



Going Mobile: The New World of Educational Technology

2008 NCTI Technology Innovators Conference

Tom Greaves
America's Digital Schools

Thomas Greaves
tom@greavesgroup.com
760-942-7654

Agenda

- Going Mobile: A Five Year Outlook
- The Bandwidth Crisis Hits Mobile Computing
- Implications for Special Needs

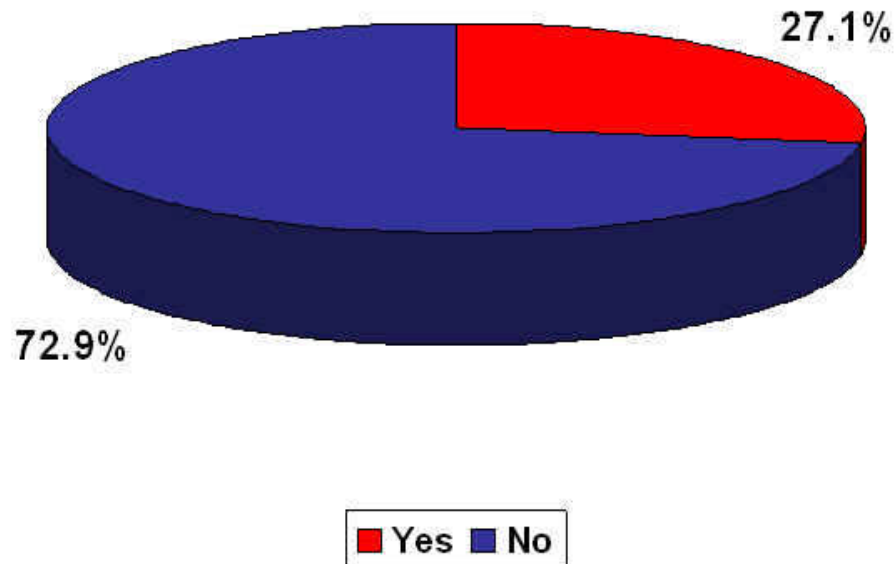




The Mobile Revolution

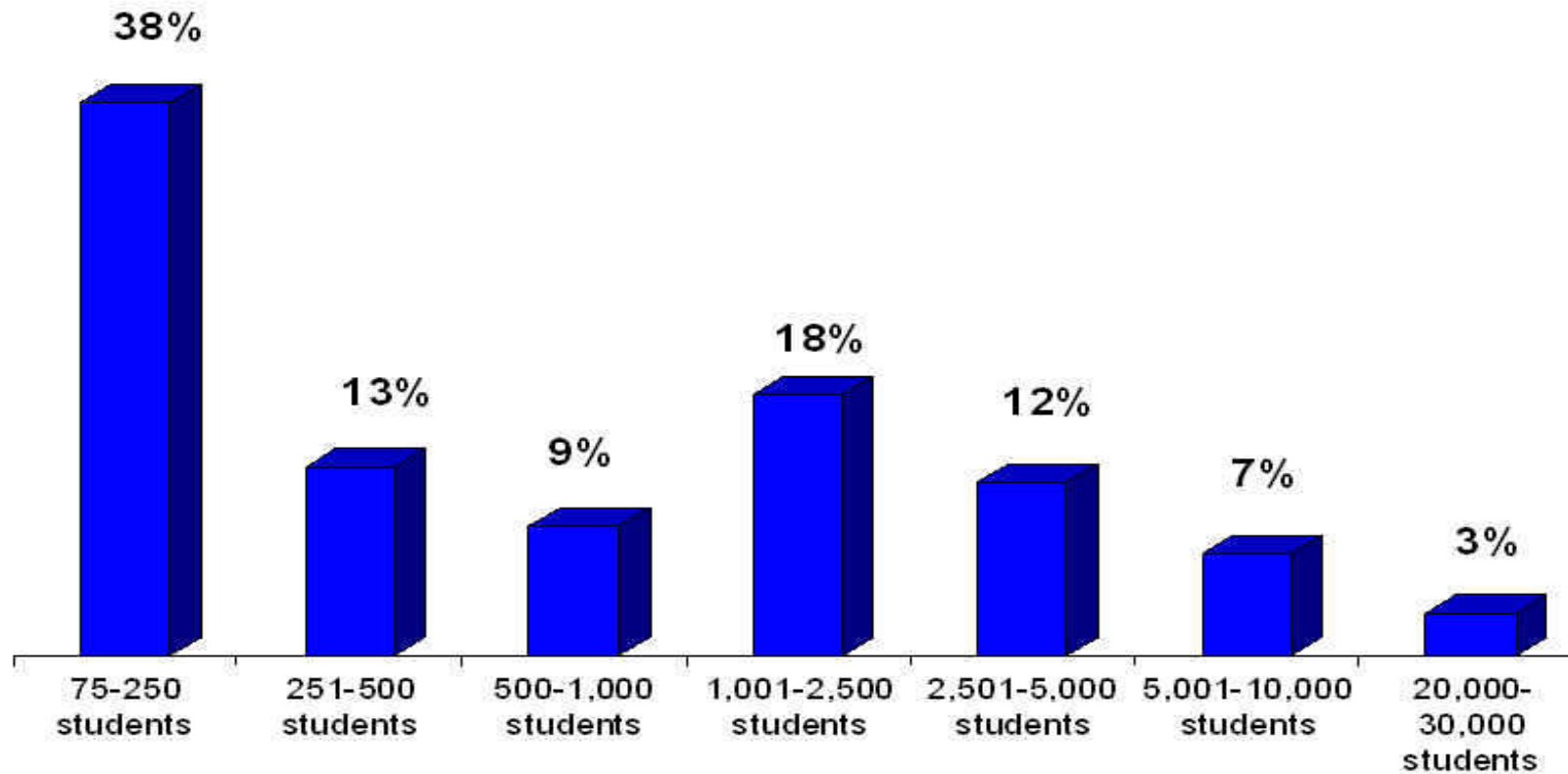
- 2006: 19% Mobile, 81% Desktop
- 2011 Projection: 50% Mobile
- Education Mobile Computing is the fastest growing tech segment worldwide
- US is not the leader

U.S. One-to-One Computing Status



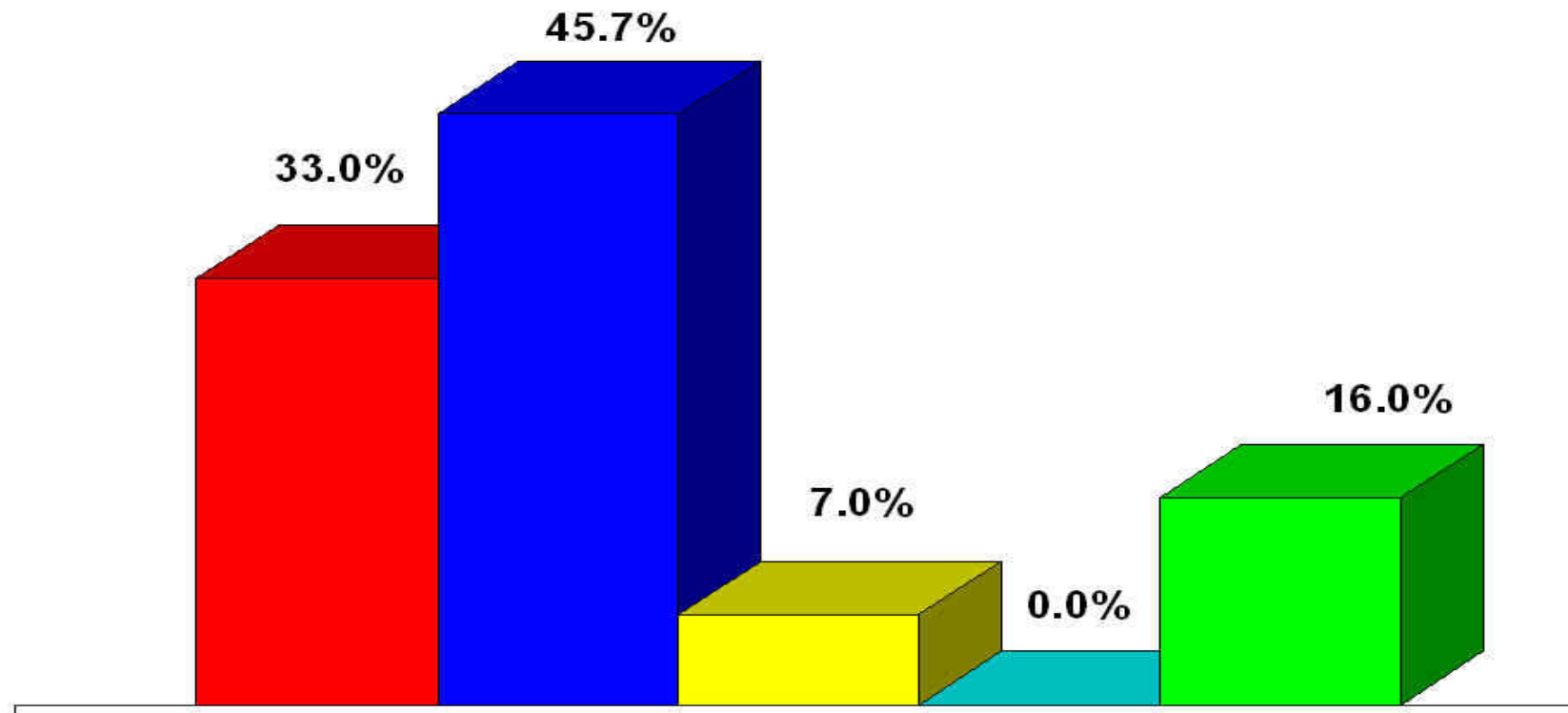
Are you currently implementing 1:1 in at least one full grade in one school and in at least a pilot environment?

Number of Students Involved in 1:1



Average: 1,631 Students

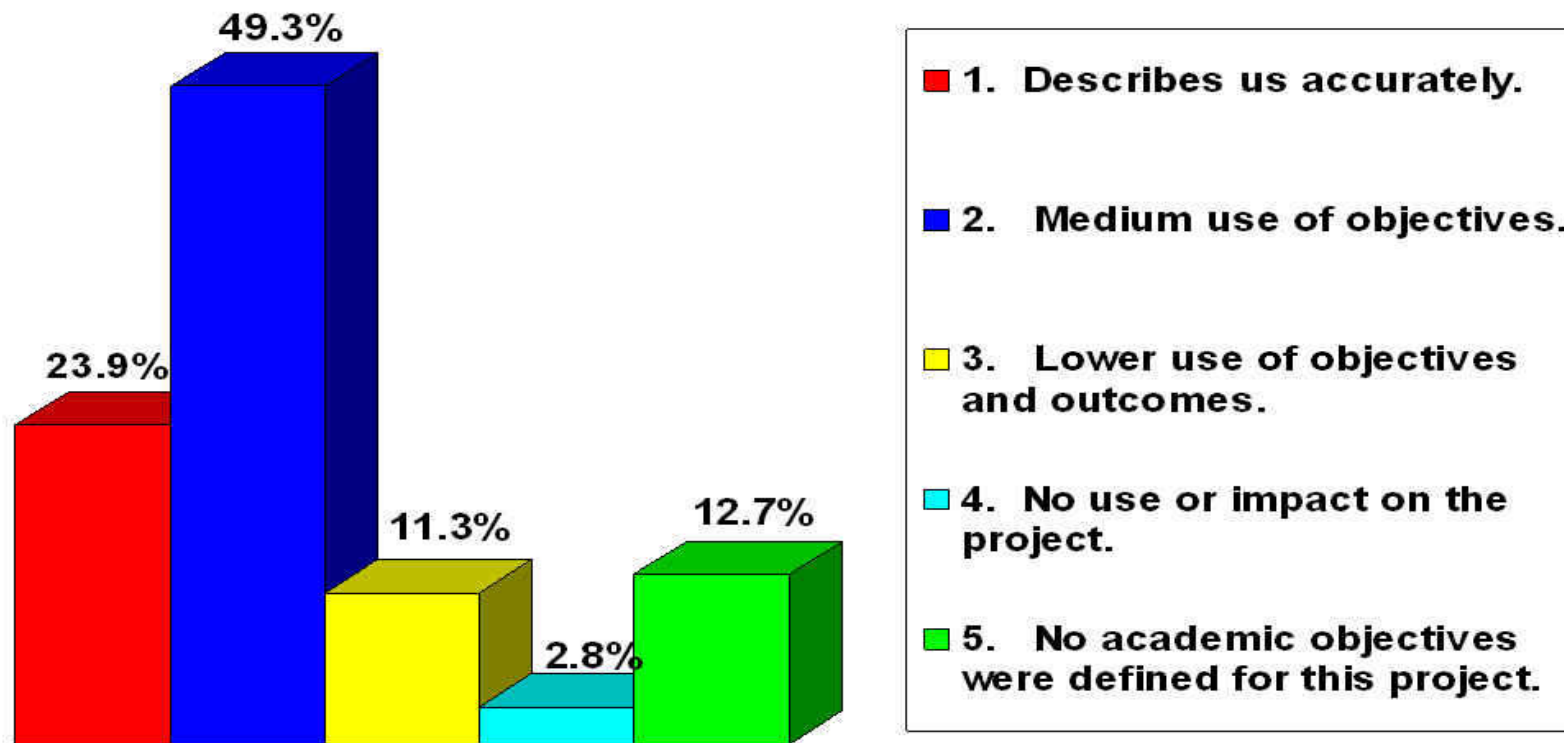
Academic Improvement with 1:1



■ 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?

Academic Performance Objectives



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.

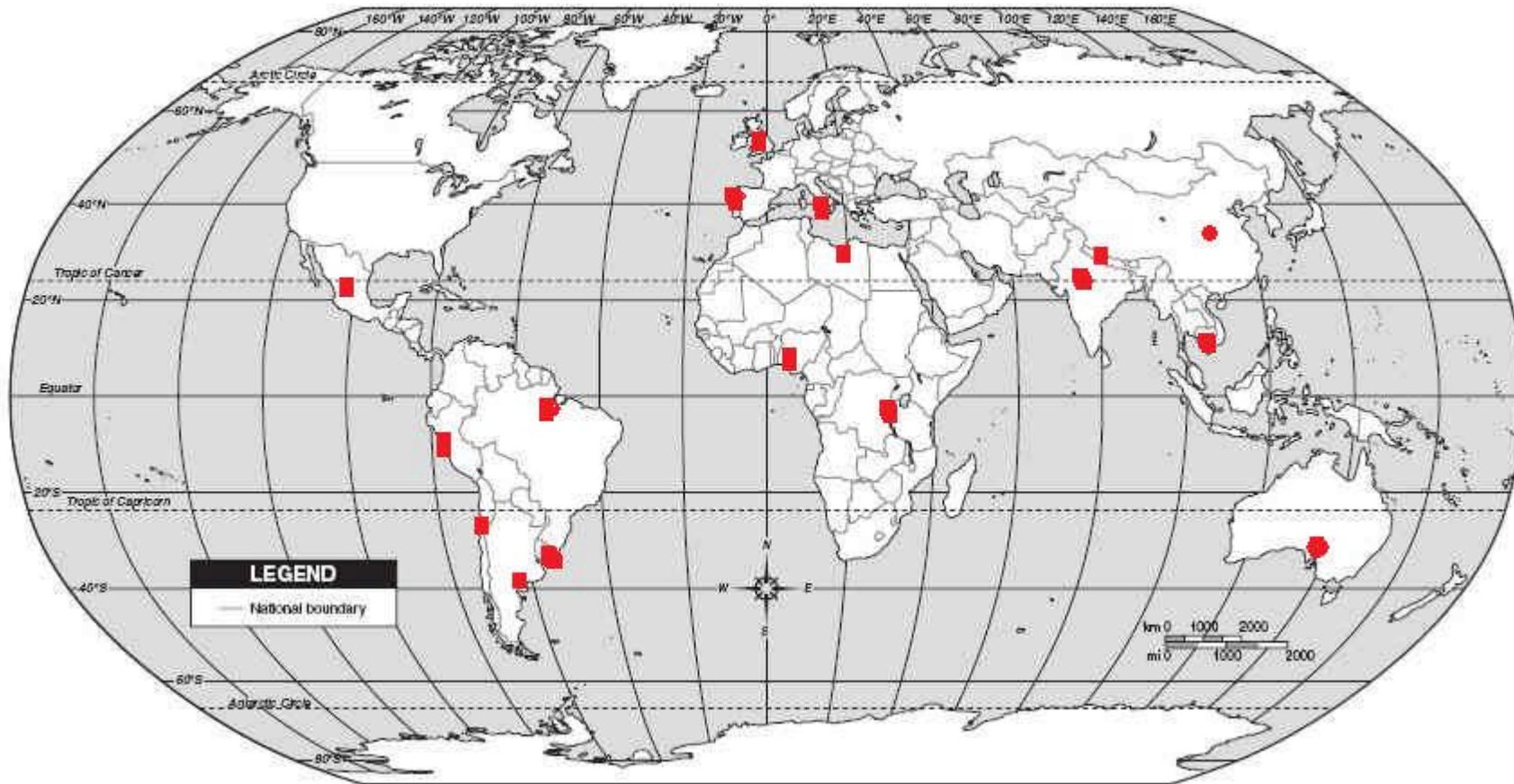
Key Technology Success Factors

- 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

The Worldwide Story

- Australian Gov't committed \$1B to 1: 1
 - Grades 9-12
- OLPC Marketing – Tremendous impact
 - Spawned a plethora of low cost devices
- Selected Large Scale Projects:
 - Portugal (500K Classmates), Argentina, Brazil, Chile, China, Greece, India, Libya, Mexico, Nepal, Nigeria, Peru, Rwanda, Thailand and Uruguay.

Selected World 1:1 Initiatives





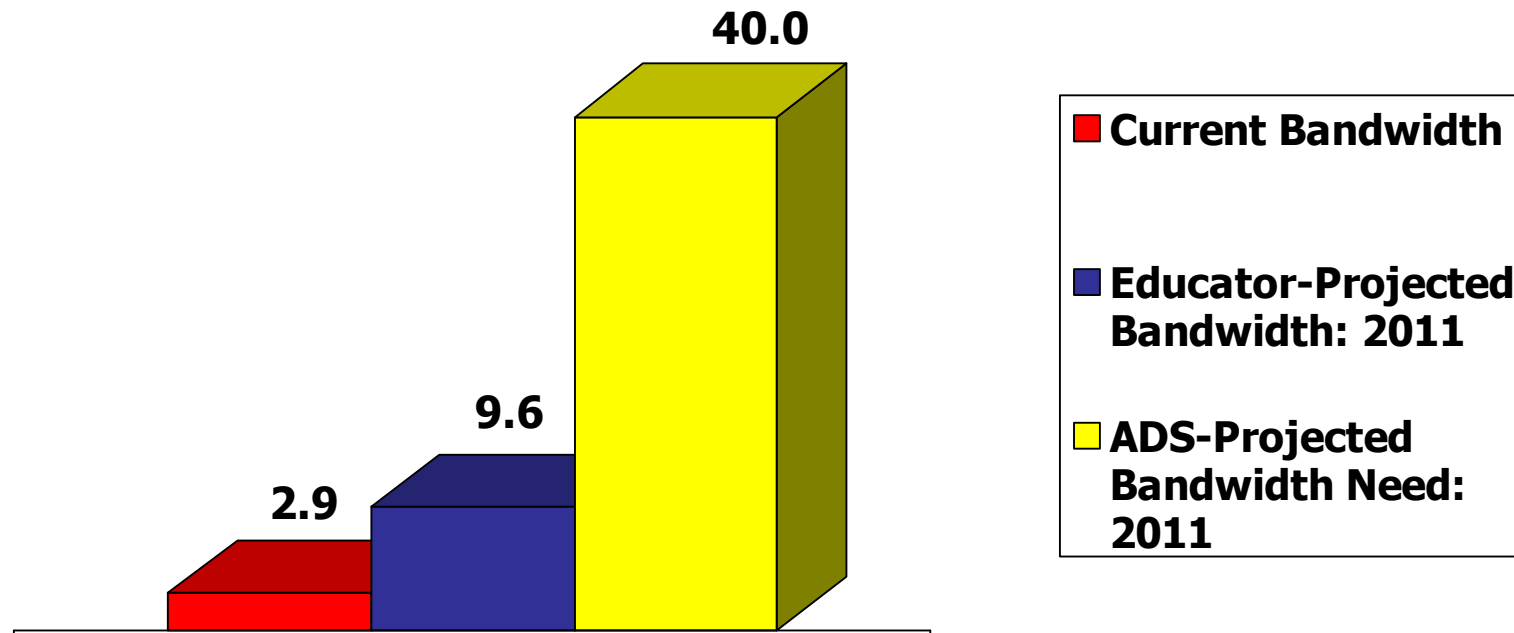
The Bandwidth Crisis

Here Today

Worse Tomorrow

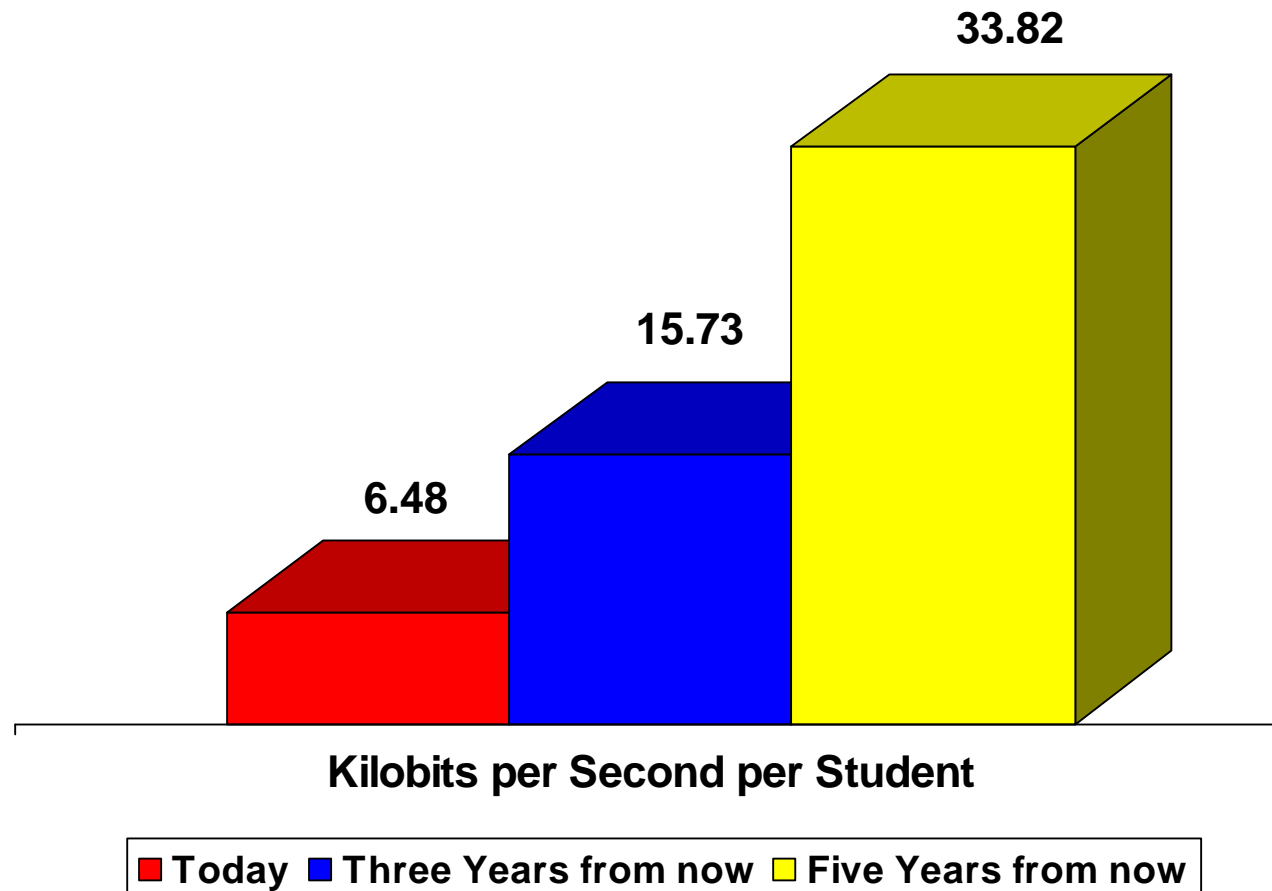
2006 Bandwidth per Student Projection

Kilobits per second per student



What is the actual available bandwidth to the Internet on a per student average basis today in 2006? Note that this is a new way to define bandwidth.

2008 Bandwidth per Student Projection



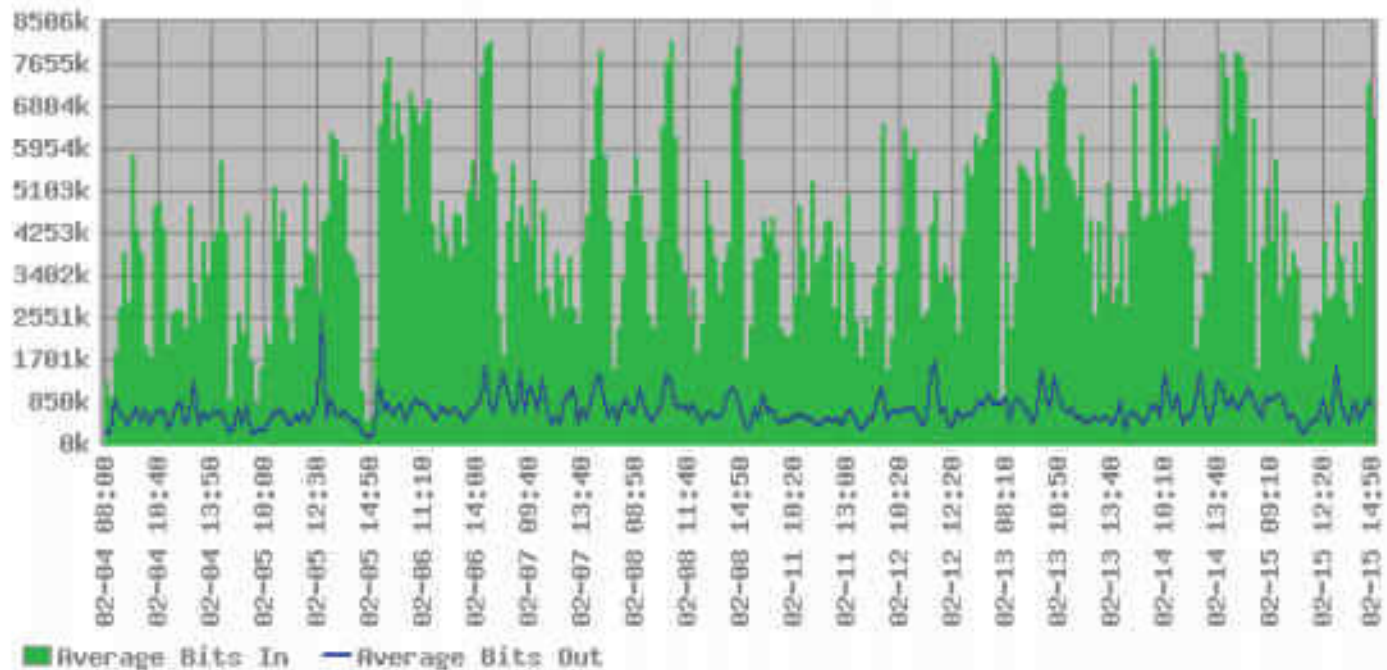
What is your total aggregate bandwidth, between all schools and district buildings and the Internet via your ISPs? How do you expect bandwidth per student to increase in the future?

What is Causing Bandwidth Growth?

- Web page size is growing
- Web application use is growing
 - Online education growing at 40% a year
 - Online assessment growing at 30% a year
 - Online research growing rapidly
 - Use of bandwidth intensive applications such as streaming video is increasing
- More machines
 - Laptop use is growing at 25% a year
- Desire for ASP hosting to cut local costs

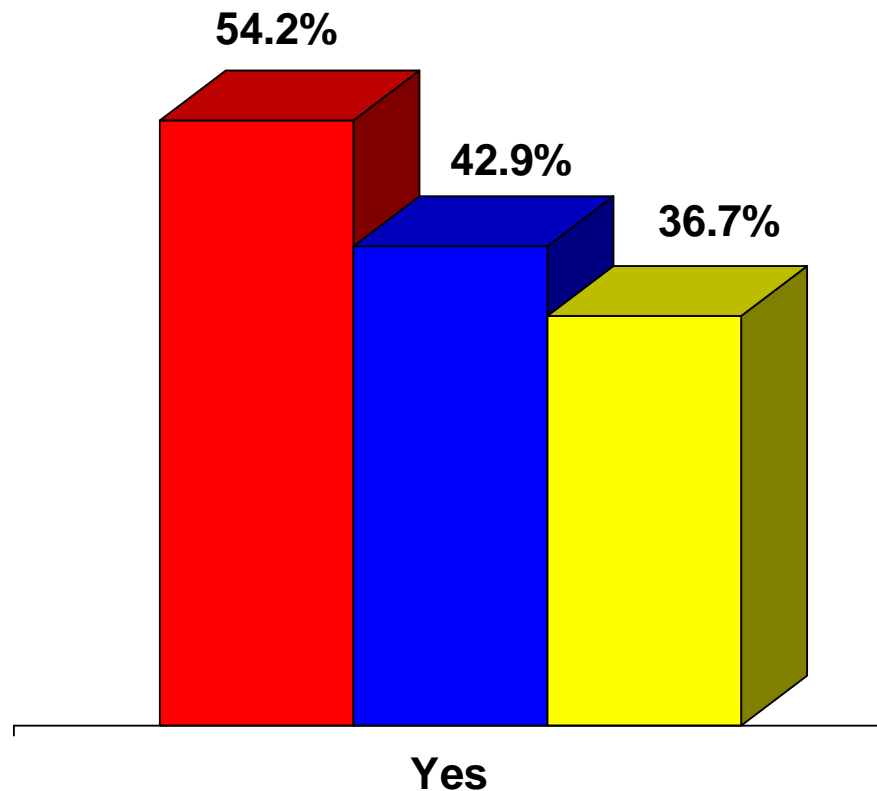
Peak Load Rarely Considered

- All our bandwidth calculations are just averages.
- However we know peak load is an important factor in school bandwidth usage.
- When the bell rings, bandwidth spikes.



Future Funding Challenges

Pct. of Respondents
Multiple Answers Allowed



- Do you foresee a problem obtaining sufficient funding, regardless of the source, for your required bandwidth?
- Do you foresee a problem with E-Rate funding your future bandwidth needs at the current percentages?
- Do you foresee a problem obtaining sufficient bandwidth, regardless of your ability to pay?

Do you foresee problems with bandwidth funding?

E-Rate and the Bandwidth Crisis

- “We have E-Rate. It will take care of us.”
- The E-Rate story
 - E-Rate is capped at \$2.25B/Yr
 - Priority 1 Services will exceed \$2.25B cap by 2011
 - It won't accommodate a 3 or 10 or 20 fold increase in required data bandwidth.
 - In a few years, most schools will be paying the unsubsidized rate for additional bandwidth. (could be \$100/student/year)

Recommendations

- Build five year bandwidth usage models for each application area
- Look at alternative models – applications and connectivity
- Get the word out to policy makers and legislators
- Get behind national bandwidth recommendations, such as SETDA's.
- Lobby to expand E-Rate funding to current need levels and have it indexed upwards each year. (In 1996 \$2.25B was just fine. Not now!)
- Urge a re-look at what constitutes a priority 1 service.
e.g. WiMAX, EVDO, LTE
- Special considerations for geographically challenged schools

Special Needs Implications

- For some, mobile computing is physically a must
- For all, mobile computing is the key to the delivery of a full range of educational tools and applications
- “When I submit my work, no one knows I am handicapped!”

Summary

- Mobile Computing is revolutionizing education.
- We've just begun to see the true value
- But it must be implemented and supported properly
- *The World is our teacher*