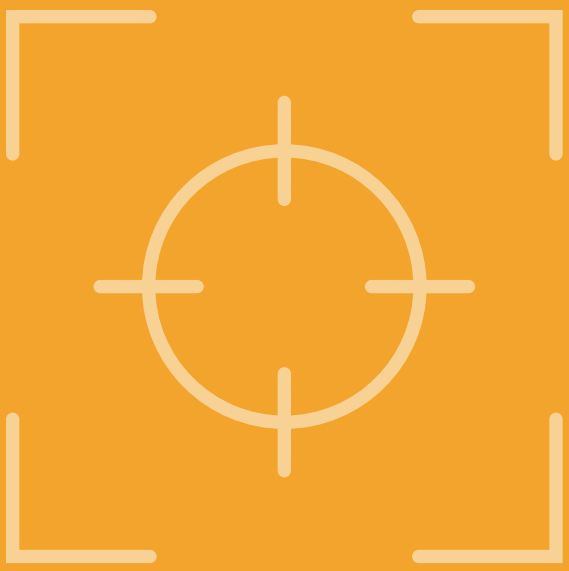

Using Technology to Support Learning

A Point of View

By Bob Moore

Education Elements

Learners of today. Ready for tomorrow.

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Cloud-based technologies have ushered in huge changes in how we conduct our lives, both personally and professionally. They have transformed nearly every segment of industry, government services and healthcare, and have brought about some changes in education – but hardly the transformation seen elsewhere that students deserve.

For that type of change to happen in K-12, an undeniable track record of unmet expectations would need to be reversed. For more than three decades, K-12 schools have found it challenging to keep up with the rapid changes in technology, let alone to ensure that their significant investment in technology is having an impact on their core purpose: student learning.

School systems throughout the U.S. invest more than $10 billion of taxpayer funds each year into technology, only to struggle to realize any tangible benefits or to see the technology gathering dust. Nearly 14 million new devices flooded into US K12 classrooms in the 2017-18 school year, according to *Education Week's Technology Counts 2017.*

The reasons for the struggle to reap the benefits of technology in K-12 are many. For example, due to the nature of education and the measures of success used, it is often far more difficult to measure ROI (Return on Investment) than it might be for a for-profit business. Also, public-sector institutions are inherently political in nature, thus decisions about technology initiatives may be influenced by local politics rather than rational criteria. Technology ecosystems and operations have become very complex and difficult to manage, even for the most well-resourced organizations. For perennially cash-strapped school systems that often lack the ability to merely "keep the lights on," let alone research and develop new capabilities, head-spinning technological advancements fall further out of reach.

The most significant barrier to effective use of technology in student learning has been the lack of singular purpose for its use in schools and within a system of instruction that leverages technology to better personalize instruction, and thus learning, for each student.

This is not to suggest that educators have not intended to use a vast variety of technologies to improve instruction and learning. After all, for many years the clarion call was "technology integration." In other words, take this new technology that could not have been conceived of just a few years ago and somehow include it in an instructional model that had been in existence for more than a century. This approach was doomed to failure.

How do school system needs compare to those of modern tech companies?

In recent years, K-12 school systems have been learning what other types of organizations realized some years ago: merely integrating technologies into established systems and processes is ineffective. Instead, organizations must consider how digital technologies can be applied to enable new systems and processes that better meet the needs of their customers and clients. In organizations of all kinds, this type of thinking is referred to as "digital transformation."

The key to digital transformation is not that technology drives, or mandates, processes. Rather, it enables the processes that allow the organization to best meet the needs of their clients. Ride-sharing services such as Uber and Lyft are perfect examples of a technology that enabled a new desirable process. Amazon has transformed the retail sector. Apple, Pandora, Google, and Amazon have all had a hand in changing how we listen to music. And now services such as Netflix, Amazon Prime, and Hulu have changed how people watch television.

The leap from business and industry to education and student learning is not as big as one might think. Businesses typically have rather simple goals, such as increase revenue and profit, increase market share, develop new revenue streams, decrease costs, etc. While goals in K-12 school systems may be somewhat more complex, many still come down to student achievement and academic growth.

For decades, the term *personalized learning* and similar terms have been used in K-12. Definitions vary widely among both practitioners and academics, but typically they include characteristics such as significant student input in the learning process, focus on student academic growth as measured by mastery rather than "high stakes" assessments, and anytime, anywhere learning. In addition, the one thing that all educators agree with is that in actual practice, personalization of the learning experience for students is extremely difficult to implement and scale.

If only it was as simple as a mobile app that could somehow magically make personalized learning happen. But even Amazon did not transform the retail industry without significant investment over a long period of time. As businesses and government organizations are being transformed through the use of cloud technologies, the technologies they have developed are leading a veritable sea-change in how school systems can deliver and receive technology services that enable instructional and learning practices that support personalized learning.

> "Technology leaders (67%) say that the greatest challenge they face in implementing digital learning or expanding technology use is motivating teachers to change their traditional instructional practices to use technology more meaningfully with students."
>
> *– Project Tomorrow*

> "Teachers in blended learning classrooms are setting a new bar for transforming learning using technology. For example, 68% report that with the use of technology in their classroom they are better able to differentiate instruction for their students."
>
> *– Project Tomorrow*

What is the role of cloud technology in the new digital landscape?

It may be surprising to some just how much cloud technology has already changed how students and staff access technology resources in K-12 school systems. In fact, it would be hard to list all of the educational resources that are available via the cloud. The beauty of this is that not only does it provide for the anytime, anywhere, any device access, but it can also relieve the IT department of some operational responsibilities. The catch is that, until recently, the use for cloud-based resources has been driven from the classroom-level and unfortunately not always in concert with school system-level initiatives. Many IT leaders also think it takes away some of their control, but the truth is that they lost control a long time ago. In a cloud-based IT infrastructure, users (i.e., teachers and students) can have much more freedom.

Undeniably, K-12 school systems adopting cloud technologies is a very positive development. With that said, there are two issues which should be of significant concern to school system leaders. First, much of the adoption of cloud-based resources and apps happens outside of the formal vetting and adoption processes, unless they happen to come as part of the textbook adoption process. It is easy to see a long list of problematic issues with this practice.

> **"80 percent of school edtech leaders say their districts are using cloud-based software... four of five district leaders are using cloud-based systems from third-party servers, or those offsite and at less risk of data loss."**
>
> *– EdDive, Aug 2017*

Second is that many school system IT leaders have yet to fully embrace cloud technologies to enable educators to implement new forms of instruction and learning, such as blended learning, as a way to personalize learning. In other words, many of the cloud-based resources used in classrooms are only replacing paper-and-pencil type resources, and thus not changing instruction. There are many reasons for this, but lack of understanding of the very complex, fast-changing cloud marketplace, as well as the technologies that make up the "cloud" are paramount. The need for control, perceived security risks, and lack of understanding of the education process (and how cloud can enable this) are but a few of the many other reasons.

In many school systems, the IT department is often reluctant, and not prepared, to move to the cloud. Afterall, managing this fundamental, wide-sweeping change in how technology services are delivered is unlike anything school system technology leaders have faced in the past three decades. The technologies are different and evolving faster than anyone can keep up with. It requires a different model for funding the technology. New technical skills are required. Technology vendors with whom people had grown comfortable may no longer be significant players. Concerns about security and privacy of data must be addressed. If all of those are not challenging enough, school system technology leaders, often referred to as the CTO (Chief Technology Officer) must change their focus from technology to education, from racks and servers to services, from slow and steady to nimble and agile, and from standardized, one-size-fits-all use cases to personalized experiences for students and staff.

Superintendents, board members, parents, business leaders, and other education advocates should be increasingly frustrated that the systems they entrust to educate their children have yet to fully embrace cloud and transform students' academic experiences. Imagine how different our lives would be if the likes of Amazon, Facebook, Google, Microsoft, Netflix, and Uber had not chosen to envision new ways of doing business based on cloud technologies? When scouring the websites of cloud service providers such as Amazon Web Services, Google's Cloud Platform, and Microsoft's Azure services, you will find a "who's who" listing of for-profit companies, government entities, universities, non-profit organizations, and more, all who

have embraced the cloud so they can offer new and better services. They can often accomplish these at lower costs, or at the very least by re-allocating limited resources to the core purpose of the organization, rather than operating and maintaining IT equipment that is obsolete before it is even fully implemented.

The promises of cloud technologies for K-12 school systems, then, are these:

1. Rather than focusing on operating technology systems and the infrastructure they require, focus instead on providing the services and data that are needed to personalize student learning.
2. Rather than getting locked into a single technology provider or platform, create a flexible, agile environment that can change with the needs of the school system's educators, administrators, students, and parents.
3. Predict, flatten, and possibly reduce technology funding needs over the long term.
4. Ensure that technology services are always available so that learning can be anytime, anywhere.

It is clear that there is a disconnect in K-12 school systems when it comes to cloud-based technology services. On one hand, most applications used in classrooms are in the cloud. Cloud platforms such as Google's GSuite and Microsoft's O365 are widely popular. Yet the adoption of these has largely been "organic," and even chaotic, resulting in redundant applications due to lack of standards or a plan. And far too often the IT and "curriculum" departments are not on the same page.

How can schools effectively use cloud technology to enable their own digital transformation?

While all of that might seem impossibly daunting, there are established, effective practices that organizations can use to move to a cloud-oriented technology environment, so that it can reap the many benefits. After all, in the past decade, many organizations have faced and overcome these same challenges. Based on these experiences and the increasing maturity of cloud technologies, there is a substantial body of knowledge that school systems can use to make this transformation.

The process of evolving to a cloud-based IT infrastructure is critical and it is equally critical to have an objective, unbiased technology consulting partner that can help the school system:

1. Conduct a thorough assessment of the current state of applications & infrastructure
2. Identify risks and costs of the current state
3. Identify opportunities for reducing risks & long-term costs
4. Identify opportunities for improving services & adding new services for students & staff
5. Develop a plan for realizing the benefits of cloud-based IT infrastructure
6. Develop a budget for the plan
7. Develop a training & staffing plan
8. Procure the services to achieve the plan
9. Manage implementation of the plan

"Cyber Security and privacy are of increasing concern, with 62% of IT Leaders rating them more important than the prior year."

– (CoSN K-12 IT Leadership Report, 2017)

It is important to emphasize the need to be objective and unbiased. It is common for school system technology decision-makers to work closely with local or regional resellers (also referred to as partners). While these companies do offer consulting-type services, they also have business relationships with very large technology partners and are paid to resell their products and services. Even when intentions are the very best, it is nearly impossible

to be entirely objective and unbiased in such a relationship.

A consulting service with experience in businesses, such as manufacturing, banking, and retail, may have excellent technical expertise, but will lack the ability to understand how the school system works and how the move to cloud-based IT services will affect the work of the students and staff and the culture of the school system.

Understanding of the education enterprise, particularly of school systems and their core work of teaching and student academic growth, is critical for an effective technology consulting partner. Partnering with the right technology consultant can be a significant contributing factor to identifying the best technology solutions, as well as strategically planning their implementation to achieve education goals.

ABOUT THE AUTHOR

Bob Moore has enjoyed a career of 26 years in education technology. Most recently he served as Dallas Independent School District's chief technology officer with responsibility for the district's technology efforts. His work has included more than two decades as a CIO in K12 schools and several years as lead strategist for a multi-billion dollar global ed-tech business, as well many years of active leadership in organizations such as CoSN. His life's work is grounded in his tenacious commitment to vision, innovation, integrity and practicality.