

# Bring Your Own Device (BYOD) Guidebook

*A Practical Guide to 1 to 1 Success*



## *ClassLink Leadership Series*

*ClassLink delivers one-click single sign-on access  
to web applications and files at school and in the cloud.*

# Authors and Acknowledgements



This guidebook resulted from the shared insights and contributions of many experts. We sincerely thank the following contributors for their time and dedication to helping advance technology in education. Through their insight, this guidebook is truly a comprehensive primer on the state of BYOD in 2015.

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# Introduction

Since we published the previous edition of this guidebook 24 months ago, the landscape of 1 to 1 adoption in school districts has changed. Personal technology in the classroom have become the norm, not the exception. According to the 2014 Digital School Districts Survey, an annual review conducted jointly by the National School Boards Association and the Center for Digital Education, the majority (56%) of districts contacted had implemented a Bring Your Own Device (BYOD) program, up from just 15% the year before.

There has never been a better time to make the jump to BYOD. We can now say confidently that personal devices increase student engagement, collaboration, and flexibility. Further, the recent proliferation of cloud-based education apps puts powerful resources in the hands of all students and teachers, and much of it works on nearly any device with Internet access.

With ever-more technologically savvy students and teachers entering classrooms, the likelihood of personal device ownership is increasing rapidly. School districts that felt their student body did not have devices to make a BYOD program feasible in 2010 or 2012 may find a different situation today. Thus, we encourage all school leaders, school board members and teachers who are beginning their journey to BYOD to consider the insights in this guidebook. The benefits of engaged learners and improved learning outcomes await your classrooms.

*“Do not confine your children to your own learning, for they were born in another time”  
– Chinese Proverb*

# Landscape of BYOD and 1:1

Over the past few years, with the onset of so many different personal devices, the definitions of BYOD and 1 to 1 have expanded to include tablets and smartphones. As these diverse devices entered the classroom, they created more options and pathways towards 1 to 1.

## What exactly is 1 to 1?

1 to 1 exists where every student has and meaningfully uses a personal device during some part of the school day to help them learn. Just as there are many types of classrooms today, there are many types of 1 to 1 implementations. A modern consideration when moving towards 1 to 1 is whether to allow student owned devices in the classroom.

Common approaches to devices in the classroom:

- School Purchased Equipment - As the name implies, the school purchases the devices and makes them available for personal use by students for all or part of the day. After school, the devices can either remain at school or go home with students.
- Bring-Your-Own-Device (BYOD) - A policy where students and teachers can bring their own devices from home to use in the classroom. Typically, school districts define allowable devices and they permit teachers to decide on how the devices are to be used in their classrooms.
- A combination of School Purchased Equipment and BYOD - A blend of both. Nearly all schools are opting for this approach as it affordably allows for the quickest approach to maximize the use of technology to improve learning outcomes in the classroom.

## Not all BYOD programs are 1 to 1 programs

1 to 1 is an approach where every student has their own device and meaningfully uses it to help them learn. Advocates of 1 to 1 are quick to point out that important and significant changes to the curriculum and pedagogy are required for successful 1 to 1 programs. BYOD may not be that far reaching. BYOD can simply be a school policy that allows students to bring in their devices. School leaders sometimes combine the concepts of BYOD and 1 to 1 in developing their own unique organizational goals.



## Current Statistics

Again and again we are all told how today's students are tech-savvy. According to a recent Neilson Survey, 79% of teens own a smartphone and another Pew Study found 23% own a tablet. But even more impressive is tomorrow's students. If today's students are 'digital natives' as Marc Prensky puts it, how do we describe tomorrow's students? The data suggests that the teenagers of tomorrow will be even tech-savvier than the teens of today. Children aged 6-12 actually have a higher rate of tablet ownership than current teenagers do, and in fact have the highest rate of tablet ownership of any individual age cohort. Staggeringly, 38% of children under the age of two have already used smartphones or tablets in some capacity during their life.

Successfully incorporating digital learning resources into the classroom to improve learning is among the top challenges for today's educators. School districts that can successfully implement the ideals of 1 to 1 will undoubtedly best prepare their students for the future.



# Benefits

As BYOD and 1 to 1 are often spoken of together, their benefits tend to overlap.

## 1 to 1

**21st century skills:** As the world becomes increasingly digitized, critical thinking and digital literacy are becoming essential skills. Meaningfully using a device in classroom learning is a critical step to making sure students build these essential skills. In a recent Speak Up survey, 87% of parents said that the effective use of technology at school has an important impact on their child's success and 50% said that the effective use of technology was extremely important.

## 1 to 1

**Individualized learning:** Each student using their own personal device refocuses the typical classroom experience from a generalized approach for the entire classroom to one that is more tailored to the individual needs of each student. According to a 21st Century Learning survey, 93% of education professionals agree students benefit from personalized pacing in learning. Furthermore, many industry organizations advocate the benefits of personalized learning.

## BYOD 1 to 1

**24 hour access to device:** Students that have continuous access to learning resources have an advantage over students that do not. Instead of access to learning resources being limited to being present in school, students can extend the access outside the classroom and outside of school hours. Further, bringing learning resources home can empower parents to take a greater role in their children's education and gain greater insight into what goes on in their children's classrooms.

## BYOD

**School cost saving:** With BYOD, school districts do not have to buy devices for every student. Instead of having to keep up with the latest, expensive technology, districts can instead focus on funneling their resources on infrastructure and other professional development needs. By letting students bring their own, capable technology into the classroom, districts can get the benefit of these powerful, personal devices without shouldering the costs.

## BYOD

**Knowing your own device:** Like choosing a notebook or backpack, students will tend to better use and embrace a device of their own rather than a 'temporary use' device provided by the school. Instead of having to spread their work and digital lives over multiple platforms, students can easily centralize these identities in a single, portable device. Personal device ownership can yield important efficiency benefits for the classroom as students become better at diagnosing and handling their own technological issues.

# Approaches to Defining Allowable Devices

School districts use different approaches to define which of the ever-growing number of devices on the market they allow in their classrooms. Below are three of the most popular methods used by districts today.

## Minimum Specifications

In this approach, the district defines certain technical requirements that devices students bring to school must meet. This can, for example, include certain functionalities (e.g. minimum display size, keyboard required) or software compatibility (e.g. must be WinPC or MacOS) requirements. This approach provides some measure of flexibility on the part of the student, yet also allows teachers to plan lessons under the assumption that their students will have a certain level of technological capability. Students may also become more digitally literate under this approach, especially when collaborating with students whose platforms differ from their own.

## Select Devices

In this approach, the district limits choice to specific manufacturers and models. This allows teachers to get acquainted with the specific strengths and weaknesses of their device and plan lessons with confidence knowing that each student's device will have identical capabilities. It also allows the school to cater to the device's specific strengths and better control troubleshooting needs. School districts using this approach may also negotiate volume discounts with manufacturers, helping the household by simplifying the decision and purchase process. This approach limits flexibility and restricts students from using other, potentially more powerful devices that they may already own.

## Unrestricted

In this approach, students can bring whatever device they want provided it connects to the Internet. This approach provides the most flexibility for students, however it may limit the ability of the teacher to plan around specific device capabilities. The main benefit of this approach is that it puts the least demand on the household, as nearly any device would be acceptable to the district, while maximizing classroom experimentation and discovery as a result of the range of personal devices available.



# Common Elements of BYOD Success

## 1. Project Team

A close-knit, coordinated team can be invaluable towards creating a successful BYOD program. Many school districts use this strategy when adopting BYOD by creating a small cross-functional team to lead and add credibility and confidence to the undertaking. A cross-functional project team is a group of people with different areas of expertise working together to reach a common goal. Getting the right people “on the bus” from the start can make the journey much easier for the whole organization.

**Choose the right people.** As Cathy Cassidy, Managing Director of the International Matrix Management Institute, notes, in order for a project team to be successful, key stakeholders need to be represented. Not only should they have a seat at the table, but they should also be well-informed about the status of the project and actively solicited for feedback. By communicating effectively with necessary stakeholders, it is possible to achieve the “buy-in” needed to implement a BYOD program.

**Keep it small.** Effective cross-functional teams are small. While the exact number of members on your team will depend on the scale of your undertaking, a typical core team, according Mary Kay O'Connor, President of StartingPoint, Inc., is 8 to 10 people. O'Connor adds that having a larger team could jeopardize participation, productivity, and accountability.

**Define clear goals.** The best way to keep a diverse group working effectively is to make sure everyone is working towards common goals, as Elizabeth Eyre, head of Editorial at Mind Tools points out. The highest-level goals - the ones that are most important in determining the direction of your BYOD program - should be made by the group’s leader. The rest of the team should find the best path to implement these goals. One way to effectively crystallize these expectations is to create a team charter that clearly lists your objectives and the resources the team can call upon to achieve them.



## 2. Define Key Goals and Timeline

There are many goals that can define a successful BYOD program. Below are strategies to consider to make the most out of the goals you choose.

**Develop key goals for using BYOD.** Key goals can take many forms. For some districts, it may be to increase student engagement. Other districts simply wish to make learning materials available 24/7 without budgeting device purchases for the whole district. Whatever your key goals may be, simply having them makes figuring out milestones and deadlines easier.

**Define goals from a stakeholders' perspective.** In practice, this means creating specific goals that address the concerns and needs of students, teachers, school administrators, technology staff, and more. Having stakeholders participate in defining goals from their personal perspective also adds a measure ownership and attainment of the goal.

**Create metrics to measure your progress.** As the saying goes, “you are what you measure”. Simple qualitative measures such as the number of devices logged into your network and the number of specific educational web sites visited by students are a start. Other goals may be instructional in nature, such as the number of technology infused lessons delivered by teachers in a given month, or the number of occasions where specific technology resources are used.

### BYOD in the Real World

- Orange County Public Schools defined their BYOD goals as increasing student engagement, implementing 21st century skills, and improving the rigor of lessons through technological integration. In order to evaluate their progress towards these goals, they utilized the **Technology Integration Matrix (TIM)**, a grid that incorporates five different characteristics of a healthy learning environment and tech integration. The district then paired this matrix with other tools, including **TIM-O**, **iObservation**, and the **Marzano Instructional Framework** to get a sense of progress towards goals. ClassLink played an important role in the district's success in achieving these goals. Using ClassLink, OCPS created a common starting point for teachers and students to access resources through the benefits of single sign-on.
- Ballston Spa School District set a primary goal of providing 24/7 access to instruction resources for students. The district used BYOD as a means of implementing a blended learning environment in its classrooms. The district uses student surveys and usage data reports to assess project success. ClassLink also plays an important role in helping Ballston Spa deliver 24/7 access for students.

### 3. Communication

Communication “early and often” is a high value exercise. Even where complete plans are not yet ready, communicating with stakeholders that the intention of the school district is to further embrace technology helps set the tone and define direction. It is through these routine communications that the ultimate purpose of helping students succeed in the modern world can be well established. Through communications with students, staff and parents, school leaders can build consensus and enthusiasm with the intent, long before project specifics consume the airwaves. It is also helpful to establish a shared understanding that although research and planning is expected, the leadership is confident that “lessons will be learned” and “course corrections will be made” during the process.

#### Communication Tips

- Create a “here’s what’s coming” letter to students, staff and parents that preparing students for their future must include modern tools in the classroom. Focus on why modern tools are needed, less on which specific tools.
- Whenever speaking with students, staff and parents, remind them that modern tools must be part of modern learning environments
- Cite research: ISTE’s 1 to 1 Special Interest Group (SIG) does a great job of collecting [relevant research reports](#).



Focus on why modern tools are needed,  
less on what or which specific tools.

## 4. Policy

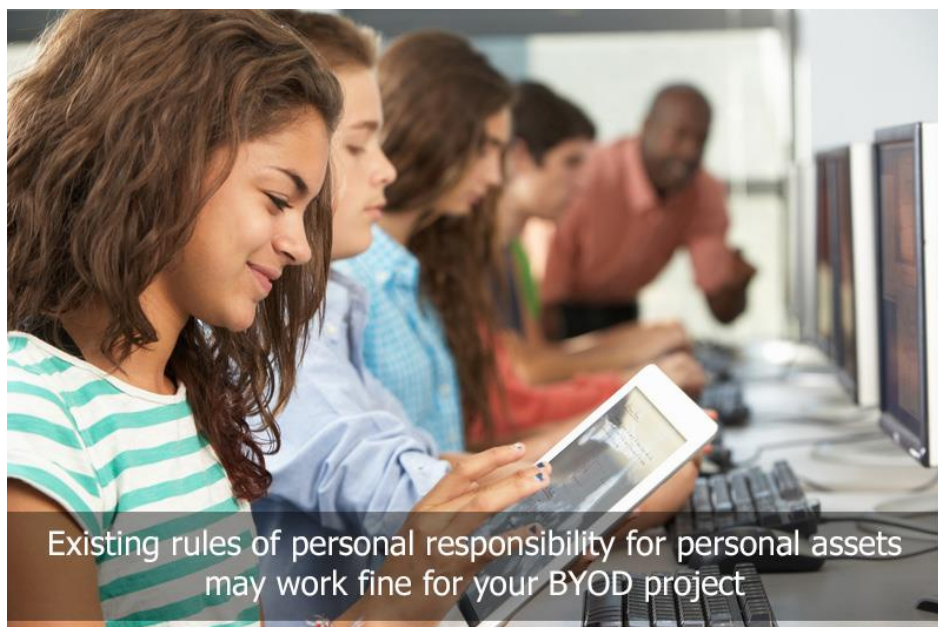
Brevity and simplicity are keys to any effective policy statement. It's common for school districts to define their 1 to 1 policy through an Acceptable Use Policy (AUP) with a Bring Your Own Device (BYOD) attachment. Good leaders know how to communicate expectations in the fewest pages possible. Some even manage to get it done in one page! Visit [www.classlink.com/byod](http://www.classlink.com/byod) for samples.

### AUP Tips

- Section 1: Purpose: Use this section to remind everyone the goals of the institution and why technology matters. Include your school's mission statement, a philosophy statement on using modern tools in learning and a statement about student safety.
- Section 2: Code of Conduct: Use this section to communicate expectations. Just as there is a school code of conduct, there should be a technology code of conduct. Users are responsible to use school technology resources for instructional purposes. Use of technology for any other purpose may be considered inappropriate and subject to disciplinary actions.

### Special Note on BYOD in your Policy Statement

Don't over think this. Schools have been addressing personal assets in school forever. Think bicycles, musical instruments and jewelry. Existing rules of personal responsibility for personal assets may work fine for your BYOD project without having to clutter your AUP with more language.



Existing rules of personal responsibility for personal assets may work fine for your BYOD project

## 5. Technology Infrastructure

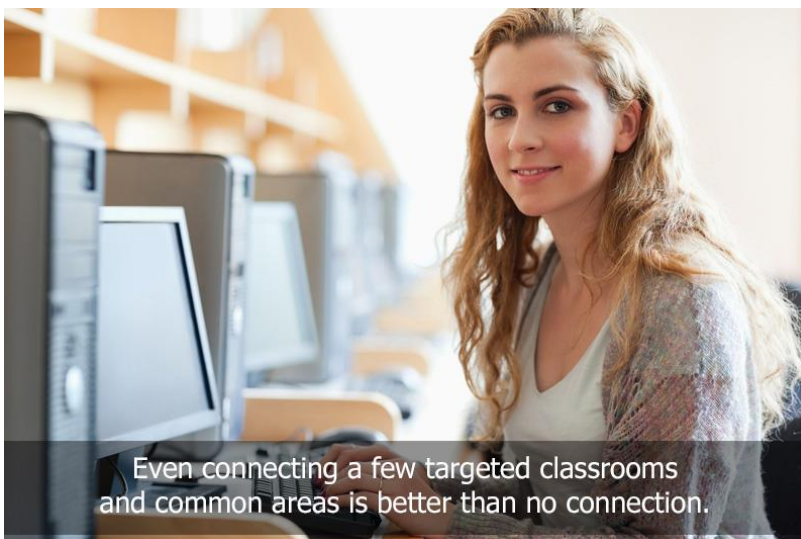
Bandwidth & Wireless. 1 to 1 and BYOD require flexible learning environments where students can access the Internet from anywhere. Create a robust wireless network that delivers enough bandwidth to accommodate the influx of new devices. The U.S. Dept of Education Office of Education Technology created a report, [Future Ready Schools: Building Technology Infrastructure for Learning](#), which contains advice on a minimum of 100 Mbps of Internet bandwidth per 1,000 students. That same report recommends a target speed of 1 Gbps by 2018.

### Infrastructure – Bandwidth and Wireless Tips

**Wireless Infrastructure.** Assume more devices than people will one day connect to your wireless network and plan accordingly. If you haven't already, begin immediately and use enterprise class equipment on building your wireless network. Even connecting a few targeted classrooms and common areas is better than no connection. Remember, the first cell phones only had limited coverage.

An experienced wireless networking professional should conduct a site survey with the proper equipment to produce a map highlighting optimal locations for your wireless access points. It is common for a large school campus with cement walls to have upwards of 50 to 100 access points. Don't let the numbers put you off.

**Internet Bandwidth.** For many, the correct answer to the question 'How much Internet bandwidth do I need?' is 'All you can afford!' Today's schools rely on online or cloud-based instructional materials, productivity applications, school administrative software, and file storage. Each year it's something new. Use the [U.S. Dept of Education report on Technology Infrastructure](#) and plan on routinely upgrading your bandwidth.



Even connecting a few targeted classrooms and common areas is better than no connection.



## 6. Wireless Security

The question of security always comes up when discussing BYOD - and rightfully so. The Child Online Protection Act (CIPA) requires schools to have technology measures and policies that protect students from harmful materials (including those that are obscene and pornographic). Additionally, there is also the need to protect the district's computer systems and data now that strange new devices are being brought into the building. Today's modern firewalls and web filtering technologies are absolutely up to the task.

### Wireless Security Tips

- **Protect the school network:** Modern wireless networks offer guest access privileges that grant Internet access yet block access into the school computer network.
- **Device Registration:** Some BYOD schools prefer to require students to register their devices before granting them internet access. This involves extra work to collect a complex 12 character unique ID (MAC Address) from every device and enter that information into the wireless network. Skip this extra work if you do not have the staffing for it. An alternative to device registration is requiring students to enter their school network login each time they connect to the network. Using this approach, online activities can be tracked and, provided the infrastructure allows it, different internet access policies can be applied, e.g. teachers have unfettered access to YouTube whereas students are filtered.
- **Charging Stations:** With BYOD it is typical for schools to create locations in the building where students can charge their devices. Consider adding power stations in central areas for students to use. Also consider including in your school's policy that students should fully charge their devices at home.





## 7. Curriculum Development

There has been unprecedented growth in quantity and quality of online instructional resources in recent years driven by a global renaissance in education technology and the unifying effect of education standards across the United States. Whatever your position on educational standards may be, consolidating learning expectations, even if only for English and Math, has created fertile ground for content innovation around the world. With technical advancements in delivering interactive experiences and global capacity to produce curricular materials, today's classrooms have access to richer resources than ever before. It's no surprise that schools around the world are moving away from traditional textbooks to digital materials. Like never before, the disruptive change brought about by all this new and exciting content is the challenge of curating the right resources for each educational need.

## Curriculum Tips

- With all the diversity and choices of learning materials available today and the decreased reliance on a single textbook to hold it all together, it is easy for your classroom curriculum to get distracted and off track. Now more than ever, schools and teachers need to have a well-devised plan that articulates what and when topics should be addressed.
- A good curriculum clearly states learning goals while allowing teachers the creativity to use varied resources. When instructors use diverse learning resources, they help differentiate instruction in the classroom.



## 8. Professional Development

When it comes to transformative change, those implementing the change, the members of the team on the front lines, need ample training and support. Professional development is critical in making a shift from teaching with books and paper to digital resources. Some will adapt quickly, and others, less so. Embrace this reality and encourage the fast paced adaptors to collaborate and share their insights. Celebrate successes and attempts for success alike.

### Professional Development Tips

- Encourage teachers to start small. New Canaan Public Schools, a 6-year veteran in BYOD, had their teachers begin BYOD with “Assured Experiences.” These individual learning plans incorporated technology for a set period of time, one activity at a time. This use of simple technology integration provided teachers with the opportunity to observe what 1 to 1 instruction looks like on a small, controlled scale.
- Support and reward a cohort of your tech savvy teachers to act as mentors for those less comfortable with technology. These teachers may be deemed Technology Integration Specialists who have completed a course on helping their fellow teachers. Encourage them to share learning plans and resources. Look for technology solutions that will allow teachers to collaborate.
- Encourage capacity building. Teachers cannot teach what they do not know. Encourage Professional Learning Communities (PLCs) where teachers can share insights. Bring in professional development experts and have them conduct demonstration-learning activities using technology.



Encourage teachers to start small.

## Common Concerns

As more and more schools embrace BYOD, many school leaders find themselves at the same crossroads. Below are some common concerns that tend to come up when planning a BYOD project.

### Smartphones



There is no denying the high distractibility smartphones can usher into a school and classroom. Many experts recommend ‘starting small’ with smartphones in select classrooms with willing teachers and building up from there.

ClassLink is a one-click single sign-on web or mobile app that can ensure smartphones have easy and instant access learning resources the same as any other device.

### Defining Device Requirements

Some schools have found success in limiting the types of devices they allow students to bring to class. By narrowing the pool of potential devices entering the school on a given day, educators can ensure that every student has access to a speedy, capable device with reasonable battery life. Schools can do this by either defining minimum acceptable specs on devices and/or specifically prohibiting certain device types.

## iPads and Other Tablets

Some years ago when iPads were launched they swept into education with some of the fastest adoption rates of any technology in history. Since then, educators have developed a deeper understanding of where these devices can be best used.



The most successful BYOD implementers first defined educational goals and then decided on the acceptability of iPads, rather than the other way around.

## Classroom Readiness: Potential for Distraction

Some educators are understandably concerned about the potential for BYOD to be a source of distraction in the classroom. Teacher professional development can limit this risk. Teachers who wisely incorporate technology where appropriate and hold students accountable to 'ok, put away your devices for this next activity' moments are the most successful. Engaging and collaborative lesson materials and activities as opposed to lecturing is essential.

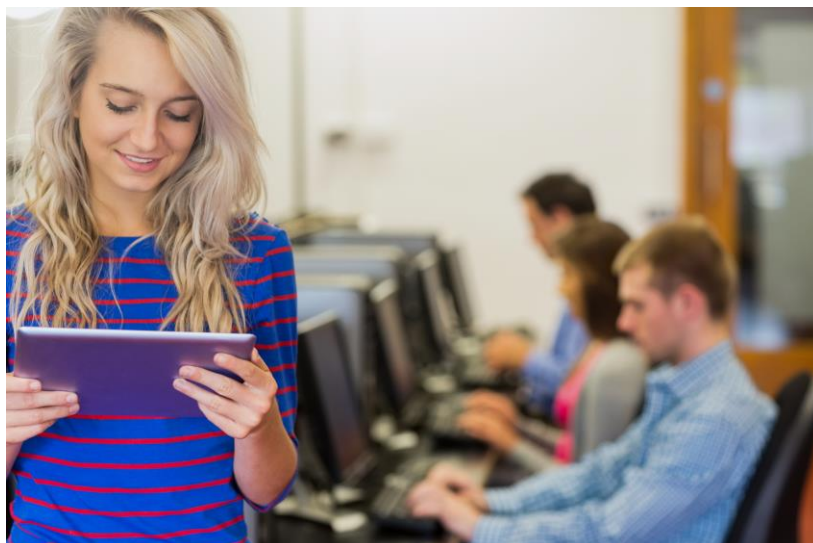
## Equity & Parent Opt Outs

Equity of technology access is a standard concern as schools begin considering BYOD. The question is typically *'What happens to the students who cannot afford or do not have access to a personal device?'* Smart school leaders know that it is not possible to wait for a 100% guarantee of any plan. Experienced BYOD educators offer the following advice on equity:

Giving early and often notice of an upcoming BYOD plan helps households plan a technology purchase and appropriate internet access.

Create a loaner device program from new and used school owned technology, similar in some ways to free and reduced lunch programs, to meet the needs of all students. With BYOD, more technology appetites are fed.

Remember that tech equity includes both devices and Internet access. For students without access to the Internet beyond their school, collaborate with local and national Internet service providers to create programs for free or discounted Internet access from home.



## Curriculum Readiness

Many of the hoped-for educational benefits of BYOD are not attainable without revising the curriculum and pedagogy. Below are two popular models of pedagogical change that educators can follow to reach this goal.

1. First/Second Order Change Model: According to the National Academy for Academic Leadership, the First/Second Order Change Model characterizes the different levels of change in organizations and can be directly applied to schools. First order change is change that focuses on improving what is already being done. Second order change is systemic, behavioral change that requires new knowledge and skills. The most successful BYOD implementations achieve second order change.
2. Substitution, Augmentation, Modification, and Redefinition Model (SAMR): SAMR is a framework for teachers to evaluate which technology to select and integrate into their lessons. Each of the four pathways in SAMR offers a different way technology can affect a lesson or capability. For instance, using an iPad for a reading assignment instead of a book would be a substitution, while using an app to annotate an image would be an example of an augmentation. Getting teachers to think about classroom technology in terms of the SAMR model is a great way to achieve true pedagogical change in the classroom.





# ClassLink as part of great BYOD projects

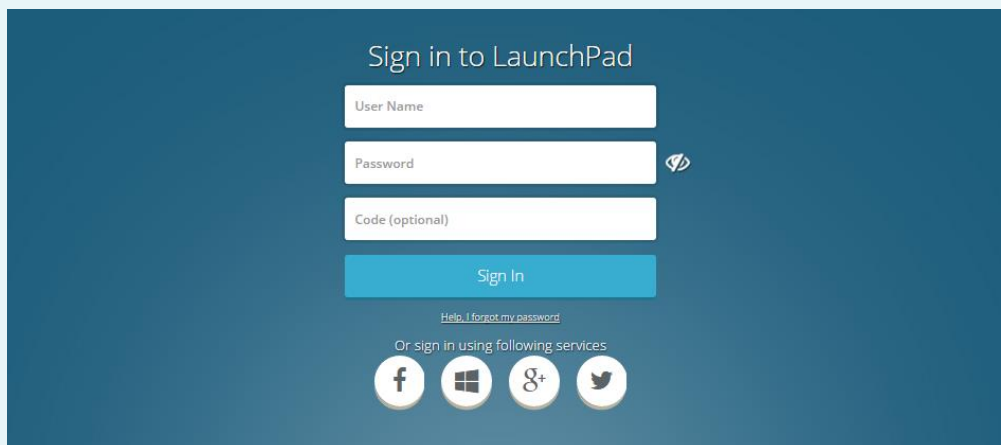
Beyond the many policy, infrastructure and professional development considerations, BYOD classrooms around the world tend to have universal pedagogical needs, including:

- Ensuring different tech devices stay on task
- Delivering the right learning content to any device
- Accessing school network resources from any device
- Simplifying and reduce the need for multiple sign ins

ClassLink is a web and mobile app that streamlines the BYOD process and meets all of the above needs.

With ClassLink, you can...

- Enjoy one-click single sign-on to any online resource. Your students and teachers will never again get frustrated trying to remember their logins and passwords.
- Access files stored on the school network or any cloud drive from any device. Your students and teachers will have one-stop-shop to all their files wherever they are stored, at school, Google drive, Microsoft OneDrive, Dropbox, and more!

A screenshot of the LaunchPad sign-in interface. The background is a dark blue gradient. At the top, the text "Sign in to LaunchPad" is centered in white. Below this are three white input fields: "User Name", "Password", and "Code (optional)". To the right of the Password field is a small icon of a key. Below the input fields is a blue "Sign In" button. Underneath the button is a link that says "Help, I forgot my password". At the bottom, there is a line of text "Or sign in using following services" followed by four circular icons for Facebook, Windows, Google+, and Twitter.

*"The great growling engine of change – technology!"  
- Alvin Toffler*

## Conclusion

The best way to begin your BYOD journey is to take the first step - say 'yes' to BYOD. Technology is already pervasive in many classrooms. However, without personalizing it and reaching that important 1 to 1 ratio goal, its potency as a tool to improve learning is hampered.

BYOD cannot be accomplished without proper leadership. This guide is designed to better prepare you to become a 1 to 1 and BYOD leader within your district, school or classroom. With research showing 85% of children in the United States under the age of 18 having access to mobile technology, now is the best time to take advantage of these resources and join the majority of schools already offering BYOD to their students and teachers..



*“Education is not the filling of a pail, but the lighting of a fire”  
- William Butler Yeats*

## Additional Resources



Visit [www.classlink.com/byod](http://www.classlink.com/byod)  
for our complete resource library on how to go BYOD.

Call 888-963-7550 to speak with an educational technology consultant about your BYOD journey and receive resources to facilitate that journey today!