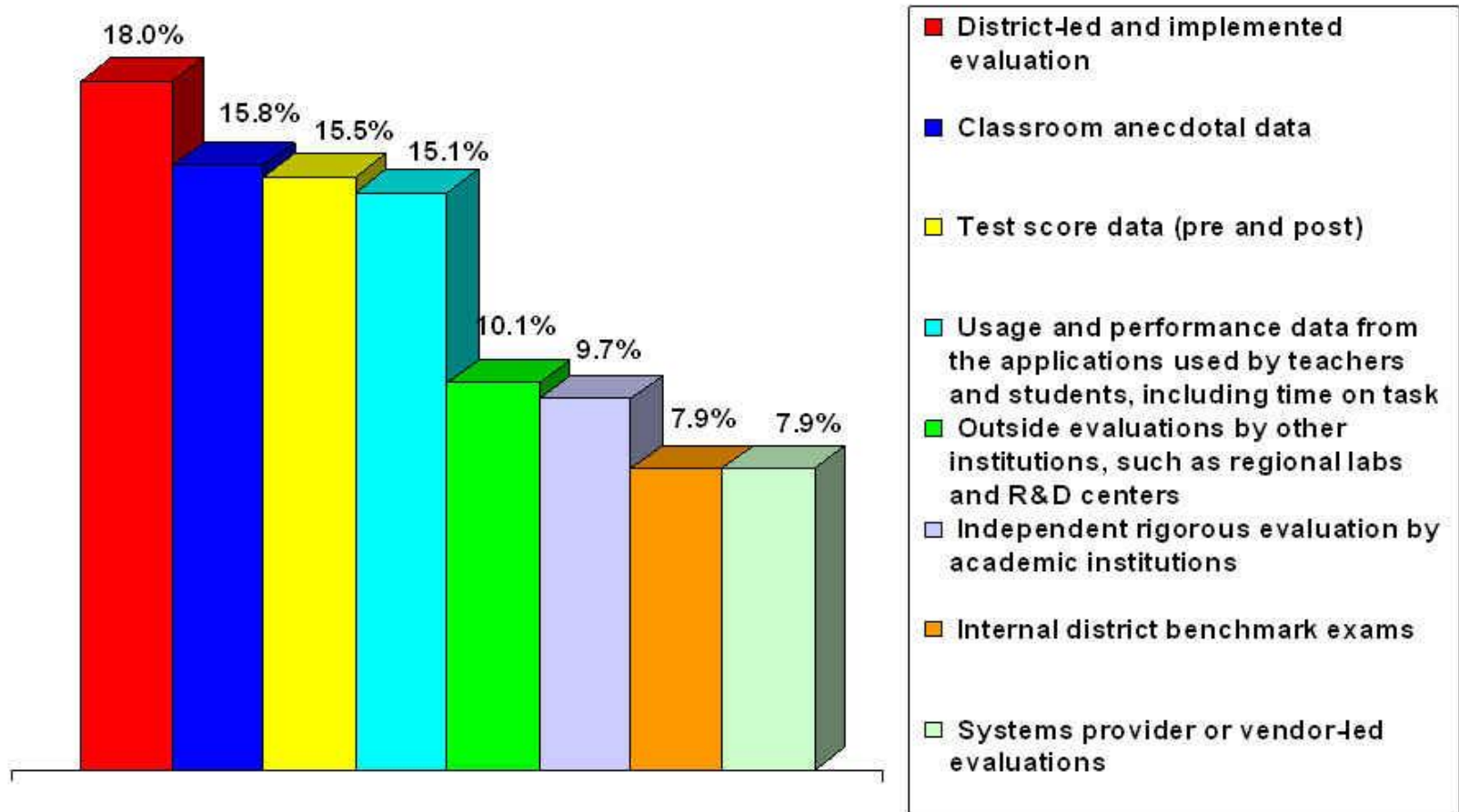
Academic Improvement with 1:1



■ Significantly ■ Moderately ■ Not Much ■ Not At all ■ Not Tracked

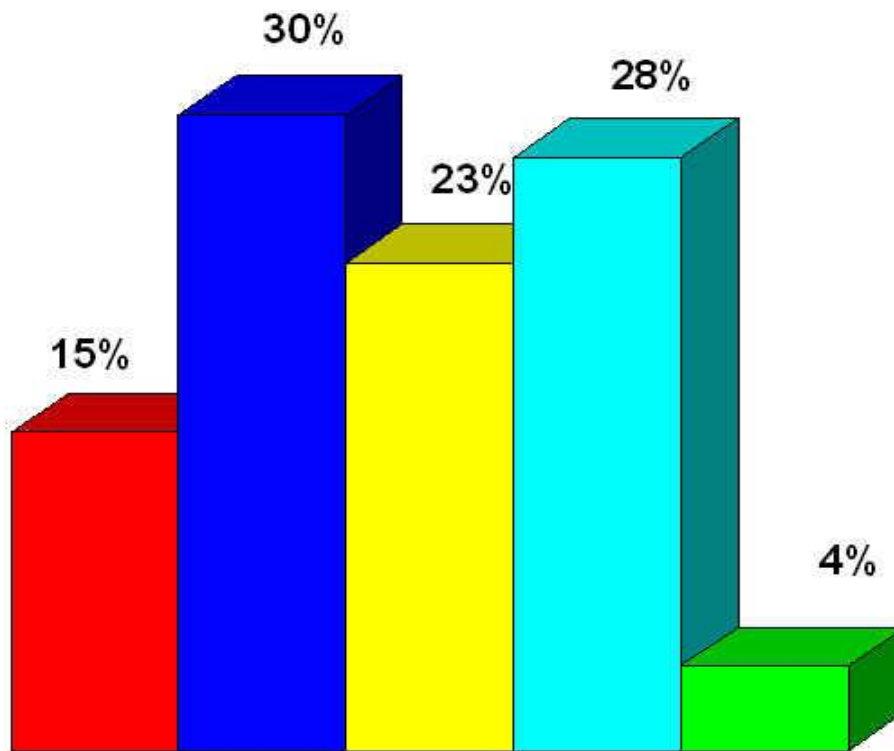
Based on the results you have, how much academic improvement have you seen that could be attributed to 1:1?

Sources for Academic Improvement Data



From what sources were your academic improvement results for 1:1 schools obtained? Please check all that apply.

Years of Data Used for Evaluation



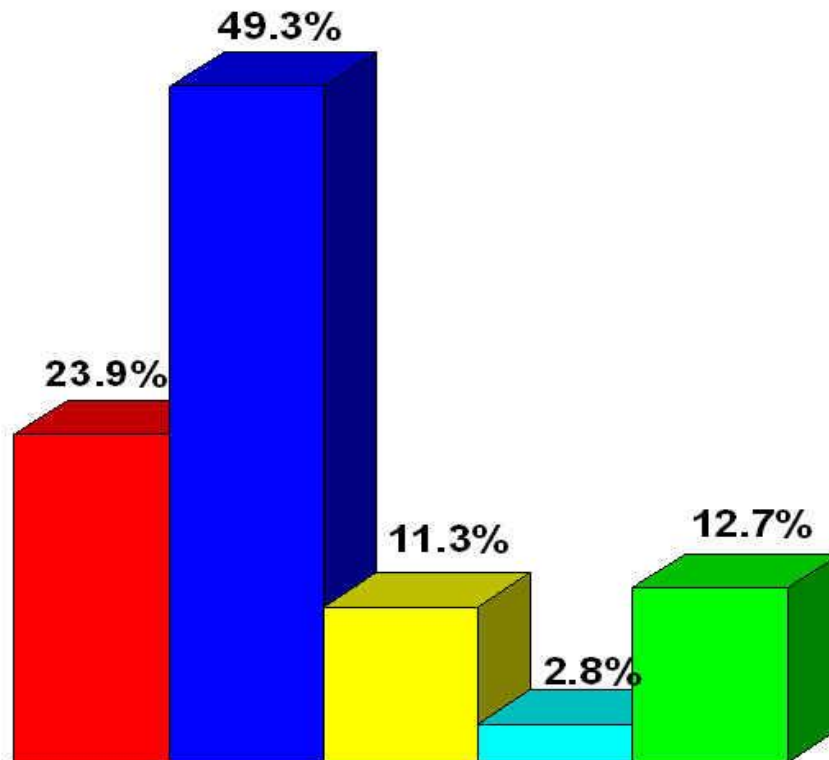
■ Less than 1 Year ■ One Year ■ Two Years ■ Three Years ■ Not Tracking

How many years of data are you using to evaluate 1:1 implementations?

Key Factors In Success or Failure of 1:1 Implementations



Academic Performance Objectives

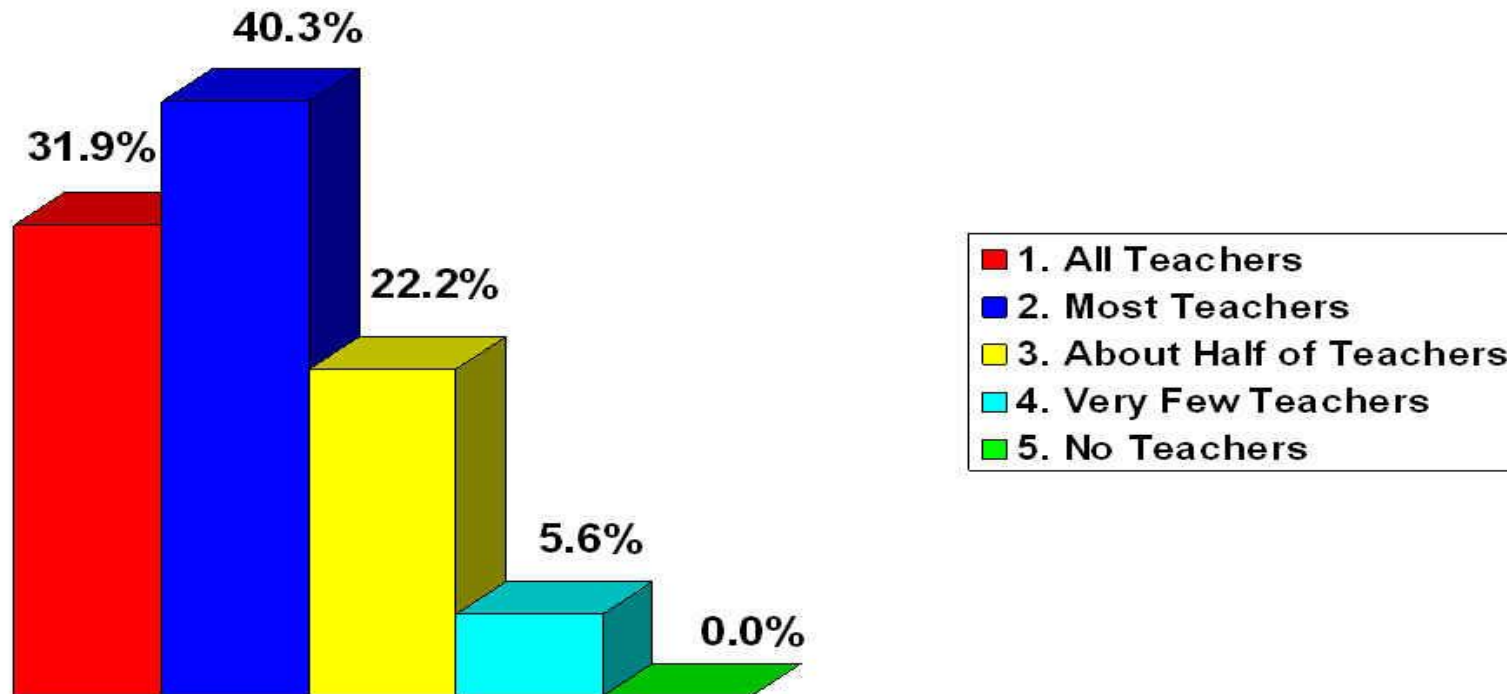


- 1. Describes us accurately.
- 2. Medium use of objectives.
- 3. Lower use of objectives and outcomes.
- 4. No use or impact on the project.
- 5. No academic objectives were defined for this project.

Scenario:

We have specific academic performance objectives and outcomes.
All stakeholders buy into these objectives.
The outcomes are used to guide project management on a regular basis.
A comprehensive independent program evaluation is being conducted.

Teachers and Involvement



Scenario:

Teachers are heavily involved in the process.

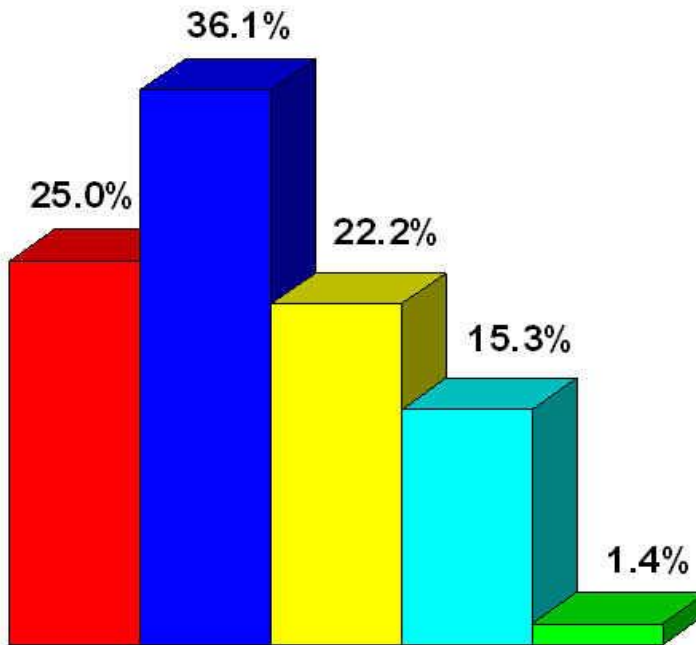
Teachers sat on the planning committees.

Teachers received their laptops several months before the students did.

All teachers are expected to participate in the program, without exception.

Sufficient ongoing professional development is in place to ensure success.

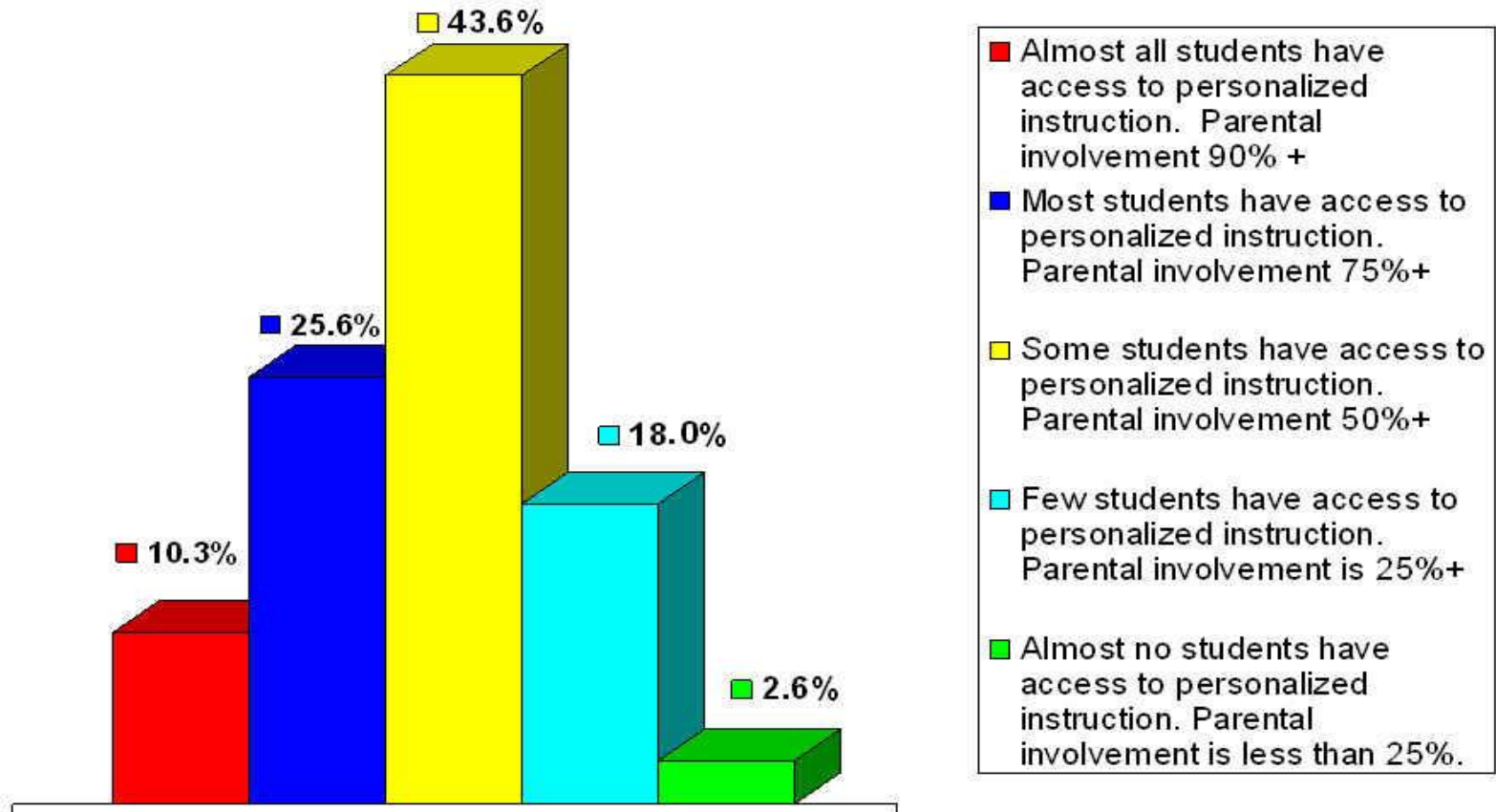
Use of Online Resources



- 1. We use online resources to the maximum extent possible. We use an LMS, commercial online software, online assessments and online databases.
- 2. We are heavy users of online resources, but we do not use an LMS.
- 3. We use online resources, but we do not use two or more of the major features mentioned above.
- 4. We use online resources, but we do not use three or more of the major features mentioned above.
- 5. We use print materials for the most part. Computer use is limited to standard applications, such as word processing, presentations, and web browsing.

Scenario: Online resources are widely used about as much as textbooks.
A LMS or similar software supports curriculum delivery, calendars, and interaction.
All logistics and, where possible, all assessments are electronic.
Online curriculum materials are an important part of the program.
All materials, print and online, are electronically correlated to standards.

Personalized Student Instruction and Parental Access



15. Scenario: All students have individualized instruction programs to the extent permitted by the curriculum and policies. Advanced students may have the same assignments but are expected to cover them in more depth. Initiative is encouraged. Parents receive training in support of the program. Training includes student performance expectation setting.

Key Technology Success Factors

- Strong support from administrative leaders
- Robust Implementation – 99.9% uptime
- Ongoing Professional Development, including in-classroom mentoring
- Balanced uses of technology
- Mobilized curriculum
- “Best of Class” methodologies

America's Digital Schools Summary

- 1:1 is alive and well – In some cases thriving
- Technology can indeed add value to education
- But it must be implemented and supported properly
- Learn from the pioneers

Texas Technology Immersion Pilot

- The Texas Education Agency has used federal dollars to fund Technology Immersion Pilot (TIP) schools.
- The Evaluation of the Texas Technology Immersion Pilot (eTxTIP) uses a quasi-experimental research design, with 21 treatment and 21 control schools, to test the effectiveness of *Technology Immersion* in increasing middle school students' achievement.



Kelly Shapley
TIP Evaluator

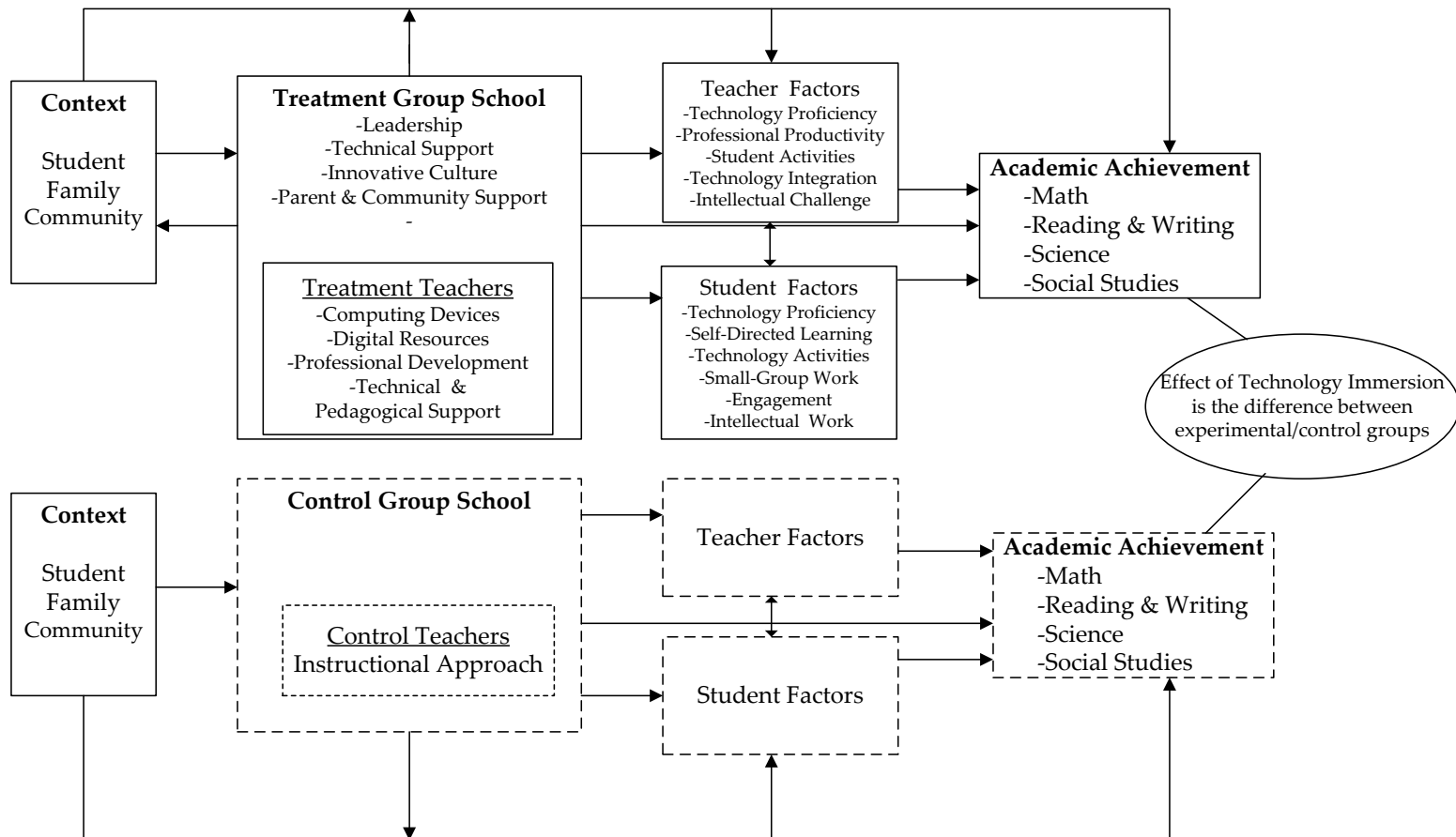
Technology Immersion Model



Technology Immersion Description

- A wireless laptop...so that each student has a computer for use at school and at home
- Productivity, communication, & presentation software
- Online instructional resources in the four core academic areas
- Online formative assessments
- Professional development for educators in designing technology-enhanced learning environments
- Initial and ongoing technical support

Theory of Change Guides Research



Measures

School Support

- Leadership
- Innovative Culture
- Parent & Community Support
- Technical Support
- Professional Development

Teacher Factors

- Technology Proficiency
- Professional Productivity
- Ideology
 - Technology Integration
 - Learner-Centered Instruction
- Student Classroom Activities
- Intellectual Challenge of Instruction

Measures

Student Factors

- Technology Proficiency
- Self-Directed Learning
- Classroom Activities
- Small-Group Work
- Engagement
 - Disciplinary Actions
 - Attendance
 - School Satisfaction

Student Achievement

- Texas Assessment of Knowledge and Skills (TAKS) scores
 - Reading (grades 5, 6, 7, 8)
 - Mathematics (5, 6, 7, 8)
 - Writing (4, 7)
 - Science (5, 8)
 - Social Studies (8)

Effects on Teachers' Growth Rates

Hierarchical Linear Growth Modeling Teacher Survey Scale Score	Teachers in Immersion Schools with Average Poverty			Yearly Growth Rate for Control Teachers
	Average Estimated Initial Status Fall 2004	Average Estimated Score Spr 2007	Yearly Growth Rate Immersion	
Technology Proficiency^a	4.49	5.42	0.31***	0.13***
Professional Productivity^b	2.93	3.53	0.20***	0.08***
Ideology^a				
-Technology Integration	3.18	4.95	0.59***	0.24***
-Learner-Centered Instruction	3.64	4.79	0.38***	0.20***
Student Classroom Activities^b	1.96	2.66	0.23***	0.03*

^a7-point scale. ^b5-point scale. * $p < .05$. ** $p < .01$. *** $p < .001$.



Effects on Students' Growth Rates

Immersion effect net of student and school poverty	Immersion		Control	
	Adv. Students	Disadv. Students	Adv. Students	Disadv. Students
Cohort 1 (Eighth graders)				
Classroom Activities (5-pt) ***	0.25	0.30	0.04	0.08
Small-Group Work (5-pt) **	0.02	0.07	-0.06	0.00
Technology Proficiency (5-pt)	0.31	0.38***	0.27	0.28
Self-Directed Learning (7-pt)	-0.07	-0.09	-0.05	-0.07
Cohort 2 (Seventh graders)				
Classroom Activities (5-pt) ***	0.30	0.34	0.06	0.10
Small-Group Work (5-pt) **	0.14	0.13	-0.01	-0.02
Technology Proficiency (5-pt) ***	0.43	0.43	0.27	0.27
Self-Directed Learning (7-pt)	-0.11	-0.11	-0.14	-0.13

Effects on Student Engagement

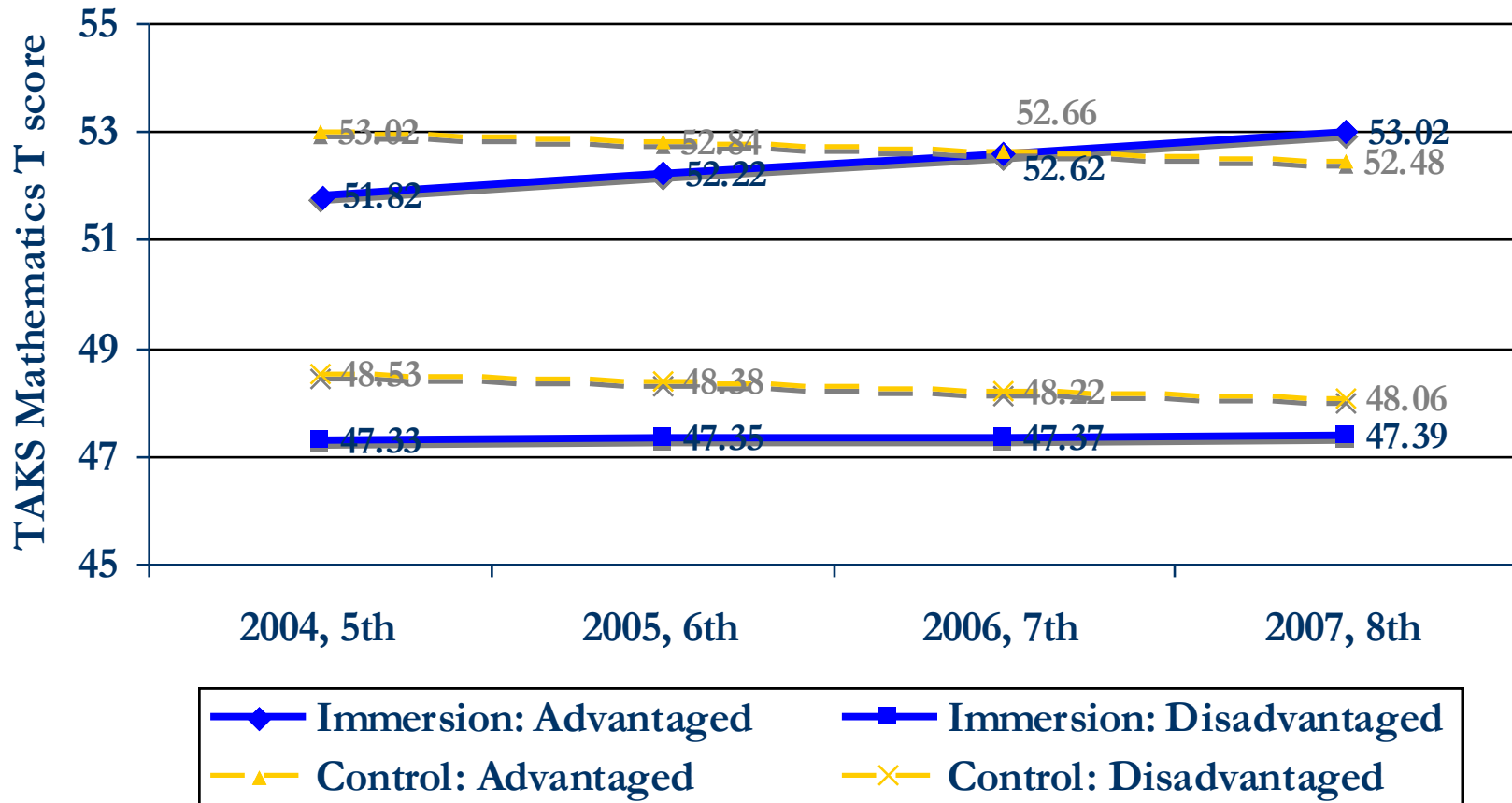
- Students in Technology Immersion schools had significantly fewer disciplinary actions than control-group students.
- Technology Immersion and control students reported similar levels of school satisfaction.
- Students in Technology Immersion schools had significantly lower school attendance rates than control-group students.

Effects on Academic Achievement

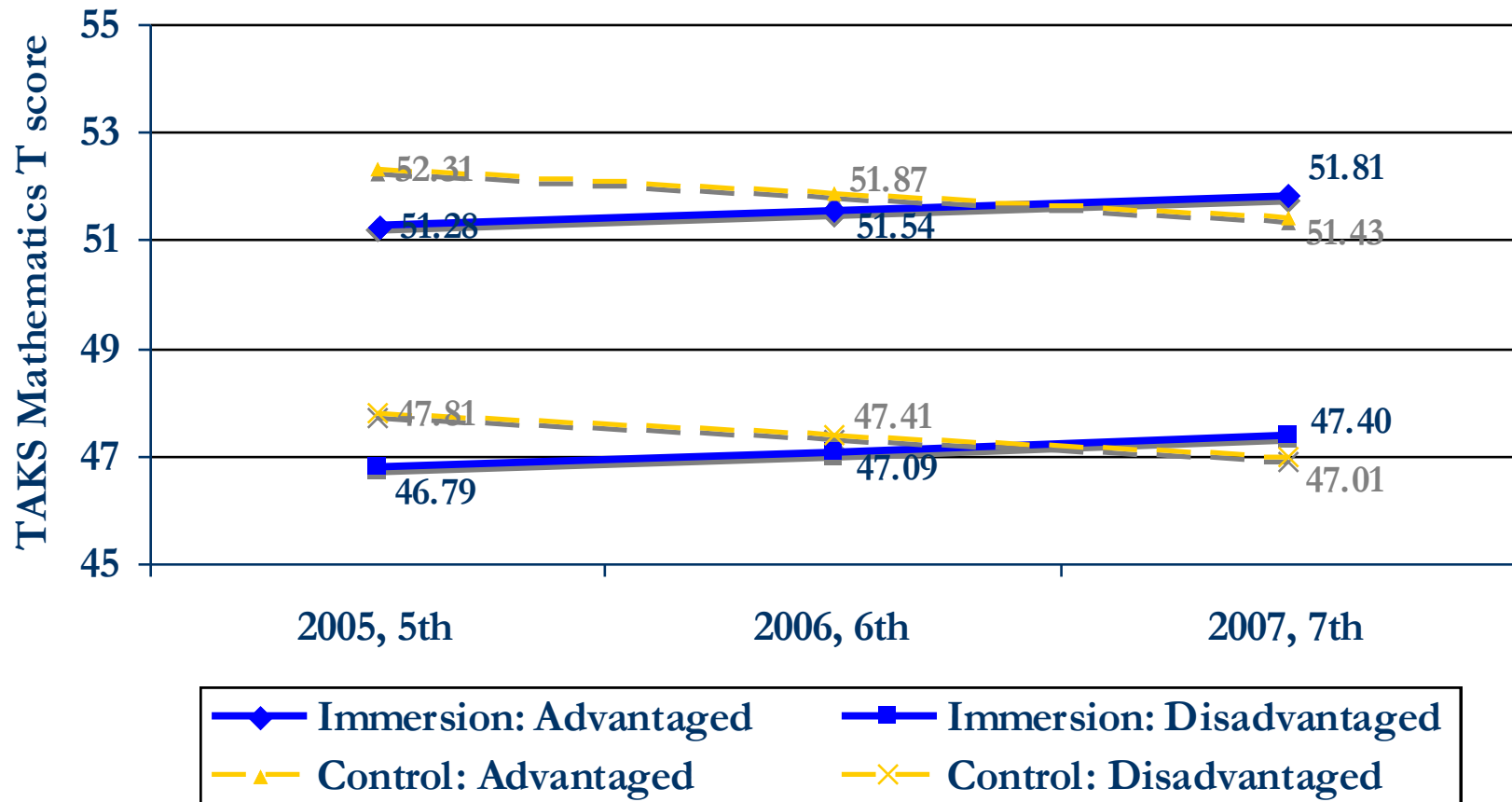
- There was no statistically significant effect of Technology Immersion on **TAKS reading** growth rates for Cohorts 1 and 2 students.
- There was a marginally statistically significant effect of Technology Immersion on **TAKS mathematics** growth rates for both Cohorts 1 and 2 students.



Estimated Mean TAKS Mathematics Growth Trajectories for Cohort 1



Estimated Mean TAKS Mathematics Growth Trajectories for Cohort 2



Relationship Between Treatment Fidelity and Academic Achievement

- Implementation Fidelity Measures
 - Immersion Support and Classroom Immersion
 - Student Access and Use (Laptop Access Days + Core-Content Learning + Home Learning)
- Controlling for student characteristics and other school variables, Student Access and Use was a statistically significantly positive predictor of **TAKS reading and mathematics** achievement across cohorts.
- Students use of laptops for Home Learning (i.e., homework in core-subject areas and learning games) was the strongest implementation predictor of TAKS achievement

Technology Immersion Resources

- Yearly quantitative and qualitative evaluation reports and eTxTIP Evaluation Toolkit
Available at:
 - www.etxtip.info
 - www.tcer.org
- TIP Toolkit and other resources
Available at:
 - www.txtip.info

Henrico County Schools: Our Story

- Our District
- A Brief History
- Data Efforts
- Where Are We Today?



Fred Morton
Superintendent of Schools

Our District

- 48,000 students
- 68 schools - 9 high schools and 12 middle schools
- Urban, suburban and rural - 52 % students of color
- 38% free and reduced lunch
- 2nd largest immigrant population in state
- 6.3 million sq ft on 1600 acres
- 34,000 miles a day by 450 buses
- 3.4 million lunches
- \$500 million organization

The Technology at Middle & High

- **4,790 Teacher/Staff**
- **25,960 Students**
- **324 Printers**
- **3,000 Wireless access (double from 2001)**
- **75 LAN**
- **78 WAN**
- **155 MB Internet**

The Initiative – A Noble Endeavour

- Project began 2001
- 4 year project with 2 goals
 - Called the “Teaching and Learning Initiative
 - Goal 1 - Close Digital Divide
 - Goal 2 - Move classroom into 21st century technology
- Apple iBooks

Data Efforts 2001-2004

- **Two Surveys**
 - enGuage
 - FGI Survey
- **Informal Dialogue**
- **General look at:**
 - Attendance
 - Test Results

Sep 2004 – Change in Leadership

- New Superintendent
- Technology effort had become a political and media focus
- Need for decision on re-adoption of HS initiative
- Short time frame for decision.
- Realization that 1 to 1 is not 1 to one!

We Needed a Clint Eastwood Approach!



- It had to be safe to discuss the ...
- Rapid Need for Open Honest Data
- Principals
- High School Teachers – 120
- Middle School Teacher – 140
- Parents – 4 Community Meetings

Key Questions

- What do you like about the effort?
- What's working?
- Where are the disconnects?
- What questions should we ask teachers, students and parents to get better information?

Large Study: “Development Associates”

- Responses from meeting used to construct study.
- Outside consultant with no vested interest to community or to computer companies.
- All teachers and students with web base survey.
- 50% parents phone contact, 50% written survey yielding 35% response rate

Insights

- 1 to 1 is not 1 to 1 – LOANERS and Maintenance
- We were still missing on the “digital divide”
 - \$50 insurance fee and \$150 repair
- Learning and teaching contrasted to teaching and learning
- Technology is a tool not a target
- It is about the learning not about the box
- Critical to move from district thinking to system thinking
- Absolute need for well designed assessment
- Willingness and desire to continue efforts with laptops

2005 to Present

- Dell Computers were selected for high schools
- 5% loaners
- New sense of enthusiasm
- Removal of \$100 damage
- Waivers of \$50 for needy students
- Expanded on site repairs
- Development of Technological Integration Progression Chart
 - <http://staffdev.henrico.k12.va.us/la/2/21stcenturyskills.htm>
 - click on [TIPC- Technology Integration Progression Chart](#)

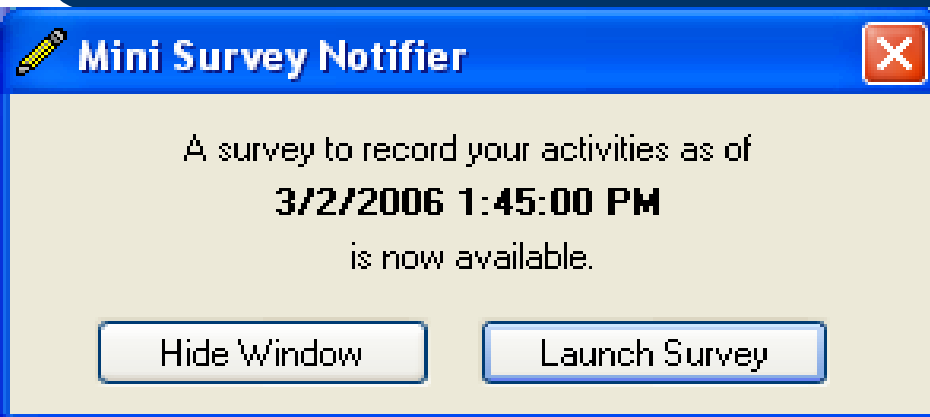
2005 – In-depth Assessment Design

- Part of RFP – Successful company would provide financial support but allow research to be independent and controlled by HCPS
- Teachers helped lead targets and efforts for assessment (about 150 from all high schools) across all content areas
- A subset was a part of the HCPS research team
- Study was to be conducted over three years
- Mixed methodology was used.
- Interactive, Inc. Dr. Dale Mann

Study Reported to School Board Nov 2008

- **Web Surveys 2006, 2007, 2008 for students, teachers and parents**
- **Random-interval “pinging data”**
- **On site visits, interviews, focus groups and classroom observations**
- **Analysis of success by content area**

Mini Surveys



- Students or teacher would launch and respond if not engaged in a critical activity.
- If “Hide Window” was clicked students/teachers were not repinged; however, survey was in task bar until midnight of the current week.

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Mini-Survey - Microsoft Internet Explorer provided by Henrico County Public Schools

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Homegroup Mail Print Wordpad Taskbar

Links Mini-Survey Customize Links Dell Co-nect Exchange Login eLearning Electronic Registrar

Student Mini-Survey

On Thursday, March 2 at 1:45PM:

1. What subject are/were you in?

- [I was absent]
- English
- Math
- Social Studies
- Science
- Foreign Language
- Career and Technical Education
- P.E/Health
- Lunch
- Other

Next

Done Local intranet

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Links Mini-Survey Customize Links Dell Co-nect Exchange Login eLearning Electronic Registrar

Student Mini-Survey

On Thursday, March 2 at 1:45PM:

Please click "Finish" to complete the survey.

Previous Finish

Done Local intranet

Student Questions

- 2. What is/was your teacher doing? (check all that apply)
 - Lecturing/demonstrating
 - Helping small groups or individuals
 - Leading class discussion
 - Working at his/her desk
 - Other
- 3. What are/were you doing? (check all that apply)
 - Working on my own
 - Working in a small group
 - Listening to the teacher
 - Other
- 4. Are/Were you using your laptop?
 - Yes
 - No (choosing omits Question 5)
- 5. If yes, what are/were you working on? (check all that apply)
 - Taking notes
 - Working on a presentation
 - Researching/Using the Internet
 - Reading onscreen text
 - Listening to music - Other

Teacher Questions

- 1. What are/were you doing? (check all that apply)
 - Whole group lecturing/demonstrating, - Helping small groups or individuals,
 - - Leading class discussion, - Planning, clerical or research, - Other/instructional, - Other/non-instructional, - Absent/not in class
- 2. How many students are/were using the laptop?
 - None, - A few, - Most, - Not applicable
- 3. Are/Were you using your laptop?
 - Yes
 - No (choosing omits Question 4)
- 4. If yes, what are/were you working on? (check all that apply)
 - Working on or making a presentation
 - Diagnosing/assessing/testing students
 - Reporting, clerical or administrative tasks
 - Planning or researching instruction - Other

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Curriculum topic	% Students using a laptop at any given moment in... 2008 (2007)
Social Studies	55% (58)
Foreign Language	47% (42)
Science	45% (49)
Career & Technical Education	42% (41)
English	41% (44)
P.E./Health	33% (28)
Math	26% (22)
Free period use including lunch	10% (7)

Data from Dr. Dale Mann, Report to Henrico County School Board, Nov 13, 2008

Survey Analysis

	05-06	06-07	07-08	Total
Students (82)	6,797	8,268	8,275	23,340
Teachers (141)	796	765	685	2,246
Admin (66)	37	137	130	304
Parents (26)		3,436		3,436
Grads (30)		94		94
Total	7,630	12,700	9,090	29,420

Note: Numbers in (82) are number of questions on survey.

Data from Dr. Dale Mann, Report to Henrico County School Board, Nov 13, 2008

Henrico Results

- Use has remained at about 40% of the school day
- See good use in History, Science and English with limited use in Math
- Positive correlation with achievement when there is an increased use of technology in those classes.
- Students and Teachers report

Additional Information

Web Link HCPS Board Docs

<http://www.boarddocs.com/vsba/henrico/Board.nsf/Public?OpenFrameSet> [Click on recent meetings, click on 11/13/2008 Work Session, click on No. 6 – Instruction and you will see Item 6.01 “High School Laptop Initiative.”]

All the following are available at that location:

- Dr. Mann’s Full Technical Report
- PowerPoint from Nov 13, 2008 HCPS School Board Meeting
- Input Comments from Fall 2008 from 147 students, 120 teachers, administrators, instructional technology staff, parents, and HCPS Technology Advisory Committee
- Audio MP3 file of presentation

Henrico Next Steps

- Board will make decision in Jan-Feb 2009
- In 4th year of contracts there continues to be huge challenges with maintenance issues
- Need of added support at help desk
- Additional staff development
- Increase number of loaners

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