

# **DISTRICT DIGITAL CONVERSION**

*EMPOWERING PERSONALIZED LEARNING*

White Paper





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# DISTRICT DIGITAL CONVERSION

## EMPOWERING PERSONALIZED LEARNING

How do we go from a status quo, paper driven organization, to a more progressive and engaging digital school system? This is a question many school district leadership teams are wrestling with today. It is very important to address this question because the mechanics of going digital can sometimes be daunting. However, additional and even more important questions to ask are:

**What defines success and how will a district know it's attaining success?** These questions help a district focus on the impact of going digital rather than the act of going digital. Extensive research informs us that there is not a correlation between supplying students with the means (devices, connectivity, and digital resources, etc.) and higher academic results. The known examples of systemic success show that technological tools are essential, just not sufficient on their own.

**We intuitively know technology has the potential to redefine K12 education and provide an unprecedented opportunity to improve.** At no other time has there been the pressure and collective understanding that all aspects of teaching, learning, and schooling can be made more effective and efficient by technology. Yet, while ongoing technology-enabled enhancements to education are a certainty, how to leverage them to re-engineer a better school system is far less certain. The stakes are high for everybody involved. Lives and careers will be impacted forever, whether a district is fortunate enough to be highly successful, or struggles to move the achievement needle.

For the purpose of this white paper, let's consider the term district digital conversion a proxy for systemic digital instruction and learning. Let's also define district digital conversion success by the expected improvement in student achievement (ideally accelerated) and the advancement of digital instructional practices. Clarifying these terms ensures that the outcomes are central to their meaning. There are numerous examples of effective digitally enabled classrooms and schools, but very few examples of district-wide successful digital conversions. All educators should agree that systemically improving instructional practices and accelerating student learning is difficult but worth pursuing to achieve true success.

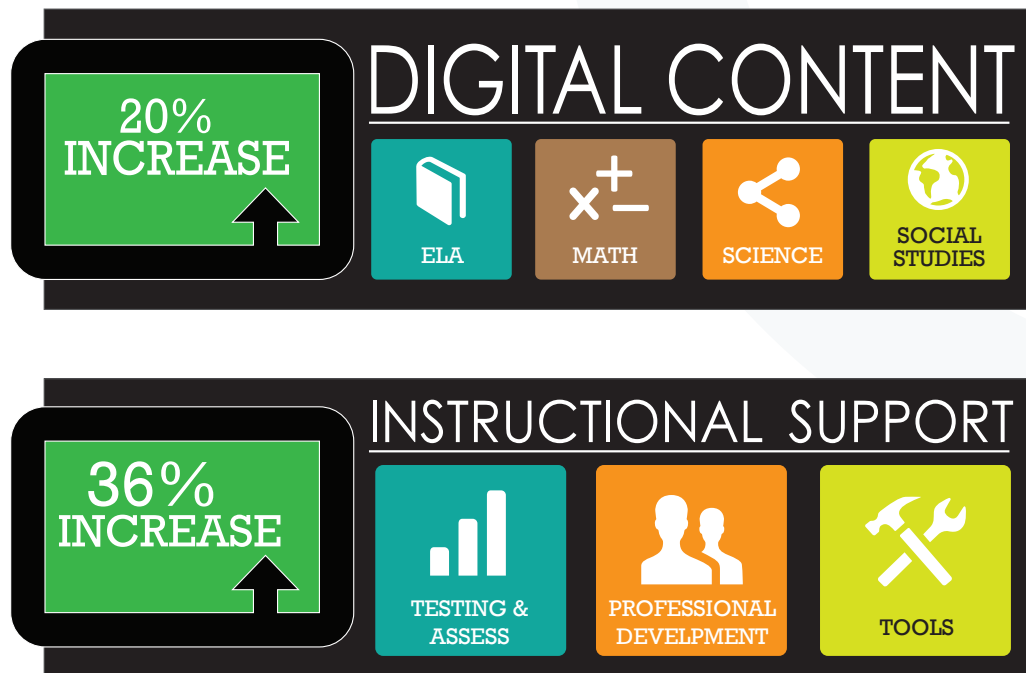


Given this century's progress toward digital education may have seemed glacial, the fact is digital conversion is here and moving rapidly. Today school systems are routinely integrating digital teaching and learning into their strategies and attempting to leverage a myriad of new tools, including hand-held devices, e-books, adaptive learning, apps, social networking, digital creation tools, and online assessments. **Whether the tools are free or for a fee, the real opportunities and costs lie in the potential to positively impact the school system's workforce, and most importantly, the student.**

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#### Yearly Spending Increase on Instructional Digital Content and Support in K-12

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*In 2011-2012, K-12 schools have significantly increased spending on more digital content and technology-based instructional support from 2010-2011.*

US Ed Tech Market Survey, 2013 Report

In a follow-up paper "Hybrids" to his best-selling book, *Disrupting Class*, Clayton Christensen investigates an important question: Is K12 blended learning disruptive? Within his paper Christensen makes the case that most blended learning is by definition a sustaining innovation, rather than a disruptive innovation. We agree. Rest assured this paper does not include any recommendations that eliminate or make obsolete the idea of school facilities, school districts, or replace educator workforces with a different workforce. Even though our recommendations associated with district digital conversion require substantial and sometimes "disruptive" changes implemented by school districts, by Christensen's definition, our recommendations are "sustaining," not disruptive innovations.



## Consistent with the concept of sustaining innovation, we believe that teachers matter—a lot!

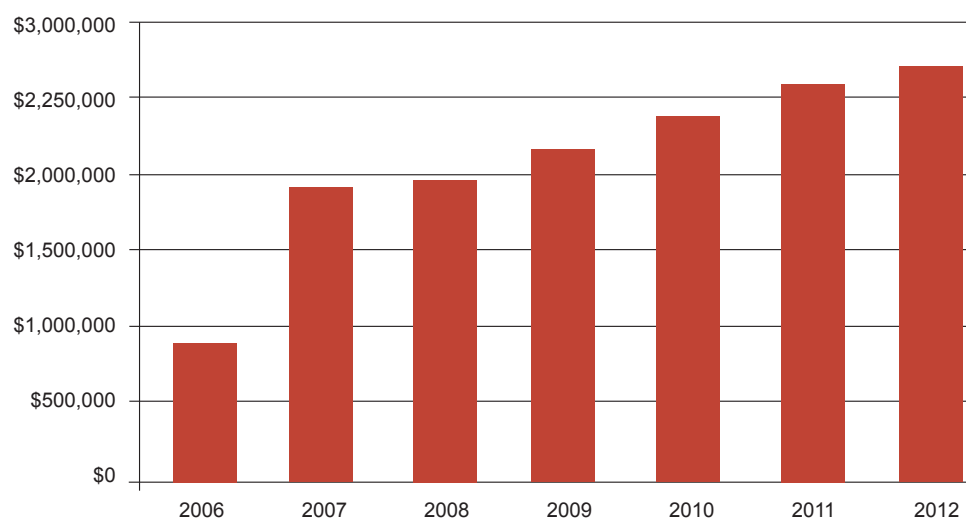
Technology must seek to make teaching easier and more efficient, and its primary use should not be teacher accountability, even though measured teacher impact is important. The primary aim of using technology must be to help teachers advance instruction and learning practices in order to accelerate learning and better prepare our children for the future.

Eventually, new best practices and integrated, cohesive digital teaching and learning environments will become the norm. In the same way a person benefits from taking advantage of compound savings over someone who doesn't, there will be profound advantages to those school systems that can rapidly embrace the use of technology to accelerate new instructional practices and learning. These successful district digital converters will provide their students with increased college and career readiness, and enhance their communities' desirability.

Districts increasingly recognize that successful digital conversion is a social and economic imperative. Students graduating from digitally converted districts will have greater opportunities than students from less digitally effective school systems. Strong research shows that college graduates substantially out-earn students without degrees. This point is underscored by highly acclaimed digital conversion district Mooresville, NC, who began their digital conversion 7 years ago. The chart below illustrates a powerful correlation over time, between Mooresville students' scholarship awards, and the launch and expansion of their successful district digital conversion.

*Increased student scholarships each year published by Mooresville.*

**Total Scholarships Received by Graduating Mooresville HS Students, 2006-2012**



## LESSONS LEARNED

Even though we are still on the early part of the learning curve, enough knowledge and experience has accumulated, that if leveraged, should allow most school systems to move forward with a high probability of improved student outcomes and instructional practice. Capitalizing on best practices, prior knowledge and experience should allow school districts more predictable success, and allow them to avoid mistakes made by early digital trailblazers.

At first, a district digital conversion can appear to be a daunting proposition, given all of the variables that need to be in play simultaneously. **Coordinating and achieving all of the necessary tasks and components for digital conversion success is akin to change management.**

Change management is transitioning organizations from their current state to a new and improved design. By this definition, a successful district digital conversion involves a fairly holistic shift from the status quo to a desired future state. A mistake a number of districts have made in the past few years is to approach personalized learning and district digital conversion as a technical and financial task of acquiring devices and new digital learning resources, while ignoring the other ingredients required for success.

Before you jump into the digital deep end, consider the following lessons learned and ask yourself if your strategy has accounted for these 10 points. By the way, these are not listed in any specific order, the number designation should not be interpreted as an indication of greater or lesser importance. The fact is each district would rank these items differently when accounting for their own digital readiness and capacity to make a digital conversion.

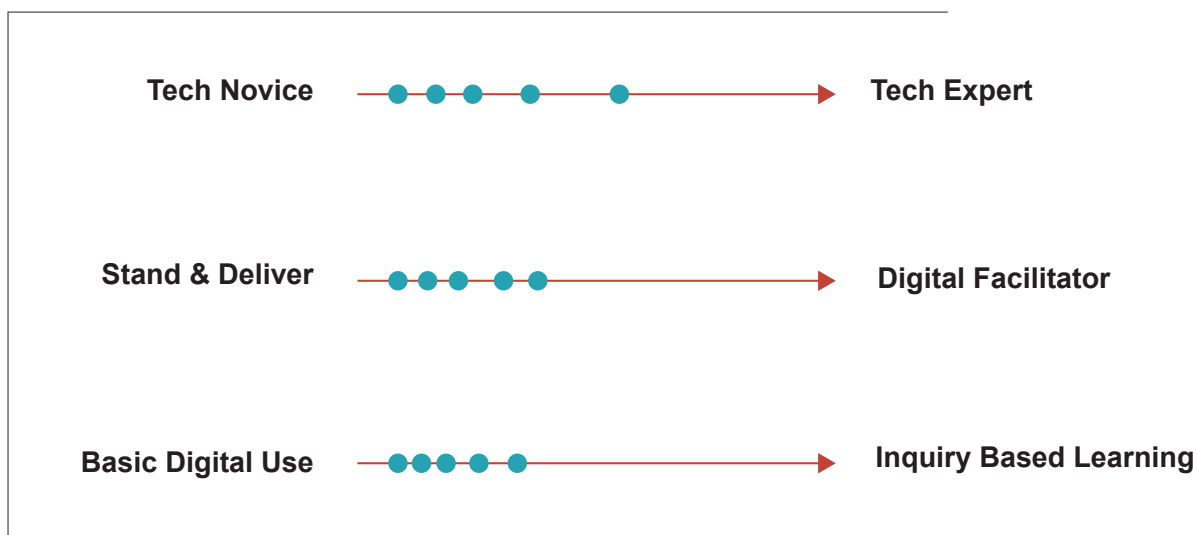


As of Q1 2014, here are the **Top 10 lessons learned** when attempting to accelerate student achievement and improve instructional practice through a district digital conversion strategy:

**1. Designed to Aid all Teachers and Learners:** Many previous 1:1 computing implementations have focused on equipping teachers and students with devices, network access, and a Learning Management System (LMS), while some have focused on adding iPhoto and iMovie as project tools to transform teaching and learning. The assumption is that linking the teacher and students to the Internet is sufficient to enable digital instruction and learning. While free resources are great and the Internet is limitless, most teachers still require a scope and sequence of engaging core lessons that are tightly aligned to state standards, often Common Core standards. Without inclusion of a rich set of high quality core digital programs, teacher productivity and student learning can be negatively impacted. A strategy that requires teachers to build all of their own content resources is usually only effective with a handful of exceptionally gifted and committed teachers, which provides insight into why so few examples of LMS-centered digital conversions have generated evidence of wide-scale and sustained student achievement gains. Conversely, digital core curricula integrated with technology that enhances teachers' real-time ability to monitor learning, personalize teaching and advance students' 21st century skills, have been shown to drive increased student achievement and engagement. Such programs have shown strong improvement in the capabilities of tech-novice and digital-savvy teachers alike.

**KEY TAKE-AWAY:** It is necessary to provide teachers with structured and unstructured digital core content.

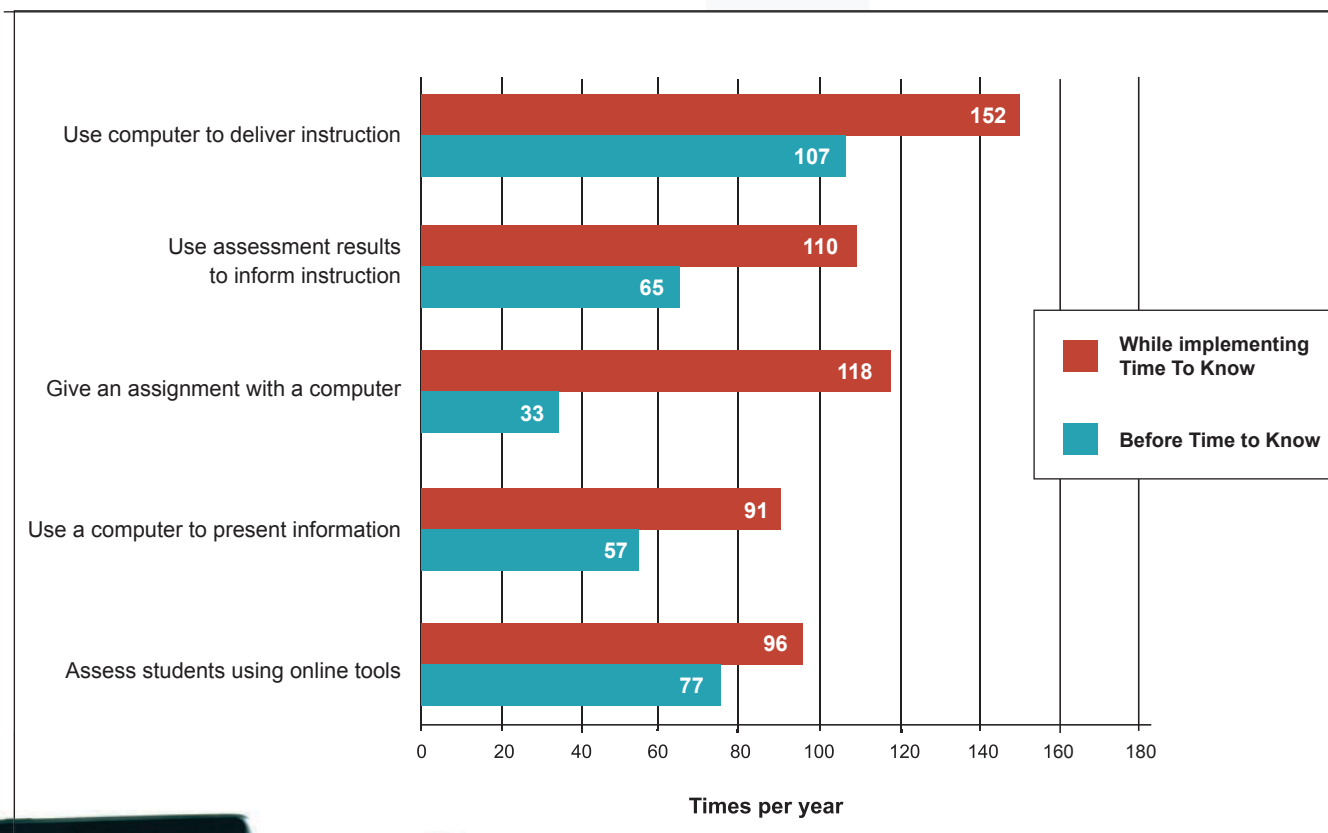
**Ask yourself,**  
where would your district's teachers land on this chart?



*If most of your teachers would be plotted on the left side of these charts, your district should ensure its digital conversion strategy addresses its real staff readiness. Evidence shows that teachers can grow into fluent digital facilitators when provided access to an effective digital teaching platform.*

The following chart is based on 3rd party research of the Time to Know (T2K) Digital Teaching Platform (DTP) and its impact on digital instructional practices. T2K is a comprehensive core digital teaching and learning system engineered to power 1:1 computing environments. This white paper utilizes research findings or system characteristics in multiple sections because of its 1:1 computing centric design.

**Evolving Teacher Practices Using a Core Digital Program**

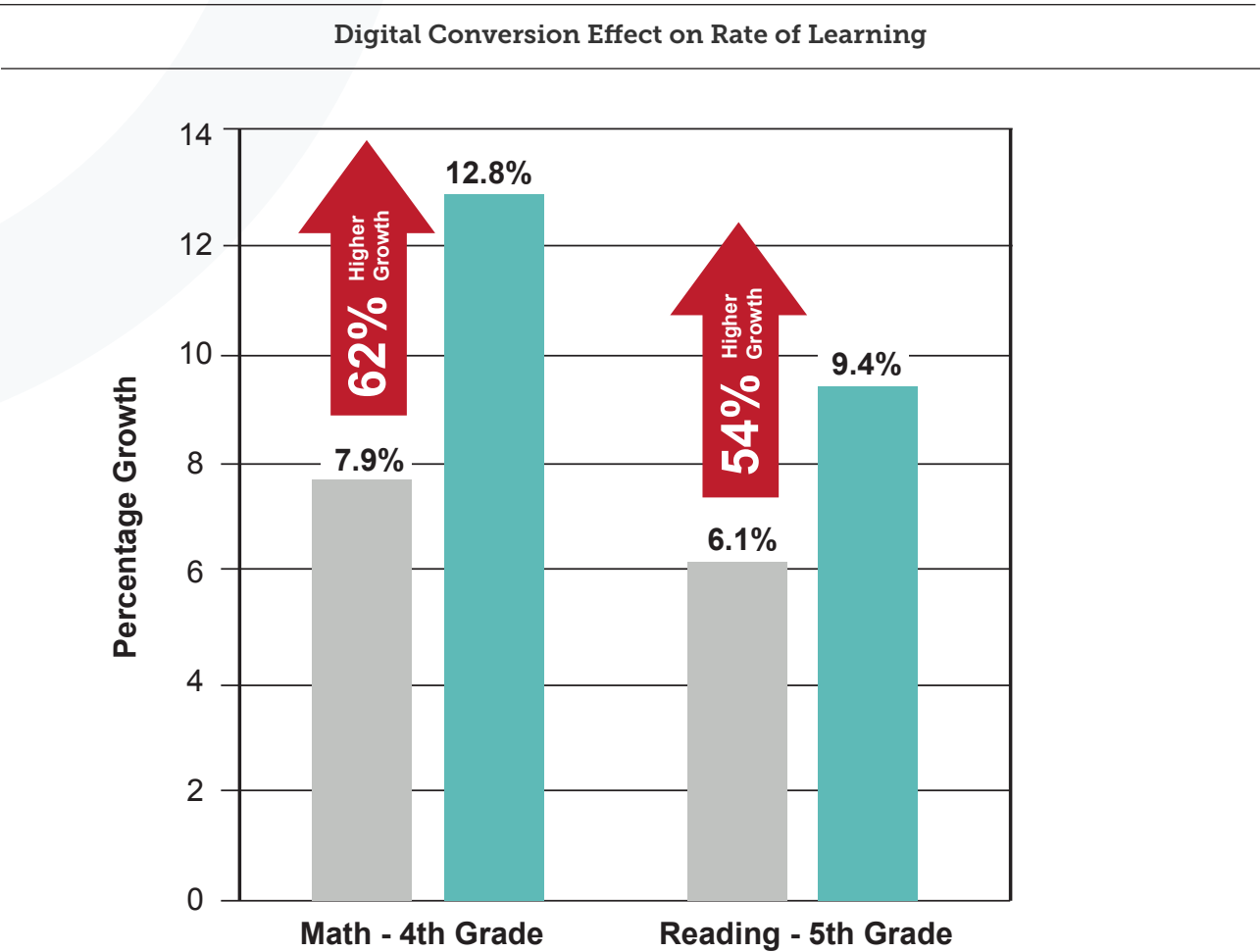


*In the first year using T2K, teachers using a structured digital course integrated with a real-time Digital Teaching Platform, increased the number of times they implemented various digital instructional methods.*



**2. Proven Results Reduce Risk:** It may seem obvious that a district should look to implement something that has been built, tested, and proven to impact instruction and learning positively. Incredibly, there are a large number of school districts who continue to be persuaded to implement strategies that have repeatedly failed, or have no evidence of deliverable student growth. Districts who are being asked to bet the farm on unproven new systems, or in some cases, systems that have yet to be built, should proceed with caution and understand the risks. It is essential to have a partner that has a system with longitudinal evidence of success, as defined by state High Stakes Test (HST) results, and demonstrable improved teacher practices that include teacher testimonials to substantially improve your chances of a positive outcome.

**KEY TAKE-AWAY:** Ensure there is evidence that your strategy will work based on high stake test rate increases.



Effects of T2K on Math and Reading Achievement

**3. Actionable Real-Time Data is Essential:** Too often, 1:1 learning implementations don't include easy teacher access to real-time student achievement data. We are just beginning to scratch the surface of how analytics will impact instruction, learning, and overall K12 decision-making. This means that the tools and data available today will improve greatly with time; however, there's no time like the present to use real-time data when planning your digital conversion. Research shows that making it easy for a teacher to monitor student progress during class can dramatically impact a teacher's ability to individualize instructional support and keep the whole class engaged and learning.

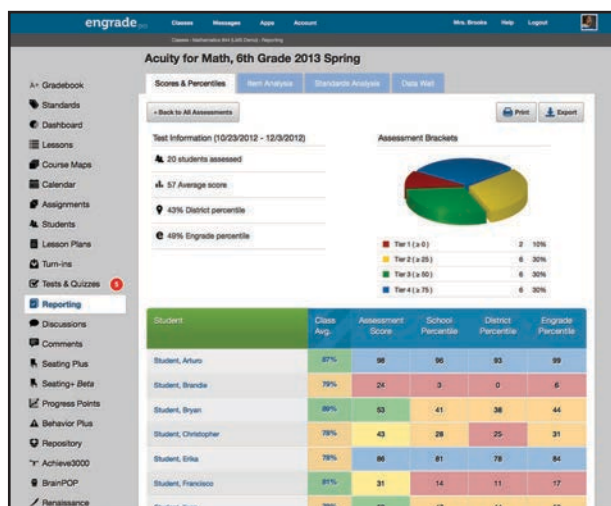
**KEY TAKE-AWAY:** Ensure your digital learning programs include real-time student progress reporting.

### Real -Time Progress Monitoring Increases Quantity and Quality of Feedback



Easy access to student longitudinal progress.

Early and often identification of student achievement trends.



*Data aggregation systems integrated with digital teaching platforms provide comprehensive insight and added precision for teachers.*

**4. Understand TCO:** The acronym TCO stands for Total Cost of Ownership but too often it is misinterpreted to mean Technology Cost Only. There are several reasons why TCO is a challenge to understand from a school system's perspective. First, school districts think about budgets and funding in traditional departmental ways, rather than the total cost of an organizational process. This silo-style cost center structure makes it hard to track and monitor true costs, as well as coordinate and optimize spending across multiple departments. There are several examples of why this is an issue in a district digital conversion and here are a couple of them: **(1)** When building a digital learning environment, how much should it cost for the digital curriculum resources? Some folks would like to believe that OER (Open Educational Resources) are the way to save and redeploy instructional resource budgets. However, the cost of locally researching, assembling, and modifying tightly aligned core digital curriculum resources often exceeds any savings realized from eliminating the purchase of turnkey licensed digital programs. **(2)** Is your district's use of support staff efficient and effectively supporting its digital conversion effort? Tracking the true costs of existing support staff being utilized to support a successful digital conversion can be challenging.

**KEY TAKE-AWAY:** Consider all costs and don't lose sight of hidden costs.



**ALL COSTS CAN BE HARD TO SEE**

**5. Reliable and Easy to Use:** When considering the implications of change, new tools to enable change, and the added investment associated with change, it is important to consider a basic but important question: Is what you are implementing reliable and easy to use? This simple concept can become difficult to address in RFPs and district procurement processes. This is further complicated by the fact that ease-of-use can be a matter of perspective. A good question for districts to ask themselves is: Will all or most of my teachers be able to easily and quickly adjust their instructional practices to take advantage of the new capabilities? Too often, the sample group used to address this question is limited to the proverbial “rock stars,” who are future leaders and highly innovative people, but who may not be a good bellwether for estimating broad-base acceptance and success.

**KEY TAKE-AWAY:** Ensure your system is reliable, easy, and can be used by all.

**6. Interoperability Matters:** A common source of consternation for school districts going digital is determining the role of legacy technology investments and how to decide what products and/or systems should interoperate with each other. This is a complex and potentially thorny strategic issue to work through before going too far down the road of added technological investments. Being clear on how added capabilities will directly impact learning and instruction is essential to making lasting changes. Also, understanding the pros and cons of closed versus open systems is important. Does the choice require a trade-off of student achievement for one-stop convenience? Newer system architectures and computer coding tends to embrace greater openness, provide common API's for 3<sup>rd</sup> party integration, and therefore greater flexibility for digital district conversion. Most districts select accelerated student learning and improved instruction as their primary goals, so implementing a strategy and system that is centered around those goals reduces unnecessary human intervention and easily supports new digital work and learning processes, which is key.

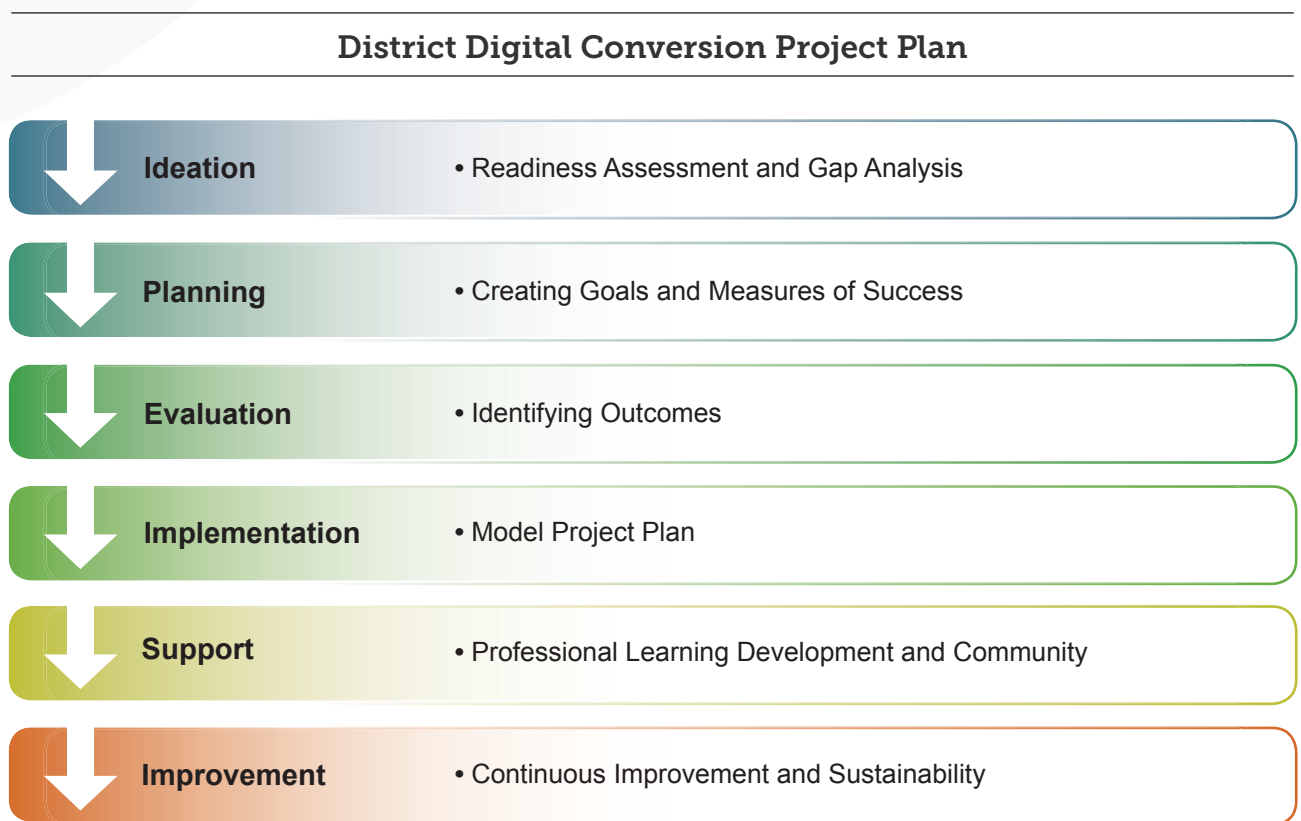
**KEY TAKE-AWAY:** Strive for integrated digital teaching and learning systems that are open.





**7. It's a Process, Not an Event:** Like the concept of change management suggested above, district digital conversion is difficult and will affect most district departments and their staff in some way. Anticipating staff needs related to digital conversion and openly discussing the implications of change can make a huge difference in building staff support. Partnering with an organization that has the experience and scale to support both the start-up implementation and the district's longer term digital conversion needs can be the key factor to a district achieving its goals. This approach usually requires the district leader to mobilize all departments to help understand their role in the effort and their alignment to the intended outcomes. While implementing and deploying technology is an important step, the team needs to keep in mind that it is just the first step of a long process. Christensen refers to these cross-functional teams as "heavyweight teams" and suggests, **"to be effective, members of heavyweight teams must abandon the mindset of "representing" the interests of their departments during the team's deliberations. Instead, they must think of themselves as having a unified interest in redesigning a product from start to finish."**

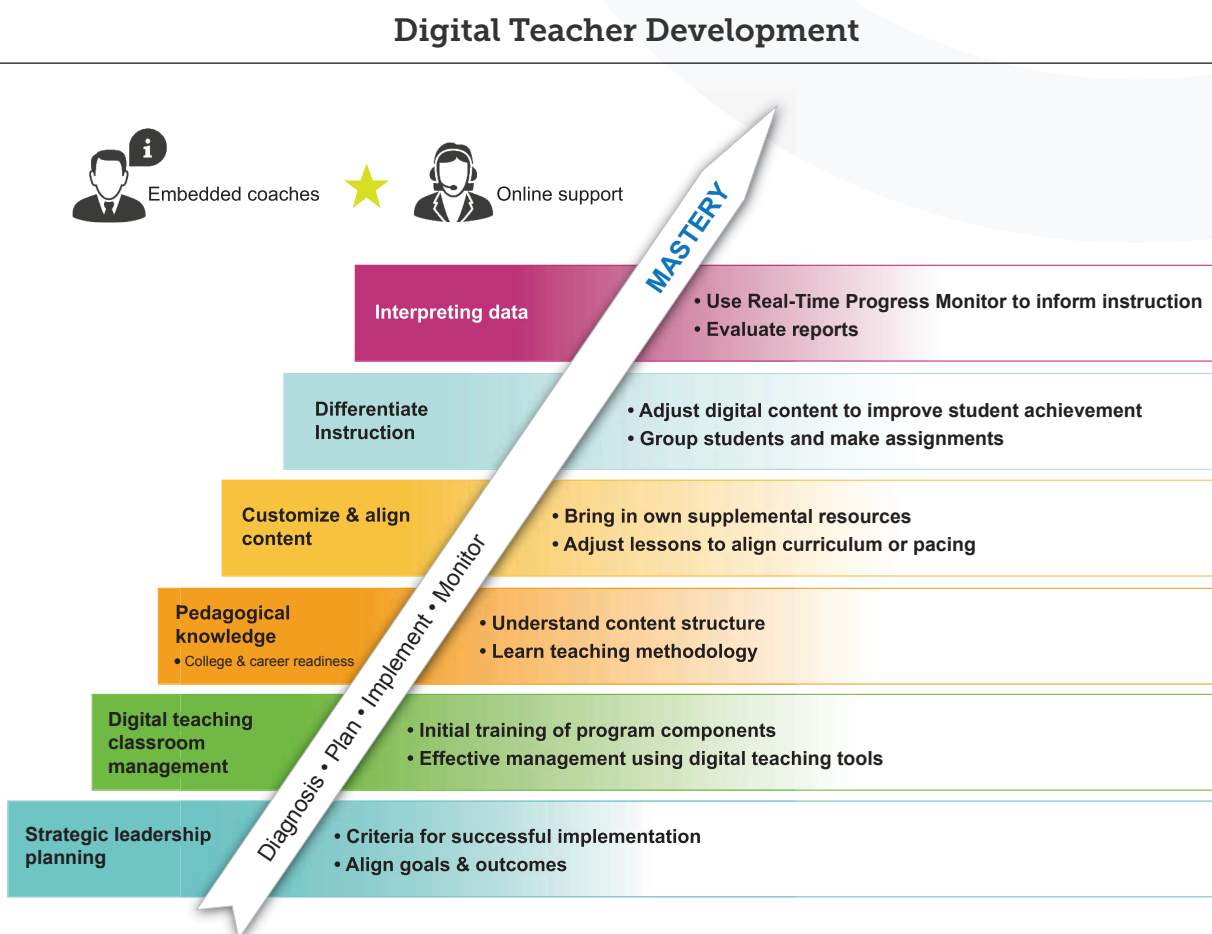
**KEY TAKE-AWAY:** It is important for leadership to ensure a well-coordinated plan exists that aligns people, goals, and efforts



*Steps of District Digital Conversion project plan to ensure a successful digital implementation.*

**8. Support New Digital Instructional Practices:** Even though it might seem obvious that it's necessary to train and support teachers on how to be effective in a digital teaching and learning environment, most training today only focuses on showing teachers how to use new tools. It is really important for a district to know how teaching should be improved when going 1:1; otherwise, a lot of money will be invested with little or no return. Since 80–90% of a district's budget is dedicated to staffing, it is imperative that staff development be at the heart of any digital conversion strategy. It is important to leverage digital instruction experts to assist with the planning and implementation of effective digital practice. It is also essential to make sure that new digital instructional practice training is tightly aligned to the district's digital learning environment.

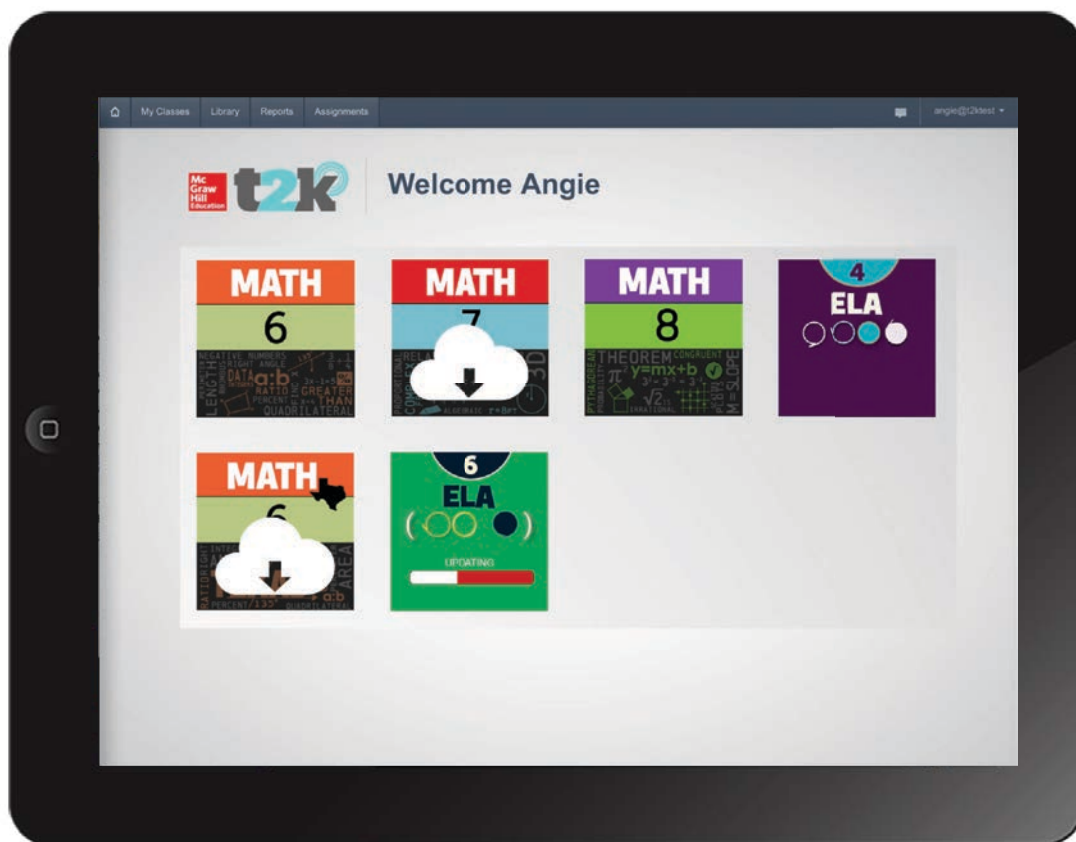
**KEY TAKE-AWAY:** Plan and sufficiently fund to train teachers in new digital instructional practices.



*Ongoing professional learning course progression focusing on improving digital teaching effectiveness.*

**9. Enable 24x7 Learning:** Every effective digital conversion should account for improved access to learning and instructional support outside of school. Traditionally, school districts have focused their learner and instructional support investments predominantly on optimizing the classroom during school hours. Going digital represents an unprecedented opportunity to impact teaching and learning outside of the classroom, but requires a rethinking of district investing. The new paradigm should strive for ubiquitous access to an engaging personalized learning environment; easily incorporate new instructional methods like “flipped learning and facilitated instruction;” enable and promote parents’ involvement in their child’s learning; and be relevant to today’s technological norms. There is no substitute to access high-quality universal wireless networks and many progressive districts actually campaign in their communities for this support. The reality is that most districts need to plan for a sizeable percentage of their students having limited or no network access, and continue to pursue community support for personal access for all.

**KEY TAKE-AWAY:** Ensure your digital learning environment is accessible anywhere and anytime.



*Network access simplified since all content can be downloaded and used without network access or accessed live through a mobile network connection.*

**10. Hardware is Not a Solution:** You may be thinking, well duh, but it is surprising how many districts still look at hardware as the key investment and decision in going digital. A lot of hardware companies will encourage hardware selection and purchase as the first step to secure limited district funding. However, unless your district is going BYOD (Bring Your Own Device), the hardware decision and purchase is best made after or in parallel to the digital teaching and learning environment decision. Additionally, districts should be careful to assess the risks associated with a teaching and learning strategy that is dependent on a specific device or device provider.

**KEY TAKE-AWAY:** Make sure the device purchase doesn't compromise your immediate and long-term digital teaching and learning goals.





# DISTRICT DIGITAL CONVERSION & PERSONALIZED LEARNING

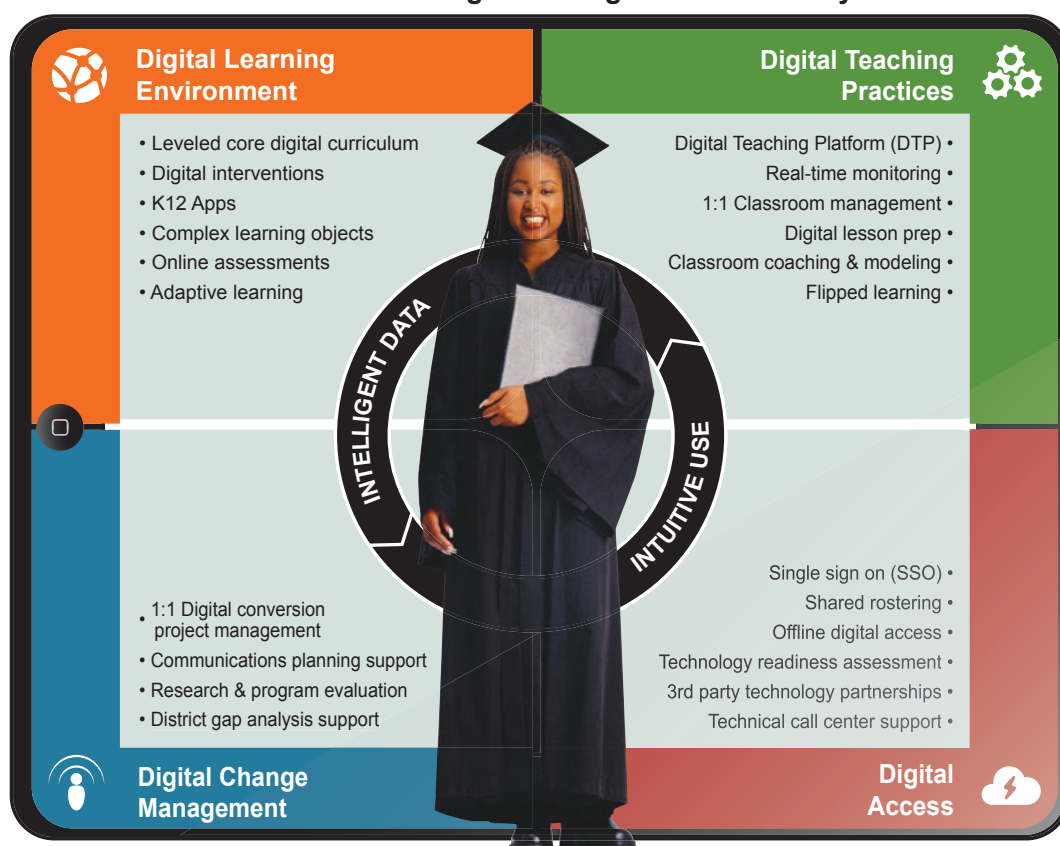
While the individual components and subcomponents are important, **the rationale for needing a “Framework” is that the sum of the interoperating parts is much greater than any single part itself.** The lack of a cohesive system is one of the reasons so many school districts struggle to achieve their intended outcomes, in spite of buying all or most of the component parts. Difficulties can arise when technology systems can't work together, which in its worst form can actually decrease focus on learning and increase workload.

A company like McGraw-Hill Education provides many pieces of this Framework and strives to make each part best-in-class and increasingly interoperable. However, it may be difficult and impractical for a school system to get everything from one provider, which is why using open standards becomes crucial to long-term district viability. Also, many school districts and states require their digital partners to work with existing assets and/or services; this requires the Framework to be flexible and requires compromises. The balance between departmental preferences, extending the life of legacy assets, and optimizing the district's digital conversion strategy can be challenging.

The following Digital Conversion Framework shows the four core components linked together to support effective personalized learning. The core four are powered by intelligent data and enabled through intuitive access. The Framework was developed through research, experience, and directly addresses the 10 Lessons learned.

## MHE Digital Conversion Framework

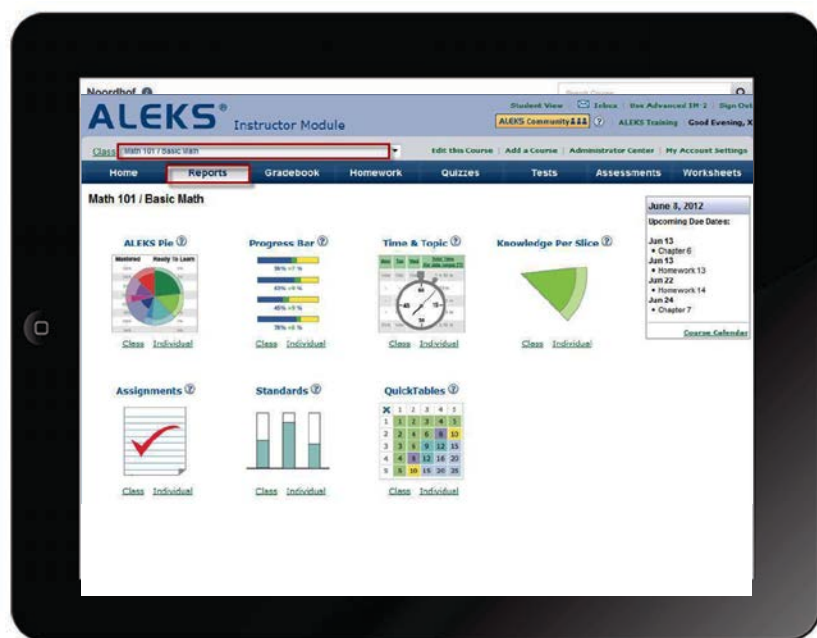
### Effective Personal Learning for College & Career Ready Student



## Digital Learning Environment

The bulleted items shown in the Digital Conversion Framework are only a sample of the full list of subcomponents that a district will want to consider including in its digital learning environment. A good rule of thumb is to cross-check the component choices against the lessons learned to help your district make good choices. Further, it is important that the component choices work well in the aggregate.

An important step to building an effective digital learning environment involves the selection of structured and unstructured digital curriculum resources. Questions to consider when choosing a structured digital curriculum are: How will it be used in classrooms? How will it be used away from school? If the resource is difficult to use in class but easy to use away from school, or vice versa, ensure they're used as intended. Generally, the more dynamic, rigorous, and individually tailored the structured content is, the better, providing it is designed for the teacher to easily manage and support.



Increasingly, effective personalized learning will incorporate programs that leverage adaptive learning technology. Adaptive learning programs can be an excellent way for schools to get more out of their digital conversion investments. In addition to equipping students and teachers with the ability to do more independent practice and learning, adaptive programs are terrific tools for students and parents to work when away from school.

HOW  
WILL IT BE  
USED  
IN  
CLASSROOMS?

An effective digital learning environment needs quality and multifaceted assessment capabilities to provide real-time learner feedback; and adaptive, summative, and longitudinal insights. To a large extent, the assessment capabilities allow the digital learning environment to become personalized. In turn, data visualization allows data from the assessments to be easy to access, use, and manipulate.

HOW  
WILL IT BE  
USED AWAY  
FROM  
SCHOOL?

## Digital Teaching Practices

As noted above, there is great innovation and promise building around self-serve learning environments that use highly intelligent algorithms to adjust and direct what a student needs to do to learn. This will surely create greater opportunities to personalize learning for students and contribute to the potential for more efficient school systems. However, the majority of school systems' budgets are dedicated to school staff, so quickly optimizing the educator workforce is crucial to accelerating student achievement when making a digital conversion.

The most obvious and consistently implemented teacher Professional Development (PD) provided is for product training. **Product training is essential but insufficient.** If a district wants its educators to adjust their instructional practices by leveraging newly provided digital tools and resources, it should have a clear plan to enable this to occur.

Developing and implementing a strong PD plan has many barriers—release days, varied competencies and readiness, and cost, to name just a few. However, no barrier is high enough that a district should not implement a sufficient level of PD. Doing so is akin to buying a car but not having enough money left to buy gas and insurance.

The bulleted list of digital teaching practices outlines important educator effectiveness tools and supports to ensure the large majority of teachers can successfully make the digital leap. A DTP is extremely important because by design it helps to make teachers more effective and efficient in a digital realm. A lot of other tools, like Learning Management Systems (LMS), help to digitize content, but a DTP does that plus automates many important teacher tasks as referenced in the image below, thereby assisting and empowering them to enhance student mastery of knowledge and 21st century skills.

## TEACHER

### EVALUATE

- Extensive reports and data analysis
- Assess student progress against standards
- Adjust instruction according to student's performance

### MONITOR

- Real-time data of student's progress
- Immediately alerts teachers
- Recommends & modifies instruction



### PLAN

- Easily plan with pre-defined lessons
- Customize & group individual needs
- Incorporate your own resources

### TEACH

- Blends digital with live instruction
- Launch, pause, and switch learning activities
- Conduct dynamic discussions and peer reviews

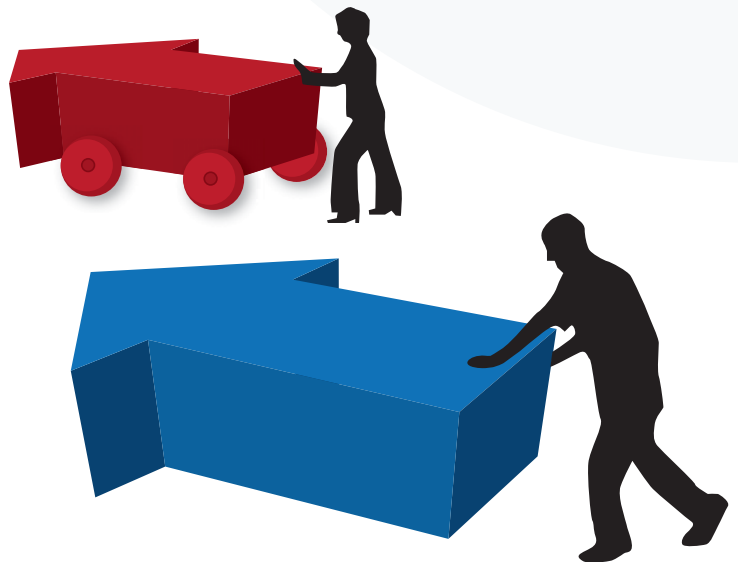
## Digital Change Management

Perhaps the most underestimated and abstract requirement for successful digital conversion is the requirement for a school system to think and function differently on virtually every dimension. In most cases, there isn't more money to fund a digital conversion, so existing departmental budgets are re-purposed to provide the necessary resources. Districts and schools have long separated technology budgets, curriculum budgets, PD budgets, and title funding budgets. Decisions that were once easily made by a single department, often now require multiple decision makers and consequently, multiple implementation owners.

### It's important that the district leader lead the district through this process.

External support can be invaluable to help plan, guide, and support a district's digital conversion effort. The first year of a district digital conversion is usually the most difficult one, and the most important one to support. This doesn't mean that subsequent conversion years are necessarily easy, but if the first year is a success, then enough internal knowledge and capacity should be in place to sustain the work for years to come. One of the most important aspects of successful digital conversion is effective communication. Everyone in a district will be impacted in some way, so they will want to know how it will impact them. Districts that already have strong communication departments will be equipped to handle the new and added work, while those without strong communication structures should anticipate the need for extra support. The communication plan also needs to address parents and the community to help them understand what it means to them.

Finally, communication planning and activities should start well before the district digital launch and continue for several months and even years. It is important to recognize that most parent and community stakeholders' perceptions of effective schools are based on when they were children. An announcement about adding new technology will not be sufficient to help them understand the scope of the planned changes or build confidence in the new paradigm.





## Digital Access

The most obvious component to a digital conversion is the device itself. **Districts need to be careful to avoid a common pitfall of funding for the technology, but not the learning.**

Digital access addresses a lot of things, but at its heart it is the ability of the students and staff to access their digital learning environment anywhere and anytime. Laptops continue to provide good value and effective use in 1:1 deployments, but all the momentum and investment are with tablets.

Network infrastructure provides local wireless access and the launch of a district's digital conversion requires the network infrastructure to be sufficient, which for most districts means some form of network upgrade. Getting an independent network readiness evaluation is a good idea. A lot of providers will help districts with Mobile Device Management (MDM) capabilities, which prior to a digital conversion, most districts didn't need to think about.

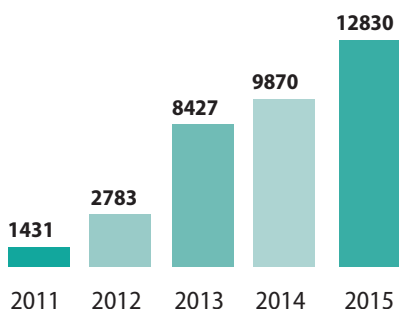
A district goal should be to make access to the digital teaching and learning environment easy and secure. Things like effective offline access, Single Sign On (SSO), shared rostering, filtering, auto-grading, and hotline or Web support all play an important role in the user experience. Try to make sure these things are implemented effectively.

Finally, in discussing digital access these days, BYOD comes up quite often. Most districts that move forward with effective 1:1s lean toward a district-provided device. It eliminates issues like equity, form factors, operating system conflicts, and liabilities, to name just a few. If a district wishes to go BYOD, it should develop mitigating strategies for known limitations of BYOD.

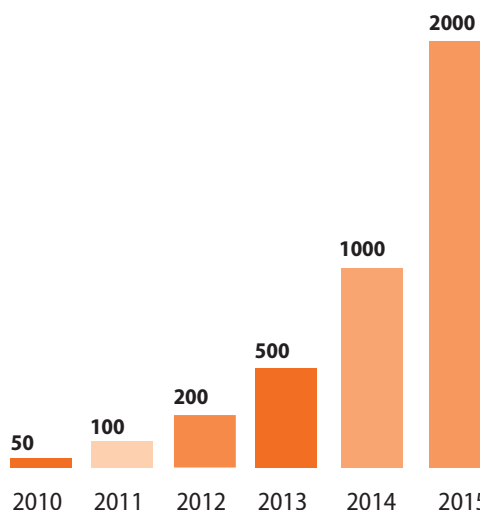
Additionally, BYOD districts should be just as clear in communicating achievement and instructional goals as districts that provide their staff and students with devices. It should not be a reason to lower the academic bar. There are valid reasons why many believe in the future, BYOD will become a more prevalent device strategy for school districts; allowing districts, to reduce their device investments by only supplying a district device to those who can't afford their own.

### *Correlation Between Increased Number of Devices and Bandwidth Demands*

*Real-life example of a typical 1:1 District*



1:1 DEVICES

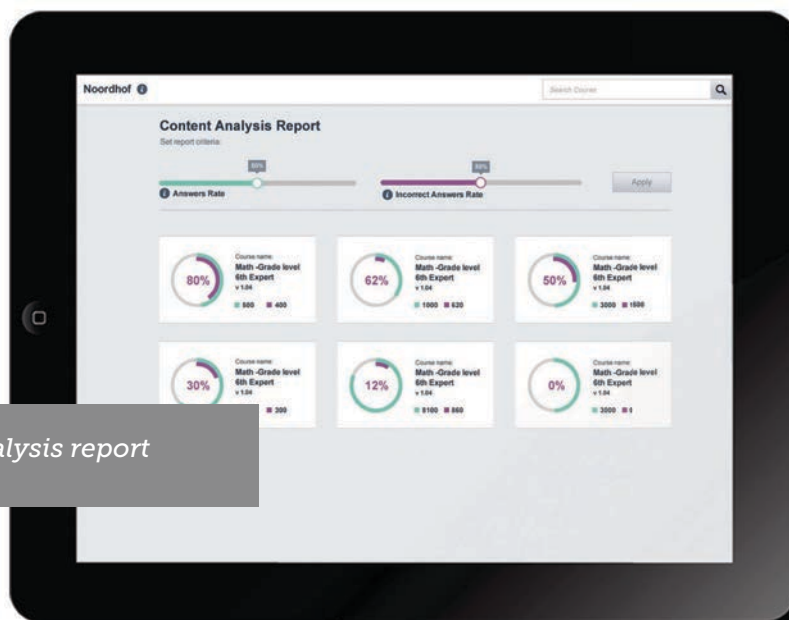


INTERNET BANDWIDTH (Mbps)

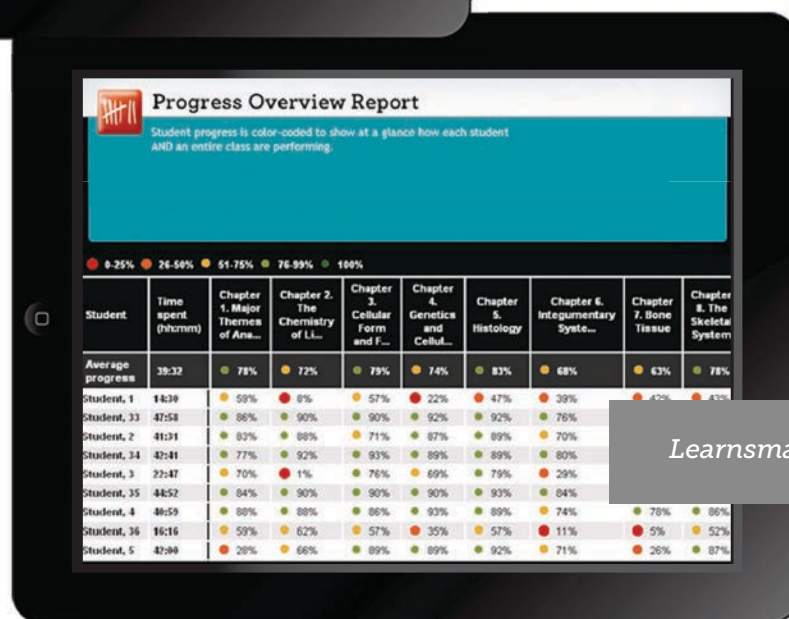
*Prepare for significant bandwidth growth when doing your district digital conversion.*

## Intelligent Data & Intuitive Use

The enabling connective tissue between the 4 core digital components is intelligent data made accessible through intuitive user interfaces. **Data that is real-time, comprehensive, personal and easy for students, teachers, administrators, and parents to use is essential to achieving an effective personalized learning environment.** Data analytics and visualization will play an increasingly important role in powering individualized instruction, resource planning, and effective education design. A lot of older systems not originally architected with these requirements in mind, may slow a district's ability to optimize their district digital conversion. Upgrading to newer, flexible, intelligent systems represents a significant improvement opportunity, but IT departments may provide some measured resistance to replacing legacy platforms. These new cloud based systems also offer districts with a potential opportunity to reallocate IT resources toward more valuable district digital conversion activities.



T2K analysis report



Learnsmart teacher report

## Additional thoughts on Total Cost of Ownership (TCO)

Determining the TCO for a district digital conversion is difficult but extremely important. Building an efficient and sustainable digital district requires leadership to understand all of the costs associated with external partners and internal operations. **Moving forward with a digital conversion often requires difficult resource choices, so having confidence and clarity in the digital plan is essential to garnering support from internal and external stakeholders.** The lack of appropriate allocation of funding or cost tracking, as noted in the TCO table, is a common pitfall. Each of the 4 scenarios have their attractions, so it is likely that all of them (and variations of them) will continue to be pursued by districts. True TCO measures all aspects of a defined operation or product implementation. In the following financial scenarios we've not included costs for actual instruction time or any potential class size impacts; instead for the purpose of this cost analysis, these types of costs are treated as equal across all 4 scenarios. The baseline cost scenario used is the seminal research done by Project Red (PR), therefore PR cost categories are used as a standard for technology related costs and many of the cost estimates from PR are reused in this analysis across all 4 scenarios. The following comments are intended to help clarify the TCO table:

- ❶ The difference between the PR device cost and the device cost in the other 3 scenarios is that we believe annual estimated costs for devices today are lower than when the PR study was conducted.
- ❷ Costs for educators to create high quality, structured core digital curriculum resources, as shown in the DIY scenario, are based on feedback from teacher interviews working in DIY environments who report that they spend an average of at least 10 hours per week performing this activity.
- ❸ The Annualized S/W (software) costs are based on the PR estimate of this cost category. In the DIY scenario, Annualized S/W costs are assumed to be lower than the PR costs due to the added expense in DIY development cost. We believe there may be some opportunities to reduce Annualized S/W costs in the modular and turnkey scenarios but for the purposes of this analysis we have assumed no difference than PR identified.
- ❹ The modest variances in the Professional Development and Planning, Project Mgt, Communications categories have to do with potential impact of improved efficiencies within each scenario.
- ❺ Costs change with time, and in the area of technology, costs generally go down. For the purpose of these scenarios, savings from reduced future costs are excluded.

HAVE  
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## District Digital Conversion Annual Cost Scenarios amortized over 5 years

	*Project Red	**Do It Yourself (DIY) District	**Modular District	**Turnkey District
<b>Number Students</b>	500	10000	10000	10000
<b>Per Student Costs</b>				
Device Hardware - Student/Teacher Devices, Warranty	\$255	\$200	\$200	\$200
Servers, Routers, Firewalls, and related S/W	\$25	\$25	\$25	\$25
Wireless Network	\$22	\$22	\$22	\$22
Telecom: Per student/per year based on 50kbps/student avg	\$25	\$25	\$25	\$25
Technology Support	\$75	\$75	\$75	\$75
<b>Technology related subtotal</b>	<b>\$402</b>	<b>\$347</b>	<b>\$347</b>	<b>\$347</b>
Annualized S/W	\$128	\$55	\$128	\$128
Curriculum Content Development	Not Incl in PR stated costs	\$750	\$0	\$0
Professional Development	\$63	\$63	\$50	\$25
Planning, Project Mgt, Communications	Not Incl in PR stated costs	\$12	\$12	\$5
<b>TOTAL cost per student/per year</b>	<b>\$593</b>	<b>\$1227</b>	<b>\$537</b>	<b>\$505</b>

\*Project Red Research (PR)

\*\* Relevant cost estimates were applied to the PR baseline costs categories

There are many things to consider when evaluating district TCO for a digital conversion. The DIY scenario is based on findings from prior district analyses and discussions pursuing this approach. DIY is clearly not a cost savings panacea, and there is a lack of evidence to suggest this approach will academically outperform the other 3 approaches. There is a caveat however. The DIY costs associated with digital curriculum development (noted in the TCO table) can be substantially reduced in districts that have the luxury of increasing teacher work for free, or for modest stipends. As a rule, these savings are only possible in states that don't have union collective bargaining agreements (CBAs), as most districts that increase teacher work will have to account for added teacher work and related costs, like we have done in the TCO table. Keep in mind that even if the district doesn't need to

account for the staffing cost, there is still an opportunity cost associated with teacher time that might otherwise be used to work with children instead of creating curriculum resources. A key for districts more predisposed to DIY is to ensure full costs of the DIY activity are accounted for, as well as ensuring they can sustain the necessary investment to evolve and improve. If a district will need to spend more, or can't build and sustain a better product or service than is available on the market, it may not make sense to DIY. This logic applies to almost anything any district might choose to build or buy, be it buses, food services, or in this case core curriculum resource development. As technology and district staff's digital capabilities and capacity improve, the TCO variables and DIY should be reassessed.



Dedicating a part of this paper to discuss TCO confirms our belief that it is an important consideration for any district digital conversion. However, **it is really important that value and impact are evaluated as part of any cost evaluation.** If the digital conversion plan does not generate accelerated student achievement and improved instructional practice, district stakeholders will likely feel there is a poor return on their invested educational dollars. If on the other hand, students and teachers efficaciously thrive, then most stakeholders will be happy to fund whatever it costs for such success. The desired state is of course, high student and teacher impact for lowest possible cost. The district's balancing act is to never let the scale tip in a way that will compromise student achievement and educator effectiveness.

There are other important but more abstract financial impacts that generally fall outside of the district's narrative, but can become a part of any district's strategy to build awareness and support for its digital conversion strategy. For example, Project Red estimated that if one was to add up all of the positive financial impact associated with successful digital conversion, it would generate more than \$3 trillion in positive annual impact. Although this number is enormous, it approximates the national opportunity cost associated with student drop-outs and their ensuing lack of financial productivity, and in worse cases their strain on our society. What this means from a district perspective is that the financial impact of their success is potentially many times their total annual per pupil funding allocation. This can be a hard fact to wrap one's head around but being able to understand the differences between costs, impact, and value can help district leaders be more effective with their staff, students, and communities.

**At some point in the not too distant future, digital districts will become the new normal and new ways of measuring efficiency and effectiveness will emerge that will make this discussion more routine.**

## **Conclusion**

In the opening of this paper we indicate that the forthcoming recommendation is properly classified as a sustaining innovation as opposed to a disruptive innovation. Clearly making a digital conversion is disruptive. Christensen's research and hypothesis suggests that a disruptive innovation may be just around the corner. If that is true, it places urgency on school districts to successfully initiate and implement their district digital conversion strategies. It is impossible to know what the ultimate disruptive innovation may include, or when it will arrive, but it seems likely that school systems and educators who become digitally effective and relevant stand the best chance to lead in the future.

Districts about to start, or those who have initiated their digital conversions, may find the lessons learned and District Digital Conversion Framework helpful to get started and improve their current efforts. For districts yet to start their conversions, we hope this paper will be educational and perhaps inspire them to make the digital leap. For those seeking advice and support, McGraw Hill Education has a group of committed digital conversion experts, who can consult and tailor a district digital conversion plan to your needs.



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## ABOUT THE AUTHOR



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Scott has had a distinguished career in leading states and school districts to embrace systemic digital learning and has a deep background in learning technologies and the growth of digital in education. Scott recently joined McGraw-Hill Education from Pearson, where he conceived of and led the research, development, implementation, and oversight of Pearson's 1:1 learning strategy. Scott's extensive prior experience working with schools and school systems in the areas of school management, assessment and data management systems, school governance, education policy, collaboration and communication software, educator development and collaborative project based learning served him well in leading this work. He regularly speaks as an industry digital learning expert with media and at education conferences and forums.

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