

# To Have or to Hold: Finding the Balance between Freedom and Control in BYOT Initiatives

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by Emil Ahangarzadeh, Ed.D.

Traditionally, education technology leaders have decided what technologies are used at a school or throughout a district. As the digital world becomes more a part of the learning environment, those responsible for providing 21<sup>st</sup> century learning opportunities are finding that one device per student initiatives are the way of the future. With the current drastic economic climate in K-12 education, more and more schools are recognizing that providing a device for each student is cost prohibitive. Often, they turn to municipal bonds and one-time funds (e.g. grants) to surmount the fiscal obstacles.

First, a note about nomenclature: the term BYOD (Bring Your Own Device) is pervasive in the pertinent literature. However, more and more, some thought leaders in the field are recognizing that devices are not the only personal tool that in play in these initiatives. For examples, there are variant operating systems, software, applications, and even wireless network technologies that people mix into the work/school environment. Therefore, some refer to these initiatives as BYOT—Bring Your Own Technology. The purpose for calling it BYOT instead of BYOD is to proliferate the thought that IT departments are not only being asked to support devices in such initiatives but other technologies as well.

The need for BYOT (Bring Your Own Technology) initiatives wherein families, students, and employees bring their own digital devices and use their own software/apps seems to be the prevailing trend in many educational ecosystems. BYOT program help overcome the problem of schools not being able to afford one device per student. In fact, analysts from Gartner, one of the nation's leading technology research firms, state that BYOT initiatives will be the norm in K-20 education within the next five years.

Consequently, one of the challenges for education technology leaders as they move toward this impending BYOT scenario is to find the best balance between providing freedom of choice for staff and students in relation to the devices and software applications they may bring into the educational environment and the need to maintain control over the use of the school's/district's network and resources. They are also faced with the legal requirement to provide adequate filtering services to stay compliant with the Children's Internet Protection Act (CIPA), the Children's Online Privacy Protection Act (COPPA) as well as other regulations (e.g. FERPA)—requirements that generally cannot be met without control of the network that students'/employees' devices access. Moreover, as BYOT programs develop, the ability to support the multiple operating systems, software, and tools becomes untenable for what is already an overworked and underfunded IT department (if one exists on a campus at all).

In most cases, teachers become the ad hoc tech support in their classrooms, as they cannot wait for a district computer technician to respond at a moment's notice when something does not work while they are in the middle of a lesson. Do we really expect our teachers to know the ins and outs of every device, app, and operating system they will encounter so they can provide technical support in a bring-*whatever-technology-you-want* class while simultaneously providing students with rich learning experiences that based in content-area standards?

Despite the imminent drive toward BYOT programs, the reality of education technology leaders' needing to maintain a concerted level of control over the tools used and successfully manage networks in an education ecosystem persists. However, placing severe restrictions on teachers and students may foster an environment where they go rogue and essentially do their own thing when it comes to technology use creating a Wild West scenario for network administrators. What's worse, such restrictive measures may cause educators not to use learning technologies with students at all. To find that optimal balance between choice and control, education technology leaders may choose to establish a series of well-defined and considered filters to gauge or assess the appropriateness of the devices/software that may be permitted into the education ecosystem as part of a BYOT program. These filters can then be used to create a policy framework for stakeholders to know which personal technologies are acceptable and which are not.

Step one in this process is to establish the must-do's and may-do's. That is, leaders should identify what technologies (including software, mobile apps, web-based tools, etc...) must be in place in order for the school's learning program to flourish. For example, if a specific piece of web technology that uses a Flash-based interface is used nearly ubiquitously throughout a school in order to strengthen students' reading skills, iPads may be prohibited by the BYOT policy since iPads do not run Flash-based programs. Or, if the device that a student brings cannot be restricted to only using the school's network for data input/output (i.e. no 3G or 4G cellular communication), then it may be filtered out of the BYOT program's established policy.

A well-developed BYOT policy may also include specific parameters about what certain groups in an education ecosystem may and may not use. For example, although a district may restrict the student population to technologies that do not include embedded cellular technology, faculty and staff may be permitted to use such devices. Students may be permitted to use their own Android-based tablets but not the Galaxy Note "phablet" which is a hybrid of an Android-based tablet and cellular telephone. Simply put, the BYOT policy may include choices and restrictions for differing groups and the amount of group inclusivity and exclusivity can be established based on the needs or culture of a school.

Therefore, the development of a BYOT policy can be based on two parametrical spectra—one wherein inclusivity is measured against exclusivity (i.e. belonging to a sub-group that can choose a set of technologies as opposed to another group which cannot) and one wherein choice is measured against prescription. For example, if a school district determines that operational efficiency wholly outplays learner/educator interests, then a BYOT policy geared toward exclusivity and control is probably best. Of course, restricting user choice so severely will undoubtedly welcome the unauthorized use of devices and technologies by learners and educators. What's more, this filtering framework may cause learners

and employees to develop a disenfranchised relationship with school and district leaders. Alternatively, leaders may choose to establish a policy that provides vast choices of technological tools but limits this choice to a very exclusive group (e.g. students and faculty of career/technical courses).

According to analysts Bill Rust and Jan-Martin Lowendahl of Gartner, the best way for education technology leaders to allay the risk of pandemonium within a BYOT program is to offer their stakeholders a sustainable and viable *level* of choice. That is, schools should develop a policy with a filtering process that both includes measures of exclusivity and compliance and simultaneously provides a system for inclusivity and choice. In this manner, they can take full advantage of what BYOT initiatives have to offer without inviting bedlam into the technological infrastructure of a school system. Therefore, the BYOT policy must include both the requisite restrictions as well as a listing of specific requirements that personal devices and tools used in schools must meet.

The inclusion of a BYOT program may also have curricular implications for a school system that may further inform policies. A guiding principle in the development of your BYOT initiative's filtering system should be that personally owned devices must be aligned to an academic purpose of your curricular program. Since it is likely that not all students of a school are able to bring their own device, this alignment should be approached passively. That is, the use of the device cannot be central in students' acquisition of content in a curricular program. The device cannot be the primary tool for the delivery of instruction.

If, however, a school system chooses to actively approach curricular alignment with their BYOT program, it must be prepared to provide students in need with electronic devices so they may access the content to be acquired. In addition, this approach to curricular alignment also necessitates the need to include required technical specifications of acceptable devices. For example, if course curriculum requires learning devices to be able to access externally ported files (e.g. micro-SD), the BYOT policy will exclude the use of the iPad 2 as it cannot access external files natively.

David Byrne and Rob Evered of Intel suggest a set of criteria for technology leaders to evaluate various technologies in order to develop a policy for BYOT initiatives. In their white paper of February 2012, they suggest technologies be evaluated for:

- Security
  - Is the device reasonably protected from malware?
  - Can the device encrypt information for transmission?
- Manageability
  - Can the device be managed by both the owner and the school/district?
- Productivity
  - Does the device support offline use if the school's network goes down?
  - Can the device support a specific software suite?
- Performance
  - What is the device's battery life expectation?
  - Is the screen too small/big?

- Can a mechanical keyboard be coupled to the device if it lacks one?
- Does the device include/exclude a camera?
- Ease-of-use
  - Will a teacher need to read a manual in order to support the use of a device or is the interface intuitive?
  - Can data be moved between applications?

Some infrastructural demands may also inform a BYOT policy. Most tablets are optimized for rich media content delivery. This, of course, places a greater demand on a school's network. A school implementing a BYOT initiative can easily see a three-fold increase in its network demand requiring the need for many more access points to be installed on campus. Additionally, by multiplying the number of access points on site, the school will also have to withstand the residual costs for increasing the capacity of its access point management console (which can bear a heavy financial toll). These possible fiscal demands may filter out a BYOT program altogether. According to John Cusack, Network Services Manager at the San Diego County Office of Education, the increased network traffic that is often a result of a BYOT program "...may cause heavy bottlenecks at a central control point that may necessitate replacing all campus access points with those that include technology to inspect network traffic by placing controller intelligence in the remote access point itself." In short—the infrastructural improvements may prohibitively increase expenditures that may require a phasing in of BYOT projects to lessen the immediate network impact.

The bottom line is that in the question of how much choice should the stakeholders of an educational ecosystem have when it comes to the personally owned devices they use on campus, choice usually beats out control. In order to alleviate the chaos that may ensue because of multiple devices with multiple capacities on a campus, education technology leaders would do right to assess their particular school's needs. Perhaps the district requires that faculty and staff only use Microsoft Windows-based devices since they will need to access content that is based on predetermined software standards (e.g. SIS information, payroll information, etc...) leaving very few choices for BYOT for faculty whereas students may use lighter mobile operating systems on their devices allowing them much more choice. Another example may include the requirement of commercially purchased software for a group of stakeholders (e.g. the Yearbook Club) while the rest of the population may use open-source productivity suites.

In any case, BYOT and one-student-one-device initiatives are slowly creeping across schools in California and the nation. Establishing a BYOT policy that considers the empowering effect of allowing stakeholders to make choices while simultaneously protecting the fiscal and network health of a school system is the best way for leaders to anticipate the demands of such trends. It is better to have a policy that considers users' preferences than to establish an authoritarian control over every bit that flows in and out of a school.