BYOD - Bring Your Own Device to School

A Citizens Advisory Council Study Topic Report

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BYOD - Bring Your Own Device to School

The era of technology use in classrooms is well underway and Unit 5 is in the process of adopting a 1:1 computing model for students across the district. While Unit 5 currently provides technology (netbook and laptop computers) for students to use for this initiative, other school districts are turning to models where students are allowed to bring their own technology to school to meet their learning needs.

Bring your own device (BYOD) refers to technology models where students bring a personally owned device to school for the purpose of learning. A personally owned device is any technology device brought into the school and owned by a student (or the student’s family).¹

Over the past several years, the availability and use of laptops and other handheld mobile devices has become widespread. Many students now have access to their own portable devices and have choices and preferences as to the kinds of devices they want to use. Mobile access to information on the internet and other cloud networks is available via laptops, netbook computers, smartphones, tablet computers, e-book readers, along with other devices. Given this shift in the consumer technology market and the capabilities of the new devices, a question many schools are now asking themselves is: Do schools still need to provide computers?

Our Citizens Advisory Council topic group was asked to look into BYOD and present general information on the topic. We will discuss various BYOD models that are being implemented by schools and we will address some of the key considerations around BYOD. We will also present findings from other schools that are using various BYOD models and we will present survey results from a Unit 5 survey done on the topic.

At this time, no specific recommendation is being made regarding whether or not Unit 5 should implement BYOD. Our belief is that further examination of district provided technology and the various models of BYOD would need to be done to determine which one is the best fit for Unit 5. We hope this research paper provides enough background on the topic to help move the conversation forward. We are also not addressing whether or not technology should be used in classrooms, as Unit 5 is already moving forward with the 1:1 computing initiative, independent of BYOD research.

Is the time right for BYOD?

Over the last few years, laptops and handheld mobile devices have become more affordable and provide users with 24/7 access to information, resources, people and communities.

Individuals choose different types of devices depending on their needs and preferences. Devices fall into six basic categories and all represent personally owned devices that could show up in classrooms or could be purchased by school authorities for school use²:

- Laptop computers are portable computers that can be used with or without the Internet
Netbook computers are portable computers that gain most of their functionality through the internet. Smartphones/handhelds are devices that connect to the internet via cellular networks or WIFI connections (e.g., Blackberry, Android, iPhone, personal digital assistants, iPod Touch). Tablet computers fall along a continuum from laptop-like to large size smartphones (e.g., iPad, Android tablet, etc.). E-book readers (e.g., Kindle, Kobo). Audio MP3 Players (iPod, etc.).

Current census data shows that 79% of all U.S. households own a personal computer and 78% have internet access. Over 95% of households that own personal computers use them to access the internet. Only 7% of all households report financial reasons for why they do not access the internet. In addition, more than half of Americans now report that they own smartphones.3

Are students ready for BYOD?

Today’s students have never known a non-digital time. They live in a world with anytime, anywhere access to information at their fingertips. Technology has provided them with a social, collaborative world. On their own time they thrive on teamwork and figuring things out with their friends. This is done in an environment where not everyone has access to the same technology devices. Some connect through smart phones or handheld devices, some use tablets, others use gaming systems or laptops. Today’s students want to connect with others in real time.

Today’s students are both consumers and creators. They download and view audio and video, then create their own to upload and share with others. They are used to having multimedia tools at their fingertips, and they are adept at using these tools to express their creativity.

Smartphone adoption among American teens has increased substantially and mobile access to the internet is pervasive. One in four teens are “cell-mostly” internet users, who say they mostly go online using their phone and not using some other device such as a desktop or laptop computer.4

These are among the new findings from a nationally representative Pew Research Center5 survey that explored technology use among 802 youth ages 12-17 and their parents. Key findings include:

- 78% of teens now have a cell phone, and almost half (47%) of them own smartphones. That translates into 37% of all teens who have smartphones, up from just 23% in 2011.
- 23% of teens have a tablet computer, a level comparable to the general adult population.
- 95% of teens use the internet.
- 93% of teens have a computer or have access to one at home. Seven in ten (71%) teens with home computer access say the laptop or desktop they use most often is one they share with other family members.
“The nature of teens’ internet use has transformed dramatically — from stationary connections tied to shared desktops in the home to always-on connections that move with them throughout the day,” said Mary Madden, Senior Researcher for the Pew Research Center’s Internet Project and co-author of the report. “In many ways, teens represent the leading edge of mobile connectivity, and the patterns of their technology use often signal future changes in the adult population.”

Can BYOD Enhance Learning?

With mobile devices like iPads and smart phones, students have the ability to access the plethora of information the internet has to offer. Instead of just the traditional style where the teacher does all the teaching and student just tries to retain it, students can learn on their own and actually search, gather, and absorb the information, not just regurgitate it.

BYOD technology can assist students that may not regularly participate in class to give feedback and participate. This activity helps the student become engaged in the lesson and retain more information.

Critical skills are developed through the use of technology. These skills are ones that will enable them to compete and prepare for the future. Students will be using mobile devices in the workplace. A well run BYOD program can teach them how to use these devices in the correct way and better prepare them for the future. By working on their own mobile devices students learn proper decision making and take responsibility for their own work and productivity.

Skills that are developed and improved through the use of technology include:

- Critical Thinking and Problem Solving
- Collaboration
- Agility and Adaptability
- Initiative and Entrepreneurialism
- Effective Oral and Written Communication
- Accessing and Analyzing Information
- Curiosity and Imagination
- Life-long learning
- Learning anywhere, any time and from anyone

One of the most important reasons BYOD technology in the classroom enhances learning is because students are using tools they already love. Technology is what today’s tech-savvy students know. It’s what they have grown up on and use for entertainment.
Exploring Various BYOD Models

There are many potential BYOD models used to define and manage devices allowed in schools. Although there are variations, the models generally fall into four main categories, plus a fifth approach that represents hybrids of the first four models.

The five categories are:

1. Personally owned devices need to be a specific brand/model.
2. Personally owned devices need to meet specific technical specifications (e.g., specific versions of operating systems, minimum amount of storage space, Internet ready, etc.).
3. Personally owned devices need to meet specific functionality (e.g., compatibility with software, compatibility with online testing requirements, etc.).
4. Accepting all personally owned devices provided they are Internet-ready.
5. Hybrids or combinations of the four models listed above.

The models above fall onto a continuum ranging from high standardization to high flexibility. At one end of the spectrum (standardization) is the identification of a single type of device that all students must purchase. At the other end of the spectrum (flexibility) is an open-ended model that encourages students to bring any device into school. The models in-between limit the personally owned devices to specific technical specifications or capabilities. A fifth model is a hybrid or combination of one or more of the four models identified below.

The decision as to which BYOD model is adopted has major implications for students, teachers, parents, administrators and school policymakers. According to Alberta Education, an educational research group that focuses on technology trends in schools, one of the key steps a district needs to take prior to making a decision on which model to use, is to clearly articulate its goal(s) for opening up schools and classrooms to personally owned devices. The policies that are established about which devices are acceptable as personally owned devices will impact what teachers and students can do with these devices in the classroom. For example, selecting the fourth BYOD model, where all personally owned devices are acceptable, may limit the assignments teachers can give, since some personally owned devices may not be capable of word processing, processing images or production of presentation slides.

In some cases, variations across schools and grade levels will lead to the development of a policy that provides educators and parents in each school and across grade levels with the flexibility they need to accommodate different needs. As Unit 5 considers if BYOD is right for them, they should also consider the tradeoffs between standardization and flexibility related to the BYOD models.

Detailed information is provided below about each BYOD model and specific benefits and considerations are highlighted. These benefits and considerations are based upon the flexibility allowed by the model being discussed. (Later in this paper there is further examination of the benefits and considerations for BYOD in general, independent of the model chosen.)
1. **Personally owned devices need to be a specific brand/model.**

**Example:** Students are expected to have a Dell Inspiron 15 i15N-1900BK Laptop to be used in their daily learning. All other personally owned devices are not allowed in the classroom.

**Benefits:**

- Devices are fully functional laptops, which can be used for the full range of learning activities. For the school – all the costs for the laptop are paid by the parent or through a significant co-contribution from the parent. Within this model there usually is a process for the seamless provision of support for less financially able families.
- The specification of a single model and brand offers the best volume buying power, simplifies servicing arrangements significantly, and lowers costs accordingly.
- Student computers all have the same capabilities, so no student is working with an inferior tool and teachers can plan learning activities around these capabilities.
- Because teachers can count on the devices being in the classroom, there is ease to planning and teaching with the devices.
- As a community, teachers can figure out the capabilities of the device and share practices.
- Technology departments only contend with the same configuration on each device.
- If a student has a technical problem, support at the school is familiar with the hardware and/or other students in the class can help.
- Loaners can be used with minimal disruption to learning because the student will know how to use the device.
- The school can negotiate with the service vendor for loaner laptops for any extended service needs.
- Students are not using the type of device as a social status symbol.

**Considerations:**

- There will be a lack of options available to the students and their families.
- Students may not prefer the chosen model, so they would have to buy a device they use only for class.
- The challenge of updating the brand/model.
- The difficulty of controlling, monitoring and/or enforcing the policy.

2. **Personally owned devices need to meet specific technical specifications (e.g., specific versions of operating systems, minimum amount of storage space, Internet ready, etc.)**

**Examples:** Students require a laptop that runs Windows 7, has a DVD R/W drive and has a video card. Or, students require a PC laptop with a minimum Pentium 4 processor, 160GB Hard Drive, 2GB RAM and wireless “g” or “n” capability; or any Intel-based Macintosh laptop.
Benefits:

- Students and their families are offered some flexibility and choice in providing devices.
- When planning lessons, teachers can check the requirements for PC/Mac versions and capabilities and know if their students’ devices will be able to run the software, applications or tools or show videos/images.
- Since a range of brands of devices are used in the classroom, students may gain digital literacy as to similarities and differences as they work collaboratively with students who have devices different than their own.

Considerations:

- Different platforms or brands may cause challenges for teachers in terms of technical support during class.
- Teachers may have to check to see if specific software and tools run both on a Macintosh and a Windows platform.
- The challenge of updating the brand/model.
- The difficulty of controlling, monitoring and/or enforcing the policy.
- The flexibility offered students may result in the use of the device as a social status symbol.
- Lack of standardization does not allow for standard charging stations.

3. Personally owned devices need to meet specific functionality (e.g., compatibility with software, compatibility with online testing requirements, etc.).

Example: Students are required to bring a personally owned device regularly to class that meets the following minimum functionality:

- Connects and interacts with the school authority Learning Management System (e.g. for Unit 5 would be CMS).
- Allows students to create full text documents or contribute fully to online collaboration places.
- Runs online interactive software or simulations hosted and based on the Flash platform.

Benefits:

- Students and their families are offered some flexibility in providing laptops or notebooks.
- Since teachers cannot be sure of exactly what the devices will run (except for those in the specifications), they may become less directive about which software, applications or web tools students use – leaving that to the students’ discretion – and simply set standards for the outcomes.
• Since a range of brands of laptops are used in the classroom, students may gain digital literacy as to similarities and differences as they work collaboratively with students who have devices different than their own.
• The access to the Learning Management System has facilitated teacher planning and posting of digital options online.

Considerations:

• Students and their families may feel uncertain as to how to select a computer to meet these criteria.
• More students own handheld devices than notebook or laptop technologies. Thus students and their families may have to purchase additional equipment.
• Other than the functionality required, teachers cannot be certain that all the tools and software they plan to have students use will actually work on the personally owned devices.
• The difficulty of controlling, monitoring and/or enforcing the policy.
• The flexibility offered students may result in the use of the device as a social status symbol.
• Lack of standardization does not allow for standard charging stations.

4. Accepting all personally owned devices provided they are Internet-ready.

Examples: Students are recommended, encouraged, or required to bring a personally owned device to class that can access internet resources. Or, students are encouraged to bring a personally owned device to school. The school authority maintains a website that allows students/staff/parents to configure an internet ready device to become a full network device at school.

Benefits:

• Students and their families are offered tremendous flexibility in their provision of the devices.
• Parents and students who prefer one platform or device over another have a choice.
• With the variety of devices in any classroom, the teacher cannot know every device, thus he will be required to focus on the learning and leave the technical challenges to the student, who knows (or must learn to know) his own device.
• A message is conveyed that all devices have advantages and disadvantages based on their application in the learning process.
• Since a range of brands of devices are used in the classroom, students may gain digital literacy as to similarities and differences as they work collaboratively with students who have devices different than their own.

Considerations:
• At times, the devices’ capabilities may not match the learning requirements and students may have difficulty participating.
• Issues of equity may arise given potential differences in the capabilities of various devices.
• The flexibility offered students may result in the use of the device as a social status symbol.
• Some devices can’t do consumption and production/creative tasks or even input full sentences easily.
• Much more work for the network manager to manage a variety of devices.
• Teachers and tech support staff need to be familiar with several platforms and many devices.
• Buying power and bulk discount purchasing and licensing options are significantly diminished, for both hardware and service accountability.
• Consumer-level service expectations. Need to rethink service process to ensure viability.
• Most programs/applications are not available across all platforms and devices or function very differently across various devices.

5. Hybrids or combinations of the four categories listed above.

Example: Any device with wireless capability is permitted to connect to the school authority network provided the user has a login account (all staff and students) and agrees to behave according to a Responsible Use of Technology Agreement. Or, students are permitted to connect to the school network with any wireless device but needs to have access to a laptop with a defined minimum capability for homework or on days that the teacher requests it in class. (A “1:2” computing model.)

Benefits:

• Students and their families are offered tremendous flexibility in their provision of the devices.
• Parents and students who prefer one platform or device over another have a choice.
• With the variety of devices in any classroom, the teacher cannot know every device, thus he will be required to focus on the learning and leave the technical challenges to the student, who knows (or must learn to know) his own device.
• A message is conveyed that all devices have advantages and disadvantages based on their application in the learning process.
• Since a range of brands of devices are used in the classroom, students may gain digital literacy as to similarities and differences as they work collaboratively with students who have devices different than their own.

Considerations:

• The limitation comes at the school level where there are expectations of the functionality of the device.
• At times, the devices’ capabilities may not match the learning requirements and students may have difficulty participating.
• Issues of equity may arise given potential differences in the capabilities of various devices.
• The flexibility offered students may result in the use of the device as a social status symbol.
• Student devices do not all have the same capabilities. Some have inferior tools and teachers must plan learning activities around the lowest capabilities.
• Some devices can’t do consumption and production/creative tasks or even input full sentences easily.
• Much more work for the network manager to manage a variety of devices.
• Teachers and tech support staff need to be familiar with several platforms and many devices.
• Buying power and bulk discount purchasing and licensing options are significantly diminished, for both hardware and service accountability.
• Consumer-level service expectations. Need to rethink service process to ensure viability.
• Most programs/applications are not available across all platforms and devices or function very differently across various devices.

The pros and cons for this model vary according to the combination or hybrid selected (see above models 1 to 4). In some cases, variations among schools and grade levels will lead to variations in the school policy that provides the educators and parents in each school and at various grade levels the flexibility and adaptability they need to accommodate such variations in needs and goals.

BYOD Considerations

There is a lot to consider when deciding if BYOD is the right way to go for 1-to-1 computing. A quick scan of the internet leads to hundreds of articles with “pros and cons” of BYOD. Beyond the benefits and considerations related to each specific BYOD model identified in the last sections, there are other general considerations that are independent of the model. We have broken these down into 3 main categories: financial; technical; and social. We have also included an additional section of general considerations that didn’t fit neatly into the other 3 categories.

BYOD – Financial Considerations

Most BYOD financial considerations revolve around who will pay for the device. Competitive pricing of tablets, smartphones, and laptop computers can make BYOD a viable option for many families. There are, however, other costs associated with BYOD that need to be weighed. Some of those include: the cost to the district of providing the technology infrastructure, the cost of software and applications, and the cost of IT support. In addition, the cost of internet access for parents needs to be included.

The percentage of contribution from parents can range from 100%, with parents shouldering the entire cost of devices as well as service, warranty and replacement for each of their children at school, to a partial or co-contribution model. Since the cost of providing computers shifts away from schools under BYOD models, school technology budgets can be used to co-contribute to the cost of each student’s laptop, support equity access programs for less financially able families or to provide an enhanced level of both infrastructure and/or hardware service support. Instead of spending dollars to buy redundant
learning devices for students who already own such tools, school IT departments can invest that money in devices for students who lack their own.

Coverage of home high-speed broadband also needs to be addressed and policies put in place for families that cannot afford it. In some districts, this may provide for a possible contribution from a company or government body under an ongoing funding initiative.

Financing options also come into play. Some options include using student registration fees to pay for devices, having a lease program or buying in bulk and setting up payment plans. Fees that normally are used for physical text books may be redirected toward device purchase if online textbooks are used instead. Regardless of option, policies around who gets the device at end of its’ life and what happens when devices need to upgraded need to be established. While ownership usually defaults to the families, other options are available.

Although BYOD may seem, on the surface, to save money, that may not always be the case. Network, security and technology management become more complex if a model is chosen that allows for widely different devices. Support costs usually increase as the complexity of the system increases. In fact, Microsoft has reported that some schools found the total cost of ownership for BYOD models is 25-30% higher than before – though this is hidden by moving some of the costs to parents. Professional development remains a priority no matter how the technology is provided and additional learning may be required in a challenging multi-device environment. This would be an added expense to schools.

BYOD – Technical Considerations

There are many technical considerations with implementing BYOD, some are directly related to the model chosen, and others exist independent of the model.

One perceived advantage of BYOD programs is that the responsibility for laptop or device maintenance moves from the school to the students and their parents. Maintenance of devices is something that needs to be considered carefully, though. A good starting point is to establish what the standard process will be for students having their laptops repaired, and if a standard school policy can actually be enforced when responsibility for upkeep lies outside the school. How long will students have to repair their devices and what can be done if repairs aren’t made within a reasonable time frame? Contingency plans also need to address if loaner devices are going to be made available and who will supply them. If an organized maintenance plan cannot be established then, inevitably, there will always be a percentage of students who cannot participate fully because their device is under repair, lost or malfunctioning, making classroom management challenging.

In-school computer support and help desks are critical to keeping 1:1 learning running smooth. In a student-chosen BYOD environment, the role of the Help Desk is expanded to cater to multiple devices and operating systems. If properly run support is not it place, it can put a strain on teachers as they try to understand and provide trouble-shooting for multiple device types. Student-manned Help Desks can
be a practical solution, but it’s important to ensure that processes and systems are in place so that support can be provided promptly and efficiently. Providing BYOD support may also add to district technology resource and staffing needs.

In addition to computer support, a percentage of student laptops and other devices will inevitably be dropped or knocked – and break. When that happens, the student needs to know the device can be repaired immediately, without any discussion about insurance assessment, or argument about whether the damage was intentional. Therefore devices within any 1:1 initiative need to be covered by full warranty and insurance for the full term that they will be used at school.

Another technical concern is infrastructure. Some schools are concerned that an influx of devices on the network will require more bandwidth than their network can handle. Our group met with Unit 5’s Director of Technology, Marty Hickman, and he stated that Unit 5’s network is already capable of handling the load. Regardless if BYOD is implemented or not, 1:1 computing is planned to be implemented across the district by 2016, so this issue is not unique to BYOD.

In a student-chosen BYOD environment image recovery, which, in a school-managed environment is embedded in the school management systems, becomes challenging. It is the same for security authentication and virus protection for devices that will connect to (and potentially infect) school networks. Within any model, it is important to assign responsibility for managing compatibilities, images, viruses and security. Whether this be the student manned Help Desk, the manufacturer, the service agent or students, what matters is that there is clarity in understanding who is managing these matters.

Device life-cycles are also important to consider. While three- or four-year rollovers are standard in most school-based programs, it’s difficult to enforce upgrades under a student choice BYOD plan. The challenge becomes teaching across different generations of technology and feature sets. Teachers are placed in the position of trying to leverage contemporary technology, without excluding students who don’t have it.

**BYOD – Social Considerations**

Social considerations related to BYOD primarily center on equity of access to devices and the proper usage of devices and information by students and teachers (policy).

For BYOD to really bring value to the classroom environment, all students must have access to devices. But the reality is that some students won’t have their own device or home Internet access. Schools with BYOD programs are solving this inequity using a variety of approaches. Some provide loaner devices from their own inventories, while others offer stipends to help families purchase a device or pay for broadband. And then there are schools that simply give students their own, buying devices for all students receiving financial aid. Internet access both in school and beyond the school day is critical if students are to access digital content through their personally owned devices. This raises the issue of
the school's responsibility for internet access throughout the school campus and at home for both personally owned devices and for school-provisioned devices checked out to students who cannot afford a personally owned device.

In addition to access to devices, policies need to be put in place regarding the proper use of devices, information and content accessed by students. Putting the focus on student accountability makes for a more positive approach to what’s essentially a trust-based contract. The document, which needs to be signed by both students and their parents, should spell out the intent of the program, how students are expected to use their devices, what constitutes an infraction and the consequences of such behavior. Unit 5 already has a policy in place for students who are participating in 1:1 computing. These policies will need to be updated to include BYOD considerations.

Parents also need to be educated and engaged in understanding and communicating appropriate use of devices. Schools should seek their input early in the process of rolling out a BYOD program and provide educational materials about policies and expectations.

Policies and standards related to what sites are reliable and appropriate for use need to be developed and education should take place regarding copyright. Legally, it is the responsibility of the user to be knowledgeable about the copyright law that applies to digital content and digital materials. In schools, the expectation that students will adhere to copyright laws is addressed through an acceptable or responsible use policy signed by students and their parents/guardians. Such policies typically address the following issues with respect to student use of copyright materials and student productions – including text, audio, images, video and multimedia:

- Avoidance of plagiarism
- Appropriate citations
- Internet safety related to student identification as author of work

One of the ways in which schools can support appropriate student use is by providing students with access to databases of audio, images, video and multimedia resources that are public domain.

**BYOD – General Considerations**

The following is a summary of benefits and considerations that are general in nature.

**Benefits:**

- Students like using their personal devices, so they become engaged in whatever it is that they’re doing with them—including classwork, which becomes even more interactive when everyone has access to technology.
• The current generation of students has grown up with technology and wants to use it in every aspect of their daily lives-including school.
• Learning anytime, anywhere without schedule or access restrictions.
• Personalized, students tap into their individual learning preferences.
• More engaged and motivated students.
• Student participation increases.
• Devices are commonly more up-to-date with newer features.
• Replicates a technology-rich environment already common in higher education and business.
• Gives students a preview of how their future workplaces will operate.
• Flexibility- supports different learners with different needs.
• Students are held accountable for their learning, puts them in charge.
• Encourages continued learning outside of the classroom walls.
• Helps students identify skills that will make them life-long learners.
• Student collaboration and communication increases.
• There is an ergonomic benefit to not having the weight from all of the textbooks.
• Can improve communication with peers and teachers.
• Access libraries of digital content that provide multiple pathways to learning.
• Pursue real-world issues and topics of deep interest.
• There is also an opportunity to use these technologies – both personally and school-owned devices—to level the playing field for students with diverse learning needs.
• Provide equitable learning opportunities, especially for students with special needs.

Considerations:
• Concerns over student data and the protection of student privacy.
• Parent-financed BYOD, might not be a viable option or well-received by some.
• BYOD requires a shift in teaching approach and a new approach to education- teacher as facilitator.
• BYOD might require extensive professional development for teachers. Not all teachers are “tech savvy”, so schools will need people available to provide technical assistance to teaching staff.
• Off-task behavior, inappropriate use of devices.
• Mobile device limitations- screen size, battery life, lack of keyboard, software compatibility, and support for Flash and other multimedia files.

BYOD – Unit 5 BYOD Survey Results

In order to assess the community’s receptiveness to BYOD, our Study Topic Review group prepared and implemented a 15 question survey that was posted on the Unit 5 website. The survey was available from January 17, 2014 through February 3, 2014. A total of 1,156 responses were submitted. Fourteen questions were directed and 1 question asked for freeform input.
Here are a few themes that emerged from reviewing the data:

- Approximately half of the respondents indicated they were not aware of what the Digital Conversion / 1:1 program was. In addition, based on some of the freeform concerns around technology implementation, the District has an opportunity to better educate parents and community members on this initiative. Once this happens, Unit 5 can then better illustrate how the 1:1 Initiative (underway regardless of the District’s choices in BYOD) can roll out faster should BYOD be adopted.
- With multiple concerns being raised (device compatibility, possible distractions in the classroom, etc.); a more standardized BYOD model (Bring Your Own Device from an approved list of devices) may help address these types of issues. (It may be too soon to go to the most liberal model, bring any device that connects to the internet, but compatible devices can still be used in a 1:2 computing model.)
- Other common concerns that were raised in the freeform section included: cost to purchase; damage; theft; technology expense; technical support, and financial subsidy aspects to help families that can’t afford a device.
- Computer and internet access exceeds that of the general population.
- Holistically, the respondent pool appears at least somewhat supportive of technology devices for instructional use.

Detailed survey results are available in Appendix 1.

BYOD - School Case Studies

In order to get additional perspective on BYOD in schools in Illinois, our Study Topic Group contacted 3 districts that we heard were implementing technology in their schools. The districts were: Indian Prairie School District 204 based in Naperville; Havana Community Unit School District based in Havana; and Tri-Valley Community Unit School District #3 based out of Downs. The schools represented a large suburban district (Indian Prairie), a small school district (Havana), and a local district (Tri-Valley).

Each district was asked the same set of questions and here are some high-lights from each district:

- Indian Prairie is a large school district in the Chicago suburbs. It is the third largest school district in Illinois, encompassing 46 square miles, including portions of Naperville, Aurora, Bolingbrook and Plainfield. The district has 33 schools and 29,000 students.
  a. They began their BYOD program in 2011.
  b. They are using an open model which allows any device of choice.
  c. The district does not co-contribute to device costs.
  d. There has been very minimal negative feedback about the program.
  e. Surveys results show that 90% of kids like the program and 90% of teachers find the students are more engaged.
f. No observation of students using devices as status symbols or peer pressure to own specific devices.
g. District provides technology support to get on network, but not beyond that. Stated kids know their devices and tend to help each other out.
h. Main challenges were: getting teachers trained (BYOD optional for teachers); keeping up with bandwidth and educating parents.

- Havana is a small rural school district about 60 miles Southwest of Bloomington/Normal. It has 3 schools and 1,300 students.
  a. They are not doing BYOD in traditional sense, but are allowing smartphone use.
  b. They are initiating 1:1 computing next year and will provide laptops to all Jr. High and High School students.
  c. They use the flip classroom model, so kids are viewing many of their lessons at home at night and doing homework at school during the day.
  d. The district is providing devices in order to get 1:1 started. They hope to get everyone comfortable with technology and then start a BYOD program.
  e. Community is very receptive to new technology.
  f. Once a few teachers starting getting on board, they trained others and it progressed from there.

- Tri-Valley is located in Downs and Leroy just East of Bloomington. It is a small school district with 3 schools and 1,050 students.
  a. They began their BYOD program in 2011.
  b. They offer BYOD solutions:
     i. Bring your own device
     ii. Purchase one from the district (a select amount are ordered based on a parent survey)
     iii. Borrow one from the Media Center. Parents sign a BYOT Policy stating if they break it, they buy it. A limited quantity is also available for checkout.
  c. The district does not co-contribute to device costs, some are available for check-out, but they stress it is a limited supply.
  d. There has been very minimal negative feedback about the program.
  e. No observation of students using devices as status symbols or peer pressure to own specific devices.
  f. District provides technology support if the device is purchased from them.
  g. They allow each student to have up to 2 devices registered on the network.
  h. Main challenges: initially teachers were a bit resistant to the change; concerns from parents related to internet access and content filtering; warranties on the computers.

Detailed responses for each school are included in Appendix 2.
BYOD - Next Steps

Our topic group recommends that BYOD continue to be explored as an option to meet Unit 5’s 1:1 computing direction. Encouraging personally owned devices in schools is a potentially exciting next step and aligns with Unit 5’s IT Plan and Unit 5’s Mission, “...to develop a path for students to learn and understand the 21st Century Skills that are necessary to become competitive in the world economy.” Many students already have access to devices that are more current, powerful and flexible than those currently offered to them in their schools and they are finding ways to use them to learn.

If it is decided that the District wants to pursue the potential of BYOD, research indicates that communication with the school community (i.e., students, parents, community groups and other stakeholders) is important if the plan is to have strong support and sustainability. The community should be educated on 1:1 computing and on the costs, benefits and concerns associated with the various BYOD models.

Even though our Study Topic Review group conducted an initial community survey, more detailed information should be gathered. Surveys, parent focus groups and student input could be used to better understand the community’s priorities around the use of technology.

The following questions should be addressed:

- What are the community’s priorities for using technology in learning?
- What types of technology devices do students have access to at home?
- What type of Internet access do students have at home?
- What are the parents’ hopes and fears regarding personally owned devices?
- What price point is reasonable for parents to be able to afford to provide a device for each of their children?
- What support, information and training would parents need to support a BYOD model?

As mentioned earlier in this paper, the selection of a BYOD model should take into account student equity considerations. The BYOD model selected should be affordable to most parents in the community, with a set of school-owned devices available for checkout to students whose parents cannot afford a device. BYOD benefits can be realized even if not all students opt into the BYOD model.
Sources Cited


5 Pew Research Center is a nonpartisan research organization that informs the public about the issues, attitudes and trends shaping America and the world. It conducts public opinion polling, demographic research, media content analysis and other empirical social science research.


Appendix 1

Survey Commentary by Question

Total survey respondents - 1,156.

It should be noted with the exception of the freeform final question that all respondents answered all questions (no one skipped questions 1 through 14).

Q1) Nearly 80% of this survey’s respondents were Parents, and the rest were predominantly a mix between Students and Staff.

Q2) There was a fairly equal mix of the grades of children in the respondent households. The low of the respondent grades was Senior at 6%; the high was Eighth at nearly 14 and a half %. Approximately 14% of the respondents (162 answers) identified themselves as “Not a Unit 5 Parent.”

Q3) Half of the respondents indicated they were NOT aware of Unit 5's Digital Conversion / 1:1 Initiative.

Q4) Sixty percent of the respondents / 700 people do not already have a child currently using a district-provided laptop.

Q5) 98% identified that their family regularly uses at least one mobile computing device.

Q6) The top three devices that children already own include:
   a) Smartphone 44%/510 respondents
   b) Tablet 37%/432 respondents
   c) iPod Touch 36%/420 respondents
   d) 180 respondents, approximately 16% answered “Does not own any device.”

Q7) Nearly 98% of the respondents indicated their family DOES have an internet connect and Wi-Fi that can be used with a laptop in the home. However, given this statistic is close to the way a similar question was previously answered, and the District found parents were considering smartphone cellular service as “internet service” to the house, care should be taken with this statistic (did some of the respondents not fully read or totally understand the qualifiers on this question).

Q8) 85% (when adding up the Yes and Maybe categories) answered they Do/aren't unfavorable to support Unit 5 students bringing technology devices to school for instructional use.

Q9) The top three issues of concern if students brought their own devices include:
   a) Theft 78%/906 respondents
   b) Damage 70%/806 respondents
   c) Cost of Purchase 38%/438 respondents
Q10) Notable in the types of devices students do already bring to school
   a) Smartphone 42%/490 respondents
   b) Does not bring any device 42%/474 respondents
   c) Across these two categories, 964 of the 1,156 respondents are represented

Q11) The respondent group had the following as their top three types of devices they might allow their child to bring
   a) Smartphone 51%/595 respondents
   b) Tablet 50%/574 respondents
   c) Laptop 42%/486 respondents

Q12) The mix between the two presented options (Choice of BYOD, No Fee OR District device with Fee) was very close, there was little spread between the two. Slight edge to district-provided device along with a fee (52%).

Q13) 40% of the respondents either feel they will need financial assistance, or might need financial assistance to participate in the BYOD program. This is the sum of both the Yes and Not Sure answers, and perhaps could be extrapolated to apply to financial assistance needed even if a non-BYOD; technology fee structure for Digital Conversion is implemented for district-provided devices.

Q14) 50% of the respondents did indicate they would consider donating older devices to the District as their households upgraded technology to help those needing assistance. The “No” answers that they would not consider this was 15%, with the remaining respondents as Maybe's.

Q15) The freeform comment box, where 32% of the respondents entered something. Of the verbatim, keyed answers available in the tool, there is a mix of supportive entries (appreciative of technology in learning), non-supportive entries (unfavorable towards technology, or more specific BYOD tech.), and neutral entries with specific concern aspects noted.
Specific concern aspects include:
   a) Fee amounts, fee structure around the technology implementation and maintenance
   b) Compatibility/incompatibility of different device platforms and the school's IT architecture. Also concerns about the capacity of the school networks to handle all the devices.
   c) Damage/Theft occurrences, expense of repairs and the child's educational support while the device is being replaced/repaired.
   d) An inequality gap as an indirect result of a BYOD program (“more well-to-do students bringing nicer devices”)
   e) Preference for district-provided devices when respondents made a statement tying back to the #12 options.
   f) Security/privacy/data integrity (including blocks of inappropriate content, or appropriate content at inappropriate times)
g) Concerns over the loss of actual book use and teacher-student active engagement across the classroom. Also the distraction to the teacher and the classroom of attempting to assist students with their devices during instruction time, especially if there was no restriction on the type of device allowed.

h) Time limits/screen time

i) One comment on how there is inconsistent adoption/use by the teachers of the technology tools already available today in the schools.

j) One comment on a person from a California school district that is now in the Unit 5 area, on how that school district went specifically with iPads, along with both an insurance on the devices, and protective cases for the devices.
Appendix 2

Questions for Schools Using BYOD

Indian Prairie – responses from Stan Gorbatkin, Asst. Superintendent, Technology Services.

How long have you been using BYOD?
Pilot began in the spring of 2011 with 6 schools. 2 elementary, 1 middle and 3 high schools were included with 30 teachers.

What model?
Indian Prairie doesn’t recommend or require a particular device. They are not telling parents they have to go out and buy rather leveraging what they already have.

Is all curriculum used with the program? No. “This is an evolution not a conversion.”
Is the curriculum web based? A lot of curricular areas have online companions.

Do you allow students to record lectures?
Indian Prairie gears toward not recording. Stan reviewed the release form and it does state this. Any recording would present a rare occurrence and the control is left to the teacher. Absolutely cannot be done without the teacher’s permission.

Do parents need to submit a release form in order for recordings to be allowed?
Stan offered an opportunity to share their forms and resources if Marty Hickmanns would like to request. There is a release form for the program.

What challenges have the teachers experienced?
There is pre-work for teachers to know about the devices to help their students. Stan shared IPad, Kindle and Iphones are the most used. Some students do use their laptops. Experience shows that kids know their devices and kids help each other out.

How do you encourage people to bring their own device?
Welcome letter to teachers, principals introduce and support the program at PTA meetings, parent council meetings and the superintendent supports the program.

What are the challenges of the wide open model? (specific to Indian Prairie)
1) Getting the teachers trained. BYOD is voluntary for teachers and not required.
2) Keeping up with the bandwidth.
3) Getting the word out to parents.

Have you noticed an increase in peer pressure with BYOD?
No. This is a reflection of how the teachers handle the program.

Security concerns from parents?
Indian Prairie has seen reduced theft because the devices are out in the open. The parents are responsible for the devices.
Have you received any negative feedback from parents regarding extra costs of the devices? Occasional 1 to 1 preference is communicated however the negative feedback is very minimal.

Does your district subsidize the cost of these devices for those who do not have their own devices? No.

How do you handle technology problems/questions? Do students assist or are there computer techs on site? Indian Prairie offers technology support as it relates to the Network. An instructional video is provided to guide the student connection to the Network. Again, kids know their devices and tend to help each other out.

Other highlights from Stan:
Indian Prairie was a presenter at TechCon and they have hosted about 20 districts since that time.

60% of 2000 teachers are trained and using BYOD/BYOT in some capacity.

Free diagnostics are available so that the teachers can poll the students.

Surveys results show that 90% of kids like the program and 90% of teachers find the students are more engaged.

As BYOD is considered, Stan shares the importance of the right people around the table. The big decisions and concerns include band width and web filter. Kids must be on the network. Aligning all policies including the student handbook is challenging yet critical.

Questions for Schools Using BYOD

Havana School District – responses from David McKinney, Principal Havana High School

How long have you been using BYOD? 3rd year. Going 1:1 next year.

What model? Some use smartphone, tablets, have 8 Nexus Tablets in room, some iPads. They control it by dictating to students when they can use it. Kids need to have flash drive. They can pull this and save it and take it home and use it on their home computer.

Is all curriculum used with the program? Teachers work it in with their lessons. With flipped lessons, they have incorporated reading. Is the curriculum web based? Will use Pearson’s Common Core Curriculum next year.

Do you allow students to record lectures? They do not due to privacy/legal concerns. For students with disabilities, the district uses software to record and edit. They use this for flipped lessons.
They have a lot of filters on equipment to limit potential for viruses. When they go to 1:1 next year, server will allow for only specific types of products. Material will need to be saved to flash drive and won’t be saved to hard drive.

**Do parents need to submit a release form in order for recordings to be allowed?** They have a technology use form and Internet policy form. They do have release for parents to sign for permission to use child’s likeness. Not an issue.

**What challenges have the teachers experienced?** Initially, getting ability/training to be successful using technology. If you have 4 or 5 that really know how to do it, they can train others.

**How do you encourage people to bring their own device?** People were very receptive so not a lot of encouraging involved, plus they provide.

**Have you noticed an increase in peer pressure with BYOD?** Hasn’t noticed. Just need to be cognizant of seat placement for students who have and have not.

**Security concerns from parents?** None. Filtering system is pretty secure. If kids abuse policy, they lose ability to use their device at school.

**Have you received any negative feedback from parents regarding extra costs of the devices?** Had some complaints initially, but having tablets available in room tempered this. Network is open for device, but will close next year.

**Does your district subsidize the cost of these devices for those who do not have their own devices?** N/A. They purchase tablets. Havana will lease laptops starting with 1:1 next year (800 laptops for Jr High and HS). They are hoping to use this to become paperless. By going to 1:1, the hope to increase class sizes.

**How do you handle technology problems/questions?** Do students assist or are there computer techs on site? They have technology coordinator who floats between two buildings, principal and also a couple of teachers help with this.

They are making training videos for students and posting on their website to help them understand how to save/utilize flash drive and cloud storage. District will pay for cloud storage (up to $5 per student).

McKinney also recommended to find out what your teachers know about technology and start training. Once they become comfortable, then start BYOD. Otherwise, you’ll have kids playing games/watching videos instead of learning while teachers are trying to become comfortable.

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**Questions for Schools Using BYOD**

Tri-Valley - responses from Josh White, Technology Coordinator.
How long have you been using BYOD?
We are now in our third year.

What model?
Each year around December, I start looking for next year’s freshman. We generally try to find a netbook with case and a four year warranty.

Is all curriculum used with the program? Is the curriculum web based?
This is teacher based. I know some teaches use our Moodle system (like Blackboard) for assignments, lessons, and collaboration between the students. Also using the netbooks for research and writing of papers.

Do you allow students to record lectures?
We haven’t run into this issue before, but we do allow, for example, we had student that was hospitalized and a student that would Skype into the classroom to still be involved within the class. Also some teachers record their own lessons to post to the internet, or Moodle. So when the students need extra lessons, or are struggling in a certain aspect of a chapter, they can go back and re-visit the lesson at any time.

Do parents need to submit a release form in order for recordings to be allowed?
The students sign an acceptable use policy.

What challenges have the teachers experienced?
When BYOT initially started some teachers pushed back, the principal stated he let the teachers integrate technology into their curriculum, and praised the teachers that did so, so the other teachers would see that technology needs to be integrated.

How do you encourage people to bring their own device?
We offer three solutions: 1. Bring your own device 2. Purchase one from us (I order a select amount based on a parent survey) 3. Borrow one from our Media Center, after parent sign a BYOT Policy stating if they break it, they buy it) I also make it certain “limited quantities are available for checkout.”

Have you noticed an increase in peer pressure with BYOD?
No

What are the security concerns from parents?
Internet filtering would be the biggest ones, all the netbooks are filtered with student level access. As for home use, we don’t provide any sort of filtering. I do discuss programs they can install on the netbooks to monitor and or block website visits.
The other big concern was a warranty provided with netbooks. I stress that the warranty is for normal wear and tear on the device, not accidental.

Have you received any negative feedback from parents regarding extra costs of the devices?
Like I stated early, they don’t have to purchase one from us. So this lets the parents decide what to do, they aren’t locked in with purchasing one from us.

Does your district subsidize the cost of these devices for those who do not have their own devices?
Like I said we have some netbooks available for check-out if the parents can’t afford a netbook, but we do stress it’s a limited availability.

**How do you handle technology problems/questions?**
The biggest issue is broken screens, I have since purchased extra screens for this purpose. I charge $100 to cover the cost of the screen. Also if the netbook was purchase from us, I’ll do basic troubleshooting. Since it was purchased from us, I have a basic image, and can restore any of the netbooks back to day one in case they installed something bad IE virus, malware. If its hardware related, I have them contact the warranty provider and they usually ship me the part, and I’ll repair the netbook for them if they would like.

**Do students assist or are there computer techs on site?**
Unfortunately I’m the only Tech person here at Tri-Valley for repairs. I do have a librarian here to add the students’ devices to our WiFi, which helps a lot at the beginning of school, when I’m usually the busiest.

On another note we allow up to 2 devices to be registered on our network