



*BLEgroup Thought Leadership Consortium:
Industry and Schools Collaborating to Develop
Leading-Edge Digital Teaching and Learning*

A Primer on 1:1 Computing For Schools and the Education Industry

Five school districts and five firms participated in the 1:1 Thought Leadership Consortium:

Schools

Calcasieu Parish, LA (<http://www.cpsb.org>)

Sunnyside (Tucson), AZ (<http://www.susd12.org>)

Cheyenne, WY (<http://www.laramie1.org>)

Miami-Dade County, FL (<http://www.dadeschools.net>)

Westonka, MN (<http://www.westonka.k12.mn.us>).

Firms

Carolina Science Online (<http://www.carolinascienceonline.com>)

Common Sense Media (<http://www.common sense media.org>)

Atomic Learning (www.atomiclearning.com)

YourTeacher (www.yourteacher.com)

Capstone Digital (www.capstonedigital.com).



Introduction and Overview

The purpose of the Primer on 1:1 Computing is to provide education decision makers and industry product developers with leading edge thought and best practices on planning and implementing 1:1 computing. The primer is composed of 3 distinct short pieces on the most central components of 1:1 computing; digital content, implementation and B.Y.O.D, any of which can determine the success or failure of 1:1 computing in schools.

The Final sections of the primer are commentaries on the three pieces from the industry perspective and school perspective. These pieces add additional perspective from the industry and schools on what is necessary for effective 1:1 computing. All of the sections of the primer are short and easy to read. Each topic can be read individually, but reading it collectively will provide a richer breadth of knowledge.

This is the first in the series of BLEgroup Thought leadership series on Digital Teaching and Learning. Over the coming year The BLEgroup will bring together knowledgeable firms and districts to exchange views and provide thought leadership on adaptive assessment/instruction, web based professional development and procurement of instructional materials. These are all critical areas to the transformation of education from print to the web and they are each still set in Jello rather than concrete.

Part I: Digital Content—Still the Question.....p.3
The nature of the new instructional materials and related issues of licensing, pricing, and interactivity.

Part II: Implementation—Much More Than Devices.....p.7
The organizational and technical planning and implementation processes necessary for 1:1 computing so that teaching and learning creates greater engagement and outcomes.

Part III: B.Y.O.D—For Districts that Cannot Afford to Purchase a Device for Each Student.....p.11
In many school systems students will be bringing their devices from home. This presents a unique set of opportunities, policies and needed controls for school systems.

Part IV: Industry Perspectivep.16
Anne Wujcik, Editor, EdNet Insight

Part V: Schools Perspectivep.19
Manuel Isquierdo, Superintendent; Ed Dawson, Director of Federal Programs, Sunnyside Schools, Tucson, Arizona

Part I

Digital Content is Still the Question

Authors

Eliot Levinson Ph.D, BLEgroup; Mike Magart, Your Teacher; Bruce Wilcox, Carolina Scientific; Dan Meyer, Atomic Learning; Gordon Knopp, Cheyenne Wyoming; Manuel Isquierdo, Ed.D, Sunnyside School District, Arizona; Don Hall, BLEgroup; Sheryl Abshire, Ph.D, Calcasieu Parish, Louisiana; Debbie Karcher, Miami Dade, Florida; Emily Esch, Common Sense Media; Randi Economu, Capstone Digital; Richard Wyld, San Carlos, Arizona

Introduction

Implementation of digital educational content and 1:1 devices is happening now and is replacing the century-old textbook as the technology of education delivery. Almost every school in the country is experimenting with 1:1 devices; every hardware manufacturer and education publisher is introducing web-based products; and key states are changing their textbook procurement policies to encourage the purchase of electronic materials instead of textbooks.

A trinity of elements makes the new educational delivery process effective:

- Low-cost digital devices
- The capacity of schools to successfully procure digital content and manage its delivery and utilization
- The functionality of digital content

1:1 Computing: Digital Content

The integration of the three elements will create effective implementation of digital curriculum. To date, the scorecard on the elements for effective implementation reads as follows:

- **Devices**—The devices are viable. Androids and iPads are easy to use; they primarily display material but also have some production capability.
- **Management Capacity**—School districts' capacity to effectively plan, manage, and integrate technology for improved education results is less problematic than it has been in the past. A group of leading-edge school districts with over a decade of experience has been developing the policies, organizational structure, training, and support processes to introduce, fund, and sustain 1:1 computing. Lighthouse institutions such as Minnetonka, MN, the state of Maine, Henrico County, VA, and St. Charles, LA, are acting as models and mentoring the less experienced districts, and the number of such exemplars is growing.

- **Digital Content**—Digital content is the most important and least developed of the three elements. The computing devices are the platform for the delivery of digital content and the districts are the agent of delivery. But the key to effective student engagement and results—and publishers' profits—is the new digital content.

We start with the basic assumption that, to be economically viable, the combined cost of the new devices and content has to be less than that of the current materials. To date, most digital content replicates the traditional textbook model in pricing and presentation. However, publishers are beginning to develop new types of content, and districts are not yet prepared to deal with the new world. They lack processes for the selection and maintenance of digital materials. The established textbook licensing models of one book per student for five years does not work for 1:1 computing, and although both the established and the new web publishers have been grappling over the last few years with the challenge of developing an effective pricing model, no viable option has emerged.

Content—The Industry Perspective

The Beginning. Following the pattern of most technology innovation, the early form of digital content replicated the previous print model. Just as Lotus 1-2-3 modeled the accountant's spreadsheet, the digital publishing format initially modeled the textbook in both style and pricing. The Apple E pub interactive format, the first kid on the block, enabled the big publishers to produce interactive textbooks and charge the schools \$15 per year for six years, essentially retaining the same economics of the traditional textbook model.

Pricing and Distribution. Almost immediately, rapid innovation took hold in the distribution of digital content. Smaller firms that had developed consumer products could charge considerably less than \$15 per student and could use the iTunes store and other web outlets rather than salespeople for distribution. Currently an increasing amount of content—including freemium-based collections of Common Core Standards-based curriculum like Learnizillion and Better Lesson—are available on the web or through learning management systems. The long-term viability of these providers is unclear, but they definitely challenge the old model.

The Nature of Content. The days of print-only textbooks are diminishing.

- Many digital textbooks include videos of teacher lectures. This development allows a flipped classroom, with students watching the lecture at home and working with the teacher on assignments in school. Whether flipped classrooms are a fad or an enduring change is not clear.
- There are opportunities for student collaboration on the curriculum content.
- Content now includes multimedia options for sound and video, as seen in the Capstone Digital collection of library books.

- The use of measurement tools like Lexiles can enable customization of curriculum to a student's performance level, as well as planning the amount of time a student needs to attain mastery.
- Several apps are available that students can use for such functions as writing and calculation.
- Games, though not yet widely used, are coming on strong and may become major curriculum elements for all subjects; the use of games in BrainPop is a good example.

The Missing Pieces. Adaptive assessments, professional development, and technology fluency are among the missing components in the effort to make 1:1 delivery and digital content work.

Adaptive assessment. The evolution of digital content combined with 1:1 devices offers the promise for individualized learning plans for students. However, such plans depend on adaptive assessment that can identify missing student skills and provide materials to reteach and retest. Though the market includes a few adaptive assessments with that functionality, such as Skillspointer, the number is limited. Until adaptive assessments combined with materials for re-teaching and retesting are the norm, the ability for individualized instruction will be limited. Even if adaptive assessments develop rapidly, it will likely take a long time for school systems and teachers to adapt to flipped classrooms and individualized teaching.

Training and fluency. This is no longer your grandmother's computing world. Technology fluency and the training needed to function effectively in the era of mobile computing and social media are significantly different than in earlier stages of technology implementation. We need rules and standardized conventions for such issues as online bullying, distinguishing fact from opinion, plagiarism, and effective collaboration. Effective utilization of content demands a standardized set of required training and conventions. The work that Common Sense Media and Atomic Learning are doing in this area provides some early examples.

Content—The Schools' Perspective

School systems have not yet thought about the processes that they need in place to purchase and use the new digital content for 1:1 computing. To our knowledge, school districts lack models for selecting or licensing this content. Here are some of the main issues that will need to be resolved in the near future:

- What is the procedure for choosing digital curriculum? It is unlikely that the old model of committees taking a year to choose a new English curriculum will work anymore.
- What criteria should be used besides standards to choose a curriculum, such as out-of-school use, engagement of students?



- How will multiple curricula be implemented on 1:1 devices? That is, a district might choose three web-based curricula for elementary math instead of one, and then use parts of each, distributing them over the 1:1 devices.
- What licensing model makes sense? Districts will likely push for a model of concurrent usage—paying for the number of students using a curriculum at one time rather than paying for every student to have a math book or access to software.
- What other options should we consider? For example, there might be one provider like an LMS or the new Amplify product/curriculum firm that will be the aggregator/broker for content purchase.

The major task for both the industry and schools over the next year will be to determine a cost-effective model for the effective delivery of digital content.

How is your tech implementation going?

The BLEgroup, www.blegroup.com a network of 180 leading edtech practitioners (superintendents, CIOs, and heads of instruction), provide both technology planning and implementation services to school systems and work with edtech firms and publishers to improve the quality of their products. If you are interested in the cost effective planning and implementation services we have developed for small and medium size districts for 1:1 computing, technology assessment and integration planning for small school districts, or planning for required on line assessment by 2015, [click here](#).

Part II

Implementation: Much More Than Devices

*Eliot Levinson, Ph.D; Manuel Isquierdo, Ed.D; Tom Woodward;
Sheryl Abshire, Ph.D; Debbie Karcher; Rob Dickson and Julie Carter, Ed.D*

Developing 1:1 Vision

Implementing 1:1 computing is like cooking the perfect meal: For spectacular results, you must conduct the process slowly and patiently, using the right ingredients at the right time...all the while visualizing the outcome. In K12 schools, *1:1 computing* connotes a child having his/her own device. Most school districts believe they are engaging in 1:1 computing when there is a ratio of one computing device, pad or phone for every child. Often, this concept is considered a silver bullet: "If the computer is present, education will occur."

But in reality, 1:1 computing is a complex system grounded in a vision of educational accomplishment. This may include a cloud-based system that enables customized instructional resources to:

- Deliver measurable, individualized instruction
- Provide teachers with ongoing professional development
- Link all instructional stakeholders (parents, students, teachers, and administrators) toward achieving outcomes

That said, for 1:1 computing to be economically viable, the combined cost of instructional materials and devices must be no greater than (or, even better, less than) what's currently spent on textbooks. While the cost of materials is coming down, text books still will be around for a while until the adoption cycle ends. Currently, schools have to pay a little more for devices and materials to make 1:1 computing economically viable; however, schools then own more of their intellectual property, thereby lowering costs. Educational publishers must develop new pricing models and licensing options to be acceptable to schools and remain profitable; thus, the economic viability of 1:1 computing still will take some time.

Gathering the Necessary Ingredients

To understand effective implementation of 1:1 computing, observe the common characteristics of districts moving in that direction.



The following attributes are present in all Consortium districts making significant progress.

- **Start by focusing on instructional outcomes:** The process takes from 3 to 5 years to achieve, so successful districts learn to keep their eye on the prize. For example, the Sunnyside district in Tucson, AZ, is focused on high school graduation rates. For the 5+ years they've used 1:1 computing, rates have grown from 67% to 87%.
- **Pilot all new activities:** Never begin with full scale implementation. The Minnetonka, MN, district utilized 1:1 computing in half the high school freshman classes before expanding to the entire freshman class and then the whole high school.
- **Build infrastructure that's robust, redundant and practically bullet-proof:** In Lake Charles, LA, all instructional materials reside on the cloud and networks are backed up by generators, creating a dependable network that garners stakeholders' trust.
- **Provide professional development:** This may include technology instruction coaches per school to instruct teachers on integrating subject matter into teaching with technology.
- **Pursue sustainability:** Successful districts include technology as part of their ongoing budget and plan for sustainability.
- **Empower the technology director or CIO:** These professionals are strategic both instructionally and technically and should always be a member of the superintendent's team.
- **Champion 1:1 computing:** In most cases, this is the superintendent's role—to secure resources and tout the program within the community. There should always be a strong PR campaign to support the effort.
- **Search for new materials and approaches continually:** There should be an ongoing search for new materials to implement and gradual improvement through training. This may include piloting different programs, from open source content to adaptive assessment.
- **Develop metrics to study progress:** As an example, Henrico County (VA) has a 4-year process with distinct metrics available to demonstrate gradual learning of new teaching skills.
- **Create policies:** Again, successful districts develop policies that require

teachers to utilize digital curriculum and master technology skills.

- **Gradual Implementation:** The fastest way to wreck a major change like 1:1 teaching and learning is to implement it with everyone at the same time. The process should be gradual over a 3-4 year based on where the academic need is and beginning with competent enthusiastic staff who are very well supported. Effective Implementation is like painting Polly Sawyer's fence, people have to desire to do it and see it as beneficial not extra work. The major reason that education technology implementation fails, is organizational resistance to the new process.

Determining What's Missing

There are certain roadblocks that can prevent 1:1 computing from becoming more common in the teaching and learning process, including:

- **Adaptive assessment:** This locates missing skills, provides materials to teach them and certifies competency.
- **Intelligent instructional materials:** These are needed to respond to particular learning needs.
- **Significant training and time:** The truth is that 1:1 computing creates a major change in the work process of teaching and therefore requires a significant investment.
- **The need for long-term, embedded mentoring:** This is the strongest form of professional development, as studies suggest that web-based instruction has not been as effective.
- **The digital cycle:** This identifies how the piece gets from the source (e.g., teacher) to the subject (e.g., student) and back again through a host (e.g., learning management system).

Avoiding Common Mistakes

Even with all the right ingredients, motivated districts still may make a few missteps in the implementation process. Study the following to ensure you're not making implementation more difficult.

- **Having insufficient bandwidth:** The most common problem is that districts lack sufficient bandwidth to implement and sustain 1:1 computing.



- **Being short-sighted:** They view implementation as a short process and therefore implement too many systems at once, creating organizational resistance and inviting failure.
- **Lacking a goal:** There's no outcome delineated at the starting point, so efforts may become scattered or, worse, counter-productive.
- **Missing ongoing support roles:** Many districts fail to provide support at the school- and curriculum levels to ensure ongoing program success.
- **Missing the target:** Some schools replicate the textbook model of instruction on a computer and thus don't benefit from the interactive, collaborative and adaptive features of true 1:1 computing

Conclusion

Although only some schools are implementing 1:1 computing optimally due to the organizational, technical, financial and instructional factors required for its effectiveness, it is a promising start. And with the state of both technology and teaching, there's no doubt that 1:1 computing will continue to be a strong part of our educational future.

For more information on the Thought Leadership Consortium or to view our previous installment, visit www.blegroup.com.

How is your tech implementation going?

The BLEgroup, www.blegroup.com a network of 180 leading edtech practitioners (superintendents, CIOs, and heads of instruction), provide both technology planning and implementation services to school systems and work with edtech firms and publishers to improve the quality of their products. If you are interested in the cost effective planning and implementation services we have developed for small and medium size districts for 1:1 computing, technology assessment and integration planning for small school districts, or planning for required on line assessment by 2015, [click here](#).



Part III

BYOD: The Solution for Districts That Can't Afford the Lexus Model of 1:1 Computing

Debbie Karcher, CIO, Miami-Dade County School District, FL; Rob Dickson CIO, Andover Kansas Public Schools; Eliot Levinson, CEO the BLEgroup

BYOD – A cost effective approach to 1:1 computing

What is BYOD? It means students bring their own computing device for use in school as well as home. Most students already have their own computing devices. If the school has a robust network and can control the student device used for education-related purposes while on the network and utilize cloud-based materials, BYOD can be a very effective way to implement 1:1 delivery. The degree of 1:1 computing provided by BYOD depends on the capacity of the device.

BYOD is happening with or without school district approval. Large districts like Miami and poor districts like Cheatham County in Tennessee cannot afford a 1:1 initiative with computers for each child. Having children bring their own device is a way to enable the move to digital textbooks, assessment, and curriculum. The exact percentage of students owning their own devices is not known, but it is extremely large.

Unfortunately, many school districts have embarked on 1:1 initiatives that are expensive to maintain and sustain because, by definition, they require a separate education device for each student. The 1:1 strategy often limits students to a closed environment where the information is delivered based on the content contained on the device and access to sites is curtailed. The closed system, though easily managed, eliminates the freedom for students to explore the Internet and engage in activities when they use their own devices. In many cases, access ends when the students goes home. Unless the instructional content is available on the computer, the students cannot fully use the device if Internet access is not available.

Much has been learned from the 1:1 initiatives that can be applied to BYOD. The professional development, curriculum, integrated learning, and technology underway in 1:1 initiatives can be used in BYOD efforts, with the goal of developing 21st century learners and moving to a digital world.

BYOD in Miami-Dade Schools

Miami-Dade released its BYOD policy in August 2012 without much fanfare. The district essentially took the device from the pocket to the desktop. Administration reviewed the BYOD policy with students and staff, emphasizing two rules: (1) when using the device on campus, students and staff must access the district's network, and (2) teachers must give permission for students to use the devices in their classroom. The biggest surprise is that students and staff are connecting with more than one device, indicating that the district may have to begin emphasizing net-etiquette so everyone can access the network without experiencing slow response time.

Why should districts embrace BYOD now?

By the time school districts implement a technology strategy, that technology is usually outdated. The bureaucratic process that school districts must follow to comply with federal, state, and local policies prevents them from acting quickly. In this era of transformation to digital teaching and learning processes, districts have to move faster. Obsolescence can be avoided by developing strategies that will accommodate the technology five years from now. The best strategies include a number of components that we have now and that will continue to evolve in the coming five years:

- Devices will continue to become cheaper and cheaper. For many districts, the greater cost will relate to supporting and paying for public and private clouds.
- The majority of students will own a device with wireless capability.
- All software will run on all devices.
- The majority of data will exist in either a private or public cloud.
- Personal data and business/school data will coexist within a firewall and be accessible on a single device, making one device, rather than separate school and home devices, the preferred solution.
- Devices and software will continue to learn about us and our habits
- Remote operation and access are evolving toward becoming standard operating procedure for teaching and learning.

Students and staff will personalize their devices to meet their life and learning styles, with their information residing in the cloud or Internet and information accessible from any device, anywhere, anytime. Personal settings or configurations are currently not always allowed on school-issued equipment. A single device will be set up the way Mac laptops are, with different uses on the same device—one use for education needs and the other for personal needs.

In a recent survey done with students in Miami-Dade Public Schools, 65 percent of the high school students said they have a device they could use at school. We expect this number to increase.



For BYOD to be effective, the following factors need to be in place:

BYOD needs to be supported in the same way effective 1:1 implementations are supported, both instructionally and technically.

Districts need to develop strategies to use BYOD to drive their 1:1 initiatives. To be successful, the plan must include funding students who cannot afford a device or access to the Internet when they are at home. This is far less expensive than providing a separate learning device for each child.

What needs to be in place?

The needed components to implement a BYOD-based 1:1 program are the following:

- Sustainable funding for children who cannot afford to purchase their own device and subscribe to Internet services.
- A tiered support model for effective technology support with existing technology staffing. (See example of tiered support model below.)
- Expansion of the network bandwidth to meet the higher traffic loads and traffic patterns generated by mobile learning.
- Mobile Device Management Interface for deploying/managing tiered devices.
- A secure network with role-based wireless and identity services to protect the organization from infected devices and hacker attacks.
- Access to an expanded network from home, workplace, or public locations.
- A portal where all content, applications, and information are accessible from the Internet and can be used on any device.
- Expansion of mobile learning to be integrated with LMSs, assessment, single sign-on, and other school applications.
- Provision of a content-filtering application that is age-appropriate and flexible, based on need.
- Devices that meet a minimum screen size and processing capability so that the devices can run all curriculum and digital content and students can interact with the software effectively.
- Expansion of the Responsible Use Policy for email and Internet usage that includes a simple BYOD policy. Miami-Dade built its policy on current policies and added only two rules.
 - When in school, students must access the district's filtered wireless network for data access.
 - Students are forbidden to connect to broadband services during school hours.

Example of Tiered Support Model: Andover Kansas

Andover Kansas has a two-tiered BYOD model of support that demonstrates what elements have to be in place for a BYOD system to function. The two-tiered process distinguishes between devices where the district provides educational applications and those that just allow communication. In tier 1 the district pushes all of the instructional applications on to the device and controls access to the Internet. Tier 1 is used mainly

for well-known devices and Tier 2 is simpler. It just allows connectivity to the network for off brand devices but does not manage the applications. However it does provide security.

Tier 1: Managed Device

We will manage the device in our Mobile Device Management Software, which allows for pushing of applications, content, etc. Connectivity Profiles will also be managed on the device.

Devices: iPads, iPhones, iPod Touch, Nexus 7, etc

Tier 2: Connectivity Support

Allows for basic connectivity to BYOD Provisioned Wireless via ISE. No application management or profile management will be supported.

Devices: Off brand Android devices, Kindle series tablets, etc

Tier 3: YOYO

You are on your own. No support for connectivity whatsoever.

Devices: Anything not mentioned.

The tiered support model for Andover Schools allows for integrated support for students bringing different devices onto the network, with a defined level of support by district technology staff. This model helps alleviate the strain on the technology department to support the different models of devices coming into the network.

What are the rationale and conditions for BYOD as an instructional environment, not just as hardware?

- BYOD allows us to achieve a 1:1 student-to-computer ratio with lower cost.
- It gives students greater control over anytime access and software choices.
- It minimizes training and the learning curve because students move with their devices from grade to grade.
- Districts will gain experience with new technology because some students and staff will be early adopters.
- Districts need to set a minimum capacity standard for 1:1 devices.
- There will be higher utilization of tools already licensed by the district. The cost of per-student licenses should decrease because there is increased opportunity for students to use the software.



- Any classroom can become a technology lab because there are no longer any space or device constraints.

What do vendors need to do to make this work?

Vendors can be profitable if they embrace and help districts implement BYOD along with the 1:1 initiatives already in place.

- They will be able to sell many more licenses and devices.
- Vendors have opportunities in building schools' infrastructures, curriculum, portals, and clouds.
- Vendors will need to change pricing models to allow families to buy devices at district prices over a period of time, and schools to purchase concurrent licensing.

What are the factors that can create problematic BYOD implementations?

- **Viruses and hackers.** The biggest risks, just as in 1:1 implementations, are having the system compromised by an infected device or a student hacker.
- **Lack of support.** Teachers and students need sufficient embedded instructional support to help them use BYOD.
- **Inadequate infrastructure.** There needs to be sufficient bandwidth, and networks need to be operant 24/7.
- **Lack of training and policies.** Districts need to provide effective retraining and professional development for teachers to work effectively in the mobile world, and they need to develop policies to support BYOD.

How is your tech implementation going?

The BLEgroup, www.blegroup.com a network of 180 leading edtech practitioners (superintendents, CIOs, and heads of instruction), provide both technology planning and implementation services to school systems and work with edtech firms and publishers to improve the quality of their products. If you are interested in the cost effective planning and implementation services we have developed for small and medium size districts for 1:1 computing, technology assessment and integration planning for small school districts, or planning for required on line assessment by 2015, [click here](#).

Part IV

Perspective from the Industry

*By
Anne Wujcik, Editor, EdNet Insight*

The BLE Group's Thought Leadership series on 1:1 addresses a number of issues of deep interest and importance to the educational technology industry. The first article "**1:1 Computing – Content Is Still the Question**" makes clear that the elements are now in place that will allow states and districts to begin the process of moving away from printed textbooks towards the implementation of a digital curriculum.

There are two central ideas in this article that content developers will have to grapple with. First the authors argue that for 1:1 computing to be economically viable, the combined cost of instructional materials and devices must be no greater than (or, even better, less than) what's currently spent on textbooks. Meeting that cost goal, when those instructional materials are expected to include rich multimedia, embedded assessment, collaboration tools and ultimately adaptive students pacing and pathways, is a challenge today. Taking the device cost out of the equation makes it a more realistic short-term goal. It is clear however that schools expect digital resources to cost no more than their current textbooks and that new pricing and business models have to be developed.

But this can't happen in isolation and the authors also make it clear that the schools themselves do not yet have in place the processes that they need to purchase and use the new digital content for 1:1 computing.

The second article focuses on implementing 1:1 in schools. This is not about handing out devices; rather it's a complex process that when done correctly starts by focusing on instructional outcomes and moves deliberately and gradually forward. The article goes on to describe common characteristics found among districts that are making significant progress in implementing 1:1 programs and provides advice on avoiding common mistakes. This article is directed to district and school leaders, but there's a wealth of information that the educational technology industry can take to heart. Districts planning their move to 1:1 often seek out industry partners. As publishers and infrastructure providers work with districts to implement their vision of 1:1 they need to be keenly aware of the best practices, unmet needs and potential problems. Is the district moving too quickly? Have they developed a solid professional development plan and ways to empower teachers? Do they have in place the instructional resources that will allow their program to transform instruction? The district's success is your success and if they miss their goal that will be seen as your failure as well.

The final article in the series considers the "bring your own device" (BYOD) model as one way of achieving 1:1 computing. The authors argue that BYOD can be a very effective way to implement 1:1 delivery for schools with capable and experienced IT staffs, robust networks, the ability to control student devices while on the network and access to cloud-based materials. While making the usual cost arguments, the article also notes that BYOD will allow schools to make the transition to a digital teaching and learning process right now while avoiding possible obsolescence as long as districts develop strategies that will accommodate the technology five years from now.

When seen as more than a low-cost way of providing devices, BYOD gives students greater control over anytime access and software choices. Any classroom can become a technology lab because there are no longer any space or device constraints. And because there is increased opportunity for students to use the software already licensed by the district, the cost of per-student licenses should decrease, allowing vendors to sell many more licenses and devices.

Again there is a lot of advice for districts in this article that educational technology vendors should take to heart as they partner with districts in implementing BYOD programs, helping make these efforts more central to instruction and learning. Clearly, however, as one device becomes the student's tool for both school and home use, vendors will need to rethink pricing and licensing models.

Together the articles in this series on 1:1 computing deliver useful insights to the educational technology industry about where leading-edge school districts are going and how they plan to get there. In the first article the authors contend that "districts' capacity to effectively plan, manage, and integrate technology for improved education results is less problematic than it has been in the past." And while that is certainly true, I would argue that it will take considerable time and effort to transfer the insights and experiences of these leading edge districts to the broader set of American schools.

As the transition to digital content accelerates, publishers continue to struggle with developing new pricing models that will work for both them and the schools. But the schools' ability to select, distribute and manage these digital assets may prove to be a significant stumbling block. The adoption model that once provided at least minimal review and vetting of instructional materials is in some disarray right now and while the Common Core State Standards should make it easier to review materials for alignment and rigor, no centralized process has emerged. The proliferation of apps and the interest in modularized content adds to the burden at the state and district level. Interest in open educational resources (OER) is growing, though OER faces the same vetting issues (mitigated perhaps by the appeal of being free). Districts are also putting considerable effort into developing their own instructional materials relying on the expertise of their teachers and their knowledge of local needs. So while it is true that the major task for both the industry and schools over the next year will be to determine



a cost-effective model for the effective delivery of digital content, some attention will also need to be paid to developing methods and metrics that help determine how these resources improve educational outcomes.

How is your tech implementation going?

The BLEgroup, www.blegroup.com a network of 180 leading edtech practitioners (superintendents, CIOs, and heads of instruction), provide both technology planning and implementation services to school systems and work with edtech firms and publishers to improve the quality of their products. If you are interested in the cost effective planning and implementation services we have developed for small and medium size districts for 1:1 computing, technology assessment and integration planning for small school districts, or planning for required on line assessment by 2015, [click here](#).



Part V

Perspective from the Schools

By

*Dr. Manuel Isquierdo, Superintendent and Ed Dawson,
Director of Federal Programs, Sunnyside School District, Tucson, Arizona*

The Sunnyside School District is recognized for the educational effectiveness of its 1:1 program that has enabled it to grow high school graduation rates from 60 to over 90 percent in the last 4 years.

Before offering a commentary on the three articles from the “BLEgroup Thought Leadership Consortium” we want to clarify the lens through which we make our observations. We are central office decision makers from a medium sized district, high poverty, and high minority k12 urban school district. Our district has established a 1:1 program 4 years ago and has expanded out digitally rich learning ecosystem with over 10,000 devices across 22 schools. The 1:1 initiative is the central component for engaging students and families in learning and improving educational outcomes. We have had many successes but have also learned from other districts on how to minimize mistakes and how to frame powerful questions, the answers to which will result in the most effective implementation of 1:1 computing possible.

The State of Digital Content From the Perspective of Schools and Publishers

In the article, “The State of Digital Content From the Perspective of Schools and Publishers” the authors have captured the three elements that are critical to successful implementation of digital content in a 1:1 environment with mention of the necessity of a revision of procurement policies. The first two elements – devices and management capacity – require sufficient attention to ensure that the third element of digital content is successful. As the authors of the Industry Perspective elaborated there are many more conversations that need to occur between the practitioners and the industry to best identify how to address the needs of the students and the teachers in this new space. A change in current structures with publishers in regards to electronic copies of books for large numbers of students’ consecutive use is critical to truly immerse in a digital world!

School systems that are in or moving to a 1:1 integrated space face decisions about what curriculum will be delivered to students:

- Common Core State Standards and the subsequent assessments (PARCC/SBAC) are game changers in curriculum – digital or not.

- Districts and schools need to develop explicit rubric that clearly identify the needs of their students and teachers (for example, ELL, assessments, PD methodologies) prior to shopping for digital content.

Purchasing digital content in the absence of such clarity can lead to costly mistakes—both financial and academic. In a digital world where “bells and whistles” are more eye-catching than traditional adoption materials; districts and schools need to recognize that there still are no silver bullets. While packaged curriculum can occasionally offer financial savings, decision makers need to carefully consider whether a “one size fits all” solution truly addresses the needs as identified in the rubric. Licensing structures that are concurrent, reasonable renewal costs or multiple-year cost savings are essential for districts to afford digital content. The possibilities in this dynamic space are endless. It is exciting that in addition to the products of large publishing company there are many emerging solutions from small, grass-roots companies. The future is bright and the conversations are timely as we move forward.

1:1 Computing: More Than Devices

The second article, “1:1 Computing: More Than Devices” addresses two significant areas that both educational publishers and school districts must address:

- What it takes to make it work
- What to avoid helping it succeed

Even though the eleven “necessary ingredients” are all worthwhile, three stand out as fundamental implementation elements ecosystem. The three fundamental elements are

- Construct a robust and flexible infrastructure to support 1:1 and digital teaching and learning.
- Create policies that set standards for students, teachers and families.
- PD, PD, PD, coaching and teacher support. Ongoing embedded professional development is critical.

We have experienced first-hand that without these three elements in place, establishing a digital environment is destined to be flawed and disjointed.

Two ingredients that are “*the heavy lifting*” necessary to grow a vital digital learning environment are:

- Focus and attention to instructional output and outcomes
- Developing, measuring and analyzing metrics of successful progress

Although not addressed in this article, a major “roadblock” to full implementation for districts who are engaged in developing a digital learning experience for students, is the paucity of content-rich, Common Core Standard built (not simply aligned) interactive and adaptive curriculum. The article is correct: make sure you have the bandwidth, but we think it is just as important to make sure that the content, you send across the bandwidth is innovative curriculum and not simply large publishers’ textbooks in pdf



format.

BYOD: The Solution for Districts That Don't Need the Lexus Model of 1:1 Computing

The third article, "BYOD: The Solution for Districts That Don't Need the Lexus Model of 1:1 Computing" is difficult for us to write an unbiased commentary given that our district purposely chose to supply standardized 1:1 device for each student rather than BYOD. However, it is understandable that in extremely large districts like Los Angeles, Miami Dade, Chicago, etc., the high cost of devices for each student, and the ability to move quickly and adapt to ever changing technology would be hindered by the deep levels of bureaucratic processes and policies necessary in a world of standard devices. However, if the issue was simply getting a device in the hands of students then we agree that the BYOD is preferable – yet the opposite can hardly be called a Lexus model.

Standardizing the device, or strategically limiting the devices to those that can be supported by the district infrastructure and use the refresh cycle to introduce the latest technology has advantages to smaller and medium size districts. The authors list eleven 1:1 necessary components for successful implementation of BYOD, some of which seem daunting including the tiered level of support from "you brought the right device" to "you're on your own with that device." Districts should weigh the cost savings of BYOD against the centralization of devices that ease and align the professional development for teachers, align the infrastructure support, and ensure a useable device that allows for anytime everywhere learning for the student and their families.

Summary

In summary, these articles address three of the vital elements that must be addressed, discussed and decided upon when moving a school district into a digital learning ecosystem: The most appropriate device model; the most essential elements upon which to focus for a successful transformation, and assuring and guaranteeing a viable digitally rich curriculum. Other vital elements that the BLEgroup will surely address in the future are:

- The outcomes and influence the digital school-based learning environment will have in transforming communities, especially low income communities.
- How to prepare and support students and teachers as the modality of the learning environment changes from one of teacher as "knowledge holder," to "student actively engaged and taking responsibility for their personalized learning while lead by a Common Core Standard versed facilitator.

Success hinges on the realistic partnership between vendors, purchasing regulators and innovative educational leaders to implement an engaging teaching and learning ecosystem over time.



How is your tech implementation going?

The BLEgroup, www.blegroup.com a network of 180 leading edtech practitioners (superintendents, CIOs, and heads of instruction), provide both technology planning and implementation services to school systems and work with edtech firms and publishers to improve the quality of their products. If you are interested in the cost effective planning and implementation services we have developed for small and medium size districts for 1:1 computing, technology assessment and integration planning for small school districts, or planning for required on line assessment by 2015, [click here](#).