K-12 Center at ETS

Driving Advances in K–12 Education

The Next-Generation K–12 Platforms: Moving from Fantasy to Reality by Challenging Conventions

By Brian Ausland

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Can next-generation portals deliver mass-distributed assessments and timely, individualized student performance data at once? Should we expect systems that provide daily, differentiated formative inventories and summative culminating experiences to also generate comprehensive statewide reporting? Is it fair to expect these new systems to use these performance data to connect teachers with specific and quality online instructional resources as well as corresponding models of best practice?

Well, of course!

In the early 1900s, inventor, theorist, and futurist professor Richard Buckminster "Bucky" Fuller considered the intersection of evolving industrial technologies and materials sciences when issuing the following two observations on the growth of related technologies nationally:

We are called to be architects of the future, not its victims.

Humanity is acquiring all the right technology for all the wrong reasons.

Nearly a century later, we are left to make sure that the right technologies will introduce powerful new possibilities for our schools instead of concretizing many of the tired education conventions from Fuller's era. In about 26 months, the U.S. public education system will collectively implement the largest, most comprehensive assessment experiment in its history when the Partnership for Assessment of Readiness for College and Careers (PARCC) and the Smarter Balanced Assessment Consortium (SBAC) produce systems that will ultimately affect every school and district in all but a few states.

PARCC At a Glance

- MEMBERSHIP: 23 states and the District of Columbia, educating about 25 million K–12 students
- GOVERNING STATES: Arizona, Arkansas, the District of Columbia, Florida, Georgia, Illinois, Indiana, Louisiana, Maryland, Massachusetts, Mississippi, New Jersey, New Mexico, New York, Ohio, Oklahoma, Rhode Island, Tennessee
- PARTICIPATING STATES: Alabama, Colorado, Kentucky, North Dakota, Pennsylvania, South Carolina
- PROCUREMENT STATE: Florida
- PROJECT MANAGEMENT PARTNER: Achieve
- HIGHER ED PARTNERSHIPS: More than 200 two- and four-year institutions, which typically receive 90 percent of all students across the PARCC Consortium states who enter college within two years of graduating from high school, will use the assessments as an indicator of readiness for credit-bearing entry-level courses.
- AWARD: $186 million total (assessment and supplemental grants), Race to the Top Assessment Program grants awarded September and October, 2010

This information is accurate as of March 21, 2011.

This summary of the PARCC assessment system has been approved by the PARCC Consortium for its accuracy. It describes the revised PARCC design approved by USED in February 2012.

Smarter Balanced At a Glance

- MEMBERSHIP: 27 states serving approximately 21 million K–12 students
- GOVERNING STATES: California, Connecticut, Delaware, Hawaii, Idaho, Iowa, Kansas, Maine, Michigan, Missouri, Montana, Nevada, New Hampshire, North Carolina, Oregon, South Dakota, Utah, Vermont, Washington, West Virginia, Wisconsin
- ADVISORY STATES: Alabama, Colorado, North Dakota, Pennsylvania, South Carolina, Wyoming
- PROCUREMENT STATE: Washington
- PROJECT MANAGEMENT PARTNER: WestEd
- HIGHER ED PARTNERSHIPS: 175 public and 13 private systems/institutions of higher education have committed to participate in the Consortium, help design the new assessments, and use the assessments as an indicator of readiness for credit-bearing entry-level courses in lieu of existing placement tests. These participating institutions typically receive 74 percent of all students in Smarter Balanced Consortium states who begin college within two years of graduating from high school.
- AWARD: $176 million total (assessment and supplemental grants), Race to the Top Assessment Program grants awarded September and October 2010

This information is accurate as of March 9, 2012.

This summary of the Smarter Balanced assessment system has been approved for accuracy by the Smarter Balanced Assessment Consortium.

Affecting nearly 50 million students and their schools at an expense that will quickly reach a half-billion dollars, this experiment will introduce a starting point for next-generation platforms when it moves traditional paper-and-pencil assessments into the digital environment. This is a bold step, particularly in light of the fact that despite credible technology funding initiatives of the past 20 years, those of us in public education have generally failed to match information technologies to our most central processes well. Across this country, most educators act as curators of yesterday's instructional technologies — their classrooms are museums that pay homage to white boards and overhead projectors. This statement isn't an indictment, but a reality that needs to be considered and navigated as we move forward with solutions that we hope will take seed and propagate.

As a commissioned component to this paper, a team of industry leaders and thinkers were asked to consider and elaborate on the topic of the future of K–12 platforms, portals, and related technologies as future extensions of mass, digitized assessment programs. As potential architects of the future, we hope to provide educational leaders a sense of how to navigate the development of the right technologies for the right reasons in light of the incredible technical and programmatic endeavors scheduled to take place around the implementation of Common Core State Standards (CCSS) and multistate online assessment programs.

We are all on a timeline in which definitive decisions will be made, lots of money will be spent, and technical resources will be developed. None of us wants to be the victim of shortsighted thinking or the owner of the "right" technology that solves the "wrong" problems.

In the following pages is a treatise delineating five steps agencies should consider before running headlong into such a critical body of technical work. Most groups already are operating in accordance with pieces of this framework through design or accident, but it makes sense to articulate these perspectives as shared by a cross-section of national thinkers in this arena.

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1. Reconcile innovative thinking with conventional obstructions of public education.

Before plowing ahead with any specific technical considerations, most of us in this line of work spend an inordinate amount of time trying to create room for technical thinking and solutions within a system and culture that struggles to embrace innovation. Public education has a particularly distinguished history of resistance when it comes to embracing innovative technologies that have readily permeated most other industry sectors and personal social interactions over the past 10 years. Whether conscious or not, the fact remains that we have accomplished little in matching ongoing longstanding processes with critical technologies compared to other industries. And as David Stevenson (VP Governmental Relations with Wireless Generation®) pointed out to me, the ensuing process reengineering that has occurred in most other industries as part of their IT evolution has actually caused them to stop and ask, "What are we ultimately trying to accomplish with this set of existing processes we are working to digitize?" And it is relevant to mention that education has historically put little energy into assessing its core processes in relation to intended objectives. In fact, the most energy, analysis, and effort expended by public education in the arena of technology has focused on enacting policies to obstruct much of technology's penetration of our campuses, implementing statutes to restrict student access, and reinforcing rhetorical questions about its use and relevance.

Given our obstinacy, it makes sense to look outside of education for working models as a good start. We have witnessed a revolution in distributed data management, intuitive design, and systems interoperability across almost all other segments of industry and society. In these instances, a direct demand for better and more productive processes has enabled new technologies to come in and disrupt the established methodologies. While education has not been an avid consumer of these advances, we can at least benefit from the work done in these other sectors as we try to judiciously match the right technologies to our core needs. Consider the following consumer and enterprise examples:

- More intuitive design has gone into basic consumer sites that address specific groups' needs like sharing ladybug-harvesting techniques for gardens than into documenting consistent, model K–3 literacy development strategies.
- More thought and planning has gone into getting timely, localized content and interactive datasets added to realtors' websites than to teachers' websites. (Even now, you would be hard pressed to find a district where the majority of schools have a designed template or list of expected practices for each of its teachers to use in generating meaningful and updated information online for parents and students in relation to their classrooms.)
- And more enterprise-level, predictive data-architecture and filtering options have been afforded to finding us the best travel itineraries based on an easily acquired data-profile of our spending patterns, frequent destinations, and preferred seating arrangements after only a few uses of a given travel site. At the same time, we have relatively little if any retrievable data on the learning aptitudes and most effective resulting pedagogies for any of the children that spend years and years in our school system. And even though this is the most assessed, documented, recorded, digitally-exposed generation to ever move through our school system, Zynga® can probably give you a more valid, updated dataset on most of our students than our collective school systems can.

Given the importance of our endeavors, we need to make room for the inventiveness of information technology and start defining a clear picture of what we ultimately want it to do for us, not as a threat to traditional educational practices and processes, but as a propagator of new opportunities for more students.

These are anecdotal points, but they do show that technology has worked to support small-scale efforts to enterprise level processes when groups of people draw a direct correlation between these types of utilities and better support of their personal or professional needs and interests. There is also an issue of demand. Where demand has occurred and is focused, progress ensues, technical and otherwise. To date, demand for better service and better knowledge about our students has been fragmented and sporadic and easily squashed by a culture and bureaucracy steeped in tradition. Given the importance of our endeavors, we need to make room for the inventiveness of information technology and start defining a clear picture of what we ultimately want it to do for us, not as a threat to traditional educational practices and processes, but as a propagator of new opportunities for more students. As California State Educational Technology Director Jose Ortega told me a few years ago when we were considering critical innovations we knew we were going to have to fight to get included in their Brokers of Expertise educator portal, "If the old tried and true worked, it would have."

2. Define the big picture and a reasonable approach to its development.

We know that this work will start with online assessments as a first piece to the puzzle. But making sense of where this piece fits in the overall scheme and planning, as well as how other elements will position and interlock around it, is imperative. We must do more than just guess how we want all of these items to work to eventually create a fuller picture of support and services to schools.

As an example, let's consider this assessment system as a series of processes that ultimately create a comprehensive body of data about many students and each student. And around this information, a series of scenarios orbit that represent various applications of this data. At the farthest edge away from this center is a state's full assessment report as submitted and combined with those of its Consortium partner states. At the most inner orbit, a fourth-grade teacher works to make good decisions for her students and bring the best instructional resources and strategies to bear on their daily learning needs. The systems we dream of will work to credibly support both of these fairly disparate points and orchestrate all of the processes that move and spin in the space between these two extremes.

So we have to imagine that in the near future, an incredibly fluid, scalable, efficient, effective, and technical system can be actively deployed, can be fully operational, and can provide all federally mandated assessments to all students across an entire body of states while also assisting individual teachers each day in their classrooms. In between those two points, state-level data generated within this huge system can be accessed and "first-tier" managed at the State Education Agency

(SEA) level by a small team of personnel due to the powerful administrative tools that were put in place. Not only can federally guided reports be generated and submitted via this same system, but internal datasets can be generated to show performance bands for various demographics and district profiles across the state.

As we move downstream, this comprehensive system is integrated at the regional and county levels as they work to use much of this same data to determine regional professional development and teacher support initiatives. Additionally, looking at results through the lens of where dollars have been spent is part of the ongoing strategic planning on how to best use limited funds moving forward.

At the individual district level, this same system can cross-aggregate with existing, local data-collection tools and programs to help verify appropriations structured in ongoing personnel and materials budgets. This helps the district determine return on investment as definitively related to student learning outcomes because it adds a clear new dimension to comparing the success of certain schools in serving certain communities within the district. It also aids in everything from negotiations to leadership assignments to in-service training mandates as supported through learning improvement trends.

As we move to the school site level, this singular system takes on a more personable look and feel as the user community is now defined as a finite group of actual teachers and their students. It is regarded more as an educational support tool because it allows principals to pinpoint students in need of more immediate intervention. It helps teachers identify appropriate and differentiated instructional materials and resources. Additionally, those resources come bundled with diverse learning activities specific to the learning profiles of the students that make up a class, as well as strategies currently bearing fruit by other teachers using those same resources with similar student populations.

Now we will drop down into the final orbit of our analogous solar (education) system, the classroom of a fourth-grade teacher. As she has done for years, she still engages her students in many of the activities and assignments she has honed across hundreds of students. However, now as they end a science unit in late November on plate tectonics and related geographical phenomena, this same system that served the needs of all upstream agencies becomes a very intimate tool within her classroom. Loaded with her pacing plan for the year and requisite student data from both the state interim assessment administered in October and her own integrated ongoing formative assessments — she is looking at a suggested 3-D interactive volcano media resource that came packaged with her state-adopted materials. Further, it even finds related but differentiated open educational resources (OER) online that reside in other collections from the *National Geographic* and NASA educator resource sites. It is no accident that these additional resources show up in her account for consideration. They, in fact, have quality metadata related to their inventories, and as such, have been vetted against a profile of reading competencies generated by the Common Core Reading Standards for Informational Text as assessed as part of students' interim assessments in late October. The Learning Registry project has assembled an exchange process for this metadata for all items within these two resource collections, along with many other collections representing hundreds of thousands of online learning artifacts, and also allows for the inclusion of various types of paradata (data describing what others have done with and found valuable about these items in other similar user communities). While she might not use all of these materials, she will have an array of choices identified for specific groups or individual students in her classroom and access to other practitioners and their preferred use of these resources with similar demographics of students. Tools developed to "tune into" the Learning Registry will provide her and all teachers exceptional resources and use-cases to help them access methods of effective delivery of those resources. And in our scenario, those items the teacher

selects to include for her students will even automatically move the links and descriptions of these support materials and the related assignment information directly to her personal teacher website for after-school or at-home support beyond the regular school day. Parents and other educational support personnel "subscribing" to her site will get emails summarizing this information and directing them back to the relevant content on her class website without taking any of her time to do so.

Finally, as the school year winds down, she will no longer need to set aside multiple weeks in which to administer lengthy blocks of assessment time for all of her students. She can pull a full proficiency report for each student in relation to the CCSS and identify which have already been satisfied through interim assessments throughout the year. Specific smaller tests can be generated for those students needing an additional opportunity to have certain skills reinforced and then reassessed at this point in the year. This can be accomplished with limited pull-out and encroachment on the day-to-day dynamics of the classroom. Teachers and school leaders have a full summative record of their students' overall performance before the data is even submitted and, in fact, have remained aware of performance levels at intervals throughout the year and have responded appropriately.

In this way, the process of knowing and asserting with validity what kids know and can do is not prescribed to a specific "testing window" nor is it tethered to getting each student in front of a qualified machine during that limited time. Engaging the teacher in this process of determining when and where learning benchmarks are reached by individual students throughout the year frees us from the logistical complications of arbitrarily "locking down" assessment administration to a prescribed time and space.

Should we consider this single, monolithic system and the related scenarios to be plausible or fanciful? Would some people take a more metered approach and tell you that it is technically possible, but practically improbable given the time frame? There is a community of people who are working toward the reality of the story as told above. It is a relatively small community given the size of the task. Most of us have worked with hundreds of developers, programmers, designers, database engineers, system administrators, and other related technical staff over the years. But it seems like the experts in this area who are the educationally focused, technical thinkers and planners are the same 20 or so people I continuously run into.

What should transpire is not so much a single system as much as a system of agreed processes for how data is stored and accessed, and from that, many smaller systems will flourish over time with interoperability being an imperative that will allow them to "play well" in this space.

A handful of them share their thinking and progress on this topic in this paper. All would likely tell you that the above scenario or destination is absolutely possible, but needs to happen incrementally in order to happen well. Some pieces in the above narrative are completed, while others will follow out of necessity. Assessments are a starting point, and doing them well will ultimately create the most appropriate data in the most-readily available formats to help produce a scenario like the one crafted above.

But if the above narrative seems just a bit too good to be true, if it leaves you wondering, "What's the catch?," you are accurate in your suspicions. There is a catch. The idea that it will all come packaged in one, huge, comprehensive, singular, cross-aggregated, monolithic (all adjectives I used above) system is a misnomer. There will be no single system to span all of these discreet points and interactions, or at least, there shouldn't be. The pursuit of the single, all-knowing, golden system is a foible of the last decade.

What should transpire is not so much a single system as much as a system of agreed processes for how data is stored and accessed, and from that, many smaller systems will flourish over time with interoperability being an imperative that will allow them to "play well" in this space. This leads us to item three.

3. **Make a coherent, open structure for the data; establish known, secure access protocols; and the innovators will bring the solutions to you.**

This assessment system should definitely be built upon a MySQL relational database structure, but then again, could require additional enterprise layers to better operate within a federated data environment. Maybe, in fact, it would make more sense to keep an open data structure, but match it to a longtime, well-documented scripting language like ColdFusion®, as long as we resist version 9 for now, stick with version 8, and ignore that Adobe® Acrobat® has decentralized its development and support unit. Then again, we could just look to package all of the principal executable items into an instance of the Sakai 2.8 environment, but then again …

It will be a surprise to many that not one of those who shared ideas for this paper nor others that I have worked with on similar projects over the past few years generally suggest any specific technical platform, authoring software, database program, security solution, interoperability specification, or device — unlike the imaginary story told above. Don't get me wrong; we all have solution bundles that we are familiar with or favor for various reasons, but most believe as I do: At a given time, there are a finite number of good solutions that can be discovered and, with diligence, made to work well moving forward as long as someone knowledgeable is paying attention and expectations are realistic. Having said that, we are definitively talking about the development of a shared, open system of retrievable but secure data. So it is generally assumed that we have moved away from talking about closed systems, which dominate the current ecosystem. These systems currently hold data to be a "hard-to-acquire" asset and, therefore, commoditize that data, which creates proprietary disincentives to sharing it. This old model creates financial barriers that stand between the most useful educational data and the most needful communities and student populations. Because of this, we are only considering the development of open systems that draw on common, consolidated data stores where developers can openly collaborate and create "best-of-breed" apps. (Thanks for the term, Dave Stevenson.)

If we establish an agreed-upon series of open-exchange protocols and a fairly ubiquitous data structure, incentives to develop very specific to large-scale applications aimed at aiding the most precise of daily classroom needs to the most systemic reporting processes will flourish. For instance, in the example cited under step two, the same data that helps manage national reporting also helps a specific teacher get exceptional resources directed to specific students, and relates to the topic she is teaching as well as the skill levels of her students. How services are acquired and deployed to execute these tasks can be a federated or independent endeavor depending on the needs of the individual LEA or a Consortium. The availability of teachers to use this data to find and access incredible and differentiated resources on the Internet that are freely accessible, assumes that these resources are adequately defined through good, agreed-upon, descriptive data (metadata) so they can be called upon intelligently by systems as described above. As Prasad Ram (Gooru Learning) shared:

> *The challenge of leveraging the web (content, experts, community) for learning is that there is barely any metadata associated with web resources. Efforts such as the Learning Registry project are a step in the right direction — so the question is, how do we construct a complete set of information about a web resource that is machine readable and can be used in inference engines (search, recommendation, etc.)? We need to go from folksonomies to taxonomies to ontologies. The platforms/tools we create should:*
>
> *a) enable the creation of such metadata for all resources; and*
>
> *b) provide engines to use the metadata to deliver a personalized adaptive learning experience.*

Again, the solutions do not depend so much on the specific technology at this point. They depend on the initial thinking and approach, as well as the ability to challenge conventions and incrementally prioritize with developers a real scope of implementation that reveres the needs of a teacher as much as the systemwide, consolidated reporting mechanisms. Narratives like the one above help, but they need to be broken down into requisite pieces, prioritized, scoped, scheduled, and planned as the inevitable destination point — lest we end up with systems that are external and foreign to the very practitioners who must use them and, through that use, develop their overall viability.

We have a mere two years to deal with our industry's most formidable technology challenge to date, along with a scope of work that compares in scale to some of the larger governmental data/technology projects continuing to be tackled by others, such as the health and banking industries, in the past decade. How we approach the work at the outset and who we include in that process is critical.

In public education, there is a real and discernible experience and knowledge gap between those who are operationally adept with current web/information technology and all of its variant applications and design and development processes AND those who have a firm understanding of the programmatic components of teaching and learning with all of its nuances, traditions, and iterations.

4. Get the right people assigned to the right tasks and grant them the autonomy to make the right decisions.

With the big picture in mind, agencies should consider assembling teams that can either build out basic, core components that will need to operate internally and in a secure environment on the SEA level, or, at minimum, access those who can lead such teams. From setting core functional specifications to assisting in framing out viable RFPs, knowledge is the premium. In public education, there is a real and discernible experience and knowledge gap between those who are operationally adept with current web/information technology and all of its variant applications and design and development processes AND those who have a firm understanding of the programmatic components of teaching and learning with all of its nuances, traditions, and iterations.

For a technology-based solution to be successful, it has to be considered, conceptualized, designed, and developed with a credible level of technical expertise. At the same time, the process of development has to be constantly vetted against nothing less than an intensely intimate understanding of the non-technical environment, people, and solutions in which it was intended. Because of this, we desperately need to acknowledge a few hard truths about how public education traditionally approaches this type of work and the dismal results we've had to date — whether approaching it from a state, Consortium, or national perspective. Some teams can grasp the most promising technologies and how to develop and scale them. However, these personnel don't primarily exist within the public education landscape. Then there are teams that are heavily immersed in the most promising ways to encourage change among kids, teachers, and communities and are turning around our most challenged schools. But they are almost exclusively technology neophytes. In addition to closing the achievement gap, closing the operational gap between people possessing these two distinct skill sets has been a challenge plaguing public education for the better part of the past 20 years.

Too often in public education we end up with leaders with either one or the other of these skill sets who make assertions based on very limited understanding or reverence for each other's knowledge. As such, we have continuously been the unwitting recipients of technical work products that were, at certain times, developed by skilled technicians who worked with no sense of educator-level implementation models. In other instances, the projects were led by current or former well-intentioned educators who, with a bit of training and experimentation, now consider themselves something other than second-class programmers or application developers and insist on very poor and/or outdated technical solutions.

As stated before, we must consider finite, sound, and robust technical solutions. State and federal agencies, along with the Consortia working with them, must gain access to good thinkers and developers while creating a balanced exchange that honors what both technical and educational personnel know and hold as their respective areas of expertise. In the past 20 years, particularly

the past five, we have revolutionized distributed data management, intuitive design, and systems interoperability. It is difficult to have lead education agency staffs write intelligible RFPs that solicit appropriate vendors for this type of work, and even when we have viable internal staffing, those in leadership positions are often inclined to make decisions with which they are most familiar and comfortable. It is hard to get innovative processes understood and approved by those who have benefited from and have often helped to underwrite the traditional processes.

Let's take for example a state education agency policy that won't allow a middle school program director to make a $100 purchasing decision to buy a new battery for his state-issued Ford® Crown Victoria. No one believes that he would end up purchasing a boat battery or an armful of D-cell batteries duct taped and wired together, but that decision is more appropriately directed to the fleet services team, as per protocol. Yet, that same director could very well find himself at his desk (after leaving his car with the fleet manager at 8 a.m.) now executively charged to manage a $3.5 million budget to support a model middle schools research and dissemination initiative that aims to develop $550,000 of related web deliverables. With more than 80 hours of model school interviews and classroom observation footage, along with more than 100 pages of research findings, graphs, sample assignments, and assessments from over 25 sites across the state, he elects to have a CD-ROM set developed for documentation and dissemination. Despite urgings to develop an online community in an existing resource portal where content can be updated and other middle school sites can reflect on and record their implementation of various elements and receive ongoing guidance, the director opts to commission the development of the CD-ROM. A significant portion of the budget is used for the physical production and shipment of thousands of CD-ROMS, with no means of tracking access or use once they are in the hands of school personnel. Now, in spite of the addition of follow-up research and amendments to existing strategies, several districts and schools still have fairly obsolete materials within one year of publication, and the most use these discs seem to receive is as principals' coffee-cup coasters.

In an effort to avoid this type of scenario, one emerging model calls for an adept consulting team to participate during the pre-planning work phase as an informed advocate for a public education agency. These teams are often a hybrid of personnel with skills that represent fluency in technical analysis, design, and development, as well as in education-related systems and processes from the school site up to the SEA. Typically, asking an external entity to perform an internal role in this manner ensures efficacy and autonomy. Both are paramount when it comes to providing guidance focused exclusively on getting the best technical resources developed to serve the needs of the project in the most effective way possible. In their best configurations, consultant teams can assist with advance research on solutions; identify existing resources; and help foster relationships to secure those resources, development of RFPs, solicitation and review of vendors, and internal training of key management staff for ongoing project work.

5. Address the needs of the end user (teachers/schools) to create vested operators of the larger system and get better resulting data more effectively.

Some of this decade's top technologies have been used to process and assist with the actions that many other industries or groups consider to be important, intriguing, and personally or professionally valuable. While these other communities decided to embrace online environments and actively consume, discover, analyze, and learn to implement the modern information infrastructures to their advantage, the education community has struggled to want to understand. Once we recognize what practitioners in our field consider important, intriguing, and valuable, we can translate those exchanges for innovative developers and better harness these same technologies to support ongoing documentation, sharing, communication, and data-enriched planning in public education.

We still haven't asked the right questions of educators, such as what are the most important things they would elect to do or ask to be provided to them in order to help them teach and assess students? What most valuable commodities can help them combat professional isolation and build professional efficacy through more effective practice? How do we reconcile the variability of our "end users" and ultimately draw similarities between a new Continuation High School teacher in the Los Angeles Unified School District and an elementary teacher in Wyoming starting her 19th year?

We still haven't asked the right questions of educators, such as what are the most important things they would elect to do or ask to be provided to them in order to help them teach and assess students?

We have been conducting some research for a federal partner that focuses on what teachers want from their online environment, and here is an abridged excerpt from our early findings:

"When using online sites and systems, I wish I had ..."

- more rich examples of specific concepts that I am trying to teach that grab their interest
- more opportunities to allow my kids to see the skills we are learning in authentic, real-world contexts outside of the school
- not more stuff, but good stuff — I don't need 300 things, I need the right three things
- time to work with students individually on the specific, unique challenges they each have; methods to know how to approach each of their needs better
- an easier way to know when students are not comprehending the information we are covering
- an easier way to communicate what we are studying in the classroom to students' parents or guardians at home
- other knowledgeable adults that could provide real information and demonstrate real skills to my students and help provide multiple points of feedback on the students' progress and work products
- less materials to assess and grade beyond the regular school day, please

In fact, in all of our preliminary findings and across focus groups led by my teams and others for years, I have never heard anyone call for a system that delivers online assessments to a large gathering of students during a specific period of prescribed time. Almost all teachers, leaders, and local IT personnel actually abhor the idea for reasons ranging from the philosophical to the logistical. And the problem with this is the following: These are the teams that will have to implement this system of resources effectively in order to generate any level of acceptable quality data that the whole process depends upon exclusively. If we can help build confidence in the data amongst practitioners, then we can reasonably expect the good tools that will ensue to be of value and legitimacy in the field.

The easiest concerns currently dominating the conversation involve logistics. This seems like a classic situation in which we have to question why we continue to subscribe to restrictive time and device conventions. We can address both of those elements by making full use of the most calibrated, expensive, and knowledgeable series of assessment devices already fully integrated and operational on every single campus, in every single classroom — teachers. Allowing them to use their expertise with their students, along with their ability to develop key instructional activities for those students to exhibit proficiency with standards, is vital to this effort. Making sure that the resulting data from these efforts can be coalesced with strategic, external, small-segment question items as managed by various applications is critical. Given an adherence to open data, however, we can breed the tools to perform in this way while also being periodically normed against formative performance data entered by instructors and monitored by site leadership for consistency. This will ultimately untether the data-collection process from single-occurrence assessment windows that inadvertently create device-access issues and require large-segment question items.

Of greater concern is the philosophical belief, so widely held among practitioners, that these tests provide little assistance with classroom-level endeavors and resonate from remote, contrived

sources that know little to nothing about their needs or those of their students. They are not wrong to feel this way; we have done little to appropriately match resulting data to useful actionable work in the classroom. On most levels, these data were not designed for this purpose or for classroom relevance. In this regard, we have failed not only teachers, but our own intents as well. However, it was an evolutionary step forward and much was learned. We now have an opportunity to introduce an assessment system that assists the teaching and learning exchange. And we do have far more advanced technologies to better understand a teacher and his/her students, as well as provide relevant timely support, than we did even five years ago. As an aside, the by-product of focusing more effort on building classroom-relevant systems will be rich, comparative, summative data that can be moved "upstream" from the classroom to help qualify decisions, dollars, and policies. That will be a secondary component to a system that teachers — first and foremost — consider credible and valuable, as should be the case.

In the end, we will help to create a system of vertical alignments for curriculum and instructional strategies that intimately address the needs of all students, while maximizing progress and opportunities for them and thus the communities in which they live. Simultaneously, we will share data that ultimately creates better vertical alignment of budgets and policies that will work to better manage each state's ongoing investment in its public education systems and its interest of having an educated democratic citizenry that will support the ongoing diversity and strength of our nation.

Is building this next-generation assessment system —and thus enabling a tapestry of smart applications and intelligent tools to bloom — a fantasy? Consider Fuller himself, a man who failed geometry repeatedly and was expelled from Harvard University for "irresponsibility and lack of interest," yet never gave up on his dream of a mathematically structured engineering approach that could be matched with high-density, lightweight materials to create large, inhabitable, efficient structures. We know these structures as geodesic domes. Fuller patented their design principles, which now influence the creation of everything from the space stations orbiting our planet to amusement park rides, including the iconic and indeed "fantastic" Spaceship Earth attraction in Epcot® at the Walt Disney World Resort®. This considered approach to technology, strongly advocated by Fuller and other great minds of the past century, is our path to becoming —as Fuller said — architects of the future, not victims of it.

So, to be candid, it doesn't matter if a next-generation assessment system is, at this point, a fantasy. We have no other choice but to take the right steps to transform this fantasy, along with the dreams of our students, into reality. It is through ensuring that our students' tomorrow holds more opportunities for them than today that we fulfill our obligation as architects of that future.

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The Next-Generation K–12 Platforms: Moving from Fantasy to Reality by Challenging Conventions

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