# Table of Contents

Executive Summary 2

Background 5

Realizing the Potential of Mobile Technologies for Learning 7

Articulating Puzzles and Challenges 11

Devices and Infrastructure 12

Safety and Privacy 14

Digital Assets and Assessments 14

Human Capital 16

Insights from the Conference 18

Devices and Infrastructure 19

Safety and Privacy 22

Digital Assets and Assessments 24

Human Capital 25

Next Steps 28

Appendices 30

A: Wireless EdTech 2010 Conference Advisory Board 31

B: Wireless EdTech 2010 Conference Speakers 35

C: Conference Agenda 47

References 51
Executive Summary

On October 29th, 2010, in Washington, D.C., Qualcomm’s Wireless Reach™ initiative1 sponsored the 2010 Wireless Education Technology Conference. Dr. Paul E. Jacobs, Chairman and Chief Executive Officer of Qualcomm, explained the rationale for this event:

“The United States has a once-in-a-generation opportunity to reform education in a way that will truly prepare our students to compete in the global economy. Mobile technology has a critical role to play in this effort by equipping students and teachers with 24/7 access to learning communities and information. Qualcomm is pleased to join a group of distinguished leaders to explore mobile learning at Wireless EdTech 2010.”

The meeting, which brought together leaders in business, K12, higher education and government, was the first conference to focus on major issues in research, practice, and policy that must be resolved to realize the full potential of mobile broadband devices for learning.

In his keynote address, Dr. Jacobs highlighted the major shifts mobile devices can create for learning. He described how the mobile experience has evolved from voice to messaging to entertainment to computing, each new dimension transforming what users can accomplish. He went on to point out that public agencies also recognize this shift. For example, the Federal Communications Commission’s (FCC) National Broadband Plan (2010, page 226) states:

“The country’s economic welfare and long-term success depend on improving learning for all students, and broadband-enabled solutions hold tremendous promise to help reverse patterns of low achievement.”

This sentiment is echoed in the public, as documented in a major report on mobile learning released at the conference by Project Tomorrow, a national education nonprofit organization.

In conclusion, Dr. Jacobs presented the concept of mobile broadband and the six senses. Mobile devices now have the capability of: (1) recognizing where you are, (2) interacting with networks, (3) sensing local content and services, (4) discovering relevant things, (5) enhancing your surroundings with information and simulation, and (6) learning your interests as well as how and with whom you like to learn.

Dr. Chris Dede, a Professor in Learning Technologies at Harvard’s Graduate School of Education, prefigured these capabilities in his opening remarks and stressed that this new capacity for learning infused throughout the world is a powerful way of moving beyond the traditional model of learning — isolated from the world in classroom settings.

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1 Qualcomm believes access to 3G and next-generation mobile technologies can improve people’s lives. Qualcomm’s Wireless Reach™ initiative is a strategic program that brings wireless technology to underserved communities globally. By working with partners, Wireless Reach invests in projects that foster entrepreneurship, aid in public safety, enhance the delivery of health care, enrich teaching and learning and improve environmental sustainability. For more information please visit www.qualcomm.com/wirelessreach.
Dr. Dede discussed how emerging educational technologies often do not achieve their potential because “old wine is put in new bottles.” For example, podcasting is touted as an educational solution, yet almost all podcasts have had limited impact on learning because they use the “teaching by telling, learning by listening” instructional model that characterized educational radio and portable tape recorders in generations past. In contrast, he described how mobile broadband devices can hold “new wine,” such as highly engaging augmented realities that infuse virtual data and authentic, simulated experiences into real-world settings, facilitating transfer of learning from classrooms to life situations. Further, Dr. Dede envisioned, the “bottle” itself may disappear as mobile broadband allows us to have all the powerful supports of classroom learning without the need for constraining education in time and space.

That said, Dr. Dede stressed that any transformative strategy faces many challenges. Beyond presenting work towards visions of new models for learning, the conference was designed to elucidate barriers to be overcome and breakthroughs needed if the potential of mobile broadband for education is to be realized. He described the most difficult problems as “knots” because they required coordination across stakeholders to resolve.

In keeping with the metaphor of puzzles to be solved, FCC Chairman Julius Genachowski, in a live interview with John Harris, editor-in-chief of POLITICO, articulated the opportunities and challenges of mobile learning. He described how the FCC sees broadband (wired and mobile) as a key initiative to enable universal public access to online information and services by 2020. He discussed the successes of the E-rate program as a model and the new FCC pilot program that extends E-rate to mobile broadband service off school campuses. The conference enabled scholars, practitioners, vendors, and policymakers to engage in meaningful dialogues. This cross-sector conversation identified four key puzzle areas:

- **Devices and Infrastructure** - How can we best balance educational investments between the classic infrastructure of wired computers and the emerging infrastructure of wireless mobile devices?
- **Safety and Privacy** - How can we use Internet access and digital student data to enhance education, while preventing various forms of abuse?
- **Digital Assets and Assessments** - How can we drive innovation in digital learning materials and services when the education market is notoriously fragmented and slow to adopt, and when the strengths and limits of mobile devices for learning are not well understood?
- **Human Capital** - How can we empower educators and other stakeholders to realize the potential of anytime, anywhere mobile learning through evolutionary, revolutionary, and disruptive transformations that move beyond the model of industrial-era schooling?
Complicating the challenge is that barriers in each area create difficulties for progress in the others.

The conference was not designed for participants to produce formal recommendations or detailed strategies for next steps. Instead, it was a forum for dialogue among leaders in various industries, designed to enable stakeholders who do not usually communicate with each other to have extended conversations about visions and opportunities, challenges and knots to untie together. Insights from the technology industry, educators, policymakers, and scholars drove a rich discussion. They saw a ubiquitous technology infrastructure that supports anytime, anywhere learning as central to 21st century education. Participants advocated for ensuring that every student and educator has a mobile broadband device, with training and support for its optimal usage to empower learning, and urged the systematic exploration of mechanisms to fund such an infrastructure for every district, school, and student, regardless of economic status.

Attendees indicated that they greatly appreciated having an event that centered on mobile learning and hoped that similar conferences would be held in the future so that stakeholders can develop a community that effectively champions these initiatives. In response, Qualcomm has convened a working group of leaders in mobile learning that meets periodically to build on the insights from the conference. Also, Qualcomm will sponsor the 2011 Wireless EdTech Conference on October 20th, in Washington, D.C.
“The United States has a once-in-a-generation opportunity to reform education in a way that will truly prepare our students to compete in the global economy. Mobile technology has a critical role to play in this effort by equipping students and teachers with 24/7 access to learning communities and information.”
On October 29th, 2010, in Washington, D.C., Qualcomm’s Wireless Reach™ initiative sponsored the 2010 Wireless Education Technology Conference. Dr. Paul E. Jacobs, Chairman and Chief Executive Officer of Qualcomm, explained the rationale for this event:

“The United States has a once-in-a-generation opportunity to reform education in a way that will truly prepare our students to compete in the global economy. Mobile technology has a critical role to play in this effort by equipping students and teachers with 24/7 access to learning communities and information.”

Dr. Chris Dede, Timothy E. Wirth Professor in Learning Technologies at Harvard University, provided the opening address and served as moderator for its plenary sessions. Dr. Jacobs delivered the keynote speech. Next came an interview conducted by John Harris, editor-in-chief of POLITICO, with Julius Genachowski, chairman of the Federal Communications Commission (FCC), regarding the importance of broadband and mobile technology to the future of education. Other speakers include Kwasi Asare, Associate Director of the U.S. Department of Education’s Office of Education Technology; Marie Bjerede, founder of e-Mergents; Dr. Daniel C. Edelson, Vice President for Education at the National Geographic Society Education Foundation; Julie Evans, Chief Executive Officer of Project Tomorrow; Shawn Gross, Managing Director of Digital Millennial Consulting; Michael Levine, Founding Director of the Joan Ganz Cooney Center, Sesame Workshop; Robert M. Lippincott, Senior Vice President of Education at the Public Broadcasting System, and Steve Midgley, Deputy Director of Education Technology, U.S. Department of Education.

The conference focused on key cross-functional topics, such as:

- Differences between 1:1 mobile broadband learning and 1:1 laptop programs,
- Advantages of extending learning beyond the four walls of a classroom and traditional school hours to fully leverage 24/7 connectivity,
- Platforms needed to support new methods of teaching and styles of learning,
- Network and infrastructure issues and options as they relate to cloud computing and device evolution,
- Methods for breaking down silos and fostering collaboration between stakeholders, and
- Means of leveraging the ecosystem of mobile devices and applications to lower costs in order to provide schools with access to state-of-the-art technology.

This event, which brought together leaders in business, K12, higher education and government, was the first conference to focus on major issues in research, practice, and policy that must be resolved to realize the full potential of mobile broadband devices for learning.
Realizing the Potential of Mobile Technologies for Learning

“...No vision for 21st century learning can be realized without mobile broadband. ..."
In his keynote address, Dr. Jacobs highlighted the major shifts mobile devices can create for learning. He described how the mobile experience has evolved from voice to messaging to entertainment to computing; each new dimension transforming what users can accomplish. He stressed that this is the largest technology platform in history, with more than five billion wireless subscribers and rapid growth in 3G (broadband) access. In particular, emerging markets in developing countries are investing heavily in wireless mobile broadband infrastructure because of the positive returns on this investment for economic development and education.

Dr. Jacobs stressed that such an investment is also important in the United States. The FCC’s *National Broadband Plan* (2010, page 226) states:

“The country’s economic welfare and long-term success depend on improving learning for all students, and broadband-enabled solutions hold tremendous promise to help reverse patterns of low achievement.”

This sentiment is echoed in the public, as documented in a major report on mobile learning released at the conference by Project Tomorrow, a national education nonprofit organization. Drawing on data compiled from over 370,000 K-12 students, parents, teachers and administrators, *Learning in the 21st Century: Taking IT Mobile* (2010) indicates that:

- More than half of students in grades 6-12 say their vision for the ultimate school includes mobile devices.
- More than 60 percent of parents would purchase a mobile device for school use if the school allowed it, and
- Almost three-quarters of education leaders say mobile devices used effectively for learning have the potential to increase student engagement.

At the conference, a major report from Sesame Workshop, *Learning: Is there an App for That?* (2010), provided additional insights about children’s usage of mobile devices and applications.

In conclusion, Dr. Jacobs presented the concept of mobile broadband and the six senses. Mobile devices now possess the capability of: (1) knowing where you are, (2) interacting with networks, (3) sensing local content and services, (4) discovering relevant things, (5) enhancing your surroundings with information and simulation, and (6) learning your interests as well as how and with whom you like to learn. Dr. Dede prefigured these capabilities in his opening remarks and stressed that this new capacity for learning infused throughout the world is a powerful way of moving beyond the traditional model of learning isolated from the world in classroom settings.
Dr. Dede discussed how emerging educational technologies often do not achieve their potential because “old wine is put in new bottles.” For example, podcasting is touted as an educational solution, yet almost all podcasts have had limited impact on learning because they use the “teaching by telling, learning by listening” instructional model that characterized educational radio and portable tape recorders in generations past. In contrast, he described how mobile broadband devices can hold “new wine,” such as highly engaging augmented realities that infuse virtual data and authentic, simulated experiences into real-world settings, facilitating transfer of learning from classrooms to life situations. Further, Dr. Dede envisioned, the “bottle” itself may disappear as mobile broadband allows us to have all the powerful supports of classroom learning without the need for constraining education in time and space. As a member of the Technical Working Group for the U.S. Department of Education’s 2010 National Education Technology Plan, he discussed ways in which the Plan presents such a vision and recommends investments and policies to realize this future.

Dr. Dede then placed the evolution of mobile broadband in a larger context by describing a potential transformation of formal education beyond industrial-era schools – developed a century ago for a different economy and society – to a 21st century system based on “distributed learning.” Parents prepared and credentialed as tutors, informal educators as coaches, and community members as mentors could become part of the formal educational structure, now extended to anytime and anyplace rather than limited to the classroom and the school day. Mobile broadband devices would enable customized learning “lifelong and lifewide,” as well as providing tools and applications that would allow teachers, tutors, coaches, and mentors to orchestrate their efforts into a seamless web of support. Sophisticated analytics could mine rich data streams collected from learners’ digital interactions to help with diagnosing what types of personalized educational experiences are good next steps. He indicated that the conference program was designed to show how various groups were working to achieve the range of capabilities necessary to achieve this and other visions of 21st century learning.

These alternative models of educational improvement, Dr. Dede described, can involve evolutionary, revolutionary, or disruptive transformation. Evolutionary transformation centers on using mobile devices within and outside of classrooms to enable 1:1 access to computing, digital textbooks, and facile collaboration among teams of students. Revolutionary transformation, in contrast, focuses on using mobile broadband to expand human support for learning beyond the classroom and school day to invent new structures for formal education, such as the “distributed learning” model sketched above. As an alternative to these types of internal, deliberate change for current institutions, disruptive transformation builds on Harvard Business School Professor Clay Christensen’s concept of new forms of educational institutions, such as virtual schools and online universities, using mobile devices as part of a strategy for externally undercutting and eliminating inflexible, traditional models of education. The emergence of 21st century learning will likely involve various groups implementing all three of these transformative approaches.
That said, Dr. Dede stressed that any of these transformative strategies faces many challenges. Beyond presenting work towards visions of new models for learning, the conference was designed to elucidate barriers to be overcome and breakthroughs needed if the potential of mobile broadband for education is to be realized. He described the most difficult problems as “knots” because they required coordination across stakeholders to resolve. As an example of such a knot, educators and parents do not want to invest in mobile infrastructure unless they are certain high quality educational experiences are available – yet content providers and technology vendors do not want to invest in developing these experiences unless they are sure a strong market for those services exists. Investment by public and private stakeholders is necessary to untie this knot.

In keeping with the metaphor of puzzles to be solved, FCC Chairman Julius Genachowski, in a live interview with John Harris, editor-in-chief of POLITICO, articulated the opportunities and challenges of mobile learning. He described how the FCC sees broadband (wired and mobile) as a key initiative to enable universal public access to online information and services by 2020. He discussed the successes of the E-rate program as a model and the new FCC pilot program that extends E-rate to subsidize mobile broadband service off school premises. Chairman Genachowski delineated challenges to this vision, including educational policies that restrict mobile usage in school settings, limited availability of wireless spectrum, and privacy concerns.

Overall, the conference program was developed, Dr. Dede described, to bring together various types of stakeholders, identify puzzles to be solved, and formulate steps to untie knots that impede the transformative potential of mobile learning. We must “put together the elephant,” he said, “with each group having a vital part – the trunk, the legs, the ears, the tail… No vision for 21st century learning can be realized without mobile broadband.”
Articulating Puzzles and Challenges

“Anytime, anyplace learning requires a ubiquitous infrastructure that supports a wide array of wirelessly enabled devices.”
The 2010 Wireless Education Technology Conference brought together a wide array of education stakeholders who typically do not talk to each other. Because each participant brought insights to the discussion, the conference was structured to be highly interactive and inclusive, in order to blur the lines between expert speakers and conference attendees. This strategy allowed scholars, practitioners, vendors, and policymakers to engage in meaningful dialogues, not only to surface the “usual suspects” that make mobile broadband technology challenging to implement in education, but to go beyond that lament to frame collaborative strategies that could lead to collective progress.

This cross-sector conversation identified four key puzzle areas:

- **Devices and Infrastructure** - How can we best balance educational investments between the classic infrastructure of wired computers and the emerging infrastructure of wireless mobile devices?
- **Safety and Privacy** - How can we use Internet access and digital student data to enhance education, while preventing various forms of abuse?
- **Digital Assets and Assessments** - How can we drive innovation in digital learning materials and services when the education market is notoriously fragmented and slow to adopt, and when the strengths and limits of mobile devices for learning are not well understood?
- **Human Capital** - How can we empower educators and other stakeholders to realize the potential of anytime, anyplace mobile learning through evolutionary, revolutionary, and disruptive transformations that move beyond the model of industrial-era schooling?

Complicating the challenge is that barriers in each area create difficulties for progress in the others.

**Devices and Infrastructure**

Anytime, anyplace learning requires a ubiquitous infrastructure that supports a wide array of wirelessly enabled devices. Balancing the short-term and long-term costs of such an infrastructure roll-out within the existing technology environments of our schools will require careful analysis and planning.

First, the phrase “it’s not about the device” is a lesson from history: Educational outcomes do not improve merely by putting computers in the hands of teachers and students. To realize the potential of mobile broadband, we also must provide professional development for educators on how to reinvent teaching and learning with this technology. In addition – given the rapid evolution of computers, wireless mobile devices, tablets, and gaming platforms – “it’s not about the device” reflects that any infrastructure we build must work both for whatever devices students are using today and for the more advanced technologies they will use in a few years.

Second, most school technology infrastructures are built on the assumption that
student access happens in computer labs for a limited number of hours per week. The same infrastructure that supports these computer labs is used for administrative and workflow purposes, such as tracking attendance and grades. These traditional “command and control” infrastructures make assumptions about how day-to-day work is performed, how students are taught, how students are tracked, what security measures are important, and how information gets from the classroom to parents, administrators and others. These assumptions are deeply wired into the way computers, networks, and software are organized within a school district; making the move to new models of technology usage complex, cumbersome, and expensive.

Third, traditional school infrastructure poses challenges with connectivity because their design assumes that computers will connect with the school servers and networks via either Ethernet or the school’s WiFi network. When other kinds of connectivity – such as cellular 3G or 4G mobile broadband or peer-to-peer networks – are taken into account, schools’ traditional infrastructures are often ill equipped to deal with intermittent connectivity, limited bandwidth, and new security models.

Fourth, cost is currently a major barrier because the expense involved in purchasing and refreshing wireless devices and data plans for connectivity is significant. In particular, conference attendees saw current network service plan pricing as unaffordable at scale for educational institutions. At a time when we are laying off teachers due to budget constraints, considering such an investment is difficult. Yet, an increasing number of students – even those living in poverty – own mobile broadband devices that enable anytime, anyplace learning. Further, labor-intensive, industrial-era schools are becoming unaffordable, and our society is seeking new models of education that can achieve better outcomes without increasing resources.

In summary, the anytime, anyplace learning envisioned by the 2010 National Education Technology Plan calls for a new wired/wireless infrastructure that allows students to access the Internet, their digital content, and their learning communities from whatever device they happen to have access to (e.g., laptop computer, cellphone, tablet, gaming platform). This requires investing in a mobile broadband infrastructure that complements and augments conventional wired computers, but is ubiquitous, inexpensive, and easy to evolve. This emerging infrastructure consists of cloud computing, mobile broadband devices, and layers of software that support a rich array of learning products and services.

Traditional infrastructure is still mission-critical to today’s schooling and will remain so for years. Infrastructure is an investment with a longer life than equipment or software, and educational institutions are conservative about making changes in funding patterns. Complementing wired infrastructures—that schools will be reluctant to abandon—with mobile broadband infrastructure will require federal, state, and local decision making that recognizes the limits of pouring resources only into wired infrastructures and the opportunities of investing in complementary wireless infrastructures that support 21st century learning.

“...the anytime, anyplace learning envisioned by the 2010 National Education Technology Plan calls for a new wired/wireless infrastructure that allows students to access the Internet, their digital content, and their learning communities from whatever device they happen to have access to.”
Articulating Puzzles and Challenges

Safety and Privacy

The potential of anytime, anyplace learning places new requirements on student safety and privacy. Traditionally, student access to the Internet is managed by filtering software in school networks, which in theory prevents students from accessing inappropriate content. This strategy is fragile in several ways. Filtering services are flawed in their ability to distinguish between legitimate and non- legitimate websites. Also, filters are cumbersome to change in order to allow certain sites to be accessed within a classroom. Teachers often have to make a request weeks in advance for a particular site to be unblocked, making educational exploration and serendipity on the Internet too clunky for classroom use. Filters are also ineffective—students know how to get around blocking software in school and in addition can access inappropriate content out of school. Further, reliance on filters undercuts policies that allow maturing students expanded, developmentally appropriate freedom as they increase their responsibility as digital citizens.

In the emerging infrastructure that supports anytime, anyplace learning, even these rudimentary Internet safety tools are often unavailable. The hardware and software running on most mobile wireless devices does not support the ability to manage Internet usage. This places the burden on teachers in the classroom and parents at home to ensure that students don’t access inappropriate material; don’t engage in malicious behavior, such as cyber-bullying; and are not distracted by the temptations of their devices when they need to focus on educational responsibilities.

Also, the volume of data about student learning increases enormously when much of that learning is virtually mediated, whether through digital textbooks, games, and simulations or via online interactions with peers, teachers, tutors, and experts. As data analytics improves, our ability to interpret this “cognitive audit trail” information is growing, with potential to give students, parents, and teachers diagnostic insights into a student’s learning; provide curriculum developers with feedback on how to improve a given program’s effectiveness; and enable scholars to develop findings that can refine theories of learning and instructional design.

While this opportunity to track individual learning is exciting, issues of privacy and inappropriate decision making are heightened by these new powers. Issues regarding the ownership of data are currently raising many concerns in consumer markets. In education, there is an even greater burden of responsibility to safeguard the privacy of students and to minimize abuses.

Digital Assets and Assessments

Assuming that a technology infrastructure for anytime, anyplace learning is in place and that the technical, policy, and legal hurdles of student safety and privacy are adequately addressed, the assets for learning and assessment available to edu-
Articulating Puzzles and Challenges

Assessments of learning are another opportunity mobile devices offer for innovation. As discussed in the 2010 National Education Technology Plan, teachers are in need of assessments that are diagnostic rather than summative and are linked to learning in and out of the classroom. Teachers need diagnostic tools to adequately identify, measure, and evaluate what individual students know and do not know during the act of learning, in order to formatively adapt instruction so students can overcome any misconceptions they have in moving along a learning progression. Further, students need detailed, immediate feedback to regulate their learning and to promote the development of personal agency, consciously choosing, influencing, and structuring their actions in order to achieve their learning goals. Assessments tailored to mobile devices can empower both students and teachers through the capability to record very detailed observations of students’ actions not possible via paper-and-pencil or teacher-observers, as well as to adapt to students’ responses in real time so that assessment and instruction are richly interwoven.

However, many barriers stand in the way of realizing these visions of mobile educational experiences for learning and assessment. In contrast to the medical, entertainment, and business markets, the education sector lacks a technically savvy, incentivized research and development community to bring the innovations above to maturity on mobile platforms. As a result, educators are offered less choice, older technologies, less cross-platform support, and far less innovation than other types of consumers with deeper pockets and more aggregated purchasing mechanisms. The challenge is two-fold: educators must find ways to leverage...
the innovations that come from other markets and must also make the learning/teaching sector sufficiently attractive and aggregated to spur increased investment and innovation.

A further barrier to effective development is that little is known about the strengths and limits of mobile devices for learning and assessment. In part, this is because the ecosystem of form-factors (e.g., cellphones, smartbooks, tablets, gaming platforms, e-readers) for mobile technologies is rapidly evolving. Another issue stems from the constraints of mobile devices compared to wired laptops and workstations, such as connectivity, limited screen size, and more difficult keyboard input. More substantial research investments to guide innovative development in promising directions are crucial to mobile learning and assessment.

**Human Capital**

Technology is a tool in the transformation of education, but innovation and effectiveness ultimately stem from people – the day-to-day work of educators and students. Participants in the 2010 Wireless EdTech Conference had little interest in using mobile devices to automate the processes of traditional industrial-era schooling, even though this can result in efficiencies. Instead, as discussed below, attendees focused on new models of education that support anytime, anyplace learning for every student through ubiquitous mobile broadband.

Adding mobile devices to industrial-era schools does create some efficiencies. Rather than carrying static paper texts in their backpacks, students can use digital texts delivered and updated via mobile devices. Practice and drill can become slightly more engaging when performed on interactive mobile devices rather than on paper. Homework done on mobile devices can be submitted online rather than in hardcopy, and certain kinds of digitized homework can be graded automatically. Students can use customized applications on handhelds to record and process data in various subjects, allowing them, for example, to spend class time focused on science concepts rather than on the mechanics of creating tables and charts. Students can augment traditional writing assignments using multimedia tools on mobile broadband devices to incorporate images, video, and audio recordings.

However, using mobile devices to make industrial-era schools more efficient fails to realize the true potential of this infrastructure. The history of learning technologies illustrates that automating weak forms of instruction (e.g., teaching-by-telling, drill-and-skill, canned laboratories) results in marginal improvements incommensurate with the investments required. Further, students recognize that technology is used in conventional schooling in ways far inferior to the strategies for informal learning they utilize outside of classrooms. That students dislike having to give up their learning strengths and preferences with social media when entering the classroom is unsurprising, and student misuse of mobile devices in
school settings is predictable, because they are bored and dismayed with the fundamental instructional process.

That said, there is a chicken and egg conundrum around providing professional preparation for the work of educators in 21st century educational settings: If a new teacher is trained to teach in a traditional schooling environment, teaching in a context that has undergone evolutionary, revolutionary, or disruptive transformation will be a challenge that involves unlearning (which is much more difficult than learning). However, if a novice teacher is prepared for a transformed learning environment, teaching in a traditional school will be an exercise in frustration that may well cause educators to leave the profession. Matching the preparation of teachers to the industrial-era model of schooling in which they will initially teach creates inertia that holds back the process of transformation.

Also, regardless of the type of institutional innovation for which educators are prepared, we know that “teachers teach as they are taught.” For teachers to inculcate students’ effective use of mobile devices for learning, their own professional development must intensively utilize mobile devices in a comparable manner. Further, the 2010 National Education Technology Plan argues that teacher learning ultimately must continuously occur through ongoing professional learning communities — online and face-to-face — rather than episodic training experiences. These changes will require massive shifts in preservice teacher education and inservice professional development. Both are organizational processes deeply resistant to change.
Students have the opportunity 24/7 to be productive in ‘snippets of time’ in much the same way professionals are when using their smartphones to communicate.
The participants in the 2010 Wireless EdTech Conference not only identified substantive puzzle areas that make mobile broadband technology challenging to implement in education, but also analyzed these problems to frame strategies for addressing issues from a systemic, collaborative, cross-sector perspective. Insights from the technology industry, educators, policymakers, and scholars drove a rich discussion that substantially moved the dialogue forward.

**Devices and Infrastructure**

*How can we best balance educational investments between the classic infrastructure of wired computers and the emerging infrastructure of wireless mobile devices?*

History documents a difference in kind, not just in degree, in moving from a computer lab model of technology access to a 1:1 model based on laptops. In the 1:1 model, the computer becomes a personal tool that is available as needed for focused time on projects or quick access to information. Students can retrieve information from the Internet, occasionally share across distance information on assignments, and take advantage of individualized instruction, such as math drills, typing tutors, and spelling games, all customized to personal level and pace. This shift is similar to the change in industry when professionals moved from sharing computer access among a department to a personal computer on every desk – professional work was transformed. Initially, productivity improvements were achieved as spreadsheets and databases sped up laborious, time-consuming tasks; but the radical gains occurred with changes in the nature of work, taking advantage of real-time information to deliver inventory, products, and information just-in-time. Professionals learned to collaborate remotely across geographies and time zones.

Conference participants identified an equally dramatic difference in kind moving from a 1:1 laptop model to a 1:1 mobile broadband model. Just-in-time access becomes available anytime, anyplace. Students have the opportunity 24/7 to be productive in “snippets of time” in much the same way professionals are when using their smartphones to communicate with their colleagues and access enterprise systems as needed. Just as access to rich information allows professional teams to become self-organizing and hyper-productive, multimedia access to the Internet, curriculum, and their learning communities enables students to assume responsibility for their own learning, with much of the educational experience taking place outside the classroom, freeing precious instructional minutes for teachers to foster interpretation and reflection in class. Participants noted that learners find working in small teams using mobile devices easier than with laptops; the screens of mobile or tablet devices do not interpose barriers between students, and cellphones are familiar tools for many students.

An implementation that highlights this difference in kind is Project K-Nect, described at the conference by Shawn Gross of Digital Millennial Consulting and Dr. Kathy Spencer, Superintendent of Onslow County Schools. In Project K-Nect, students and teachers were provided with supplemental math content on
smartphones. These problem sets included Java visualizations of math problems followed by a description where the specific numeric values varied from student to student. The project included monitoring of student use of the smartphones combined with an acceptable use policy signed by every participating student. Students were provided with a virtual space for blogging, threaded discussion, and posting videos. With these simple building blocks, both expected and counterintuitive results emerged.

First, as was expected, students found the technology engaging and consequently spent more time on task, which was considered a positive outcome in and of itself. Of greater interest, the 24/7 connectivity enabled these students to be productive outside of the walls of the classroom and hours of the school day in a very different way than without the technology. Students began self-organizing into learning communities where they mentored each other in math, whether they were on their hour-long bus ride in this rural community, at work, or at home late in the evening. Students who would normally come to school without having been successful in homework were now arriving prepared for class. Students who completed their assignments without aid from peers now could achieve social stature by helping other learners to succeed. The work and roles of students shifted in response to the new capabilities afforded to them by mobile broadband devices.

As the work of students shifted, the teachers in Project K-Nect supported and fostered these changes. Rather than using technology merely for efficiencies and codifying traditional practice, they experimented with leveraging student use of technology outside the classroom to transform their instruction. Many teachers monitored the student use of blogs and discussions outside of school, both providing critical help and support to individual students and gaining a richer diagnostic insight into each student’s learning, allowing them to adapt the next day’s instruction according to pupils’ needs. Students were given assignments outside of the classroom, such as photographing examples in nature of mathematical relationships that were then the source for rich discussion in the classroom. Classroom work evolved to problem-based assignments in which students collaborated, critiqued each other’s reasoning, and focused on explaining mathematical concepts in authentic situations.

Although the mobile broadband devices did not cause the transformation, they were the key enabler that allowed engaged students and motivated, thoughtful educators to transform teaching and learning in select classrooms in North Carolina. Today, many of the students who began with Project K-Nect taking Algebra I, with no expectation of completing anything but the minimum required math classes, are successfully taking AP calculus. Many of their teachers proclaim that they will never go back to using the instructional methods they employed before the Project K-Nect experience.

Based on this and similar examples discussed at the conference, participants were keenly interested in moving rapidly to an infrastructure that supports 24/7, anytime, anyplace mobile broadband access for every student. They discussed ways
to minimize further investment in classic infrastructure and on finding creative methods for funding the emerging mobile broadband based infrastructure. In particular, participants identified that existing school infrastructure is generally cumbersome and costly to maintain. In a majority of districts, one technical professional is responsible for the infrastructure of many schools; software applications, integration, and usage are often home-grown and fragile; and the availability of resources is not well matched to the demand.

An example of using new types of infrastructure to improve this situation was described by Phil Emer, Director of Technology Products at the Friday Institute at North Carolina State University. In North Carolina, Emer works closely with school districts to transition from fragmented, expensive IT solutions to aggregated servers supported at the state level. Schools save money because they pay for only the computing services they actually use. Since there is professional support of these aggregated servers, the quality of the IT infrastructure is improved. Based on these successes, the state committed to funding a type of cloud computing infrastructure that can readily evolve to support 1:1 mobile broadband devices in the hands of educators and students. By investing primarily in emerging infrastructure, North Carolina avoids the long-term expense of maintaining additional classic infrastructure that is rapidly becoming obsolete. This gradual transition is creating a concomitant opportunity for educational transformation in North Carolina.

The consolidation of back-end infrastructure can result in net-cost savings, but the expense of providing mobile wireless devices and mobile broadband is still substantial. In particular, participants identified the high cost of current network services plans as a huge barrier. Three approaches to addressing these costs were described by conference participants. The first example of cost mitigation came from Bailey Mitchell, Chief Technology and Information Officer at Forsyth County Schools in Georgia. In order to enable 1:1, Forsyth encouraged students to bring their own devices to school. Students brought laptops, cellphones, and even Nintendos – anything with Internet access. When there weren’t enough devices to go around, students would share. Mitchell also discussed the challenges of working with such a “bring your own device” (BYOD) model, providing infrastructure and software that would function across platforms and surmounting limitations when many students did not have Internet access outside the classroom.

The second example came from Project K-Nect (discussed earlier) for several North Carolina High Schools over the past three years. Funding for these devices and mobile broadband services has come from a wide array of sources, including preferred pricing from operators, grants from corporations and internal funding from the schools themselves.

A third example was highlighted by FCC Chairman Julius Genachowski. The FCC is embarking on a $10 million pilot project to investigate the use of E-rate funding to provide mobile broadband for educational purposes anytime, anyplace.
– not just on school campuses. If successful, the expansion of this program would be fundamental to ensuring that economically disadvantaged students are able to enjoy the myriad of educational benefits of having mobile broadband connectivity at home and elsewhere, off school grounds.

As these illustrations show, educators are exploring alternative models that provide mobile broadband to all students. In addition, vendors indicated that both device and broadband costs are declining and with increased volume, they are gradually becoming more affordable. Some providers are recognizing education requires specialized business models that include leasing devices, placing caps on data usage, and turning off data plans during months when schools are not in session.

Along with a back-end infrastructure that is tolerant of advances in mobile devices and new strategies for affordability, industry participants predicted rapid evolution in the features of mobile wireless devices that will support innovations in digital content and pedagogy. For example, new screen technology will enable extremely low-power, bright screens that work even better in sunlight than indoors, enabling anytime, anyplace learning that is as effective outside as inside. Vision-based augmented reality allows a mobile device’s camera to position informational overlays on the field of view, making possible educational simulations and experiences in the real world that are supplemented by digital data and visualizations. Super-low-power computing devices, such as smartbooks, will support all-day connected computing experiences – always-on, always-connected, and location-aware – without the need for frequent recharging of batteries.

**Safety and Privacy**

*How can we use Internet access and digital student data to enhance education, while preventing various forms of abuse?*

Of all the puzzles and knots to be untied, conference participants thought the issues of student Internet safety and privacy may require the most diverse set of stakeholders to resolve. This theme involves decisions at the philosophical, policy, software development, infrastructure, and device manufacturer level. Philosophically, there is a question of whether students should be blocked from the Internet as a default, with exceptions granted for specific educational material, or whether students should be granted access to the Internet as a default, with specific inappropriate material blocked. The former philosophy has simple technical solutions, but conference participants considered it counterproductive to the goals of educational transformation. The latter supports both evolutionary and revolutionary transformation, but creates two new burdens: educating students in the appropriate and safe use of the Internet, and creating flexible technology solutions that allow greater supervision and control of novice Internet users while providing more freedom to experienced and responsible digital citizens.

At the policy level, there are disagreements from district to district and parent to parent of what constitutes appropriate and inappropriate Internet content. This
places a burden on citizens, parents, and educators to thoughtfully identify the limits they wish to place on student Internet use and a requirement on technology to implement clear, effective, and understandable controls that will enforce those policies.

As discussed earlier, traditional state-of-the-art Internet filtering is inadequate to meet these needs in a mobile broadband environment. However, network operators and device vendors indicated they are investigating new software approaches. An example is Netsweeper, a company that provides Internet filtering and web threat solutions with flexible policy management. This service is currently implementing solutions that work across networks, including WiFi and cellular data networks. In addition, because of the cloud-based nature of their solution, the Netsweeper implementation supports policy management across a student’s multiple devices (e.g., desktops, laptops, smartphones), as well as an approach to monitoring a student’s overall Internet usage.

The effectiveness of this kind of software solution depends, in turn, on the security implementations of device manufacturers. In order for Internet filtering and monitoring to be effective, the security on the mobile devices needs to ensure that all Internet access passes through the Internet filtering control software, plugging the security holes and work-arounds that students use routinely to get past computer-based Internet filtering software.

Along with Internet usage, students’ interactions with digital content can be instrumented in ways that create rich data streams, or “cognitive audit trails,” to illuminate a pupil’s detailed learning process. Valuable diagnostic information can be gained, such as: How long did it take the student to work through various types of materials? At what points in problem-solving does the student consistently refer back to the text or search the Internet? What kinds of challenges motivate the student to seek help from peers or mentors? The collection and analysis of this data holds tremendous promise in providing real-time, meaningful feedback to students, their parents, and their teachers. Other potential uses include feedback to curriculum developers regarding the effectiveness of specific digital offerings and to scholars researching theories about educational interventions.

However, the ability to interpret such data is immature, and inappropriate use of the data to make assumptions about a student’s eventual capacities and limit a child’s opportunities is a significant risk. As this data begins to surface, it is critical to rely on the judgment of effective educators to interpret and complement these digital datastreams. In addition, the preservation of student privacy is important, but complex. If every educational provider has unique mechanisms for providing anonymity and privacy, instead of utilizing a seamless and consistent set of policies and protocols, it is easy for personal information to leak through the cracks. Systemic design of data collection and dissemination that protect the privacy of children must be a critical element of applying data analytics to education.
Digital Assets and Assessment

How can we drive innovation in digital learning materials and services when the education market is notoriously fragmented and slow to adopt, and when the strengths and limits of mobile devices for learning are not well understood?

Our industry has barely scratched the surface of innovations in the areas of digital assets and assessments. The challenge is to stimulate broad-based and rapid innovation of the sort that platforms such as smartphones and tablets are driving in consumer markets. Conference participants noted that a basic infrastructure of cloud computing and mobile wireless devices can serve as the platform for education innovation. If the education equivalent of apps stores was developed and accessible to any student, teacher, school district, or state, it would provide a significant aggregate market that could be reached by researchers, entrepreneurs, and educators developing digital assets. The potential size of the market combined with ease in reaching customers could spur meaningful innovation. Additional stakeholders are involved in enabling this model, including those responsible for curriculum adoption and standards for assessment. This creates a further layer of “knots” to unravel regarding how and whether to repurpose textbook monies for digital assets, and to what degree teachers should have the freedom to explore various materials in their classrooms.

Participants also observed that, once the technology infrastructure is in the hands of students, many Web 2.0 products that are developed for the consumer market are repurposed for educational use. The advantage of using commercial products such as Google docs, blogging tools, and podcasting lies in the deep technical support and rapid evolution of those products that are supported by the large user base. The disadvantage lies in the additional development of Internet skills and ethical decision making required of students in order to protect their personal information and public reputation.

Participants stated that digital assessments are a key enabler of educational transformation. Technology potentially allows educational innovations to be quickly developed and disseminated at scale through a ubiquitous wireless infrastructure for anytime, anyplace learning; but valid assessments are the mechanism by which the effectiveness of those innovations are evaluated. Standardized digital assessments are also the key to moving to a “certification” process that allows students to advance as they master material at their own pace. Digital assessment is an evolving science where significant innovation is occurring beyond the well-documented limits of paper-and-pencil, item-based tests, but is limited by lack of research funding. In addition, as with digital assets, a marketplace for assessments that is available both to schools and to private citizens may help spur innovation.

Digital marketplaces are only useful if they guide the buyer towards the content and assessments that are well suited for their particular situation. There is much research to be done regarding the combinations of crowdsourcing, curation, and social recommendation that can make such a marketplace an effective facilitator of
educational innovation. Educators are now exploring open source approaches to a digital marketplace for education, such as the Open Educational Resources (OER) Commons. The OER Commons addresses some of the critical challenges of sharing, finding, and distributing education content. Educators are able both to share content they have developed and to find and use content from other educators across the country. Content is organized according to subject matter and grade level, making it easier to identify appropriate material for a particular classroom. Issues of licensing are clarified, with developers of digital assets choosing one of several plainly worded, simple to understand license models that govern how their material is shared and used, protecting the intellectual rights of the authors. This is a strong example of how crowdsourcing of educational digital assets can occur.

However, the crowdsourcing approach to digital marketplaces has limitations. The richer the set of material available, the more challenging it is for an educator to find just the right assets for a given lesson. Also, materials are in different formats and of varying granularity, which places a burden on educators to modify assets for their customized usage. At present, teachers find that it is often more work to find and adapt other educators’ materials than to create new assets from scratch. Further, without an overarching organizational framework that identifies how individual materials fit into a complete curriculum, developing students’ learning progressions and building rich sequences of content is difficult.

Quality is also a concern in crowdsourcing models. For example, the educational applications available to smartphone owners in digital marketplaces typically have significant limitations. These apps often provide an engaging format for very traditional, limited training, such as flash cards, computation practice, or memorization of facts. Without an overall organizational framework for curriculum and absent an understanding of new ways of teaching that support deep student exploration of topics, these apps have marginal value for 21st century learning.

As discussed in the 2010 National Education Technology Plan, open source materials are promising, but currently limited for educational transformation. Participants indicated that investment and research into better digital marketplace models for education are crucial for realizing their potential.

Human Capital

How can we empower educators and other stakeholders to realize the potential of anytime, anyplace mobile learning through evolutionary, revolutionary, and disruptive transformations that move beyond the model of industrial-era schooling?

Effectively developing educators’ capacity requires identifying the desired outcomes of investing in expanded skills and knowledge. As discussed earlier, few conference participants favored the dominant form of educator training, which focuses on automating traditional instruction with mobile devices – or worse, banning them entirely from schools. This was seen as treating the symptoms of an ineffective educational approach rather than addressing fundamental underlying problems.
As an alternative, some conference participants championed professional development that advances the evolutionary transformation of schooling to transcend traditional barriers on where, when, how, and with whom learning can happen. Always on, always connected mobile wireless devices enable students to access not only educational content, but also their learning communities – whether at school, at work, at after-school activities, or at home. Using mobile-based social media, students can collaborate and provide peer tutoring both inside and outside of school. Classroom time can focus on demanding cognitive and psychosocial experiences, such as collaborative interpretation and inquiry, because outside of school students can readily access foundational resources on mobile devices to prepare for these tasks. “Homework” can include participating in authentic field work, such as collecting data, performing interviews, and photographing architecture, as well as engaging in augmented reality experiences that foster transfer of academic learning to real-life applications. Conference attendees noted that, in a strategy of evolutionary transformation, professional development for educators must center on how to structure student assignments that emphasize and support independent and collaborative work inside and outside the classroom.

In contrast, some participants advocated professional development to empower revolutionary transformation, replacing industrial-era schooling with a new 21st century model of formal education, comparable to the shift a century ago when the rural one-room schoolhouse was displaced by our current strategy of schooling. In a revolutionary educational model, society would take responsibility for providing personalized learning experiences designed to meet the needs of every learner, lifelong and lifewide, delivered in and out of dedicated educational settings such as schools and colleges by a variety of educational roles spanning teachers, mentors, coaches, and tutors. As an illustration, a “distributed” model of 21st century education would encompass a wider context of formal learning outside of classrooms that includes parents, informal educators such as museum and library staff, community members, and older peers, who collaborate with teachers in achieving equity and excellence. Schools of education would prepare, license, and provide professional support for teachers, tutors, coaches, and mentors who were trained to orchestrate their coordinated activities. Assessment would shift from a quality control process that ranks students via testing after a certain number of hours of instruction to a certification process that recognizes student mastery no matter how, or at what pace, that mastery was gained. Students could augment their education with topics that are of particular interest to them and could move ahead based on their mastery of a subject, rather than on the number of hours they have spent in class.

The affordances of mobile broadband devices can now support such a broader suite of roles involving “teaching” and a range of educational delivery systems beyond the walls of the school. Conference attendees noted that professional development for revolutionary transformation would center on learning models of “teaching” that involve a rich partnership within a team of other educators, parents, mentors, coaches and tutors to support each student’s learning and certification.
Other participants felt change would take place primarily through disruptive transformation, based on analogies to business, in which structural innovations take place through new institutions forcibly displacing traditional organizations by developing new types of products and services. Given that industrial-era schools are incredibly capable at resisting change, and that our culture’s tendency is to use technology to automate rather than to innovate, evolutionary transformation is very difficult to achieve. So many divergent viewpoints exist in our society about the role of education that collective revolutionary transformation is unlikely, barring some major cultural change. As a result of these barriers to deliberate innovation of formal education, mobile broadband devices might foster alternative models of learning that initially serve only those disaffected consumers who can afford an “outside the box” approach, but ultimately could disrupt and replace industrial-era schooling. Attendees felt that preparation and professional development of educators for disruptive transformation should focus on skills of entrepreneurial innovation and scaling up successes.

To aid all these types of professional growth regardless of the form of educational transformation selected, mobile devices can help to create career-long personal learning networks within and across schools, pre-service preparation and in-service educational institutions, and professional organizations. The goal of these career-long personal learning networks would be to make professional learning timely and relevant as well as an ongoing activity that continually improves practices. As discussed in the 2010 National Education Technology Plan, these networks and other resources would enable educators to take online courses, to tap into experts and best practices for just-in-time learning and problem solving, and to provide tools so that educators can develop resources and share them with their colleagues.

In other words, mobile broadband devices can empower the professional development of teachers and other adults involved in the educational process in all the many ways they can enhance student learning, as described throughout this report. And, all the limitations and unknowns that currently constrain realizing these advantages for students also are holding back achieving their power to build educators’ capacities for growth, innovation, and leadership.
Attendees agreed on the critical importance of educational transformation and articulated tremendous potential for mobile broadband devices to advance learning.
The conference was not designed for participants to produce formal recommendations or detailed strategies. Instead, it was a forum for dialogue among leaders in various industries and designed to enable stakeholders who do not usually communicate with each other to have extended conversations about visions and opportunities, challenges and knots to untie together. Nonetheless, attendees agreed on the critical importance of educational transformation and articulated tremendous potential for mobile broadband devices to advance learning. They saw a ubiquitous technology infrastructure that supports anytime, anywhere learning as central to 21st century education. Participants advocated for ensuring that every student and educator has a mobile broadband device, with training and support for its optimal usage to empower learning, and urged the systematic exploration of mechanisms to fund such an infrastructure for every district, school, and student, regardless of economic status. Attendees indicated that they greatly appreciated having an event that centered on mobile learning and hoped that similar conferences would be held in the future so that stakeholders can develop a community that effectively champions these initiatives. In response, Qualcomm has convened a working group of leaders in mobile learning that meets periodically to build on the insights from the conference. Also, Qualcomm will sponsor the 2011 Wireless EdTech Conference on October 20th, in Washington, D.C.

Attendees’ insights suggest that they generally endorse the National Broadband Plan and the 2010 National Education Technology Plan. Recommendations from the latter that particularly bear on mobile learning themes heard at the conference include:

1.3 States, districts, and others should develop and implement learning resources that exploit the flexibility and power of technology to reach all learners anytime and anywhere.

2.3 Conduct research and development that explores how embedded assessment technologies, such as simulations, collaboration environments, virtual worlds, games, and cognitive tutors, can be used to engage and motivate learners while assessing complex skills.

3.2 Leverage social networking technologies and platforms to create communities of practice that provide career-long personal learning opportunities for educators within and across schools, preservice preparation and inservice education institutions, and professional organizations.

4.2 Ensure that every student and educator has at least one Internet access device and appropriate software and resources for research, communication, multimedia content creation, and collaboration for use in and out of school.

Working to advance these larger initiatives seems the best way to achieve the potential of mobile broadband learning to enable educational transformation.
Appendices
Marie Bjerede  
Founder  
e-Mergents

Marie Bjerede is a writer, speaker, and champion for education reform. She believes people acting as independent agents can collaborate to get more done and live happier lives and she’s seen, first-hand, how technology co-evolves with that model. Bjerede has spent a quarter century in the wireless communication industry working in many roles — from embedded software coder to leadership geek to education advocate. From this front-row seat to the wireless revolution, she’s seen mobile broadband bring the transformative potential of the Internet to industries and communities. But she’s also watched as schools have been left behind. With her wireless communication background, she’s now challenging technical, economic, social, and systemic obstacles to bringing every student the advantages afforded those with 24/7 mobile connections to their learning content and communities.

Daniel C. Edelson, Ph.D.  
Vice President for Education, National Geographic Society  
Executive Director, National Geographic Education Foundation

Daniel C. Edelson, Ph.D., is Vice President for Education at the National Geographic Society and Executive Director of the National Geographic Education Foundation. In these positions he oversees the National Geographic Society’s outreach to educators and directs the Society’s efforts to improve teaching and learning in geography and related disciplines. This work includes the development of resources for educators and learners of all ages, the delivery of professional development programs for educators, the implementation of public awareness and public engagement programs, and grant-making to support geographic literacy initiatives throughout the U.S. and Canada.

Edelson began his career in education as a researcher in learning technologies and has focused throughout his career on environmental and geographic education. Prior to assuming his current position in 2007, he was a professor in education and computer science at Northwestern University for 14 years. As part of his research and development activities at Northwestern, he developed several products for publication, including My World GIS™, a geographic information system for educational use; “Investigations in Environmental Science,” a case-based environmental science textbook for high school; and a number of middle school earth science units. He also created professional development programs for educators from middle school through college and led several large-scale instructional reform efforts in urban public schools.

Edelson has written extensively on motivation, classroom teaching and learning, educational technology and teacher professional development, drawing on research conducted with colleagues and students. He is an author of more than 50 papers in journals, edited books and conference proceedings, including “The Cambridge Handbook of the Learning Sciences,” “The International Handbook on Science Education,” Journal of the Learning Sciences, Journal of Research on Science Teaching, and The Science Teacher.

Edelson received his Ph.D. in computer science from Northwestern University and his B.S. in engineering sciences from Yale University. He lives in Chevy Chase, Md.

Michael M. Flood  
Education Practice Manager  
AT&T Advanced Enterprise Mobility Solutions

Michael Flood focuses on Education Technology’s enabling role in the transformation of K-12 and Higher Education with a particular emphasis on mobility and connectivity. At AT&T, Flood’s role involves him in strategic opportunities, product and service design, marketing strategy, vertical industry knowledge transfer to AT&T’s education sales force and executive briefings. Externally, Michael serves as an AT&T liaison to the Education community for media and public relations, association memberships (EdNET, CoSN, ISTE, AASA, NSBA, etc.), business development and events.
Flood holds a B.S. in Management from the Georgia Institute of Technology and an M.B.A. from Emory University’s Goizueta Business School. In Atlanta, Michael serves as the Chairman for the Board of Advisors to AIESEC (the world’s largest student-run organization) and as a volunteer with AFS Intercultural Programs (a high school and teacher international exchange program). Flood is a founding member of the Georgia Gwinnett College Technology Advisory Council and guest lectures on Education Technology at Georgia Perimeter College. Flood joined the EdNET Advisory Board in the Spring of 2010.

Tom Greaves
CEO and Founder,
The Greaves Group, LLC

Tom Greaves is recognized as a visionary in the conceptualization, design, engineering and marketing of technologies for schools. He holds multiple patents and patent disclosures for student computing technologies and has been involved in hundreds of 1:1 computing projects at the district, state and federal level. He has published widely and is currently is the Software Information Industry Association (SIIA) Mobile Computing Trends Watch Report Editor. Greaves’ recent work is highlighted by the 2006 and 2008 America’s Digital Schools surveys which have extensive coverage of 1:1 computing devices and implementations.

Greaves has 40 years experience in the computer industry, including 26 years at IBM. During the last several years at IBM, he was a member of the IBM EduQuest senior management team, responsible for educational hardware product marketing and development. His group developed many educational products including the IBM Personal Science Lab, and Mammals, a Multimedia Encyclopedia, the first commercial software product using software video playback. Co-produced with National Geographic, Mammals became the first product of its type to be recognized on the New York Times Best Sellers list.

In 1996 Greaves co-founded NetSchools, along with his mentor, Jim Dezell. NetSchools was the first company to focus on comprehensive curriculum integrated, Internet connected 1:1 laptop solutions. NetSchools’ ground-breaking work lead to technology transformed schools that exhibited dramatic improvements in student achievement in the poorest and most remote of America’s schools.

Throughout his career, Greaves has played a key role in the design and development of seven computers specifically targeted for the K-12 market, and managed the product marketing activities for over two hundred award winning educational software titles. Working with Federal and state legislators, he implemented technology-transformed schools in several National 1:1 Educational Technology Demonstration programs. Following the sale of NetSchools to PLATO Learning in 2002, he founded The Greaves Group, a strategic education consulting organization. Along with his partners, the Greaves Group focuses on assisting clients develop their vision of the future in educational technology and then implementing programs that help realize that vision.

Greaves believes the work has only just begun which will lead to dramatic improvements in student achievement.

Shawn Gross
Managing Director
Digital Millennial Consulting LLC

Shawn Gross’ educational training, public policy involvement, and his private sector education technology experiences position him as a digital learning thought leader in mobile learning. Through his efforts to identify optimal uses of technology to increase student achievement, Gross designed, developed and implemented the 1st US mobile learning initiative in K-12, Project K-Nect. Gross assembled a team of experts comprising software developers, curriculum specialist, curriculum developers, professional development staff and education researchers in order to achieve the goal of demonstrating the efficacy of utilizing mobile devices to increase student achievement. In addition to the development, implementation and management of Project K-
Nect, Gross was responsible for launching the first US Mobile Learning Conference. As founder and Director of DMC, he provides the guidance and product development for this project. He has extensive public sector experience as senate legislative aide and senior policy advisor. He was honorary executive to the Congressional Web Based Education Commission, a contributing author to the National Education Technology Plan, chairperson to the Washington, D.C. Mayor’s Task force on Education Technology, and the author of a portal implementation technology guide for 1997 Summit of the Americas. His work in the private sector includes Sun Microsystems and Apple Computer, in product development and marketing, K-12 education practice, e-learning account management, and as government relations liaison on issues of education technology. Gross received his BA in International Studies from The Ohio State University; and both his MBA and Masters of Public Policy and International Affairs from the University of Pittsburgh.

Brian Jepson
Senior Editor
O’Reilly Media

Brian Jepson is a Senior Editor for O’Reilly Media. He co-wrote Mac OS X for Unix Geeks, and has written or edited a number of other tech books. He’s also the co-founder of Providence Geeks, and serves as an all-around geek for AS220, a non-profit, unjuried, and uncensored arts center in Providence, Ri.

Eric Klopfer
Associate Professor of Science Education Director, Teacher Education Program
Massachusetts Institute of Technology

Eric Klopfer is Associate Professor and the Director of the MIT Scheller Teacher Education Program and the Director of the The Education Arcade. His research focuses on the development and use of computer games and simulations for building understanding of science and complex systems. His work combines research and development of games and simulations, from initial conceptualization, through implementation, piloting, professional development and end-user research. He is the creator of StarLogo TNG, a platform for helping kids create 3D simulations and games using a graphical programming language, as well as several mobile game platforms including location-based Augmented Reality games, and ubiquitous casual games. He is the author of “Augmented Learning,” a new book on handheld games and learning from MIT Press, and is co-author of the book, “Adventures in Modeling: Exploring Complex, Dynamic Systems with StarLogo.” He is a founding member of the Learning Games Network.

Don Knezek, Ph.D.
Chief Executive Officer
The International Society for Technology in Education

Don Knezek, CEO of the International Society for Technology in Education (ISTE*), is recognized internationally for his leadership in transforming learning through effective and innovative uses of technology. He has led innovation in the classroom, from the district and state department of education perspectives, and through large multi-state projects. Dr. Knezek has recently served as Director of The National Center for Preparing Tomorrow’s Teachers to Use Technology (NCPT3) and Co-Director for the National Educational Technology Standards (NETS) Project – both important ISTE initiatives.

Don is committed to universal education and is a tireless advocate for professional development in context and to 24/7 student access to quality digital learning environments. He is providing consulting services to ministries of education around the world sharing his valued expertise in preparing education leaders and teachers to thrive in an increasingly digital world.

Keith R. Krueger, CAE
CEO
Consortium for School Networking (CoSN)

Keith R. Krueger is CEO of the Consortium for School Networking (CoSN), a U.S. nonprofit organization that serves as the voice of K-12 technology leaders, especially school district CTO’s, who use technology strategically to improve teaching and learning.
In 2008 he was selected by eSchool News as one of ten people who have had a profound impact on educational technology in the last decade.

He also serves on the Advisory Boards for eSchool News, Scholastic Administraetor Magazine, the American Productivity Quality Council, the Virtual High School Global Consortium, the Friday Institute at NC State University and the Wireless Reach Advisory Board. He is a past Board Member for the Organizations Concerned about Rural Education (OCRE) and served for many years as Board Member and Treasurer of the National Committee on Technology in Education & Training (NCTET).

Krueger has a global reputation as a key thought leader. He has represented the National Science Foundation on a joint EU/US committee planning a joint research agenda for eLearning, and served as an NGO delegate to various United Nations and G8 international ICT in education meetings. He has organized senior level U.S. delegations to visit Australia, Asia and Europe to examine best practice in educational technology.

As a Certified Association Executive, he has a long background in nonprofit/association management and is particularly interested in using information technologies for education, health and libraries. He has a Masters of Arts in Public Affairs from the Hubert H. Humphrey Institute at the University of Minnesota.

**Michael J. Schmedlen**  
Director, WW Education  
Lenovo  

As the Director of Worldwide Education, Schmedlen is responsible for constructing relevant solutions which improve outcomes for students at all levels of academia. He collaborates across Lenovo lines of business to ensure that educational needs are addressed in the research, development and application of our offerings. Most importantly, he listens to teachers, professors and administrators to ensure that the best innovations are shared globally, and that these ideas are incorporated into Lenovo’s solutions to help institutions maximize their performance. Schmedlen has served as a director on a number of local, state and national education policy boards including the Partnership for 21st Century Skills and the North Carolina Public School Forum. He currently leads the Education Research Initiative (ERI) in partnership with Microsoft and Intel Corporations. Schmedlen received his undergraduate degree in Latin from Colgate University and is currently pursuing a Masters of Business Administration degree at Duke University.

**Patrick Weinmayr**  
Business Development Manager, Strategy and Alliances Department  
SMART Technologies  

Patrick Weinmayr is the business development manager for the Strategy and Alliances department at SMART Technologies. The department is responsible for strategic alliances including company acquisitions, technology licensing, and strategic alliances.

Weinmayr brings 15 years of marketing, operational and management experience in the areas of software, hardware and networking. He holds a degree in commerce from notable Canadian and Russian universities and has worked in the area of business research, channel marketing, and IT and networking throughout his career. Weinmayr initially joined SMART in 1996 in channel marketing and development.
2010 Wireless EdTech Conference Speakers

Kwasi Asare
Associate Director, Office of Education Technology
US Department of Education

Kwasi Asare is associate director of education technology at the US Department of Education. He is responsible for teaching and learning technology strategy, policy, and research in the Office of Education Technology. He leads internal and external teams, fosters partner projects, and drives education technology initiatives in support of the Secretary’s priorities.

Prior to joining the department, Asare was a senior product manager in the Tivoli brand of IBM’s Software Division. In this role, he was responsible for the profit and loss of compliance software helping customers satisfy regulatory requirements.

Previously, Asare was the worldwide product marketing manager for IBM’s energy management portfolio and brand manager. In that capacity, he was a key leader in the establishment of IBM’s market presence in energy efficiency as part of a larger program for a smarter, greener, more efficient planet.

Asare has held positions in product management, brand management, software development, consulting, business development, and strategy. Asare holds a bachelor’s degree in computer science from Wake Forest University and a master’s degree in business administration from the UNC Kenan-Flagler Business School. He and his wife, Tamika, reside in Arlington, VA.

Kristin Parsley Atkins
Director, Wireless Reach
Qualcomm

Kristin Parsley-Atkins is director of Wireless Reach™ within Qualcomm’s Government Affairs department. Wireless Reach supports programs and solutions that bring the benefits of broadband connectivity to communities globally. By working with partners, Wireless Reach creates new ways for people to communicate, learn, access health care, sustain the environment and reach global markets using next-generation mobile technologies. The goal of Wireless Reach is to create sustainable and meaningful projects that strengthen economic and social development in underserved communities with a focus on education, entrepreneurship, health care, the environment and public safety. To date, Wireless Reach has 64 projects in 27 countries.

Atkins oversees Wireless Reach initiatives in Europe, Africa, Southeast Asia and the United States, with a special focus on K-12 education in the U.S. Wireless Reach believes the use of “always on, always connected” mobile devices in the hands of K-12 students has the potential to dramatically improve educational outcomes by providing both unprecedented access to learning resources and the ability to collaborate with peers and advisors in and out of the classroom. To help drive the wireless mobile device education platform forward, and as a step towards demonstrating the use of wireless devices as a productive educational tool in and out of school, Wireless Reach is supporting a number of pilot studies that are investigating various methods of how to overcome the barriers of adoption.

Previously, in her role as manager of corporate communications for Qualcomm, she was responsible for public relations projects involving health care, embedded technology, India and the Wireless Reach initiative.

Prior to joining Qualcomm, Atkins was the manager of public communications strategy and media relations for the US-based operator Cricket Communications, Inc. Atkins received her Bachelor of Arts degree from Southern Methodist University in Dallas, Texas.
Paul Besozzi  
Partner, Technology and Communications Group  
Patton Boggs

Paul Besozzi concentrates in the wireless, broadband and emerging technology areas. His extensive experience over 25 years in these fields includes regulatory, transactional, legislative and litigation matters for clients ranging from wireless service providers to resellers of long-distance service, including cellular, personal communications services, specialized mobile radio, point-to-point microwave, advanced wireless services and other emerging wireless technologies.

Besozzi represents clients before the federal and state regulatory and policy-making agencies and organizations, including, for example, the Federal Communications Commission, National Telecommunications and Information Administration, Rural Utilities Service, Congress and state public service commissions, in matters relating to rulemaking, ratemaking, licensing, adjudication, enforcement, compliance and grant opportunities, such as those available under the American Recovery and Reinvestment Act of 2009. He also advises applicants and appellants dealing with the Universal Administrative Company, particularly on E-Rate matters. His extensive transactional experience includes asset and stock transactions and a broad variety of commercial and business agreements for the entities he advises, including spectrum leases, interconnection arrangements and wireless infrastructure agreements.

Before joining Patton Boggs, Besozzi was a partner in his own telecommunications law firm for a decade, after serving as general counsel and minority counsel to the U.S. Senate Committee on Armed Services. Besozzi served as a member and editor of the Georgetown Law Journal during law school and was elected Phi Beta Kappa while attending Georgetown University School of Foreign Service.

Karen Billings  
Vice President, Education Division  
SIIA

Karen Billings has over 30 years of experience in the education technology industry with positions in management, development, marketing, sales, and classroom teaching. At SIIA she drives the association’s work with its 140 member companies for whom educational publishing is a primary business. Prior to SIIA, Billings, was Vice President, Major Business Initiatives for bigchalk Inc, where she drove relationships with major industry partners to respond to new business opportunities and Vice President and General Manager of its MediaSeek Division. She worked at Microsoft Corporation, managing K-12 Strategic Relations and at Claris Corporation, where she ran the Worldwide K-12 and Higher Education Marketing Programs. She served as Director of Sales at Logo Computer Systems, Inc. and as an Executive Editor in the School Division at Houghton-Mifflin Company.

Marie Bjerede  
Founder  
e-Mergents

Marie Bjerede is a writer, speaker, and champion for education reform. She believes people acting as independent agents can collaborate to get more done and live happier lives and she’s seen, first-hand, how technology co-evolves with that model. Bjerede has spent a quarter century in the wireless communication industry working in many roles — from embedded software coder to leadership geek to education advocate. From this front-row seat to the wireless revolution, she’s seen mobile broadband bring the transformative potential of the Internet to industries and communities. But she’s also watched as schools have been left behind. With her wireless communication background, she’s now challenging technical, economic, social, and systemic obstacles to bringing every student the advantages afforded those with 24/7 mobile connections to their learning content and communities.
Ben Daley
Chief Operating Officer and Chief Academic Officer
High Tech High
Ben Daley is the chief operating officer and chief academic officer for High Tech High (HTH). He acts as an advisor to fifteen high school students and teaches and advises students in the HTH Graduate School of Education. Daley joined High Tech High to teach physics as a founding faculty member in fall 2000. He was the second director of High Tech High Original Recipe.

A New Hampshire native, Daley wisely moved to San Diego, CA at the first opportunity. As a student at Haverford College, Ben majored in physics and was credentialed in secondary physics and math. After graduation, he traveled to the Philippines and taught science and math at an international school in Manila. Upon his return to the U.S., he taught physics and AP physics at the Madeira School, a girls boarding school in suburban Washington, D.C. He then moved to California to coach basketball and to teach physics at Pomona and Pitzer Colleges. He earned an M.A. in science education at the University of California, Santa Barbara.

Chris Dede
Timothy E. Wirth Professor in Learning Technologies
Graduate School of Education Harvard University
Dr. Chris Dede is the Timothy E. Wirth Professor in Learning Technologies at Harvard’s Graduate School of Education. His fields of scholarship include emerging technologies, policy, and leadership. His funded research includes three grants from NSF and the US Department of Education Institute of Education Sciences to explore immersive and semi-immersive simulations as a means of student engagement, learning, and assessment. In 2007, he was honored by Harvard University as an outstanding teacher.

Dr. Dede has served as a member of the National Academy of Sciences Committee on Foundations of Educational and Psychological Assessment and a member of the 2010 National Educational Technology Plan Technical Working Group. He serves on Advisory Boards and Commissions for PBS TeacherLine, the Partnership for 21st Century Skills, the Pittsburgh Science of Learning Center, and several federal research grants. His co-edited book, Scaling Up Success: Lessons Learned from Technology-based Educational Improvement, was published by Jossey-Bass in 2005. A second volume he edited, Online Professional Development for Teachers: Emerging Models and Methods, was published by the Harvard Education Press in 2006. He currently is preparing a co-edited book on Steps Towards the Digital Teaching Platform.

Bernie Dodge
Professor of Educational Technology
San Diego State University
Dr. Bernie Dodge is a Professor of Educational Technology at San Diego State University where he teaches courses in technology integration and educational game design. In 2000, he was named by the editors of eSchool News as one of the top 30 educators who have had an impact on technology in the nation’s schools. Later that year, Converge magazine profiled him among leaders shaping the future of education and technology. Dr. Dodge was on the Educational Advisory Board for Cable in the Classroom from 2002-05, and is currently on the Advisory Board for the National EMINTS Center in Columbia, Mo., and the editorial board for ETR&D. He was named an Apple Distinguished Educator in 2003, and was the recipient of awards from MERLOT in 2004 and 2007. He developed the WebQuest model in 1995 and continues to refine and disseminate it widely through presentations and workshops around the globe and through his website at http://webquest.org.

Matt Dunleavy, Ph.D.
Assistant Professor in Instructional Technology
School of Teacher Education & Leadership
Radford University
Dr. Matt Dunleavy is an Assistant Professor in Instructional Technology at Radford University in Virginia. From 2006 to 2007, he was a postdoctoral fellow in learning technologies at the Har-
vard Graduate School of Education and the director of the Handheld Augmented Reality Project (HARP). Dr. Dunleavy received his Ph.D. in Educational Research, Statistics, and Evaluation at the University of Virginia, where he focused on the impact of ubiquitous computing on student learning and the classroom environment. Prior to completing his formal education, he lived overseas teaching English as a Second Language in Cameroon, Central Africa as a Peace Corps volunteer and then independently in Taiwan, Republic of China. He is currently the principal investigator on a National Science Foundation grant and a Virginia Department of Education grant (http://gameslab.radford.edu/), both of which explore how mobile technology and augmented reality can be used to improve academic and socio-cultural skills for K-16 school students.

Daniel C. Edelson, Ph.D.
Vice President for Education, National Geographic Society
Executive Director, National Geographic Education Foundation

Daniel C. Edelson, Ph.D., is Vice President for Education at the National Geographic Society and Executive Director of the National Geographic Education Foundation. In these positions he oversees the National Geographic Society’s outreach to educators and directs the Society’s efforts to improve teaching and learning in geography and related disciplines. This work includes the development of resources for educators and learners of all ages, the delivery of professional development programs for educators, the implementation of public awareness and public engagement programs, and grant-making to support geographic literacy initiatives throughout the U.S. and Canada.

Edelson began his career in education as a researcher in learning technologies and has focused throughout his career on environmental and geographic education. Prior to assuming his current position in 2007, he was a professor in education and computer science at Northwestern University for 14 years. As part of his research and development activities at Northwestern, he developed several products for publication, including My World GIS™, a geographic information system for educational use; “Investigations in Environmental Science,” a case-based environmental science textbook for high school; and a number of middle school earth science units. He also created professional development programs for educators from middle school through college and led several large-scale instructional reform efforts in urban public schools.

Edelson has written extensively on motivation, classroom teaching and learning, educational technology and teacher professional development, drawing on research conducted with colleagues and students. He is an author of more than 50 papers in journals, edited books and conference proceedings, including “The Cambridge Handbook of the Learning Sciences,” “The International Handbook on Science Education,” Journal of the Learning Sciences, Journal of Research on Science Teaching, and The Science Teacher.

Edelson received his Ph.D. in computer science from Northwestern University and his B.S. in engineering sciences from Yale University. He lives in Chevy Chase, Md.

Phil Emer
Director of Technology
Friday Institute

Phil Emer has spent more than 20 years working at the intersections of data communications, research, academia and business – splitting time between the public and private sectors. In the private sector Emer worked as an engineer with IBM, as a technology executive with venture-backed Carolina Broadband and as a technology director with not for profit MCNC. In the public sector Emer directed voice, video, and data communications at NC State University and served as Director of Technology with the Friday Institute for Educational Innovation at North Carolina State University. He is currently Director of Technology Planning and Policy at the Friday Institute where he led the NC School Connectivity Initiative.

Emer serves on the NC eLearning Commission, is a member of the advisory board of the Institute for Next Generation IT Systems, and serves as adjunct faculty in the department of computer science at NC State University. In November 2009, Governor Bev Perdue appointed Phil to the NC
Innovation Council. Emer holds a B.S. in electrical engineering from Virginia Tech and an M.S. in computer engineering from NC State University.

Julie Evans  
Chief Executive Officer  
Project Tomorrow
Julie Evans is the CEO of Project Tomorrow (www.tomorrow.org), one of the nation’s leading education nonprofit organizations. Project Tomorrow (formally known as NetDay) is dedicated to empowering K-12 students, teachers and parents to have a larger voice in improving education and learning. Evans has been CEO of this organization since 1999. Prior to this position, Evans enjoyed a successful 17-year career in national and regional sales and marketing management with Unisys and two education technology startups. Evans is a graduate of Brown University and serves on the Board of Directors of Project Tomorrow, the International Society for Technology in Education (ISTE), the Childrens’ First Advisory Council and the Association of Women in Technology Council. She has served on the Advisory Boards for the Horizon K-12 Report in 2008 and the Horizon Higher Education Report in both 2008 and 2009. Evans was selected in 2003 as a Frances Hesselbein Community Innovation Fellow and is a frequent speaker, writer and commentator on children, education, science and technology issues. In April 2008, Evans was named as one of the Top Ten Most Influential People in Education Technology over the past 10 years by eSchool News, a leading national education publication.

Michael M. Flood  
Education Practice Manager  
AT&T Advanced Enterprise Mobility Solutions
Michael Flood focuses on Education Technology’s enabling role in the transformation of K-12 and Higher Education with a particular emphasis on mobility and connectivity. At AT&T, Flood’s role involves him in strategic opportunities, product and service design, marketing strategy, vertical industry knowledge transfer to AT&T’s education sales force and executive briefings. Externally, Michael serves as an AT&T liaison to the Education community for media and public relations, association memberships (EdNET, CoSN, ISTE, AASA, NSBA, etc.), business development and events.

Flood holds a B.S. in Management from the Georgia Institute of Technology and an M.B.A. from Emory University’s Goizueta Business School. In Atlanta, Michael serves as the Chairman for the Board of Advisors to AIESEC (the world’s largest student-run organization) and as a volunteer with AFS Intercultural Programs (a high school and teacher international exchange program). Flood is a founding member of the Georgia Gwinnett College Technology Advisory Council and guest lectures on Education Technology at Georgia Perimeter College. Flood joined the EdNET Advisory Board in the Spring of 2010.

Julius Genachowski  
Chairman  
Federal Communications Commission
Julius Genachowski was nominated by President Barack Obama as Chairman of the Federal Communications Commission on March 3, 2009, and sworn into office on June 29, 2009.

Prior to his appointment, he spent more than 10 years working in the technology industry as an executive and entrepreneur.

He co-founded LaunchBox Digital and Rock Creek Ventures, where he served as Managing Director, and he was a Special Advisor at General Atlantic.

From 1997-2005, he was a senior executive at IAC/InterActiveCorp, a Fortune 500 company, where his positions included Chief of Business Operations and General Counsel.

His confirmation as FCC Chairman returns him to the agency where, from 1994 until 1997, he served as Chief Counsel to FCC Chairman Reed Hundt, and, before that, as Special Counsel to then-FCC General Counsel (later Chairman) William Kennard.
Previously, he was a law clerk at the U.S. Supreme Court for Justice David Souter and Justice William J. Brennan, Jr. (ret.). He received a J.D from Harvard Law School where he was co-Notes Editor of the Harvard Law Review. He received a B.A. from Columbia College.

Shawn Gross
Managing Director
Digital Millennial Consulting LLC
Shawn Gross’ educational training, public policy involvement, and his private sector education technology experiences position him as a digital learning thought leader in mobile learning. Through his efforts to identify optimal uses of technology to increase student achievement, Gross designed, developed and implemented the 1st US mobile learning initiative in K-12, Project K-Nect. Gross assembled a team of experts comprising software developers, curriculum specialist, curriculum developers, professional development staff and education researchers in order to achieve the goal of demonstrating the efficacy of utilizing mobile devices to increase student achievement. In addition to the development, implementation and management of Project K-Nect, Gross was responsible for launching the first US Mobile Learning Conference. As founder and Director of DMC, he provides the guidance and product development for this project. He has extensive public sector experience as senate legislative aide and senior policy advisor. He was honorary executive to the Congressional Web Based Education Commission, a contributing author to the National Education Technology Plan, chairperson to the Washington, D.C. Mayor’s Task force on Education Technology, and the author of a portal implementation technology guide for 1997 Summit of the Americas. His work in the private sector includes Sun Microsystems and Apple Computer, in product development and marketing, K-12 education practice, e-learning account management, and as government relations liaison on issues of education technology. Gross received his BA in International Studies from The Ohio State University; and both his MBA and Masters of Public Policy and International Affairs from the University of Pittsburgh.

John Harris
Editor-in-Chief
POLITICO
John F. Harris is the editor-in-chief and a cofounder of POLITICO, a publication specializing in national politics and the workings of the federal government.

Since its launch in January 2007, POLITICO has become one of the country’s most- trafficked news sites and has drawn widespread attention nationally and internationally for its efforts to create a new editorial and business model to sustain robust journalism in an era of radical change for the media industry.

He is a 1985 graduate of Carleton College in Northfield, MN, with a major in American History. He began his newspaper career in 1985 as a summer intern at the Washington Post. The summer ended with a job offer, and Harris spent the next 21 years at the paper in a succession of beats that began in Virginia politics.

He covered the term of Virginia Gov. Douglas Wilder, the nation’s first elected black governor, spent time covering the military, and six years, starting in 1995, covering the White House during Bill Clinton’s presidency. Harris’s last position at the Post was national politics editor. In late 2006, Harris joined with colleague Jim VandeHei to launch POLITICO, in collaboration with publisher Robert Allbritton.

Dr. Paul E. Jacobs
Chairman & CEO
Qualcomm
Dr. Paul E. Jacobs is Chairman of Qualcomm’s board of directors and the Company’s Chief Executive Officer. A leader in the field of mobile communications for nearly two decades and a key architect of Qualcomm’s strategic vision, Dr. Jacobs’ responsibilities include leadership and oversight of all the Company’s initiatives and operations.
Through his technology innovations and advocacy, Dr. Jacobs spearheaded Qualcomm’s efforts to develop and commercialize mobile technology breakthroughs that have contributed significantly to the growth of both the Company and the industry. Important developments which began under Dr. Jacobs include: the first Palm OS®-based smartphone; inclusion of GPS capabilities in mobile phones (which led to the acquisition of SnapTrack™ and Qualcomm’s development of gp-sOne™ position-location technology); the Brew® system, which enables over-the-air downloading of applications using digital signatures to ensure the integrity of the content; the business ecosystem that enables Brew developers to engage operators globally and receive payment for their applications; MediaFLO™ technology for mobile TV; and mirasol™, an advanced reflective display technology.

Following the completion of his Ph.D. in 1989 and a year as a post-doctoral researcher at a French government lab in Toulouse, Dr. Jacobs joined the Company fulltime in 1990 as a development engineer leading the mobile phone digital signal processor software team. Five years later, Dr. Jacobs became vice president and general manager of the combined handset and integrated circuit division, which was subsequently divided into Qualcomm Consumer Products (QCP) and Qualcomm CDMA Technologies, respectively.

In 1996, Dr. Jacobs was named senior vice president of the Company and in 1997, president of QCP. Under Dr. Jacobs, QCP (prior to its sale to Kyocera Wireless in 2000) moved into the No. 2 CDMA handset supplier position in the U.S. In 2000, Dr. Jacobs was named executive vice president of Qualcomm and in 2001, group president of Qualcomm Wireless & Internet (QWI), where he oversaw Qualcomm Technology Licensing, Qualcomm Internet Services, MediaFLO USA Inc. (now FLO TV) and MediaFLO technology development, Qualcomm MEMS Technologies, Qualcomm Enterprise Services (formerly Qualcomm Wireless Business Solutions), Qualcomm Government Technologies and Qualcomm Technology & Ventures. As Qualcomm executive vice president, he was also responsible for administering the Company’s corporate marketing functions and standards organization. Dr. Jacobs became CEO in July 2005 and was appointed Chairman in 2009.

As an innovative leader of a broad range of technical teams within Qualcomm, Dr. Jacobs has been granted more than 35 patents for his inventions in the areas of wireless technology and devices. Dr. Jacobs chairs the World Economic Forum’s Future of Mobile Communications council, serves on the Board of Directors for A123Systems, and is a member of the Advisory Board of the University of California, Berkeley, College of Engineering; the Advisory Board of University of California, San Diego, Jacobs School of Engineering; and the Young President’s Organization. Dr. Jacobs received his bachelor’s (1984) and master’s (1986) degrees as well as his doctorate (1989) in electrical engineering from the University of California, Berkeley, and subsequently endowed the Paul and Stacy Jacobs Distinguished Professor of Engineering chair at the school. He is a member of the Phi Beta Kappa, Eta Kappa Nu and Tau Beta Pi honor societies.

Rich Kaestner
Total Cost of Ownership, Value of Investment and Green Computing Project Director
Consortium for School Networking (CoSN)

Rich Kaestner serves as Total Cost of Ownership, Value of Investment and Green Computing Project Director for the Consortium for School Networking. In that capacity, Kaestner coordinated the development of the web-based CoSN-Gartner K-12 Total Cost of Ownership tool, and continues to provide project leadership, training and technical support for this initiative. In order to help schools better determine the value of investment in proposed or planned projects, Kaestner is providing development leadership and support for CoSN’s Value of Investment (VOI) Leadership Initiative. Addressing the highly visible issues of reducing the carbon footprint for schools, Kaestner has developed CoSN’s Green Computing Leadership Initiative which provides tips, resources and tools for green lifecycle, computer energy usage and the role computers can play for overall school conservation initiatives. Kaestner is also a major contributor to CoSN’s Mastering the Moment toolkit, designed to help provide support and guidance to technology leaders during economic crises.
Prior to his work with CoSN, Kaestner was a technology marketplace consultant with Gartner and worked in various management, sales and support capacities for technology vendors.

**Eric Klopfer**

**Associate Professor of Science Education Director, Teacher Education Program**
**Massachusetts Institute of Technology**

Eric Klopfer is Associate Professor and the Director of the MIT Scheller Teacher Education Program and the Director of the The Education Arcade. His research focuses on the development and use of computer games and simulations for building understanding of science and complex systems. His work combines research and development of games and simulations, from initial conceptualization, through implementation, piloting, professional development and end-user research. He is the creator of StarLogo TNG, a platform for helping kids create 3D simulations and games using a graphical programming language, as well as several mobile game platforms including location-based Augmented Reality games, and ubiquitous casual games. He is the author of “Augmented Learning,” a new book on handheld games and learning from MIT Press, and is co-author of the book, “Adventures in Modeling: Exploring Complex, Dynamic Systems with StarLogo.” He is a founding member of the Learning Games Network.

**Michael Levine**

**Founding Director of Joan Ganz Cooney Center**
**Sesame Workshop**

Michael Levine is the founding director of the Joan Ganz Cooney Center at Sesame Workshop, an action research and innovation institute devoted to harnessing the potential of digital media to advance young children’s learning and development. Prior to joining the Center, Dr. Levine served as Vice President of New Media and Executive Director of Education for Asia Society, managing the global nonprofit organization’s interactive media and educational initiatives to promote knowledge and understanding of Asia and other world regions, languages and cultures. Previously, Dr. Levine oversaw Carnegie Corporation of New York’s groundbreaking work in early childhood development, educational media and primary grades reform, and was a senior advisor to the New York City Schools Chancellor, where he directed dropout prevention, after-school and early childhood initiatives. Dr. Levine is a frequent adviser to the White House, the U.S. Department of Education, PBS and the Corporation for Public Broadcasting, writes for public affairs journals, and regularly appears in the media. He was named by Working Mother magazine as one of America’s most influential leaders in shaping family and children’s policy and serves on numerous nonprofit boards and advisory councils, including We Are Family Foundation, the Forum for Youth Investment and Teach For America. Dr. Levine is also a senior associate at the Edward Zigler Center in Child Development and Social Policy at Yale University. He received his Ph.D. in Social Policy from Brandeis University’s Florence Heller School and his B.S. from Cornell University.

**Robert M. Lippincott**

**Senior Vice President, Education**
**PBS**

Lippincott is Senior Vice President for Education, responsible for the development and implementation of effective public media educational programming and services for PBS, local public television stations, students, teachers and parents. His tasks include strategic and operational planning, securing new financial resources and leveraging new technologies to expand PBS’ education services.

Before joining PBS, Lippincott has served in a wide variety of leadership positions in schools and businesses building and applying media and communications technology to education. He has been a classroom teacher, a member of the faculty of Harvard University, Graduate School of Education and a pioneer in multimedia and internet design for K-12 audiences. His track record of project, product and learning success with media and telecommunication businesses includes serving as director of interactive technologies at WGBH Educational Foundation, Boston’s public broadcasting station.
Christopher Lohse
Strategic Initiative Director, Information Systems and Research
CCSSO
Christopher Lohse is the Strategic Initiative Director of Information Systems and Research for the Council, and believes deeply in the ability of data to help tell the stories of how our nation’s children experience school. Through richer, more nuanced understanding of our students’ collective narrative, Lohse believes that all education stakeholders can be empowered to make decisions that will maximize children’s chances for success, fulfillment, and meaningful life-long learning. To that end, Lohse works at the Council to create and implement an innovative vision for the role and use of data in the education space. Part of that vision involves enabling well-architected, interconnected, vertically and horizontally-aligned data systems with elegantly designed user-interfaces to benchmark education results nationally and internationally. Moreover, Lohse and the large team of competent information technologists, education specialists, and researchers he leads, works to help states create data systems that enable researchers to isolate the effects of particular policies and programs.

Before joining CCSSO, Lohse was the internal research director for Teach For America, an adviser to the Montana state school chief (Director of Policy Research and Federal Liaison), a research director for the Native Caucus of the National Conference of State Legislatures, and a research analyst focusing on science and education policy for the Montana Legislature’s Office of Research and Policy Analysis. He serves on a number of technical review and research panels, and presents often at major education conferences. He is also a mentor teacher in the Harvard Graduate School of Education’s Teacher Education Program, working with master's candidates in science and mathematics program. Lohse is also a former classroom teacher, having taught for five years in South Central Los Angeles as an advanced placement chemistry teacher, initially under the Teach For America program. He holds Master’s degrees in Education and Policy from Harvard University, and a biochemistry degree from Willamette University.

Steve Midgley
Deputy Director of Education Technology
US Department of Education
Steve Midgley is the Deputy Director of Education Technology at the US Department of Education. His principal areas of focus are data transparency, digital interoperability and online learning. Prior to arriving at Education, he was the Director of Education at the FCC, where he headed the team which developed the Education chapter of the National Broadband Plan. Prior to government service he was the principal of Mixrun, a CTO consultancy for a number of for-profit and education sector organizations. Mixrun’s clients included California Department of Education’s project called Brokers of Expertise, which uses online and real-world systems to share and build the expertise of educators. Midgley also served as a Program Manager for the Stupski Foundation for six years, designing and implementing grants for technology in K-12 education. This work involved intensive on-the-ground implementation work with District and State agencies around country. In the 90’s, Midgley was the founding Vice President of Engineering for LoopNet Inc., a commercial real estate listing firm. He designed and built LoopNet’s technology and web systems from its inception. LoopNet remains a successful business and is currently listed on NASDAQ.

Bailey Mitchell
Chief Technology and Information Officer
Forsyth County Schools
Bailey Mitchell brings twenty five years of experience as an educator and has worked for the past thirteen years as the Chief Technology and Information Officer for Forsyth County Schools.

He is responsible for both the educational and administrative technology enterprise with a focus on online learning, collaborative classrooms, parent communication and teacher support. Forsyth’s technology enterprise is nationally recognized as a leader in educational technology and was recently awarded a federal i3 Innovation grant for personalized learning.
Mitchell is the chair-elect and serves on the board of CoSN (Consortium for School Networking).

Prior to working for Forsyth County Schools, Mitchell served as the Director of Instructional Technology at the Georgia Department of Education. At the Department, Mitchell directed the state’s education technology initiatives and was instrumental in building a network of fifteen Technology Training Centers that are located in universities and regional education sites across the state.

Mitchell has a B.S. degree in Career and Technology Education and a Masters and Specialist Degree from The University of Georgia in Educational Administration and Curriculum and Supervision.

Michael J. Schmedlen
Director, WW Education
Lenovo

As the Director of Worldwide Education, Schmedlen is responsible for constructing relevant solutions which improve outcomes for students at all levels of academia. He collaborates across Lenovo lines of business to ensure that educational needs are addressed in the research, development and application of our offerings. Most importantly, he listens to teachers, professors and administrators to ensure that the best innovations are shared globally, and that these ideas are incorporated into Lenovo’s solutions to help institutions maximize their performance. Schmedlen has served as a director on a number of local, state and national education policy boards including the Partnership for 21st Century Skills and the North Carolina Public School Forum. He currently leads the Education Research Initiative (ERI) in partnership with Microsoft and Intel Corporations. Schmedlen received his undergraduate degree in Latin from Colgate University and is currently pursuing a Masters of Business Administration degree at Duke University.

Marsha Semmel
Acting Director, Institute of Museum and Library Services  Deputy Director for Museums and Director for Strategic Partnerships

Marsha L. Semmel assumed the role of Acting Director on March 14, 2010. Semmel will lead the agency until a new director is confirmed. She continues to hold the positions of Deputy Director for Museums and Director for Strategic Partnerships.

As Deputy Director for Museums, Semmel manages the Institute of Museum and Library Services’ portfolio of grantmaking programs that support capacity-building and leadership projects for all types of museums, including art, history, science, historic houses, children’s museums, aquaria, arboreta, botanical gardens, and zoos. As Director for Strategic Partnerships, Semmel maintains oversight of federal-state partnership activities, initiates and implements collaborations with other federal agencies and organizations, and manages special projects and initiatives.

From 1998 to 2002, Semmel was President and CEO of the Women of the West Museum, in Denver, Colorado. Prior to that, she was President and CEO of Conner Prairie, a living history museum in Indianapolis, Indiana. From 1984 to 1996, Semmel worked at the National Endowment for the Humanities, in Washington, DC.

Elliot Soloway
Arthur F. Thurnau Professor, Dept. of EECS, College of Engineering
University of Michigan

Elliot Soloway is an Arthur F. Thurnau Professor in the Dept of CSE, College of Engineering, School of Education and School of Information, University of Michigan. For the past 10 years, Soloway’s research has been guided by the vision that mobile, handheld – and very low-cost – networked devices are the only way to truly achieve universal 1:1 in schools – all across the globe. In 2001, the undergraduates selected him to receive the “Golden Apple Award” as the Outstanding Teacher of the Year. In 2004, the EECS College of Engineering HKN Honor Society awarded Soloway the “Distinguished Teacher of the Year Award.” Soloway is a co-founder of GoKnow, Inc.
Soloway has been crusading for Mobile Learning since the early Palm Pilot days. They have been exploring ways to use such personal technology to transform – not merely to enhance or enrich – teaching and learning. Finally, with the coming of the cell phone, low cost, easy to use, truly personal, i.e., truly portable, not just transportable, computing devices their vision is realizable in schools – worldwide.

**Dr. Kathy T. Spencer**  
**Superintendent**  
**Onslow County Schools**

Dr. Kathy T. Spencer serves as the Superintendent for Onslow County Schools on the east coast of North Carolina. She is a native of the community and has dedicated her career to the public school system there for over 25 years.

She is currently serving as a member of regional, state, and national level leadership that focus on student opportunities to include the Eastern Region Workforce Development Board, Jacksonville/Onslow Chamber of Commerce Board of Directors, Jacksonville/Onslow Chamber Education Committee, Southeast Education Alliance Board Member, Southeast Education Alliance Superintendent’s Council, the North Carolina High School Athletic Association Board of Directors, the World View Advisory Board, and the American Association of School Administrators Governing Board. She presents statewide and nationally for AdvancEd (SACS/CASI) on the subject of Continuous Improvement and District Accreditation. This comes after leading her system as the first in North Carolina to achieve the status of District Accreditation as well as the first in North Carolina to receive District re-Accreditation.

Dr. Spencer is an advocate for 21st century learning, with a focus on new processes and tools for educators and students to access needed curricula. Presenting across the state of North Carolina regarding innovative use of technology tools and processes to expand new opportunities for students has become integral in her work. She has led the charge in her district for innovative projects, like Project K-Nect, which utilizes SmartPhones to access math curricula. As a result of her work in this area, she currently serves on the State Superintendent Technology Council, as well as the NC Virtual Public School Advisory Board. This project has received national and statewide recognition. She has also led her district as a North Carolina pilot/beta system for virtual learning at the middle and high school levels, to include work developing new gaming/curricula integration for STEM courses through partnerships with state/national business partners.

Dr. Spencer is a graduate of East Carolina University. She holds a B.S. in Intermediate Education, a Masters of Education, School Administration Certification, an Educational Specialist designation and an Educational Leadership Doctorate. She has focused her research on educational leadership and the facets of induction and mentoring associated with the novice school leadership role.

**Jeff Vyduna**  
**CEO and Cofounder**  
**Poll Everywhere**

Jeff Vyduna is the CEO and Cofounder of Poll Everywhere, the world’s first Classroom Response System to use student cell phones. Vyduna cofounded Poll Everywhere in June of 2008 as a response to the astronomical cost of clicker hardware. Poll Everywhere was seed funded by Y Combinator.

Previously, Vyduna was the CIO of a school district in Guatemala City. He also taught two sections of high school Multimedia, and saw first hand how cell phones were primarily a nuisance in the classroom. Vyduna was also a technology consultant for Deloitte Consulting, where he put several audiences to sleep with non-engaging presentations and crowded slides.

Vyduna has since presented to the Red Cross and FEMA, the Presentation Summit, the University of Illinois ECE graduation, and been a panelist at the O’Reilly Webs 2.0 Summit. Vyduna holds a B.S. in electrical engineering from the University of Illinois and an MBA from the MIT Sloan School of Business.
Poll Everywhere
Poll Everywhere replaces Classroom Response Systems (“clickers”) using the device your students already own – their mobile phones. It’s the easiest way to take attendance, conduct formative assessments and quizzes, and boost student engagement. Students can send their questions or ideas right to a smartboard or PowerPoint slides, or participate in audience choice voting like on American Idol.

Texting also opens the door to new classroom activities and teaching techniques. It encourages risk-taking by allowing for anonymous participation (that a teacher can still track down if needed).

A set of clickers for a school will cost around $1200, but Poll Everywhere is available to K-12 educators for $50 per year.
2010 Wireless EdTech Conference Agenda

- The United States is embarking on a groundbreaking effort to redesign education for our 21st century society. The policy, process and technology infrastructures that are adopted over the next few years will shape education for decades.

- The Wireless Education Technology Conference is dedicated to bringing together novel, synergetic combinations of education theorists, policymakers and practitioners with technology experts and suppliers to examine and articulate the role of wireless technology in today’s education environment.

- The conference will address key cross-functional questions such as:
  - What distinguishes mobile learning from existing 1:1 implementations?
  - What are the capabilities needed by a mobile broadband device in order to be useful for education in practice? What is the platform for bringing education innovation and best practices to scale? What is the platform for new kinds of teaching and learning?
  - What are the operational issues with network and back-end infrastructure? What does the network design for cloud computing look like? What are the barriers? How do we handle evolving mobile devices, implementation, scale and sustainability? What can we learn from current real-world success stories?
  - Breaking silos and fostering collaboration—what do stakeholders need to hear from each other?
  - Ways to overcome myths and misconceptions
  - Strategies for assembling the puzzle pieces needed to achieve a 24/7 learning environment

Schedule:

Thursday, October 28th, 2010
(6:00 p.m. – 8:00 p.m.)

Opening Reception
6:00 – 8:00 p.m.
Registration
Cocktail Reception
Sponsor Showcase
Attendees will have the opportunity to discover new products and services for a 21st century classroom

Friday, October 29th, 2010
(8:00 a.m. – 6:30 p.m.)

Morning Session
8:00 – 8:45 a.m.
Registration
Breakfast Buffet

8:45 – 9:30 a.m. Greetings and Agenda
  - Dr. Chris Dede, the Timothy E. Wirth Professor in Learning Technologies at Harvard’s Graduate School of Education
  - Julie Evans, CEO, Project Tomorrow
  - Duncan Moss, Senior Director, K12 Marketing, Blackboard, Inc.
9:30 – 10:45 a.m.  Plenary I – What distinguishes mobile learning from existing 1:1 implementations? (Two 30-minute panels)

9:30 – 10:00 a.m.
Panel I – Practice: Unique capabilities, instructional plans and potential of 24/7 connected mobile devices in the hands of all students and teachers
Panelists:
- Marie Bjerede, Founder, e-Mergents (Moderator)
- Ben Daley, Chief Operating Officer and Chief Academic Officer, High Tech High
- Shawn Gross, Managing Director, Digital Millennial Consulting LLC
- Eric Klopfer, Associate Professor of Science Education and Director of the Teacher Education Program, MIT

10:00 – 10:15 a.m. Networking Break

10:15 – 10:45 a.m.
Panel II – Infrastructure: Unique requirements for mobile implementation including networks and interoperability
Panelists:
- Steve Midgley, Deputy Director of Education Technology, US Department of Education (Moderator)
- Phil Emer, Director of Technology, Friday Institute
- Rich Kaestner, Project Director, Total Cost of Ownership & Value of Investment and Green Computing, Consortium for School Networking (CoSN)
- Bailey Mitchell, Chief Technology and Information Officer, Forsyth County Schools

10:45 – 11:30 a.m. Keynote Speaker
- Dr. Paul E. Jacobs, Chairman and CEO of Qualcomm

11:30 a.m. – 12:15 p.m. Newsmaker Segment
A live interview will be conducted on the importance of broadband and mobile technology to the future of education
- John Harris, Editor-in-Chief of POLITICO
- Julius Genachowski, Chairman of the Federal Communications Commission

Lunch Session
12:15 – 1:15 p.m. Networking Lunch
Attendees will have the opportunity to network during this time

Afternoon Session
1:15 – 2:15 p.m. Breakout Sessions
Attendees may choose one of the six sessions below

1. Mobile Learning Case Study: Project K-Nect
   - Shawn Gross, Managing Director, Digital Millennial Consulting LLC (Moderator)
   - Kathy Spencer, Superintendent, Onslow County Schools

2. Augmented Reality (Infusing Virtual Simulations in Real Settings through Mobile Devices) and Future Capabilities of Mobile Devices
   - Eric Klopfer, Associate Professor of Science Education and Director of the Teacher Education Program, MIT (Moderator)

3. Real-World Implementation of Mobile Learning
   - Kristin Atkins, Director of Wireless Reach, Qualcomm (Moderator)
   - Ben Daley, Chief Operating Officer and Chief Academic Officer, High Tech High
   - Bernie Dodge, Professor of Educational Technology, San Diego State University
• Elliot Soloway, Arthur F. Thurnau Professor, College of Engineering, University of Michigan
  • Jeff Vydea, Cofounder, Poll Everywhere
4. Children’s Mobile Applications & Their Potential for Learning
  • Michael Levine, Founding Director, Joan Ganz Cooney Center, Sesame Workshop
5. Dollars and Sense of Transitioning to Mobile Learning
  • Marie Bjerede, Founder, e-Mergents (Moderator)
  • Paul Besozzi, Partner, Patton Boggs
  • Michael M. Flood, Education Practice Manager, AT&T Advanced Enterprise Mobility Solutions
  • Rich Kaestner, Project Director, Total Cost and Value of Investment, Consortium for School Networking
6. K12 Students, Parents and Educators Speak Up about Mobile Learning: new research from Project Tomorrow
  • Julie Evans, CEO, Project Tomorrow

2:15 – 2:30 p.m. Networking Break

2:30 – 4:00 p.m. Plenary II – Cross-pollination
Dialogue with diverse stakeholders regarding teaching and learning with mobile broadband devices, led by Dr. Chris Dede

Audience will be invited to participate via Poll Everywhere by submitting challenges, insights and possible solutions in real-time during the panel

Each panelist will be asked to share the three biggest challenges in realizing the vision of anytime, anywhere learning implicit in the 2010 National Education Technology Plan, National Broadband Plan and the morning sessions

Panelists include:
  • Kwasi Asare, Associate Director, Office of Education Technology, US Department of Education
  • Ben Daley, Chief Operating Officer and Chief Academic Officer, High Tech High
  • Dr. Matt Dunleavy, Assistant Professor in Instructional Technology, School of Teacher Education and Leadership, Radford University
  • Dr. Daniel C. Edelson, VP for Education, National Geographic Society; Executive Director, National Geographic Education Foundation
  • Shawn Gross, Managing Director, Digital Millennial Consulting LLC
  • Rob Lippincott, SVP of Education, PBS
  • Chris Lohse, Strategic Initiative Director, Information Systems and Research, CCSSO
  • Bailey Mitchell, Chief Technology and Information Officer, Forsyth County Schools
  • Michael Schmedlen, Director of WW Education, Lenovo

4:00 – 4:15 p.m. Networking Break

4:15 – 5:30 p.m. Puzzle Breakouts
The conference will conclude with a set of five breakout sessions where attendees are invited to participate in a discussion on piecing together “puzzles” that consistently emerge in the national discussion about Wireless Education Technologies. These puzzle pieces are often stumbling blocks in our ability to envision and plan for the practices and infrastructure that will operationalize our shared vision of 24/7 connected learning for all students. The sessions will focus on assembling the necessary pieces.

Puzzle 1 – Evolution, Revolution and Disruption
How mobile devices could empower either an evolution of today’s schools or a transformational shift to a new type of formal education for the 21st century
  • Dr. Chris Dede, the Timothy E. Wirth Professor in Learning Technologies at Harvard’s Graduate School of Education
Puzzle 2 – Strengths and Limitations of Mobile Devices
How these strengths and limitations impact teaching and learning with mobile devices, and how they complement laptops and workstations
- Bernie Dodge, Professor of Educational Technology, San Diego State University
- Karen Billings, Vice President, Education Division, SIIA

Puzzle 3 – Privacy, Safety and Security
How to keep students safe while taking advantage of the opportunities of 24/7 connectivity
- Phil Emer, Director of Technology, Friday Institute

Puzzle 4 – Breaking Traditional Classroom Boundaries
Can wireless technology break down traditional barriers of formal and informal learning? Unique to mobile; the blending of informal and formal causes boundaries to become blurred
- Marsha Semmel, Acting Director, Institute of Museum and Library Services; Deputy Director for Museums and Director for Strategic Partnerships

Puzzle 5 – Leveraging Student-Owned Devices
How schools can leverage the devices students already carry
- Marie Bjerede, Founder, e-Mergents

Closing Reception
5:30 – 6:30 p.m. Networking Reception and Closing Remarks
Cocktails and hors d’oeuvres will be served
References


For more information, please visit www.wirelessedtech.com