Wireless Education Technology

The Role of Mobile Broadband in K-12

CTIA WIRELESS 2010 – March 23, 2010

Tweet your thoughts and comments about mEducation to #WirelessEd

To participate in the mobile experience, opt in by texting EDTECH to 65995

Who are you? For example:

Carrier
OEM
Infrastructure
Educator
Developer
Content Provider
Consultant
Media
Government
Other

To participate: text KIDS and your message to 99503

Evolving Trends

As schools continue to prepare today's increasingly tech-savvy students to enter the 21st century workforce, mobile technology plays a key role in driving operational efficiency, supporting school safety and increasing student engagement and achievement.

School Trends/Challenges

Efficiency and Cost Reduction

- Lower revenues driving layoffs & furloughs
- Increase efficiency throughout operations
- Monitor / reduce energy, fuel & labor costs

Student Engagement and Achievement

- Increase engagement early (and sustain)
- Deliver individualized instruction
- Ensure equality of access

Technological shifts

- One-to-One vision is for anywhere, anytime connectivity – even outside the school.
- Virtual schools and distance education
- Pervasive, high capacity wireless services

Student Trends

Preparation and Home Environment

- Wide variance in skills and capabilities within age groups, grade levels and classrooms
- Low support from working & struggling families

Student Expectations

- Anytime, anywhere access to the learning environment (content, assignments, teachers)
- Personalized instruction with rapid feedback
- Leverage technology to help me learn my way

Education Technology Trends

- Hosted Learning Management Systems
- Student and Parent Portals
- Digital Divide in device capability & connectivity

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A little bit of history from the world of K-12 Education…

1980's	*Computers in the Classroom* *"Educational Software"*
Early – Mid 1990's	*Internet Connectivity in Schools* *Birth of the Web (NCSA Mosaic, Netscape)* *Online Resources, Electronic Libraries* *Early One-to-One Projects*
Mid – Late 1990's	*E-Rate Created (explosive growth in connectivity)* *"One-To-One" Becomes a National Movement*
Late 1990's – Present	*Laptop Programs, Mixed Success / Many Failures* *One-to-One Vision Incorporates Connectivity*
Early – Mid 2000's	*Early Handheld Learning Projects (PDA Based)*
Late 2000's	*Early Mobile Learning Projects* *Smartphones, Netbooks, MID's*
2009	*First 4G Network Begins National Deployment*

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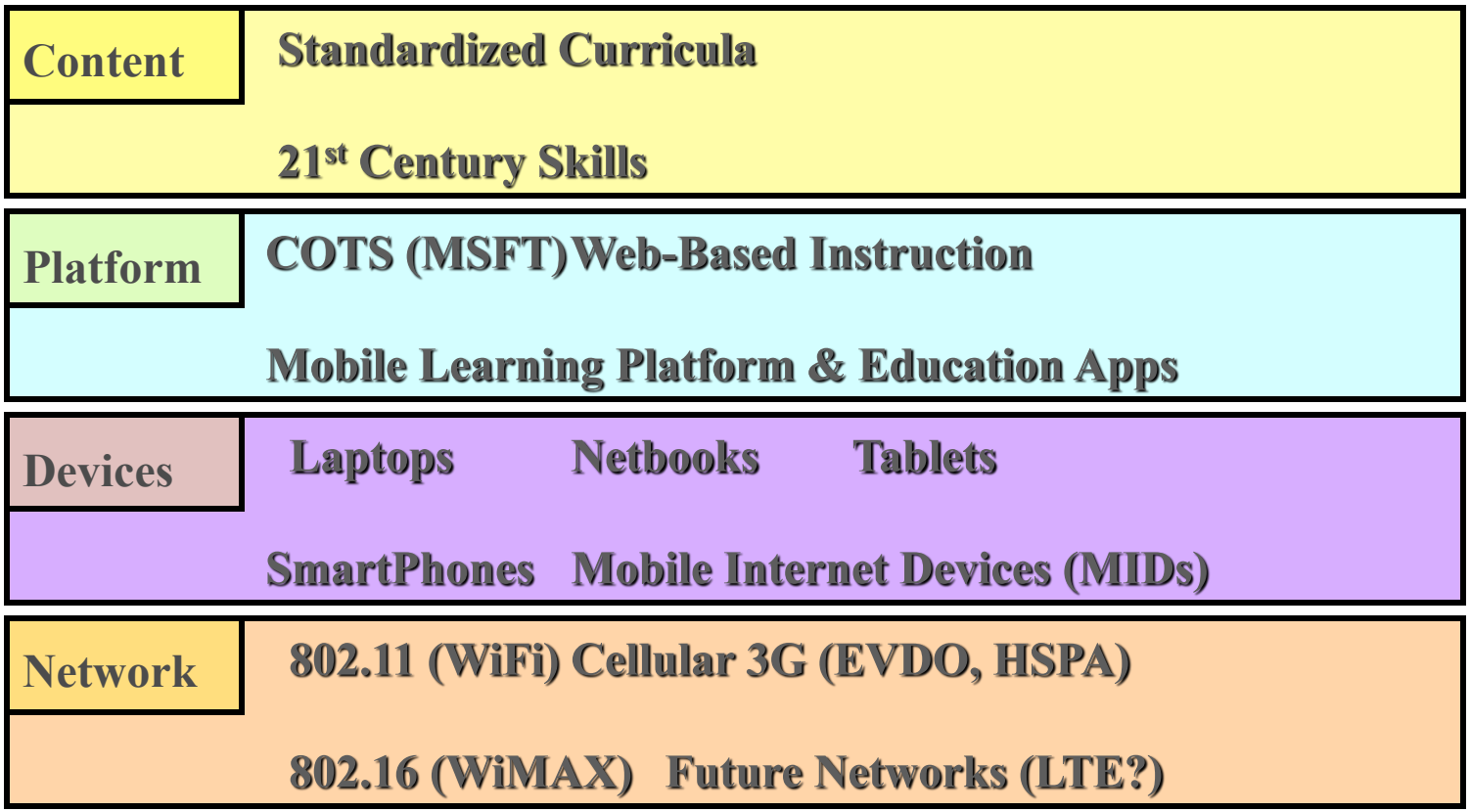
A Mobile Learning Platform



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Economic Models, Funding Sources

Local Funding Sources

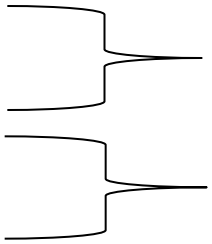
- District Budgets
- Bond Initiatives
- SPLOST Funds
- Local and Private Grants or Donors
- Parent Teacher Association (PTA) Fundraising

Federal Funding Sources

- E-Rate (Priority 1 Services)
- Enhancing Education Through Technology (EETT)
- Broadband Technology Opportunities Program (BTOP)
- State Fiscal Stabilization Funds (SFSF)
- Race To The Top Awards (RTTT)
- Rural Utilities Service (RUS) Distance Learning & Telemedicine Program
- Investing in Innovation (i3)

Sustainable Funding

- Individualized Instruction
- Virtual Schools & Distance Education
- Online, Electronic Content
- Personal Education Records



- Highly Effective, "*Connected Teachers*"
- Textbooks, Copies, Worksheets, Assessments, Student Creative Work, Group Projects

The "Transformation" of K-12 Education is Only Beginning…

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Economic Models, Funding Sources

Business Model Conflicts / Hurdles

- Technology Planning (3-5 year horizon)
- Budget Cycles (complex, annual, 12-16 months ahead)
- Funding Methods (fixed allocations, per student, per year, etc.)
- Education Specific, Data-Focused Platforms and Devices
- Procurement Laws Are Misaligned

Potential Solutions & Benefits

- Education Specific Pricing
- Consortium Based Procurement and Contracting
- Nationally Coordinated K-12 Specific Environment – USDOE?
- Alternate Business Models Targeting K-12 Education – MVNO? Wholesale?

For More Information, Contact:

Michael Flood
Vertical Manager, K-12 Education
Sprint Nextel
Michael.Flood@Sprint.Com
http://www.sprint.com/k12

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When do you think 75% of K-12 students will use mobile broadband devices in the classroom?

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The Future of Mobile Educational Devices

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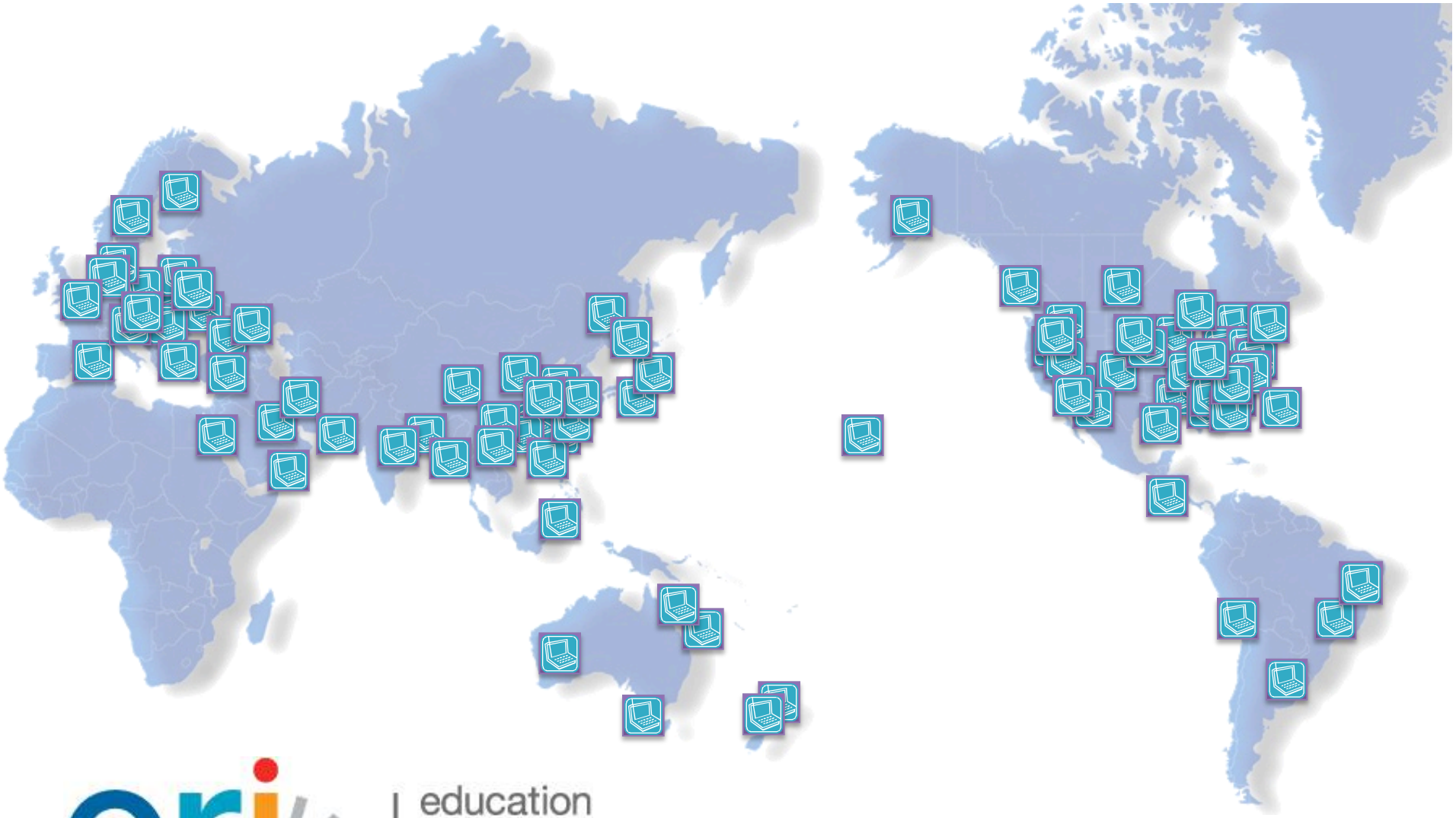

eri | education research initiative

What are the potential barriers to achieving widescale adoption of mobile broadband usage in K-12 classrooms?

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Mobile Learning

Mike Page

Director, Government & External Affairs

Thinkfinity.org

Verizon's Thinkfinity.org is a website that contains thousands of free K-12 lesson plans and student materials for every core subject, designed by the leading educational organizations in the United States.

- **55,000+ FREE resources for K-12 education**
- **A partnership between the Verizon Foundation and the nation's leading educational and literacy organizations**
- **FREE professional development**
  (P21 PD affiliate / ISTE NETS T aligned)
- Access and use resources from school or home!

Mobile Learning
Verizon Thinkfinity Mobile Advantage

- **Opportunity**
  - This isn't about shrinking online resources to fit on a mobile device.
    - It's about expanding learning opportunities.
    - It's about taking advantage of teachable moments that often occur outside of a traditional classroom.
    - It's about leveraging the tool that sits within 71% of teenager's pockets.
    - It's about meeting students where they are, engaging them, and helping them achieve.
    - It's about merging of Verizon Thinkfinity's educational expertise + Verizon's technical expertise and network

Mobile Learning
The Need and Verizon Opportunity

2009
- **Step 1: Computer**
  - Proven success: with Verizon Foundation's Thinkfinity
    - Computer-based model for delivering the highest quality educational resources to teachers, parents and students for free

2010
- **Step 2: Smartphone**
  - Pilot an effective use of mobile technology for education leveraging the Verizon Foundation's expertise in instruction and learning, as well as Verizon's broadband network and smartphones

2011
- **Step 3: TV**
  - After success with the smartphone pilot, the team will focus on educational use of FiOS both at home and in schools

71% of teens ages 12-17 have cell phones - a percentage that remains relatively steady regardless of race, income or other demographic factors.
Pew Research Center

Mobile Learning
Project Concept and Approach

- **What**
  - Identify learning opportunities and needs in the math and science strands
  - Develop a course (tools/content) for smartphones to supplement learning this academic strand.
- **Who**
  - Demographically mixed set of 100 smartphone Users
  - 9th grade students, students' teachers, technology resource specialists, administrators and parents
- **How**
  - Verizon's IT ,Verizon Wireless and Verizon Foundation converge competence and the right experience
    - Thinkfinity Content Partners – NCTM, NGS & AAAS
    - Focus on STEM academic strand

Mobile Learning: Concept Demonstration

- **Video-based Motivation / Instruction**
  - Project requires students to be citizen scientists, engaging in real science in a relevant context

Mobile Learning: Concept Demonstration

- **Data Collection: students collect data about birds observed, including photographs, GIS location, habitat**

Mobile Learning: Concept Demonstration

- **Mini-Assessment: students verify data by looking at video, photographs or descriptive information about species**

Mobile Learning: Concept Demonstration

- **Understanding Data in Context**
  - Data is uploaded to shared space like National Geographic's Field Scope
  - Field Scope includes data from professional scientists and students,

Is your company actively pursuing or considering wireless education opportunities?

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QUALCOMM®

The Role of Wireless Technology in Education

Marie Bjerede

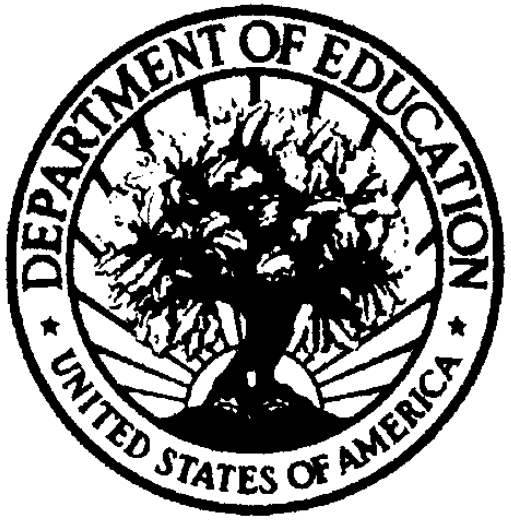
Vice President, Wireless Education Technology

schools have been left behind

national momentum bringing schools into 21st century

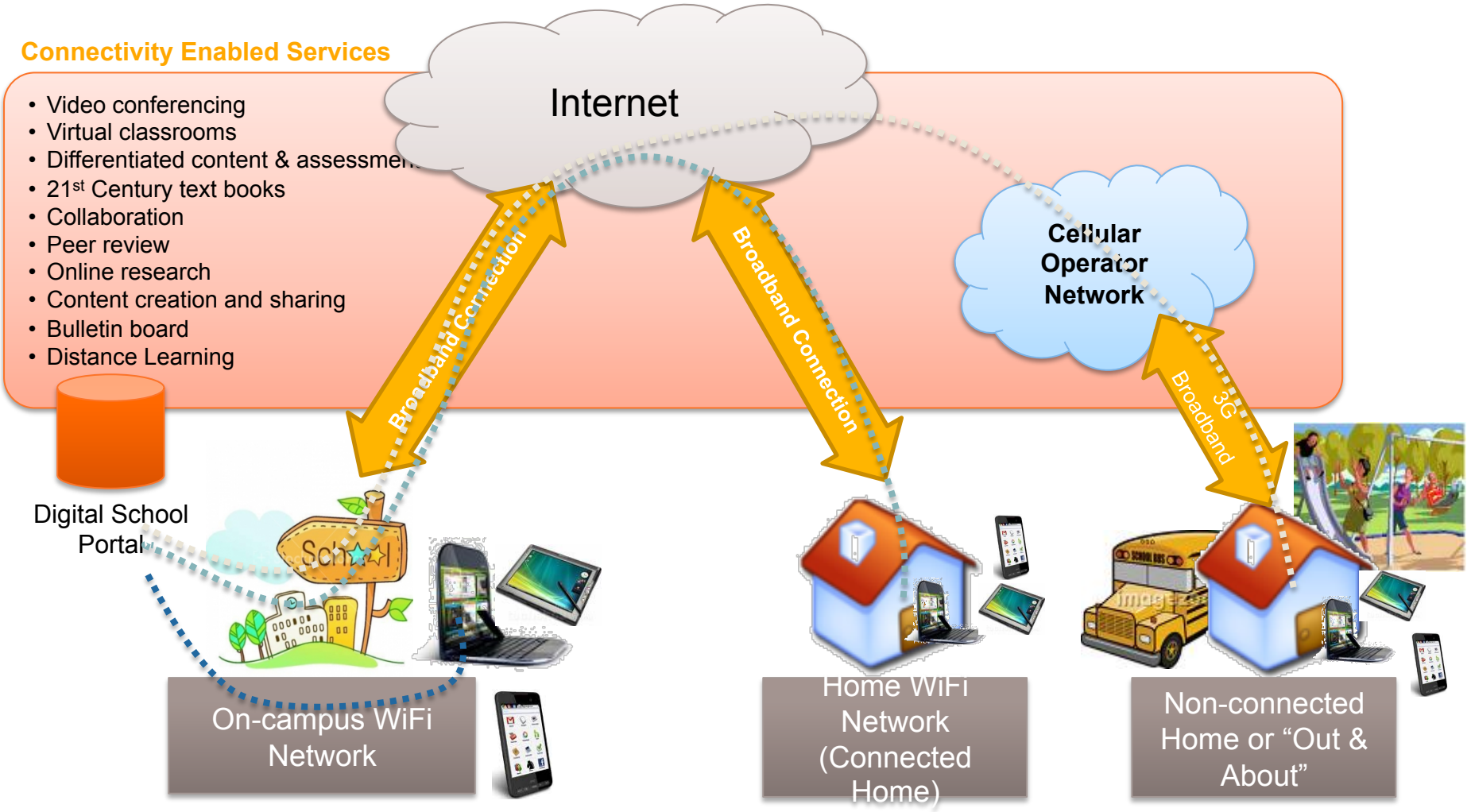
"Our model of an infrastructure for learning is always on, available to students, educators, and administrators regardless of their location or the time of day. It supports not just access to information, but access to people and participation in online learning communities. It offers a platform on which developers can build and tailor applications". – *National Education Technology Plan*

"Restricting student access to network services while on school grounds is becoming increasingly indefensible given the new educational opportunities presented by cloud-based desktops, smartphones, tablet PCs, netbooks and other highly portable solutions. Demand for wireless services in education is rapidly growing, and students without off-campus access to online educational services will be increasingly left behind in terms of skills, experience and confidence in their online capabilities". – *National Broadband Plan*



The mobile divide – who gets left behind?

connect students, not just places



Thank You

mbjerede@qualcomm.com

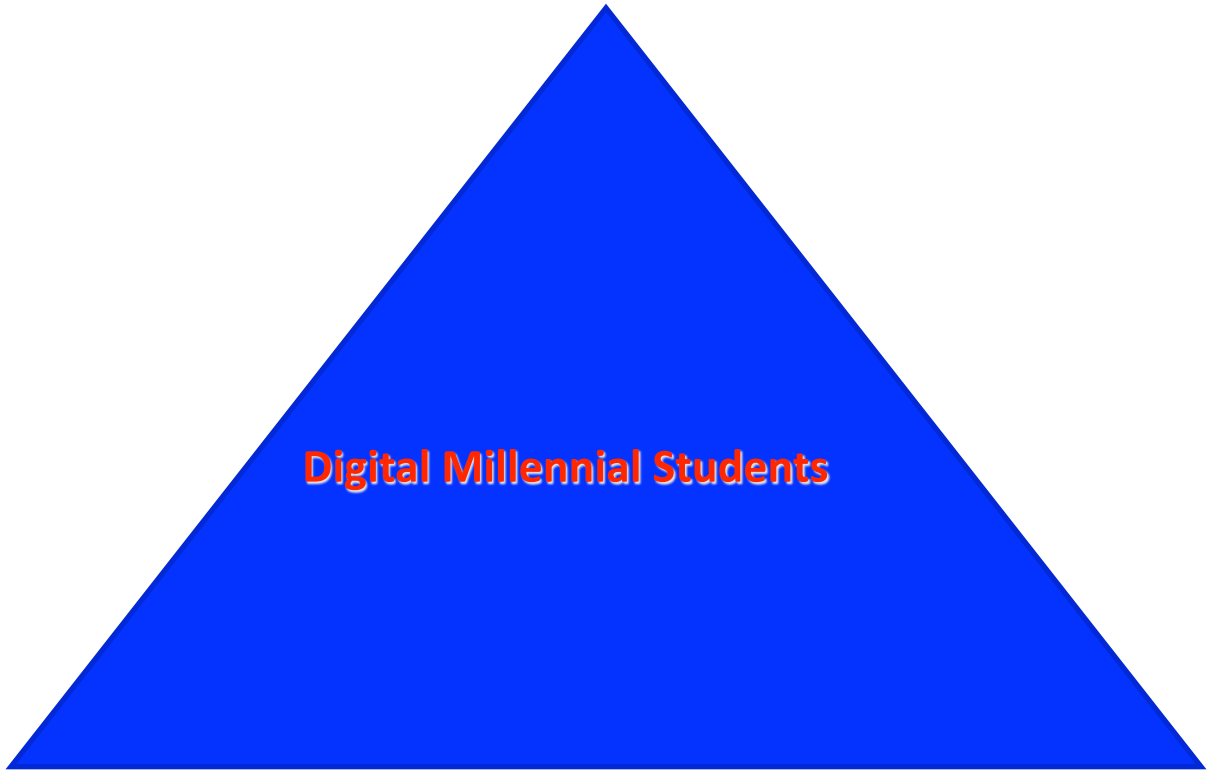
Have your views about mobile education changed as a result of attending this panel? If so, how?

To participate: text **KIDS** and your message to **99503**

Shawn Gross
Managing Director
Digital Millennial Consulting

International CTIA WIRELESS 2010
A Division of CTIA-The Wireless Association®

21st Century Skills



Math and Science Skills Deficit

Access (digital divide)

System Overview

K-Nect Teacher Portal

Administration of Problem sets

eContent Management System

Monitoring & Reporting System

System Administration of Devices

Virtual Hard Drive

Assessment System

K-Nect Student System

Access to comprehensive problem sets

eContent Repository

Instant Messaging

Blogs

Assessment

Virtual Hard Drive

Research Results - 2007

Quantitative

- 4 out of the 4 cohort Project K-Nect Algebra I classes outperformed the other Algebra classes taught by the same teachers on the NC End of Course Exam (EOC) for Algebra I
- All 4 cohort Project K-Nect classes outperformed the other Algebra classes taught by the same teachers with their final grades
- 2 of the 4 teachers reported that students achieved at least a 10% gain in Algebra I over their peers as a result of the program
- The aggregate gain of all 4 cohorts between the pre-test and post-test administered by the research team was 20%

Qualitative

- Students' report using the phone for at least an hour everyday to complete their Algebra work
- Students reported increased parental support with their instruction in Algebra.
- Students reported increased communication and collaboration with their teachers
- Students reported increased communication and collaboration with their peers regarding questions they had regarding their homework assignments
- Students felt supported by the project team and their teacher for communicating via the device for remote support
- Students reported a better understanding of the mathematics because of real world applications associated with the curriculum
- Students indicated that because they had continuous access to mathematical resources on the mobile device, their instructional time dedicated to Algebra significantly increased

Research Results – 2008/9 (Algebra I)

Southwest High School – Onslow County

Class	Teacher	EOC Proficiency Levels	Period of Evaluation
Algebra I	S. Kliewer*	91%	Spring 2009
Algebra I	Teacher A	76%	Spring 2009
Algebra I	Teacher B	60%	Spring 2009

Dixon High School – Onslow County

Class	Teacher	EOC Proficiency Levels	Period of Evaluation
Algebra I	H. Spring*	93%	Spring 2009
Algebra I	Teacher A	79%	Spring 2009
Algebra I	Algebra B	71%	Spring 2009
Algebra	Teacher C	67%	Spring 2009

Southern School of Engineering – Durham

Class	Teacher	EOC Proficiency Levels	Period of Evaluation
Algebra I	E. Moffitt*	71%	Spring 2009
Algebra I	Teacher A	48%	Spring 2009
Algebra I	Teacher A	0%	Spring 2009

Research Results – 2008/9 (Geometry)

Southwest High School – Onslow County

Class	Teacher	EOC Proficiency Levels	Period of Evaluation
Geometry	S. Kliewer*	90%	Fall 2008
Geometry	Teacher A	74%	Fall 2009

Dixon High School – Onslow County

Class	Teacher	EOC Proficiency Levels	Period of Evaluation
Geometry	H.Spring*	65%	Fall 2008
Geometry	Teacher A	40%	Fall 2008
Geometry (H)**	Teacher B	70%	Fall 2008

**H= Honors

Research Results – 2008/9 (Algebra II)

Southwest High School – Onslow County

Class	Teacher	EOC Proficiency Levels	Period of Evaluation
Algebra II	E. Kliewer*	83%	Spring 2009
Algebra II	Teacher A	71%	Spring 2009
Algebra II	Teacher A	33%	Spring 2009

Dixon High School – Onslow County

Class	Teacher	EOC Proficiency Levels	Period of Evaluation
Algebra II	H.Spring*	81%	Spring 2009
Algebra II (H)**	Teacher A	75%	Spring 2009
Algebra II	Teacher B	50%	Spring 2009
Algebra II	Teacher C	30%	

**H= Honors

Research Results – 2008/9 (Biology)

Southern School of Engineering – Durham

Class	Teacher	EOC Proficiency Levels	Period of Evaluation
Biology	N. Joyner*	88%	Spring 2009
Biology	Teacher A	55%	Spring 2009
Biology	Teacher A	50%	Spring 2009

Contact Details

Shawn Gross
shawngross@projectknect.org
Skype ID: shawngross
Phone: 202-215-7448
http://www.digitalmillennial.com
http://www.projectknect.org

How can the wireless industry accelerate the adoption of mobile broadband in K-12 education?

To participate: text **KIDS** and your message to **99503**

International CTIA Wireless 2010
Las Vegas, NV
March 2010

Wireless Education Technology:
Role of Mobile Broadband in K-12 Education

Speak Up 2009 National Findings

Results of Online Survey of 370,000 K-12 Students, Parents, Teachers and Administrators

Speak Up is conducted annually by Project Tomorrow, a national education nonprofit group
www.tomorrow.org

Julie Evans
Chief Executive Officer
jevans@tomorrow.org

Speak Up 2009 survey question themes

- Learning & Teaching with Technology
- 21st Century Skills: Digital Citizenship
- Math Instruction & Career Interests in STEM and Teaching
- Professional Development
- Internet Safety
- Education Continuity – Administrators' Challenges
- Emerging Technologies in the Classroom
  - ***Mobile Devices,*** *Online Learning*
  - *Digital content and E-textbooks*
  - *Educational Games, Web 2.0 tools and applications*
- Designing the 21st Century School

Sampling of Key Findings: Speak Up 2003 – 2009
+ 1.85 million surveys from students, parents & educators

- Persistent digital disconnect between students and adults
- Students' frustrations with the lack of technology use in school
- Lack of relevancy in education exacerbated
- Students function as a "Digital Advance Team"
- Students adopt and adapt emerging technologies for learning
- Introducing the "Free Agent Learner"

Putting the puzzle pieces together

Persistent digital disconnect

Frustration with school tech obstacles

Aspirations for 21st century learning

Millennial culture

Free Agent Learner activities

Adaptation of emerging technologies for learning

Perceived lack of relevancy in school

Result:

A new uniquely "student vision" for leveraging emerging technologies to drive achievement and educational productivity

Creating Our Future: Students Speak Up about their Vision for 21st Century Learning

Three Essential Elements in the Student Vision

- **Social–based learning**
- **Un–tethered learning**
- **Digitally–rich learning**

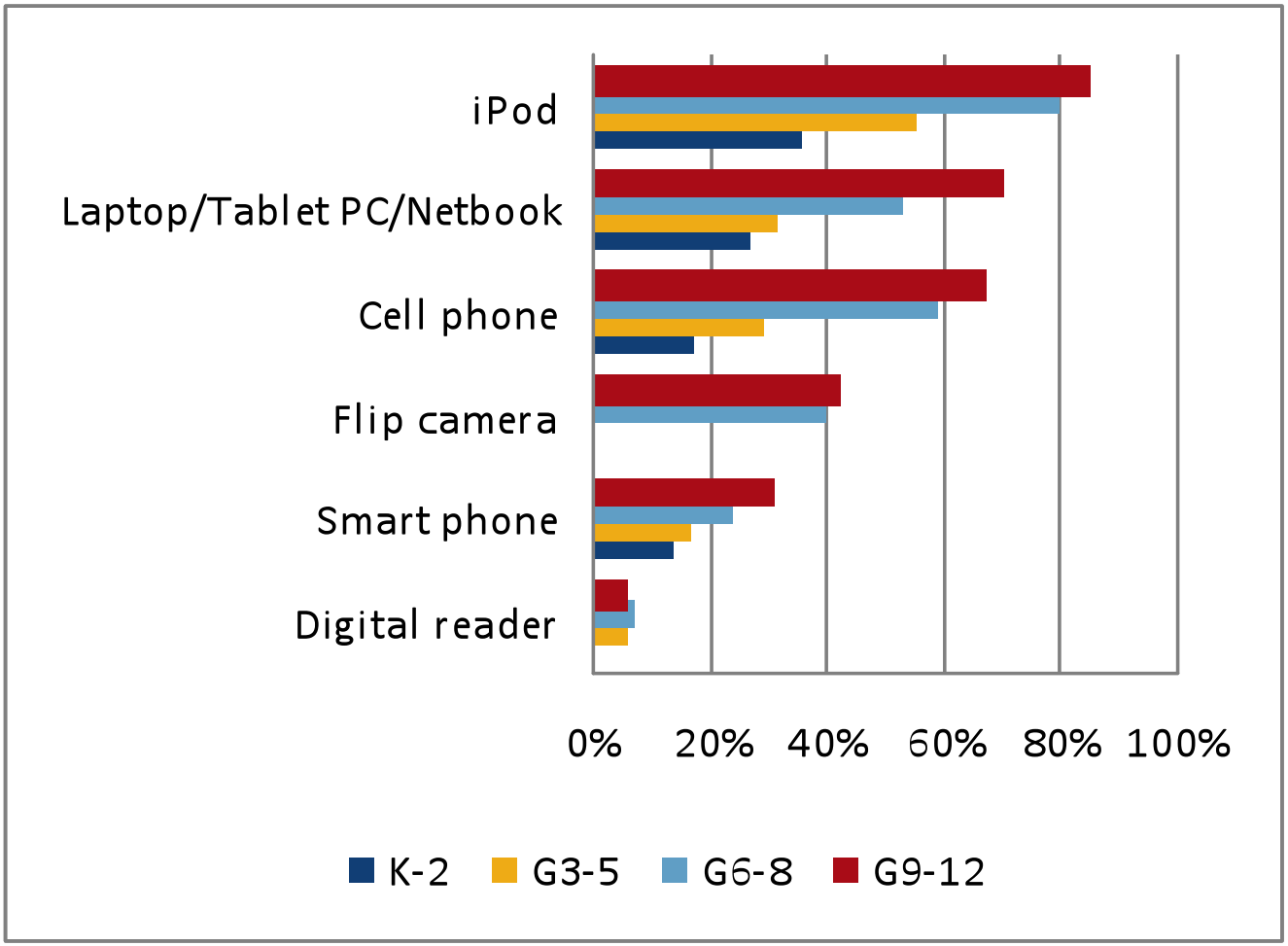
Creating Our Future: Students Speak Up about their Vision for 21st Century Learning

Three Essential Elements

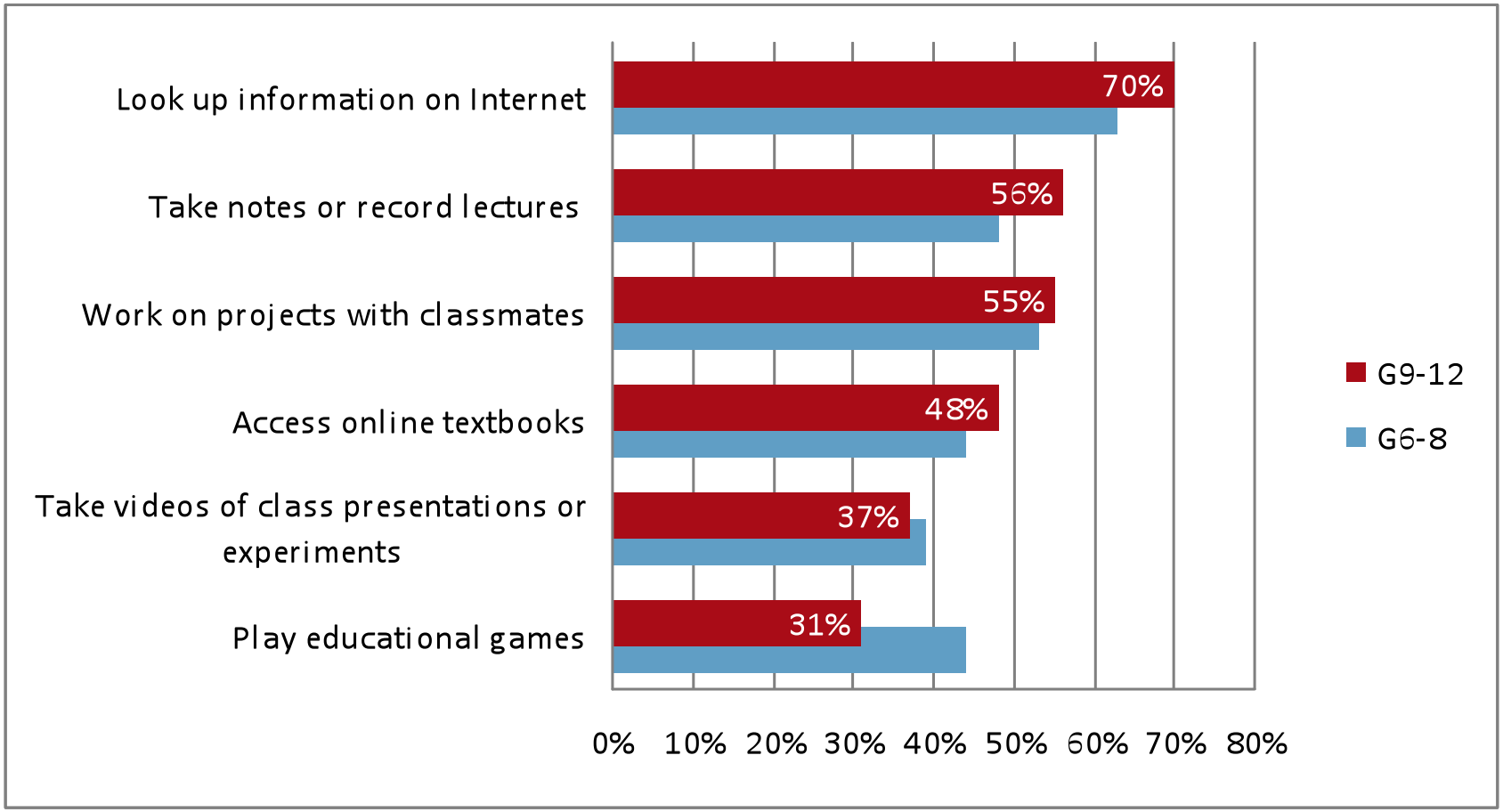
- **Un–tethered learning**

  Students envision technology-enabled learning that transcends classroom walls and is not bound by limitations or deficiencies

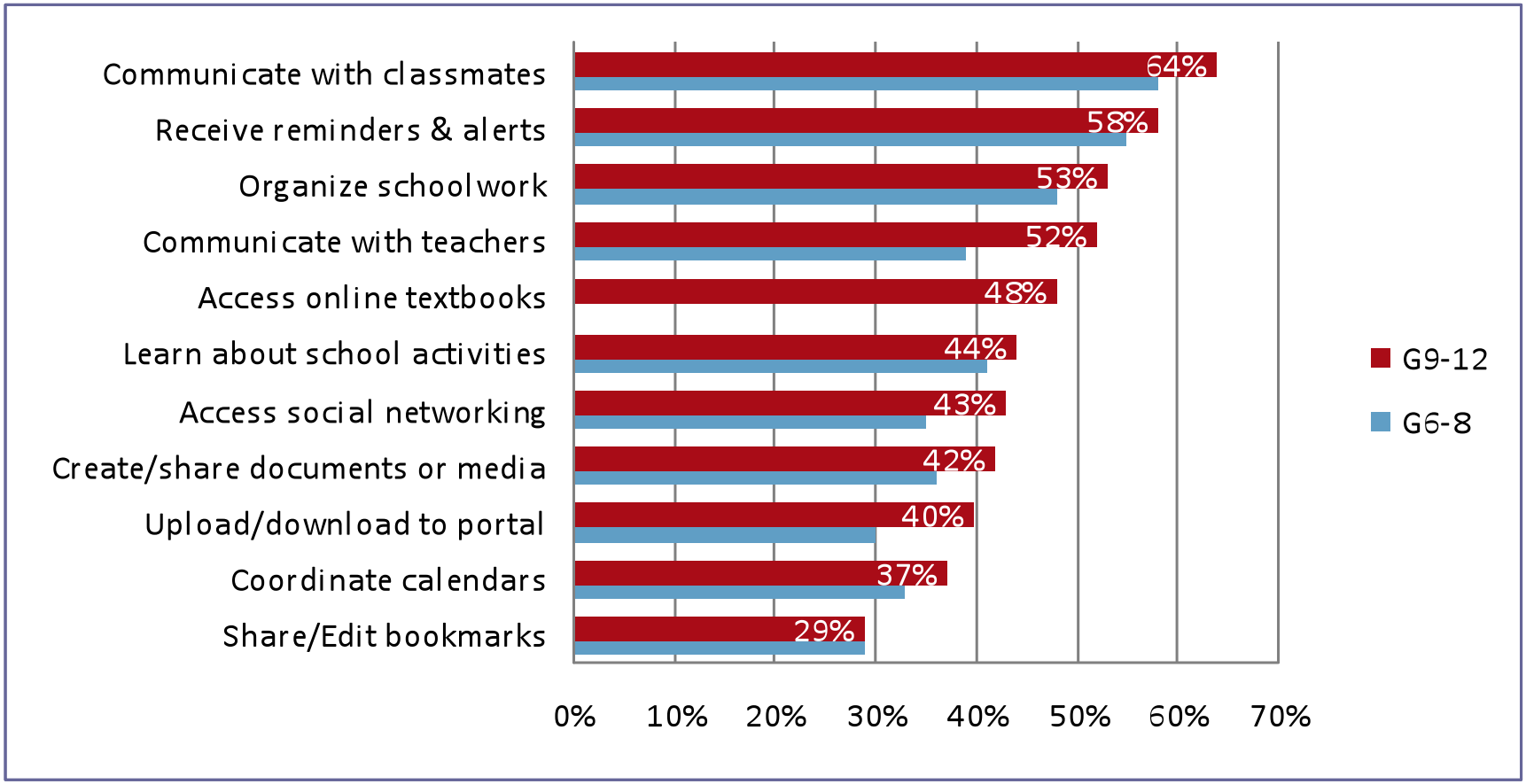
Mobile Devices: Students have access to a variety of electronic devices



Students want to use mobile devices for learning purposes



And believe that mobile devices can also enhance personal productivity



Students face obstacles using technology at school

Top responses:

1. **I cannot use my mobile device (51%)**
2. School filters and firewalls block websites I need (48%)
3. Teachers limit our technology use (34%)
4. Too many rules! (27%)
    - Cannot access my communications tools
    - Rules that limit use of my school's technology

How schools could make it easier to use technology – the student point of view

Students say:

1. **Let me use my own mobile device (58%)**
2. Give me unlimited Internet access on campus (41%)
3. Let me use my own laptop (41%)
4. Access my school projects from any computer – home or at school (40%)
5. I want to access my social networking site and communications tools (36%)

Parents' beliefs about the potential benefits of using mobile devices for instructional purposes

Increases student engagement	**43%**
Prepares students for world of work	41%
Extends school day for learning	38%
Provides access to online textbooks	37%
Improves teacher-parent-student communications	35%

- **Teachers' biggest concerns about using mobile devices at school**

- **50% of teachers** say that the greatest benefit to using mobile devices:
  - **increases student engagement in school and learning**

But 67% of teachers say their biggest concern however is students will be distracted

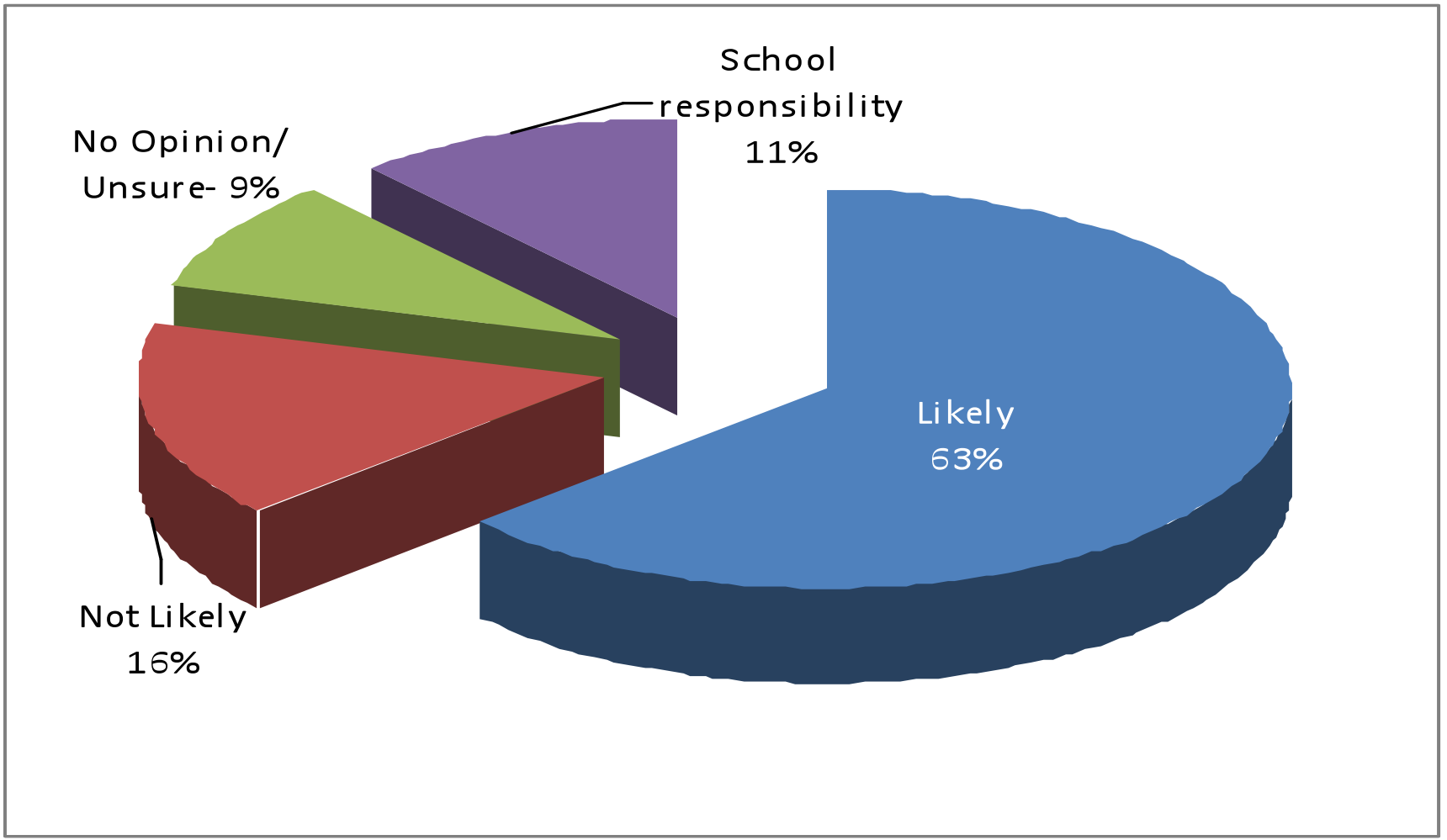
- **Administrators' perspectives on mobile devices within learning**

- **66% of administrators** say that the greatest benefit to using mobile devices:
  - **increases student engagement in school and learning**

Administrators' perspectives on mobile devices within learning

- What prevents administrators from allowing students to use their own devices?
  - **Current district policies (49%)**
  - **Concerns about theft (47%)**
  - **Concerns about network security (47%)**
  - **Teachers are not trained (45%)**
  - **Digital equity concerns (42%)**

Would parents purchase a mobile device for their child to use at school?



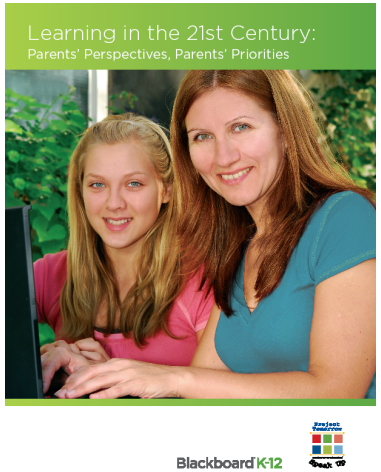
Designing the ultimate school for 21st century learning

What do students say will drive higher achievement?

- Communications tools (60%)
- Digital media tools (60%)
- Games and simulations (60%)
- Online textbooks (57%)
- Mobile computer for every student (57%)
- Interactive whiteboards (53%)
- Collaboration tools (51%)
- Digital resources (51%)
- **Mobile devices (51%)**
- Tools to help organize schoolwork (49%)
- Campus wide Internet access (49%)
- Online classes (48%)

More Speak Up? www.tomorrow.org

- National Speak Up Findings
- Additional data analysis from Speak Up
- Presentations, podcasts and webinars
- Reports and white papers
- Consulting and project evaluation services
- Speak Up 2010 – fall 2010



Julie Evans
Chief Executive Officer
Project Tomorrow
949-609-4660 x15
jevans@tomorrow.org

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The Role of Wireless Technology
in K-12 Education

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and click on Mobile Education

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