Chapter 3

Reaching the End Point

Is there an end point of the digital transformation for institutional education? There is an end point, but getting there will require what may seem like never-ending and exhausting change in both public and private schools across the U.S. What I have learned is that it is really a journey of five to ten years. It's achievable.

In most of the cities I visited, I shared a vision for where the bulk of the market is going and how fast, based on our research and our direct observation. From the very beginning, this vision included a change continuum that ends in what is known as the "Age of Experience." It's an economic term and represents our present age as beyond merely a focus on information and technology. It is conceptually a time when our "online and offline identities are converging...accelerating the development of experience-driven products."1 Most teachers and school administrators agree to the logic of it, their journey of change ending at this point, because it resonates well with their internal terminology, such as "blended learning." Education executives are relieved to hear about an end point in view, because they don't want to keep shifting the pieces and parts of their operations around indefinitely, guessing as to workability of their plans. Continuous disruption has a feeling of having some deep wrong that can't be named. Change is needed, but disruption is something more.

Key Points

• Education is headed toward every student receiving truly personalized learning after transitioning through a tech maturity curve to the "Age of Experience."

• Schools and districts will know they have reached the Age of Experience when they find themselves considering the depth of individualizations they can do.

"Economy of Experiences sheds light on the fundamental process of change whereby society is currently searching for new forms of value creation. The 'Experience Economy' is the first symptom of this process. The Economy of Experiences is more than 'feed me' or 'entertain me.' Businesses and organizations have a larger, more significant role to play in supporting individuals in their search to find their own way and a significant role for themselves.

"It starts by placing individuals at the center of their social context as well as events that are important to them in the world in which they live. In order to facilitate these, we present new business models in which co-creation plays an important role. Concrete design principles are given that can be used as a basis for creating meaningful experiences."² Most leaders understand that continuous disruption leads to destruction of the organization. When you engage in too much change getting into the thin threads that hold together a working organization of people and things, you can wreck productivity and morale. The whole enterprise can wither and die. This happens to companies all the time when some new competitive force hits their market or industry, but to most people in education, it is an alien thought.

Educators can weather this storm with a proper view to the architecture of their digital assets and a real strategy straddling the digital and physical worlds.

Educators cannot conceive of a world where their industry isn't able to stay the way it's always been. They feel that if it changes, they will lose all sense of order. Federal compliance requirements, new testing, new standards, a growing population of students, economic pressure, and an urgency to integrate technology make for one wild ride for any leader. This is especially for leaders who are not trained or apprenticed in any kind of business or programmatic execution and have mostly risen in the ranks from their training as a teacher.

The proffered idea of an "Education Market Activity Continuum," a cycle of

change from one starting point through to an end point in this instance, is starting with a mass move by schools into strategy and then is seen as maturing all the way up to a focus on experience. It began as an average, where the market was in 2013-2014, where schools mostly stumbled about



as they either considered or implemented computing devices. Since schools have implemented computing devices as a tactic without a real understanding of their use or contextualized how the environment would change in many instances, not having a real strategy was the first pitfall.³ In 2014 and 2015, schools had been experiencing this pitfall, and we got on the road to help them by the thousands come to grips with what it would be like to have an actual strategy. These strategies included various programs that could collect inventory of what they already owned digitally, took into consideration policies and practices, engaged in a programmatic approach to professional development, and more. These were not individual things no one had ever thought of before, but new considerations with regards to the executions of the whole of those programs in concert. This was the mark of actual success.

In 2016, The Learning Counsel leveled up to discussions about tactics, true to the market's current dynamics. Most schools and districts in 2016

The continuum stages define the digital transformation in education, going from strategy consideration and implementation, all the way through to a refinement that will arrive at the same place as other industries who have moved through the technology revolution – the Age of Experience. were in "buy mode" for digital curriculum, but not always with the necessary tactical maps behind them. Buying was willy-nilly in many districts without a plan to administer cost negotiations with the thousands of publishers or a proper vetting of the purchased or custom home-built digital learning objects.

In 2017 and beyond, The Learning Counsel is continuing to both support the natural change and drive forward the Education Market Activity Continuum with a series of Special Reports and live events.

These Continuum stages define the digital transformation in education, going from strategy consideration and implementation, all the way through to a refinement that will arrive at the same place as other industries moving through the technology revolution – the Age of Experience. Let me define each of these stages and describe what is involved in each.

Strategy Years

For schools, the strategy years are characterized by a real concern about devices and networks. They are the year or years where a district starts off with devices and ends with a plan to implement digital learning or vice-versa. It is characterized by a lot of discussions about equity and home access, and the right *kind* of device per grade. Also, a lot of effort goes into substituting old ways with a digitized way, but not necessarily a *digital* way. This stage does not necessarily recognize the highest capabilities of digital technologies and merely substitutes old ways for a new mode with the lowest orchestration of software – merely documents and links to outside resources. Schools haven't even entered real strategy if they haven't gathered as a body to create an orderly process that consents to some commonalities in the transition. A real digital transition strategy, the way we are now defining it, is an organizational motion, not individual random motions by teachers or tech directors with random answers to dozens of unaligned questions about how to be, how to teach, or how to meet standards.

In the Strategy Years, a school needs its advance guard of enthusiasts and leaders. There is a lot of depth to the strategy conversation. Many schools and districts have done well at this, but they are in the minority considering the whole nation.

Tactics Years

After setting goals and programming out a strategy, schools find they are in a couple of heated years of tactics arguments. These arguments will be over the broad, general plan of access and fairness for all teachers and grades, because many schools find they can't use the same device for all ages. Others find they can't do live online testing without breaking the network, or don't even have the hope of equal access any day of the normal school week due to the high numbers of odd devices hitting their networks that they never planned on. This phase includes discussions on the utility of the pieces of things, like what file standards should be used, and what types of curriculum software features work the best.

In this phase, the tendency of administrators is to let these conversations take place amongst the rank-and-file teachers, with only an admonishment to coordinate with the instructional and technology staffs. This is a tactic in itself, barely recognized for what it is; that is, a lack of closely supervised leadership. Leaders with this approach either do not see the relevancy or they cannot grasp the significance. They often say, "We let the teachers make all the choices," as to what and how they will use various technologies including the software elements.

The lack of tactics leadership leads to such wonders as vast and unsustainable quantities of digital files, tens of thousands of which are barely tracked and typically hard to find. Most are irrelevant or quickly out of date. Also, many critical resources are left on the individual's own desktop, frequently not even backed up. Or the teacher allows the students to log into outside services that are collecting huge amounts of student data. These services are hidden from view but are used to commercially advertise or otherwise corner a student's interests. This means that the student is potentially locked into a categorization right during their highest mental development years as a "frequently sick" or "game-oriented" individual. Lack of tactics leadership involves more than just the risk; it also leads to the continued overwhelming of teachers who are trying to cope and get the job done.

Tactics conversations will probably rage forever, but there will be a couple of years of heavy discussion about all the digital learning objects, who should have what objects, who should make the objects (public or private), the missing objects that need to be built, and the things that fall away as useless. A true tactics conversation involves discussions about a fully digital coverage model, how the school can transition from paper and printing to the highest degree possible, and proving exactly how their informational and teaching models lower cost and gain model efficiency.

Sustainability Years

When I say "sustainability," I'm not talking about being green by being ecologically aware and doing your bit with recycling. The idea I'm presenting is the ability of your district to sustain a new working model for teaching and learning. In other words, is the school or district able to deliver, in a stable, long-term manner, complete packages of learning for their students digitally and graduate them, not necessarily based on grades, but by readiness and skills to enter the world of 2020 and beyond?

Evidence of a school that is ready to enter the "sustainability conversation" starts by discussing restraints and then bursts through them. The first time I heard sustainability mentioned unsolicited by a school was September 13, 2016 in Tampa, Florida, when Dr. Tina Barrios, Assistant Superintendent of Information Systems and Technology of Polk County School District, said regarding tech innovation in schools, "I think that where we are at now is: how are we going to sustain it?"

The sustainability conversation is going to go deep in the next few years. Schools will run into all kinds of archaic legislation, competition from consumerization, faulty funding lines, and old policies that will have to be overturned to have a bit more breathing room for their transformation. Some of this has already gone on, but with this continuum, we're talking about the motion of the bulk of the market. In any case, there will be a couple of years for most schools and districts where top policies will be altered and conversation will center on sustainability. Education administrators will know they are coming *through* the sustainability arguments when they have reoriented themselves to think *as a software company* would think. This means that they have started to enter the same frame of reference as all other industries have done. They will be solidly confronting the reality of the digital age, that to communicate with populations of students and teachers and control them well through the end goals, you must be on the same "channel" with them.

That channel is, of course, online for the great majority of communications. It is robustly well beyond the local individual face-to-face interactions and on a global scale, bringing fantastic efficiencies in knowledge access that allow for local purveyors-of-knowledge to change what they do to be more service-oriented and a less autocratic source of learning. It will be necessary for teachers to actively seek this mutation, because the next few stages definitely require them to formulate a keen sense of differentiation in order to use technology's many iterations of analytics, to redesign their daily routines with in-person and online guidance, and to come to grips with the demands of this age the Age of Experience.

Analytics Years

The analytics years start with a realization that there are dashboard qualities to much of the software, and that the tons of tests and data signify more than is being utilized for the betterment of education. It also includes conversations about the aspects of "malalytics" or "harmalytics," those things being collected and displayed and consuming massive amounts of administration that are just unnecessary or so uncomfortable they are harmful.

Most of the Education Industry is already consumed with testing and assessment. There is an abiding fear of ever-more analytics. The ability of testing instruments to affect immediate and non-trivial adaptations of learning to the individual student, true individualizations, has yet to be fully realized. In addition, these adaptations have yet to be quantifiable on a national scale so that big testing can be done away with. The trick is in the timing. Most testing to date is summative, or comes at the end of a course of study, which tends to be rather high stakes in that the test is taken and then goes to points unknown to be graded before coming back an indefinite period later to roost in the permanent student record. Most of the time it is as much as six months later.

These tests, in most instances, are barely useful for teaching and learning. It is almost useless even for evaluating the accountability of teachers. The big data that comes out of this work is endlessly massaged and manipulated, sometimes on a politically motivated aim to show strength where there is none, or conversely, put into ruin another. These big data analytics are not necessarily transparent even if they are public. The mysteries of the actual questions used in the tests, the methods of testing, the timing of the test, and countless other variables, including the weather and how well the child was fed that day, can all be part of the confusion that leaves educators feeling downtrodden even when the results are good.

When the real aim is real learning, big highstakes tests have been gaining ground in one distinct and negative way – they are seen as an us-versus-them disciplinary and control effort by those they are imposed upon. Students and teachers alike feel that analytics about themselves through a universal test distinctly separated in time from the original learning is dehumanizing. It forces more memorization and concentrations on what exactly will be in the test rather than learning. Such tests should be called what they really are – surveys to rate a nation's students and teachers comparatively in a value bell curve of best to worst.

Formative assessments, those done inside the daily routine of learning (i.e., close to the learning in time) are immensely useful to the student as feedback loops. New highly developed and designed courseware, which provides various avenues for the student to go down with repetitive variants to questions until the student gains one hundred percent mastery, have the promise of even removing the need for formative assessments.

The ability to collect formative data on a level that might even include how long little Suzy's eyes remained locked on one aspect of a problem, how many times she had to go back to one part because of how a question was worded, how frequently she had to click on words to get definitions of them, how slow or fast she was, how much time it took to formulate a sentence for an essay, and how much the device spell-corrected – all of those are analytics points, the likes of which will be coming to teachers in future courseware.

In the analytics years, schools will be looking at the meaning and utility of all these inventions of technology, and they will be looking beyond that at the collation of these data points into something more, possibly a more efficient learning path. Definitely at the higher-valued digital aspects of learning experience that cause nuances of data collection we have not yet dreamed about. All of this type of data is already being collected online by big industry for tracking consumer behavior and used in ways and with algorithms that would astound the average person. We all think that somewhere, someone can know *all* about you merely by how you shop and surf online.

When the Education Industry reaches the moment when many schools and many private industry partners have accrued awesome amounts of data, it can begin to be used in alarming and edifying ways. Some of the alarming things are already happening. There will be a rise in concern that so many organizations and teachers are not trained in Internet defense, and they are most certainly unfamiliar with algorithms and analytics usages. This will become a fascinating discussion point. Possibly surprising and saddening things will have happened as a national body by the time we get into the Analytics Years with accrued big data. It is highly likely that things will force more new legislation by this time. Schools and districts will know they have arrived in the Analytics Years because they will be talking a lot about data collected, about what's useful and what's not, and administrators and teachers will have their digital dashboards to help them align their efforts towards a full service-orientation for each individual student. Analytics will be used on a vastly more significant scale, but not to discipline teaches and students. Data used by the individual, for the individual, and for the relationship of teaching and learning will be part of the discussion.

Design

Coming through the Analytics Years will have caused many in leadership to question things that have never been really in question before. These will include even down to the very root basics of what is taught, the actual core subjects. It will get into the very foundations of the organizational structures beyond the questions of online and face-to-face and well into networked mixes of school branding over "white-labeled" learning modules. Administrations will have knit together, for example, a group of best-in-class instructors who are ported in over live internet feeds to teach various lessons at precise moments, courseware and games will be slotted in for certain lessons, and live technology-oriented projects will replace the old science and social studies classes with Crime-Scene-Investigator-like labs, or even playwriting to script an ancient classical Roman scene that is video edited by the students after performing.

Because of all the new learning modalities, administrators will find themselves remodeling and retrofitting their brick-and-mortar structures to fit. Now that learning is 15-40 percent (40 percent is considered optimum) purely screen interface, with students "in the screen" reading or moving through courseware and educational games, the physical environments will need shifting and the remaining 60 percent of time will need to focus the energies and socializing in new ways. For example, quiet reading areas with bean-bag chairs or giant cushions that allow students to lounge comfortably will be part of the environment, alongside group meeting areas with mobile furniture, and lab rooms and cubbies for quiet personal work similar to industry. Group spaces, even "social emotional" spaces, that provide for social sharing in the old "whole group" way, will be necessary, even whilst students and teachers may use social media as a back-channel for chat not seen by all simultaneously.

Schools will move towards a well-designed institution and instructional model such that their streamlined and innovative approach can be articulated easily and marketed for student recruitment purposes. How well a whole school or program is "designed" will be contextualized as if by professional marketers and software developers for best appeal in a highly competitive landscape - just like colleges and pretty much all service companies have had to do. Private industry is already viewing the "Design Economy" in the rear-view mirror. For over twenty years there has been exponential growth of new non-linear manufacturing models and boutique services firms. The Dyson vacuum cleaner is a good example of the new design era. It was an old product and an old industry, revolutionized by a new concept. Accompanied by a super-marketing effort with an engineer leading the effort, Dyson is one of many companies whose corporate DNA fits well with society's clear expectations of good design, good mission, good communication, and "enough." Excess is shunned by the present age, so in the Design Years, if administrators open the door to input from their teacher and student populations, one of the first things they will learn is that a large portion of what they always thought was bountiful learning is considered excessive and superfluous and should be replaced by more adapted and individualized learning journeys to ready the student for life.

The Design era, a.k.a. the Tech or Digital or Information Age, is the same as the four earlier stages outlined in this chapter. Good design is generally predicated on good strategy, thorough tactics, an eye to form and cost sustainability, analytics of outputs, and a service orientation. Most manufacturers and software developers have a "version two" and so forth after their initial "minimally viable product" version one. This later version has higher design, a better interface. Good design is a seamless underlayment to real and easy expansion. By itself, good design is like having a good character, warm smile, hearty laugh, and strong handshake. When you have those things, you have a somewhat magical magnetism. You "grow" without heavy and exhausting effort.

Education will be joining the Age of Design, because education, like all of the continuum of years spoken about in this chapter, will inevitably level up to where the rest of industry has already gone. In the Design Years, a tangible shift in how institutions communicate and articulate themselves as parts of a community, real or virtual, will become apparent. This could also be called the Golden Age of School Administration such that a new higher level of executive skill will enter in. It could be known as the "coding" of education if the viewpoint of institution-as-intelligent-software-interface gets popular like it currently is in industry.

Schools will know they are in the Design Years when they are most focused on their survival in their markets, like when they are gaining more competition from local private schools and unschooling or consumerization. When demands for more and more charters and other separate avenues are ever higher despite the technology they have brought in so far, then schools are at a crisis point of their design. Tweaking and augmentation, using analytics, and a few new hires and some firings of personnel are not cutting it; they need a clean slate. In addition, they will have reached the Design Years when their leadership and a few forward thinkers in that school or district realize that the sum of all their disjointed, mostly teacher-level efforts, with a few pronunciations by leadership against the demand of its population, is still inadequate.

This is where an awareness will alight such that, compared to other super-tech imbued industries, our institution does not have a disciplined and refined cohesive highly technologically enhanced administration that delivers on its promise. It is not constructed to win; it must be deconstructed and then rebuilt into a winning platform exactly like industry must do when it is marginalized or run out of business by competition. It must find its "hook" in the present economy and social structure, which will undoubtedly be founded on tech with all other elements playing second fiddle to that central channel.

The Point about Time

Before moving on to discuss the last "Experience" stage, let's make a point about *why* this is all happening. In every city for the past twenty or so, I have mentioned that there are four pillars of the universe we all know and love. Those are: space, matter, energy and time. Those are the "things" of our universe upon which all else is built. As mankind, we have built an ecosystem of each one of these, in turn standing on the shoulders of the one before. We first focused on survival by busily

conquering spaces. We had to hold a lot of space to find enough game or fish, and later farm, so defending and holding onto our little corners of the world was very important. Kings and Queens and all sorts of regimes and governments have warred for nation-states. Later on, in the focus on space, people have taken on mortgages and decorated. Our learning in the early part of the original Earth space-race was parents-as-teachers and monasteries for higher learning.

Mankind then moved on to the Industrial Age and conquering matter, building bridges, inventing air flight, and in general making a lot of stuff.

The next evolution was into energy and all things having to do with it, including all trade and making computers and the Information Age. This Age, also known as the Knowledge Age, was the vast accumulation of things-to-know while also distributing those widely. Since money is what people are paid for their labor as an exchange mechanism, it is a form of energy. Like manipulating electrical grids, that Age has included financial market manipulations and more. Governments have focused in this Age on oil and any means of producing energy directly, but, as an Age, mankind's dedicated focus on energy as an issue is almost over.

The last pillar of the universe, and the one that is now drawing the most attention from advanced societies, is *time*. What the present generations are most focused on is how they can have a *good life*. They consider that knowledge is "done." It's on the internet, isn't it? Born-digital learners often think that someone, somewhere already knows something about anything, and that that knowledge can be found. They are therefore prone to focus

on experience, including learning-as-experience. The Millenial generation is even into the "Tiny House Movement," abstaining from mortgages and going mobile with their *living*. They are less interested in things, in buying and acquiring since things are so easily obtainable, and more in their own ride through the years emotionally and exploring the external world. This is, from an economic point of view, a vast and interesting new frontier to be conquered. Conquering *time* as a consumable, as something aided by the delivery of services of all kinds, has many potentialities for new industry. For learning, it could mean developing delivery mechanization to compress some parts of knowledge acquisition into exceedingly short acquisition timeframes by learners and for other parts of knowledge, expanding them out into challenging and intellectually thrillingly theatrical journeys.

Experience

After the Design Age comes the Age of Experience. Schools will level-up from design to education-as-experience with online and physical interactions so artfully crafted together and personalized that the life-journey of the student will be mapped and adjusted with consummate ease. Some might just call this "personalized learning," an idea that has been around awhile. Actually, very often schools get the definition of "personalized learning" a bit backwards – personalization in the software field is really something *you do yourself*. Individualization or differentiation is what a school or teacher would do *for* the student. What can be done with the full capabilities of software design realized, including virtual reality and intelligent learning engines that adapt lines of inquiry for an individual student, are promising an unlimited potential for experiential learning.

In reality, the world could be going someplace with institutional education of truly majestic impact through a far higher capacity to individualize and transport learning from mediocre into new highs of students achieving real intellectual creativity and employability. "Geniuses" will abound, because the system is built to help them excel on their greatest potential path. The ramifications economically are beyond description.

Stepping into the Future

Not familiar with the idea of the Age of Experience? With the rise of Amazon, Google, Apple, Facebook, and Microsoft battling for collections of devotees, big business has entered a level of branding and product that is self-evidently called "Experience." Disney is the high watermark brand of this concept. If you've been to Disneyland, you've had an experience. If you've joined Amazon Prime, you know that they will send you emails at midnight to see if you will rate one of the movies you just streamed off their site. Facebook sends those nifty anniversary videos to keep engagement at a high whine, capturing attention in order to capture everything else you do. Starbucks is a prime "experience brand" with all the theatre of making a cup of coffee individualized.

Large brands, as cultural phenomena, provide valid clues for where education will need to arrive as an end point, and not because it is an ideal, but because it will be an expectation driven by other consumer experience. This is no different than the computer-tablet revolution, which happened first to shift consumer culture. As industry filed in behind it to offer more technical benefits, it delivered even greater *social* functionality, which in turn shifted culture again to expectations of things like same-day grocery order delivery and more, which in turn shifted industry, and so on.

Education will need to be providing personal value, as judged by the individual person. The only way to do this is to make it a self-determined and experiential thing, being self-determined through the vast possibilities that exist, while also taking care of students to reach minimal goals of reading, writing, mathematics, science, and social studies. Attaining this experiential level will be above typical design into best-of-breed brand. This is the difference between a local community college's cache and the Ivy League schools' already. Attaining this through technology interface woven in with human interaction is a high art, so the Age of Experience is above design and into a more artistic rendering of the attainment of knowledge as a service. It is aesthetic, even fun.

Schools and districts will know they have reached the Age of Experience when they find themselves considering the *depth of individualizations* they can do. Right now, individualization, a.k.a. "personalization" by most teachers, is the art of mildly adapting the same whole group lesson so that the slower student gets remediation to catch up, or that the student with hearing difficulty is given a special headset to listen in on some video, or that fast-Johnny gets to go play more math games online, or other educational leisure activity, because he has already finished everything. In schools where this definition of differentiating instruction is in play, you will see progress boards, typically with little gold or colored stars showing the progress of each individual student against a known set of lesson plans. Teachers busily unleash the faster kids, while helping the slower - rewarding with time the lowest common denominator, which actually penalizes the faster students more. Parents see these boards and silently gloat about their child being the one with the most stars, or are saddened by the child with so few. It is for this reason that the Age of Experience will be forced upon the Education arena. Consumers know that full adaptation is available from mentors and the sea of knowledge available on the Internet and will seek those things out rather than allow the inequity of not-truly-adapted environments. Costs to do so are coming down and incentives to achieve are going up. When schools are having real conversations that almost obliterate the "whole group" learning modality conceptually in all directions, then real individualization can start occurring and real experiences shift.

Another direction schools will go in the Experience Age is towards giving real hands-on and theatre-style or field-trip type moments to balance the screen-time learning. This is the number one thing that can be done to provide relevancy and criticality to physical school – but it will come at a high cost structure. The promise of things, like social virtual reality, may mitigate some of this, but it is still screen time. The art of real-life activity, things that draw out collaboration and communication between students locally and with like-minded others globally, will be the customization that schools promote as their marketable brand, because any high motion and interaction experience is so appealing to all students. As education comes through the technology transition, there predictably will be a renaissance in sports, music, art, labs, and more – all tied to tech and analytics.

With device wearables, virtual and augmented reality, and the internet of things, this end-point to the transition seems to come full-circle to where we *were* before we started the tech transformation: still with functioning schools but transformed beyond recognition in many cases. This predicted end point is more like a network with a bright center chandelier-like hub that is perhaps a physical place but is most definitely a virtual one, around which students coalesce, but surrounded by thousands, if not millions, of contributive bulbs, points of individual light that individual students float out to visit in random patterns before reporting back to the central hub and later graduating up to another hub. This allows every individual to have an individual experience, impossible to do at scale until a high-level of technology is absorbed into every fiber of the Education enterprise. The end of this book looks at this hypothetical future.

The structure of education upon arrival by any institution to this loosely-defined end point is in question, but for certain the function will have been modified.

Since form typically follows function, we have some interesting years ahead for all teachers and administrators to adapt through before arriving in the Age of Experience. ¹ Mike Wadhera, The Information Age is over; Welcome to the Experience Age, *Tech Crunch*, https://techcrunch.com/2016/05/09/the-information-age-is-over-welcome-to-the-experience-age/ Posted May 9, 2016.

² Albert Boswijk, Ed Peelan, and Steven Olthof, Economy of Experiences, http://www.experience-economy.com/page/view/37/our-book, 2012.

³ Los Angeles Times, "LA School District Demands iPad Refund from Apple," http://www.latimes.com/local/lanow/la-me-ln-ipad-curriculum-refund-20150415-story.html, April 2015.

Book 1

The Problem & Current Environment