Digital Learning:

How to Enhance the Learning of Any Child, at Any Time, and in Any Place

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Dear Colleagues,

Digital technology is everywhere, revolutionizing how we live, work and play. Yet, as a tool for educating our children, it is conspicuously absent in K-12 classrooms. Textbooks and lectures are still the norm, making the classroom one of the last frontiers of digital technology.

Although digital learning and education technology are in the very earliest stages of development, we believe they can have a profound impact on how we learn. What if every student could experience an education personalized to that student's learning needs? What if digital technology became a tool for teachers, freeing them to focus on the individual needs of their students much like a tutor is able to do? What if students could take the time they needed to really master a subject, or to move ahead when they were ready? What if by taking that kind of control, more students were motivated to stay in school and succeed?

As the technology matures and as opportunities multiply, we need to better understand what digital learning is and isn't, and how best to apply digital technology to education. We must help shape the outcomes that we want to see so that digital learning can have the most beneficial impact on our educational process.

This report seeks to answer some of the key questions about digital learning. What is digital learning? Where are we as a country and, in particular, in Arizona, with digital learning? What opportunities does digital learning present? And how can we make the best use of it to help educate our children?

As you will read in this report, digital learning is not a panacea. At its best, digital technology can be a tool to support students and teachers in the learning process. We don't yet have all the answers. There are plenty of instances we can point to where digital learning efforts may have had disappointing results. Having said that, we believe that digital learning holds great promise in the field of education. It is where digital technology may achieve its greatest possible benefits and impact.

As a self-proclaimed "do tank", the Center for the Future of Arizona is committed to an action agenda based on sound public policy in areas of importance to the future well being of our state. Now in its 30th year, Morrison Institute for Public Policy has built a substantial record of contributing to the public policy dialogue in Arizona and catalyzing action on these kinds of issues. We are pleased to have partnered on the topic of digital learning and its potential contribution to improved educational outcomes in the K-12 arena. It is our hope that the resulting joint report is a useful step toward greater understanding of the opportunities offered by digital learning, and of what a constructive public policy approach could be for this important issue. We invite a continued dialogue as we move forward.

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Section I

Executive Summary

Digital learning at its best is the delivery of a learning environment for teaching, learning and discovery over the Internet or via computer. Digital learning is more than a technological method of delivery. It is a collection of teaching tools and strategies designed to expand the learning and discovery environment of traditional brick-and-mortar K-12 schools. Its potential to impact education stems from its flexibility (time, place and pace), its ability to help guide and shape the learning experience of students, and its capacity to create a personalized learning and discovery experience for each student. Digital learning is not merely a "technological tool" or a way to relieve students of the need to carry heavy books; digital learning offers the possibility of creating completely new learning modalities just as digital technology has led to new modes of work, recreation and communication. Whether digital learning lives up to this promise will depend on what expectations we set for digital learning, the policy framework that is erected to support it, and how it is applied.

Digital learning is a new entrant in the educational arena and its full potential is not yet completely understood. Moreover, digital learning takes many forms and is constantly evolving. Its variations can make talking about it and analyzing its effectiveness complicated. But understanding its features and limitations must increase if we are to make wise choices about its use.

This report has three objectives. The first is to establish common language and understandings about what digital learning is. Digital learning means different things to different people. It is important to recognize the many forms digital learning can take. With the great deal of interest and media attention dedicated to this issue, the ability to have informed discussions about this topic is essential if we are to make wise decisions about digital learning.

Second, we summarize the findings of a national report that highlights Arizona's strengths and challenges in creating a robust and accountable digital learning environment. A number of national organizations have dedicated their resources to analyzing the educational potential of digital learning and have offered direct guidance to states on how it might be best utilized. In particular, the Foundation for Excellence in Education (led by former Florida Governor Jeb Bush) and the Alliance for Excellent Education (led by former West Virginia Governor Bob Wise) have directed their efforts to support the responsible and effective implementation of digital learning. This report reviews their contributions with an eye toward distilling the lessons they hold for Arizona. While Arizona generally receives high marks for its receptivity to digital learning, much work remains to ensure its effective use.

This prompts the third aim of this report, which is to suggest changes to policy and practice applicable to digital learning in Arizona. These recommendations are offered as a starting point for discussion for how to create a promising framework for productive application of digital learning in Arizona. Our recommendations draw on the findings of the national studies reviewed, focusing on those that seem to offer the most promise for Arizona. The vision for and promise of

digital learning is that every student can receive a personalized, high-quality, high-expectations educational experience. We should aim for nothing less and invest our highest priority in policies that increase the probability of this outcome while recognizing the complexities involved in student learning.

In summary, we recommend that educators, community leaders and policymakers focus on five priority areas that would better enable digital learning to support improved educational outcomes in Arizona:

- Arizona education policy should support and enable competency-based (sometimes called "performance-based") approaches to education that would clearly identify desired learning outcomes and be able to measure those outcomes.
- We must focus on setting a high bar for quality of digital learning. It cannot be emphasized enough that digital learning is a multi-dimensional tool that can contribute to the creation of completely new modes of learning, and should not be thought of merely as a technological enhancement of present learning modalities. Policies and practice must therefore focus on desired educational processes and outcomes and how digital learning can help promote those outcomes.
- A number of barriers to digital learning must be addressed, including enabling students to earn credit for courses as soon as they are able to demonstrate their competency in that subject.
- Unless all students have access to the Internet and an Internet-enabled device the true promise of digital learning will not be achieved. This means that infrastructure issues must be addressed.
- A centralized, one-stop shop Center for Digital Learning is needed in Arizona to facilitate and coordinate information, innovative practices, and teacher professional development for students, teachers, parents and schools.

Based on our analysis of digital learning we believe that the most likely and fruitful direction of digital learning will be in what is called "blended learning." Blended learning is the fastest growing segment of digital learning, where students attend a brick-and-mortar school, but use a combination of online modules and in-person interaction with a teacher. Most families will continue to send their students to brick–and-mortar schools. This means that advances in digital learning will mostly take place in regular classrooms. In such settings, blended learning will take many forms. If done well, blended learning will put the student at the center of the learning experience. This will be accomplished by leveraging technology to free teachers to focus on students in a way that resembles tutoring more than a traditional lecture.

Digital learning is not without its critics. Digital learning is in its early stages of development and any policy changes should be considered with due deliberation and, if adopted, should be monitored closely and transparently. The assumption underlying this report is that Arizona's educational system can benefit from the wise application of digital learning and in particular can support personalized, high quality, high-expectations learning for students. All that we do in digital learning must be examined with this objective in mind.

Section II

What Is Digital Learning?

Digital learning is the delivery of a learning environment for teaching, learning and discovery over the Internet or via computer. Digital learning is therefore more than a method of delivery. At its best, it is a collection of teaching tools and strategies designed to expand the learning environment of traditional brick-and-mortar K-12 schools. Its potential to impact education stems from its flexibility (time, place and pace), its ability to help guide and shape the learning experience of students, and its capacity to create a personalized learning experience for each student.

Digital learning takes many forms and is constantly evolving. Its variations can make discussing it and analyzing its effectiveness complicated. But our understanding of its benefits and limitations must increase if we are to make wise choices.

Digital learning is called different things, including virtual, online and blended learning. Digital learning can take different forms, including conventional classrooms where face-to-face teaching is supplemented with computer-based instruction, as well as full-time virtual schools where all lessons and tests are delivered online.

Blended learning is the fastest growing segment of digital learning, where students attend a brick-and-mortar school, but use a combination of online modules and in-person interaction with a teacher. Most families will continue to send their students to brick–and-mortar schools. This means that advances in digital learning will mostly take place in regular classrooms. In such settings, blended learning will take many forms. If done well, blended learning will put the student at the center of the learning experience. This will be accomplished by leveraging technology to free teachers to focus on students in a way that resembles tutoring more than traditional lecture.

Digital Learning Models [1]

The Innosight Institute, a policy center that advocates for the expansion of digital education, offers this summary of various digital learning models:

Face-to-Face Driver
This approach retains teachers to deliver most of their curricula in a traditional brick-and-mortar school setting. The teacher deploys online learning on a case-by-case basis to supplement or remediate, often in the back of the classroom or in a technology lab.

Rotation
The common feature in the rotation model is that students rotate between learning online in a one-to-one, self-paced environment and in a traditional classroom. The face-to-face teacher usually oversees the online work.

Flex
Programs with a flex model feature an online platform that delivers most of the curricula. Teachers provide on-site support on a flexible, as-needed basis through in-person tutoring sessions and small group sessions. Many dropout-recovery and credit-recovery blended programs fit into this model.

Online Lab
The online lab model relies on an online platform to deliver the entire course, but in a brick-and-mortar lab environment. Usually these programs provide online teachers. Paraprofessionals supervise, but offer little content expertise. Often, students who participate in an online lab program also take traditional courses.

Self-Blend
The most common version of blended learning is the self-blend model, where students choose to take one or more courses online to supplement their traditional school's catalog. The online learning is always remote, which distinguishes it from the online lab model, but the traditional learning is in a brick-and-mortar school. All supplemental online schools that offer a la carte courses to individual students facilitate self-blending.

Online Driver
The online driver model involves an online platform and teacher that deliver all curricula. Students work remotely for the most part. Face-to-face check-ins may be included. Some of these programs offer brick-and-mortar components as well, such as extracurricular activities.

Within some blended-learning environments, classrooms may be “flipped.” Technology now allows students to spend out-of-school time at home accessing assigned lectures and content over the Internet through podcasts, vodcasts or videos. Teachers then use classroom time more interactively, working directly with students on problem sets, lab exercises, collaborative projects and discussions. The premise behind the inverted structure is based on the following logic:

- Students learn at varying speeds. Allowing students to pause, review and reflect on material at their own individual pace encourages understanding.
- Help during is better than help after. Immediate feedback from instructors is preferable to traditional homework grading.
- Struggling students benefit from direct intervention. When work is done in the classroom, teachers are able to apply their expertise to the students requiring the most attention.
- Mastery of task is more important than task alone. The measures of performance should not be whether tasks are competed to a passing level, but whether a student demonstrates proficiency.

Because digital learning is task- rather than time-oriented, it emphasizes student performance and development as primary measures of academic progress rather than time spent in the classroom. This means that formal learning need not be restricted to the school calendar as presently constructed and that it need not be limited to the school setting. This facilitates individualized learning in which a student’s learning path can be optimized to his or her learning needs and enables students to learn at their own pace. The best digital learning courses are adaptive by design. That is, in effective digital courses “intelligent” education software can analyze a student’s abilities in order to adjust lessons, “forward” or “backward” based on individual needs.

Digital learning can be designed to address the needs of students with different learning styles and levels of motivation. When students receive instruction that suits their natural learning style, motivation and opportunities to succeed increase. Adaptive digital technologies can better accommodate different learning styles. And, in contrast to more traditional learning environments, students can control their school experiences relative to time and pace.

Data is a key component in digital learning. Because reliable data should inform the use of digital learning as an educational improvement strategy, timely feedback for students and educators is essential. Data generated in computer-based instruction allows for analysis of student learning via a process called learning analytics. Learning analytics relies on the technology to capture student engagement, performance and progress indicators during the learning process, with the goal of using what is revealed to revise lessons, teaching methods and assessments in real time. Through the use of these tools, the information generated can potentially be used to support our overall goal of improved student learning.

We will not achieve our goal of preparing all students for career or college by simply replicating current educational practices in digital form, particularly when many of our existing practices are not working. The mere fact that a course is offered in digital format or that a teacher utilizes digital technology in the classroom is not a guarantee of success. Digital learning is no different

than any other resource at the disposal of a teacher in the classroom in that it must be of high quality and it must be utilized in a way that works and makes sense. At a most basic level, if digital learning is simply used to replicate practices that are not working today there is no reason to expect better outcomes. Digital learning is a tool for learning, not an end in itself. Digital learning policies and practices must therefore focus on enabling the most effective applications of digital learning.

Section III

A Framework for High-Quality Digital Learning

For students to be adequately prepared for the future, they need to become skilled in the advanced tools used in the modern workplace. According to a 2007 report by the Partnership for 21st Century Skills, approximately 88 percent of American voters believe the nation's schools can – and should – be instrumental in teaching 21st century skills.[2] Chief among them are the capacity to communicate, work and learn using web-enabled technologies. Digital learning is consistent with the cultivation of these capabilities.

The belief that digital learning has the potential to improve preparation of students for college and 21st century careers is shared by national organizations such as the Foundation for Excellence in Education (led by former Florida Governor Jeb Bush) and the Alliance for Excellent Education (led by former West Virginia Governor Bob Wise.)

Each has committed resources to advance public understanding of digital learning and to support the responsible and effective implementation of digital learning. The Foundation for Excellence in Education has been particularly instrumental in the launch of a national campaign called Digital Learning Now, which promotes a policy framework to improve educational outcomes through technology and technological innovation in the nation's public schools.

In 2010, Governor Bush and Governor Wise convened a Digital Learning Council, comprised of leaders from the fields of education, government, philanthropy, business and technology "to develop policy actions for local, state, and federal lawmakers and policymakers to advance digital learning." The

"10 Elements of High-Quality Digital Learning"

- **Student Access.** All students are digital learners.
- **Barriers to Access.** All students have access to high quality digital learning.
- **Personalized Learning.** All students can use digital learning to customize their education.
- **Advancement.** All students progress based on demonstrated competency.
- **Quality Content.** Digital content and courses are high quality.
- **Quality Instruction.** Digital instruction is high quality.
- **Quality Choices.** All students have access to multiple high-quality digital learning providers.
- **Assessment and Accountability.** Student learning is the metric for evaluating the quality of content, courses, schools and instruction.
- **Funding.** Funding provides incentives for performance, options and innovations.
- **Infrastructure.** Infrastructure supports digital learning.

Foundation for Excellence in Education (2010). *Digital Learning Now*.

Council raised issues it felt important for "lawmakers and policy makers to foster high-quality, customized education for all students."

The group's proposals were refined into a set of 10 principles and released in the report, *10 Elements of High-Quality Digital Learning*. The report puts forth issues for consider when developing a digital technology strategy to improve educational outcomes. While other groups and publications advocate for a high-quality digital learning environment in public schools, the *10 Elements of High-Quality Digital Learning* provides a framework for considering state-level policies that affect digital learning.

Evaluating Policy Relative to the "10 Elements" Framework

Building on the initial efforts of the Digital Learning Council, a *Roadmap for Reform* was published in October 2011.[3] Based on the *10 Elements* framework, this report provides more substantive guidance to states in support of their implementation of digital learning policies and practices. It offers 72 individual "nuts and bolts" policies that underlie the *10 Elements* framework that serve as recommended metrics to measure state-level progress toward creating a hospitable digital learning climate. For example, these metrics are intended to gauge who is eligible to take digitally delivered courses, what a student must do to demonstrate competence, where students can access digital learning, when instruction is available and how funding rules affect implementation of digital learning.

State-by-State Evaluation of Digital Learning Policies

The next phase of the Digital Learning Now campaign focused on using the 72 metrics to compare states' education policies to one another and, for reference, to a hypothetical "ideal state." In 2011, a state-by-state assessment was released as the *Nation's Digital Learning Report Card*.[4] It outlines how each state's policies promote or discourage digital learning. The report card assigns states a rating on each metric to indicate the level of accomplishment:

- Achieved - The state has adopted the measure through law, rule or indisputable practice.
- Partial - The range of policies and circumstances between Achieved and Not Yet.
- Not Yet - The state has no policy, a permissive policy that isn't effectively achieving the vision, or a policy in conflict with the metric.

Grading Arizona

In a nationwide evaluation, Arizona ranks high for its policies and practices that support digital learning. The *Nation's Digital Learning Report Card* describes Arizona as "leading the nation in transforming education for the digital age."

Arizona earned an "Achieved" rating on 47 metrics, a "Partial" rating on seven others, and a "Not Yet" rating on 18 of the metrics necessary to provide a policy environment conducive to high-quality digital learning. When compared to other states, Arizona lags behind only Utah and Wyoming on the number of metrics "Achieved," and ties with Minnesota.

Arizona's Digital Learning Report Card				
Elements	Number of Metrics	Achieved	Partial	Not Yet
Student Access	8	7	0	1
Barriers to Access	10	9	0	1
Personalized Learning	12	10	1	1
Advancement	4	0	0	4
Quality Content	2	1	0	1
Quality Instruction	6	3	1	2
Quality Choices	13	10	1	2
Assessment and Accountability	6	3	1	2
Funding	5	4	1	0
Infrastructure	6	0	2	4
Total	72	47	7	18
	100% ("ideal")	65%	10%	25%

According to the *Nation's Digital Learning Report Card*, Arizona is described as a hospitable environment for digital learning. Its strength is that students enjoy flexibility and choice in digital-learning opportunities. In Arizona, no K-12 student who wishes to take a digital course is prevented by state policy from doing so, although some districts limit granting credit for certain online courses due largely to concerns about the quality of particular courses.

Also in Arizona's favor, students have latitude to design their own educational experience by selecting online courses that best meet their needs, whether through a full-time or part-time schedule. Additionally, students may enroll in online courses with multiple providers inside or outside of their local school district, or enroll in individual online courses while simultaneously attending traditional brick-and-mortar schools.

Arizona has few regulations that impede a student's ability to participate in online learning. Arizona allows access to publicly funded digital learning for students in any public school

district. State policy extends funding to students in charter, private and home schools, as well. Moreover, at any time during a student's K-12 schooling, he or she may take an approved digital course.

Further enabling access to digital courses, teacher-student ratio limits that apply to traditional classrooms do not apply to an online course or virtual school. Likewise, enrollment caps that apply to traditional schools do not apply in virtual schools.

The *Nation's Digital Learning Report Card* observes that some states restrict the purchase of digital instructional materials or provide scant resources for their procurement. Arizona does not share these restrictions. State law permits funds allocated for the purchase of instructional materials to be used for digital content. Statutes also allow for pro-rata remuneration to online providers for students who remain in a traditional school while taking one or more online courses. Further, in an effort to ensure positive outcomes, Arizona's education funding structure allows for traditional schools to withhold final payments to digital providers until a student successfully completes his or her online course.

Several types of entities – including traditional public schools and school districts, charter schools or non-profit and for-profit education organizations – can develop and offer digital learning courses. In order to provide online courses in Arizona, traditional public schools and charter schools must follow an application and certification process, called Arizona Online Instruction (AOI). According to the *Nation's Digital Learning Report Card*, the process to become an AOI provider is transparent and allows schools to appeal denials or resubmit applications at any time throughout the year. Relative to the *10 Elements* framework, AOI requirements are not onerous or burdensome. Though it does not include the evaluation of specific courses, AOI approval requires that online courses align with state standards.

The *Nation's Digital Learning Report Card* noted, however, that Arizona's technology environment is not wholly conducive to digital learning. Along with most other states, Arizona's technology infrastructure needs to be improved to accommodate the increased demands associated with digital learning.

At the institutional level, schools often lack sufficient connections to the high-speed broadband network on which advanced digital courseware and data systems depend. Further, equitable access to digital devices across Arizona is needed in order to realize the full potential of digital learning. Due to fiscal challenges in schools, one-to-one computer to student ratios for all Arizona students is not yet a reality.

Even if students were able to access instruction through a personal device, such as smart phones, disparate ownership rates between high- and low-income students still pose an obstacle. Earlier this year, the Pew Research Center's Internet and American Life Project found a 37 percent gap in smart-phone ownership between households with incomes above $75,000 a year and those making less than $30,000. The survey also revealed a 27-point difference in ownership between urban and rural mobile phone customers (39 percent to 22 percent, respectively).

Section IV.

Moving Forward: 5 Critical Elements of a Digital Learning Agenda for Arizona

The fact that Arizona scores well for its hospitable environment to digital learning in the *Nation's Digital Learning Report Card* does not necessarily mean that Arizona is uniformly experiencing positive results in digital learning. Turning a hospitable digital learning environment into a successful one will prove to be a much more complex undertaking.

Anecdotal evidence suggests that there are examples of successes but also that shortcomings, challenges and barriers remain for successful integration of digital learning into the educational process. At its best, digital learning holds the promise of individualized and self-paced learning, and the delivery of a dynamic teaching, learning and discovery environment.

Based on this vision of digital learning, we must aim high and focus on how to utilize digital learning to maximize educational outcomes. We highlight the following five critical elements of a digital learning agenda for Arizona below:

- Systems-level changes for more personalized educational experiences for students.
- Issues of quality in digital content and teaching.
- Needed fixes to the system that make digital learning more accessible.
- The importance of supporting an adequate infrastructure.
- The creation of a Digital Learning Center for Arizona to provide a centralized source of information and support for digital learning, especially at the school level.[5]

1. Create a Competency-Based Education System

The most significant promise of digital learning is the ability to support student-centered competency-based learning. In a competency-based (sometimes called performance-based) educational system students advance based on mastery of explicit learning objectives, determined through meaningful assessments and receive timely, differentiated support based on their individual learning needs. The Council of Chief State School Officers included performance-based learning as one of the six attributes of next generation 21st Century learning.[6]

The reasons to focus on the creation of a competency-based system for Arizona in a report on digital learning are two-fold. First, a competency-based system would better serve Arizona students because it individualizes education to the needs of each student by allowing students to advance at their own pace, taking extra time if needed or accelerating their studies if ready. Second, digital technology has the capability to facilitate a competency-based system and, conversely, a competency-based system demands the flexibility offered by digital learning technology. A competency-based system would help reduce the achievement gap by ensuring that students who are left behind in a time-based system have the chance to pace their learning course-by-course. Such a reform also would serve to support high achievers ready to move ahead of their peers. Further, funding resources could be utilized more effectively as teachers are freed to focus on student needs rather than ineffectively trying to get all students to learn at the same pace.

Like most states, and as noted in the *Nation's Digital Learning Report Card*, Arizona's educational system is not well designed to support a competency-based approach to education. Achieving a competency-based education system will require making changes in support of that goal as well as creating a better policy framework and practices around digital learning. This means defining what we mean by competencies, making sure an assessment system is in place to ascertain students have reached desired competencies, granting credit to students that have demonstrated competency (allowing them to more at their own pace), and making sure our educational funding model incentivizes a competency-based education. While these changes are not insignificant we believe they are doable. In fact, Arizona's Move on When Ready legislation sets a precedent for broader implementation of a competency-based approach.[7]

Ending the outmoded practice of seat time is critical to the creation of a competency-based system of education. Arizona statute dictates the minimum number of days in a school year, requiring a K-12 school year to be 180 days. During a 180-day school year, some students will master the concepts necessary to advance, while others will not. Still others may excel beyond expected progress. Students also are required to acquire a certain number of "contact hours" in a classroom per subject. The concept of contact hours (often called credit hours or Carnegie units) is a holdover from the turn of the 19th century and is out of place in a technology-rich environment.

Seat-time requirements must be replaced by a system in which students may advance based on mastery and at their own pace, resulting in changes in the timing of student progress through the educational system. Traditionally, students are promoted to the next grade at the end of a school year. However, students do not display uniform learning patterns across all subjects, excelling in one subject while struggling with another. This often frustrates learners when the academic pace is mismatched to the student's abilities. It also results in large numbers of students being held back, which is a predictor of student attrition (i.e., dropping out). Under a true competency-based system Arizona would provide on-demand, end-of-course exams to students, or at least offer the opportunity for students to advance more than once per year based on assessment results, and to be allowed to do so by subject matter rather than grade level.

Since seat-time stresses physical presence rather than learning outcomes, it is not conducive to a competency-based system. In fact, it fundamentally works against that goal. Like most states, Arizona's current funding system is based almost entirely on seat time. To enable the potential of digital learning to be realized, the existing time-based funding model must be reconceived. While designing appropriate funding mechanisms will require significant analysis and perhaps involve piloting a few different approaches, redesign of the current model is critical to drive personalized education that gauges student success based on demonstrated competency.

A competency-based system will have the following elements:

- A definition of the learning outcomes expected of students across the learning objectives. Learning outcomes should be tied to the Common Core Standards and should be set at the level of minimum college-readiness. These learning outcomes should be defined by the State Board of Education and not be left to individual districts to determine.

- A process and criteria by which to identify or create assessments in place that can determine if students have reached desired competencies. Assessments can be developed by digital learning providers, by schools or districts, or be available through other means as long as they truly measure the learning outcomes and are approved to do so by the State Board.

- End seat-time requirements and allow students in grades 7 through 12 who have demonstrated competency in subject matter to immediately obtain credit.

- A funding model in place that incentivizes both students and schools towards a competency-based system. The funding model utilized in Move on When Ready in which resources are kept the same for schools but they are applied differently is a good guide.

2. Focus on Quality of Digital Learning

The question of quality is a very important one when considering digital learning. The mere fact that a course is offered in digital format or that a teacher utilizes digital technology in the classroom is not a guarantee of success. Digital learning is no different than any other resource at the disposal of a teacher in the classroom in that it must be of high quality and it must be utilized in a way that works and makes sense.

At a most basic level, if digital learning is simply used to replicate practices that are not working today there is no reason to expect better outcomes. Simply having digital technology in the classroom is not necessarily going to improve learning outcomes. How students and teachers engage the digital learning process and towards what ends is key: Does the learning platform enable students to learn and discover at a high level and at their own pace? Are teachers getting the information they need to understand where each student is in their learning and discovery process and best assist them?

Some of the most important questions regarding the quality of digital learning revolve around whether there is alignment with academic standards: Is data used as part of the teaching process and to evaluate results? Are teachers versed in how to utilize digital resources effectively? And do schools, students and parents have a trusted source to help them assess whether digital learning can meet the needs of an individual students?

The following elements must be in place at a minimum in order to create a framework for successful application of digital learning technology:

- Clearly defined criteria for quality digital content and effective learning outcomes. Digital content should meet or exceed Common Core State Standards and incorporate minimum college a career readiness criteria for all students. The design of digital courses or application of digital technology should enable students to progress at their

own pace and be “adaptive,” that is, have the ability to analyze a student’s abilities in order to adjust lessons, “forward” or “backward” based on individual needs.

- Data on student learning to evaluate the quality of online courses and providers, including data on course completion rates. If data show that digital courses are failing to advance students academically, those courses should be eliminated.

- Digital learning as part of teacher preparation and ongoing professional development. A Digital Learning Certificate will also be developed and available to teachers.

3. Technical Fixes to Make Digital Learning More Accessible

There are a number of barriers to access to digital learning that must be addressed if a quality competency-based digital learning system is to be put in place and made accessible to all students. They are in the nature of technical fixes to our present system but would have a profound impact on the education system.

Needed fixes to our education system to facilitate digital learning include the following:

- First, allow middle school students to earn high school credit. Digital learning can help meet the unique academic needs of all students, from those requiring remedial assistance to advanced learners. Allowing middle school students to earn high school credits in a digital learning environment addresses one end of this spectrum. Arizona does not require districts to give high school credit to middle school students who demonstrate proficiency in high school level work, with the possible exception of math. Middle school students should be able to earn high school credits in any subject in which they are able to demonstrate competency.

- Second, allow for digital assessments in all subjects. Digital evaluations should be available throughout the year in all subjects, reducing administrative work and grading delays common with statewide testing.

- Third, increase access to digital content. Traditional textbooks are expensive and often out of date before the end of their life cycle. Conversely, digital resources can be revised, updated and delivered more frequently and economically. Additionally, students can access them anywhere they are connected to the Internet. Arizona should move toward a policy that encourages digitally delivered content. At the local level, schools should review their "acceptable use policies" and Internet filtering practices, which often block access to useful digital content.

- Fourth, remove limits on online courses students may take for credit. Districts should not limit the digital courses students may take for credit if the courses offer an effective means of advancing students academically. In a competency-based system students

should have control over the pace at which they advance, which includes determining the number of courses they wish to take.

4. Need for Enhanced Infrastructure

Digital learning's promise to offer personalized education to all students will come to naught if only some students have access to it. There are at least two components to making sure that all students can benefit from what digital learning has to offer. First, all students must have access to the Internet, both at home and at school. Second, all students and teachers must have a device – their own or one provided to them – that can access the Internet and which they have at their disposal at all times for learning. While Arizona has come a long way towards this goal much remains to be accomplished.

An equitable and accessible digital learning environment will have the following elements:

- Improved and expanded high-speed Internet access. Robust digital content requires broadband Internet access. However, many rural Arizona schools lack reliable access to even the most basic Internet services. Others are unable to afford the expensive upgrade to broadband. Currently, state participation in the "E-Rate" program, which offers discounts to libraries and schools for telecommunications, Internet access, networking and basic maintenance, is being utilized by some, but not all, Arizona schools. The state should continue to play a role in facilitating partnerships to provide affordable broadband access to schools as well as to low-income students otherwise disconnected from the latest technology.

- Every student and teacher has an Internet device available at home and at school. Though computers, tablets or smart phones are nearly ubiquitous in today's world, they are much less common in the classroom and often even discouraged. In order to facilitate access to digital content students and teachers should own or have ready access to an Internet-connected device. The device does not necessarily need to be provided by school district or the state. Instead, existing teacher- and student-owned devices can be used. Public-private partnerships can be formed to ensure that low-income students have access to devices. At the same time, schools must provide students and teachers with instruction in digital citizenship in order to promote responsible and appropriate use of the web.

5. A "One-Stop Shop" Digital Learning Center For Schools, Parents, Teachers

While many informational resources on digital learning exist at the national level, the volume can be overwhelming. Policy makers, school administrators, teachers, students and their families need to receive consistent, trusted, Arizona-specific information on digital learning. Arizona has no such central portal for reliable information on digital education and would benefit greatly from a one-stop shop offering centralized policy analysis, technical support and general guidance.

The goals of a Digital Learning Center for Arizona are the following:

- Provide a first-stop, one-stop resource center for digital learning and for Arizona districts and charters wishing to implement blended learning to improve student outcomes.
- Identify, highlight, and promote innovative practices in digital learning that have been successful in improving student outcomes.
- Increase efficiency, economies of scale and reduce duplication of efforts by serving as a coordinating/collaborative body.

These three goals will be accomplished through four kinds of activities or pillars of the Arizona Digital Learning Center:

- Monitor and promote policies through statute and rule that enable digital innovation to flourish.
- Develop educational leadership capacity with the initiative, skills and ability to make things happen when statue and rules are not the barrier.
- Identify and facilitate implementation of models, resources and best practices that can be utilized by Arizona districts and charter.
- Provide the necessary professional development to teachers through partnerships and the creation of a Teacher Innovation Center.

Section V.

Conclusion

Arizona has created a favorable environment in support digital learning. Whether it serves to enhance the learning of any child, at any time, and in any place will depend on the choices we make now and in the future. Digital learning is more than a technological method of delivery. It can enable a completely new way of teaching learning, and discovery and create personalized learning for every student unrestrained by time, place or pace.

Digital learning is a collection of teaching tools and strategies that can expand the learning and discovery environment of traditional brick-and-mortar schools, but only if we are attentive to how we shape the policy environment and how digital learning is used and implemented.

We hope that this report and recommendations can provide a basis for constructive dialogue and action among educators, policy makers, parents and students to determine our direction and next steps in realizing the full potential of this new learning tool for a new generation in the digital age.

Endnotes

[1] Horn, M. B., and Staker H. (2011). The Rise of K12 Blended Learning. Chapel Hill, NC: Innosight Institute, Jan. 2011.

[2] Partnership for 21st Century Skills. (2007). *Beyond the Three Rs: Voter Attitudes toward 21st Century Skills*.

[3] Digital Learning Now. (2011a). *Roadmap for Reform*.

[4] Digital Learning Now. (2011b). *Nation's Digital Learning Report Card (Arizona)*.

[5] These recommendations draw in part upon the findings of the *Nation's Digital Learning Report Card*. Additional recommendations, some building on *Arizona's 2009 Long Range Educational Technology Plan*, focus on items specific to the use of digital learning platforms and the implications for schools, students and teachers.

[6] The Council of Chief State School Officers. (2010). *Partnership for Next Generation Learning*.

[7] A.R.S. § 15-792 - 792.03