

Quality Control in K–12 Digital Learning: Three (Imperfect) Approaches

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Digital learning poses an immense dilemma when it comes to ensuring quality. One of the great advantages of online learning is that it makes “unbundling” school provision possible—that is, it allows children to be served by providers from almost anywhere, in new and more customized ways. But taking advantage of all the opportunities online learning offers means that there is no longer one conventional “school” to hold accountable. Instead, students in a given building or district may be taking courses (or just sections of courses) from a variety of providers, each with varying approaches to technology, instruction, mastery, and so forth. (Students may also be benefiting from other providers of tutoring, out-of-school supplementation, and more.) To further complicate this picture (and add to its political volatility), many providers are likely to be profit-seeking ventures. Finding ways to define, monitor, and police quality in this brave new world is one of the central challenges in realizing the potential of digital learning.

The reformers who shaped our current system of schooling in the late nineteenth and early twentieth centuries drew from the “best practices” of their time. In doing so, they designed a centrally managed, one-size-fits-all system of more-or-less standardized schools staffed by teachers doing more-or-less standardized work. (It was not unlike the mass production and assembly line systems being devised at approximately the same time for industry.) The presumption was that roughly similar schools, school districts, and educators could simultaneously serve many different students without altering or tailoring their practices in major ways. What may have worked a hundred years ago, however, has now led to overburdened educators and institutions that have trouble doing anything very well.

Virtual schooling's greatest power is that it creates the opportunity to reconsider what is feasible. Digital learning makes it possible to deliver expertise over distances, permits instructors to specialize, allows schools to use staff in more targeted and cost-effective ways, and customizes the scope, sequence, and pacing of curriculum and instruction for particular children. All of these considerations facilitate the delivery of high-quality, high-impact instruction. At the same time, because it destandardizes and decentralizes educational delivery, digital education is far harder to bring under the yoke of the quality-control systems and metrics that have been devised for traditional school structures.

To realize the potential gains in cost efficiency, customization, instructional quality, pupil engagement, and—ultimately—student learning that the digital age makes possible will require policymakers and practitioners to find new ways to monitor and police quality. Absent the familiar panoply of credentials, staffing ratios, instructional hours, Carnegie units, and school days that now provide tangible assurance that a given school is “real” and legitimate, digital learning will struggle with finding acceptance.

Why Quality Control Matters

In their enthusiasm for virtual learning, reformers risk three key mistakes. First, technophiles can too readily succumb to the hope that virtual schooling is a rising tide that will inevitably sweep away all obstacles before it, despite any missteps with regard to quality control or incentives. “The power of technology today,” write Terry Moe and John Chubb in *Liberating Learning: Technology, Politics, and the Future of American Education*, “simply cannot be overstated... Technology promises to change the fundamentals of how teaching and learning have taken place for centuries.”²¹ In *Saving Schools: From Horace Mann to Virtual Learning*, Paul Peterson suggests that “as technology improves, schools can match students to their ideal difficulty point, giving them the intrinsic satisfaction that comes with a genuine learning experience.”²²

Such sentiments eerily recall the enthusiastic claims once made for the transformative power of school choice. Twenty years ago, Moe and Chubb asserted that “reformers would do well to entertain the notion that choice is a panacea... It has the capacity all by itself to bring about the kind of transformation that, for years, reformers have been seeking to engineer in myriad other ways.”²³ Developments like school choice and digital learning do indeed have the potential to be “disruptive” forces (in the terminology of Clay Christensen), but there is no

guarantee that they will play that role.⁴ In the case of school choice, little or no quality control in too many states yielded a slew of mediocre and faltering charter schools. Moreover, excessive faith that excellence would inevitably win out led reformers to spend little time or energy on quality control—yielding middling performance and an industry filled with unexceptional providers committed to safeguarding their livelihood. Such results dampened public enthusiasm and the willingness of policymakers to support autonomy and opportunities to expand.

The second key mistake that reformers make is failing to acknowledge the implications of public attachment to familiar institutions and routines. Proponents of digital learning are right to point out that the current system is rife with failure. But the system is also familiar, and reaps the advantages of popular support, inertia, and the benefit of the doubt. Where children and schooling are concerned, the burden of proof is going to fall on the new and unfamiliar. Worrying about the perils of education technology is hardly new. (See the sidebar “Historic Tussles over Quality in Distance Education.”) While today’s skeptics fret about online instruction, it was once books and the printing press that were feared by educators, who agonized that students would learn the wrong things if left to read on their own. In the seventeenth century, Sir Roger L’Estrange (once a member of the English Parliament and translator of Aesop’s fables) wondered “whether more mischief than advantage were not occasion’d to the Christian world by the invention of typography.”⁵ Newness and unfamiliarity create a high bar to clear when assuring parents and the public that technology-infused learning (whether it involves books or iPads) is not a “risky” departure from what they have known.

Reformers make a third key mistake when they overlook the fact that K–12 education is publicly run, funded, and regulated, and therefore inherently political. Public officials are risk averse—they want to ensure that public dollars and agencies avoid doing obviously corrupt or dangerous things. Those opposed to digital learning can slow or halt its spread if they can get voters (and public officials) worried about the risks involved. It is no surprise that union officials and other opponents of digital learning are eager to identify and highlight signs of malfeasance. When former governors Jeb Bush and Bob Wise rolled out their bipartisan Digital Learning Now! compact in late 2010, Sherri Wood, president of the Idaho Education Association, denounced the digital push in the Gem State: “It’s about getting a piece of the money that goes to public schools. The big corporations want to make money off the backs of our children.”⁶ Such attacks tend to gain steam when examples of inept or corrupt provision abound, but are

Historic Tussles over Quality in Distance Education

Those who imagine that digital learning's challenges are unprecedented would do well to consider the (surprisingly) long history of distance education. The earliest use of distance education in any formal sense is probably Isaac Pitman's use of written correspondence to teach shorthand as early as 1840 in Bath, England. For the cost of a postage stamp, anyone could receive shorthand lessons by mail and have those lessons corrected and returned in the same fashion.⁷

Experiments with "correspondence schools" emerged as early as the 1870s, when formal courses were conducted via mail by educational institutions. Their instructors were paid by individual students per course. Starting in 1873, Illinois Wesleyan University experimented with distance-instruction degrees. A student could even earn a doctorate in philosophy without setting foot on campus. The distance-learning program received so much criticism, though—namely from the University Senate of the Methodist Church and from the North Central Association of Colleges and Secondary Schools—that the program was dead by 1906.⁸ Meanwhile, in the 1880s, thirty-two professors from universities including Harvard and Johns Hopkins formed the Correspondence University of America—but it also failed to survive.

As more for-profit organizations entered the distance-education market, peoples' concerns about distance schools' practices and the quality of a correspondence degree intensified. In those early years, there were two noteworthy attempts to control quality. In 1915, the growing number of correspondence study options led to the formation of the National University Extension Association, which sought to establish uniform guidelines for distance-learning providers. These guidelines included course-transfer procedures and course-quality standards.⁹ In 1926, a monitoring organization was established—the National Home Study Council (NHSC), later renamed the Distance Education and Training Council (DETC)—to identify high-quality providers in the distance-learning field. Today the DETC consists of around one hundred distance-learning institutions spread across twenty-one states and seven countries, including the military's distance-learning providers.

Concerns still abound, however, that these institutions, lacking the familiar routines and processes of brick-and-mortar colleges, may function as "diploma mills." While some traditional institutions may have low standards, it is at least evident that they exist. Not even that much can be taken for granted about entities that need not maintain traditional facilities and cannot boast a visible population of faculty and students. Policing the worth and meaning of the credentials they offer has proven a thorny challenge.

Seeking to highlight these problems in 2001, U.S. senator Susan Collins bought a BS in biology and an MS in medical biology from Lexington University for \$1,515, without taking any courses. If anyone called to inquire about the validity of the degree, the institution assured her, it would provide confirmation of her academic record and

her 3.8 grade-point average.¹⁰ According to former U.S. representative Michael Castle, practices of that kind have been “a heck of a lot simpler with the use of the Internet. The tracking of them and the prosecution of them is a heck of a lot harder.”¹¹

Those who are confident they have identified sure-fire methods for policing the quality of online learning would do well to remember that they are not the first to wrestle with these issues. Generations of policymakers and reformers have sought to juggle the exigencies of quality control with the desire not to smother or unduly inhibit more convenient, cheaper, or less conventional approaches to education.

less likely to do so when problems are minimized. Because these reforms are political, success depends in large part on making policymakers and the public comfortable with the proposed changes. That’s where quality control comes in.

From Quality Schools to Quality Learning

Embracing the power of digital learning entails shifting from a focus on “schools” and “teachers” to one on “schooling” and “teaching.” Education must no longer be understood as something done by holistic, uniform, and self-contained organizations but rather as a suite of services provided by a shifting web of providers—and provided differently in different circumstances to different pupils. (That’s the point of customizing, after all.) Rather than having a faculty that teaches English, math, French, and so forth, schools may have multiple online providers for each subject—or for portions of a particular course.

For instance, one provider might help students with writing and composition, but not teach novels or literature. Another might specialize in offering rich, interactive instruction about pivotal historical periods, without offering a full-scale chronological course. Still others (for example, outfits like Rocketship Education or Edison Learning) might package content from multiple online providers and in-person school faculty to offer “blended” instruction.

Today, most “virtual charter schools” still constitute a fairly conventional “school unit,” one that can be held accountable as a whole for aggregate student performance. However, as the unbundling of education proceeds, it will no longer be safe to presume that student outcomes reflect the performance of a “school” or even a “teacher.” In an increasingly granular world, holding providers responsible for their outcomes requires devising ways to gauge the performance of each provider in turn, rather than simply documenting the aggregate results for children in a given classroom, school unit, or locale. Such a task is an enormous

challenge, and one far beyond the scope of our current abilities, understanding, or assessment technologies. While extremely promising, then, these unbundled providers offer unique quality-control challenges.

Schooling in a digital world calls upon both school personnel and families to make new kinds of choices. School leaders will need to decide whether a given course should be taught by an online provider, a school-based instructor, or some combination of the two—and whether to offer students a choice of one or more of these modalities. In those cases where more than one option is available, students and families will then have to make a choice. This new system differs from even our current school-choice models, which require only that parents decide which school they want John Jr. to attend. Instead, it resembles more the relationship between a shopkeeper and consumer: The shopkeeper decides which goods to put on the shelves, but the consumer decides which shop to frequent—and which goods to purchase while there.

Unfortunately, it is difficult to craft quality-control systems that reflect and adapt to the seismic shift that digital learning represents. The best that policymakers can do is to select among—or combine—three basic approaches, each with its own significant limitations:

- Input and process regulation
- Outcome-based accountability
- Market-based quality control

The alert reader will note that these are precisely the same choices available to policymakers seeking to hold any public service accountable.

Input regulation entails policymakers prescribing what entities must do to qualify as legitimate online providers. Outcome-based accountability relies on setting performance targets that providers must meet. And market-based quality control permits the universe of users to choose their preferred providers—and then trusts that market pressures will reward good providers and eventually shutter lousy ones.

These are not mutually exclusive options, but together they comprise the basic menu of choices for policing digital learning (or any other public function). The difficulty is that these approaches were devised for assessing conventional institutions, not the more fluid networks of providers and learners created by digital instruction. In the digital world—where new tools and technologies offer dramatic opportunities to rethink teaching and learning by disassembling a school,

classroom, or course into its component parts, and then delivering instruction in more customized ways—these quality-control approaches will no longer be a comfortable fit for providers. Rather, like a Sunday suit that a teen has outgrown, they will tear, pinch, and constrict.

Input Regulation

Input regulation has long been the norm in policing school quality. It entails monitoring and regulating the “ingredients” of schooling—who does the teaching, how many hours they teach, how many students are taught at one time, what materials are used, how much is spent, and so forth. This model was superbly suited to the circumstances and tastes of the nineteenth and early twentieth centuries. A century ago, it was lauded by enthusiasts of Frederick Taylor’s “scientific management” for its rigor. Monitoring inputs and processes was viewed by progressive reformers of the time as the surest way to ensure that schools (like factories) were well run and efficient. And, in an era before computers and modern testing technology, it truly was a reasonable way to ensure a baseline of quality.

Input regulation requires that the school, school district, and/or state set and monitor rules detailing how and with what resources schools and educators should operate. Officials can decree that a classroom will have no more than twenty-four students, a teacher will hold a state teaching license, new math textbooks will be bought every six years, and so on. Rules of this sort ensure a minimal level of service, though none of them guarantees that students will be served well, much less that they will learn. The limitation is that, while officials can make sure schools do the things they’re told, they cannot ensure they do them effectively or well. Ultimately, the compliance-oriented approach rewards obedience rather than excellence.

Traditional brick-and-mortar schools are relatively easy places to deploy this kind of quality control. It isn’t hard for observers to check up on facilities, materials, and staff. A visible student body makes it possible to see whether students have books and are showing up on time. And a regimented, bureaucratic, and grade-ordered school system makes it possible to devise and record all manner of input statistics, from attendance rates to incidents of violence, that can be used to determine whether a given school is “good.”

When it comes to digital learning, input regulation still holds considerable appeal, if only because its familiar, predictable strictures can mitigate some of the obvious risks posed by dubious providers. Skeptics of digital learning can be

excused for wondering about the invisible instructors providing instruction or about the number of students each might be teaching. The regulatory response is to insist that teachers have certain credentials and that class sizes be limited. Similarly, it is hardly unreasonable to fear that online courses may be too easy or entail little actual instruction. The regulatory response is to mandate a minimum number of instructional hours and tasks. Input regulation, in other words, does offer some protection against fraudulent operators.

Screening out fraudulent or dishonest operators is a low bar for ensuring quality, however. The obvious problem with input regulation is that policing inputs and processes can't ensure quality (much less efficiency). Indeed, its rigidities, norms, and compliance obligations tend to stifle innovation or efforts to adapt services to the needs of schools and students. Nor does traditional regulation make much sense in key domains of digital education. Consider the issue of teacher quality, for example. If online providers presumably have the opportunity to tap teachers and professionals around the world, what is gained by requiring potential instructors to hold a teaching credential from a particular state, a standard to which many virtual schools are currently held? Such restrictions prevent the use of collegiate faculty or out-of-state educators who might be attractive candidates. Class-size restrictions for digital providers—such as those in California—drive up costs while preventing even accomplished providers with terrific instructors from utilizing their best teachers as effectively as they might. (That's every bit as true for providers in brick-and-mortar schools, of course.)

Familiar routines and metrics grow more complex as schooling moves online, and they become really tangled once a *mélange* of hybrid models starts to operate. Blending online and traditional models offers the opportunity to reimagine the use of space, resources, and staff time, but doing so makes it increasingly complicated to devise and apply simple input metrics for monitoring quality.

Regardless of the merits of input regulation in general, there is one aspect of online learning for which it is indisputably appropriate: monitoring the finances of providers that are collecting public dollars. The charter school experience is instructive—and worrying. Nothing will more rapidly (and justifiably) undermine public confidence in digital learning than seeing charlatans using the medium to collect public dollars. A minimal requirement for provision ought to be a clean financial audit in which revenues, expenses, and profits are totally transparent. (For more on this topic, see chapter four, “School Finance in the Digital-Learning Era,” by Paul T. Hill.)

Outcome-based Accountability

Frustration with input-driven regulation and quality control—specifically its rigidities, stifling red tape, and inattention to results—gave rise in the 1980s to the notion of “reinventing government” by focusing instead on outcomes. Public providers would be held accountable for results in return for more autonomy, flexibility, and control.

The appeal of this approach is obvious. In K–12 schooling, it has meant holding schools accountable for reading and math test scores and, more recently, using those results to compute value-added measures for schools and individual teachers. Test scores offer a crude but useful way to identify schools that are doing an awful job teaching basic skills, and value-added analyses of those test scores yield a method for identifying which schools (and potentially individual teachers) are better, and which are worse, at helping students master key domains.

The limitation of outcome metrics is that they accept the familiar school-house (or classroom) as the unit of analysis. They focus on determining whether a school is good or not, even if the conventional school no longer exists. In cases where a dozen online providers are teaching math and the school is functioning more as their conduit than as the source of instruction—where learning is the result of a blend of school faculty, computer-assisted tutoring, and online delivery—school-level metrics obviously fail to gauge the relative performance of the various providers.

The type of metrics developed as part of No Child Left Behind (NCLB) offer little aid here, for the questions needing to be answered involve the quality of particular courses, units, or providers, not the performance of the school as a whole. Trying to judge the performance of a “school” or “teacher” via state assessment results makes little sense in the case of digital learning. What’s needed is something more granular and more reflective of the unbundled vision of virtual schooling.

Conventional approaches to outcome accountability in K–12 education unravel when applied to online providers, which may teach material that transcends the assessed content, or content in disciplines that are not or cannot be tested, or only specific portions of an assessed course, or skills or capacities for which reliable assessments are lacking. For instance, New York City’s School of One uses dozens of providers to offer components of its middle school math curriculum. Different providers offer instruction geared to different objectives. Yet the New York state assessment measures only how well students are faring on grade-level

math objectives. It lacks the fine granularity necessary to evaluate the individual providers of customized content. Similarly, online providers offering instruction in music or art history or a foreign language—courses that lack meaningful state assessments—cannot be readily judged using current outcome measures.

No Child Left Behind’s experiment with supplemental education services (SES) offers a cautionary tale in this regard. SES permitted eligible students in persistently low-performing schools to enroll in after-school tutoring using federal Title I dollars that had traditionally flowed to the school district. Federal policymakers were committed to holding SES providers accountable for performance. They constructed an elaborate mechanism for doing so, with states required to approve potential providers and then evaluate their performance based on student achievement. Once providers were approved, local districts could contract with any number of them, and then parents would select the providers of their choice. But confusion about how to judge the quality of providers, a lack of useful data, and ineffectual state efforts to patrol quality combined to yield a potpourri of providers of dubious merit.

Worse, state assessments used for monitoring educational outcomes were not precise enough to detect the impact of thirty or so hours of tutoring, regardless of the provider. This result probably should have come as no surprise, but it threw a large wrench into the SES quality-control framework. In response, big SES providers asked to use their own assessment data to demonstrate their impact. But allowing providers to self-police in this fashion raised obvious concerns about the integrity and reliability of results.

Still and all, outcome-based accountability should not be dismissed altogether where digital learning is concerned. On the contrary, new technologies hold immense promise for this approach. The development of Common Core assessments makes it likely that, within a few years, math and English language arts performance will be measured by a uniform test across much of the nation.¹² Online assessment technology will make it possible to administer frequent, targeted tests and get immediate results. Such assessments could conceivably be designed for every major objective in a set of standards or a curriculum, enabling instructors to gauge whether and how quickly their pupils are mastering designated content. Such assessments could then enable states to measure online providers’ quality: For online providers that augment classroom instruction by, for instance, addressing specific thorny concepts, the right gauge is not student performance on the end-of-grade assessment but on specific learning objectives. Targeted testing

of this kind would entail a fundamental shift in how states have learned to gather and report performance data in the NCLB era.

Tech impresario Tom Vander Ark has suggested a way of thinking about student mastery that draws upon the Boy Scout concept of the merit badge. Mastery of a given learning objective would be signified by completion of a designated assessment, and the student would claim the appropriate “badge.” Vander Ark recommends that seat-time credit systems be replaced by assessment bundles modeled around these merit badges. “Take ratios and fractions as an example,” he writes. “A merit badge would describe what students need to know and a combination of ways they can show it including content-embedded assessment (e.g., game score), performance assessment (e.g., project), adaptive assessment (e.g., online quiz), and an end of unit test.”¹³ This doesn’t mean the assessments will be easy or cheap, however, and admittedly such a shift is not likely to occur soon. There remain plenty of preliminary challenges to overcome in determining which learning objectives ought to be identified and what constitutes an appropriate assessment.

Three challenges deserve particular attention: First, for the vast majority of courses taught in schools, reliable assessments don’t even yet exist. Second, we have limited experience and expertise in designing assessments to track learning objectives rather than simply report on student performance on the whole of a course. Until partial-course metrics are available, outcome-based accountability is irrelevant to niche providers. Third, most high school assessments report whether students are proficient in the subject but not how much they learned from the course. This characteristic creates incentives for online providers to cream-skim, and works against providers that teach poorly performing students—since even if these students make gains they may not attain proficiency. Devising ways to measure both proficiency and value added is therefore essential.

Ultimately, outcome-based quality control for digital learning will turn upon the ability of reformers to devise and implement a far more complex and sophisticated approach to testing. If a student takes Algebra I from one provider but absorbs a handful of learning objectives from a second, the quality-control challenges are severe. First, it’s necessary to have an assessment that demonstrates a student’s mastery of the requisite material. Second, it is desirable to have some kind of value-added measure that reflects how much the student has actually learned. Third, it is important to have sufficiently specific items so that the performance of the two providers in question can be distinguished.

Of course, partitioning knowledge and skills into such discrete chunks may not finally be possible. (Whether it is desirable is another good question.) Even if partitioning proves feasible in some subjects or for some instruction, it's not clear that it can be done effectively in other subjects. If targeted assessments are beyond our capabilities to devise, then outcome accountability for digital learning will prove elusive.

In short, the value and reach of outcome-based accountability is hostage to the development of high-quality, granular assessments. Until new and satisfactory assessments are devised, outcome accountability will remain a limited tool. And it will remain a nonexistent option for all those courses in which assessments do not exist and are not yet being developed.

Market-based Quality Control

Market-based accountability can avoid some of the problems posed by centralized, outcome-based accountability and input-based regulation by permitting users of educational services to decide what best meets their educational needs. Markets presume that diverse users may benefit from diverse providers, and that the quality of providers ought to be measured in a variety of ways. Under market-based quality control, the ultimate gauge of quality is whether users choose a particular provider (thus, the notion of “voting with one’s feet”). The degree to which competing for students enables meaningful quality control, however, depends on the degree to which parents and educators are discerning and demanding consumers of digital learning. Where outcome accountability fosters homogeneity in regard to essentials, a market approach creates room for heterogeneous providers to thrive. Markets leave room for new operators that may not fit within the strictures of input regulation and that may offer value or specialized services not easily captured by existing outcome accountability metrics.

Ultimately, markets can do three things that input and outcome accountability cannot when it comes to quality control. First, markets can protect against excessive homogenization of providers (and their educational products). Second, markets can extend quality control beyond the basic forces of regulation and testing. In cases where providers might evade regulation or manipulate test scores to their advantage, wary consumers are free to shift to other providers—along the way powerfully signaling their dissatisfaction. (Of course, this step depends on consumers having a reasonable sense of provider quality and the ability to act on

it.) Third, markets enable entrepreneurial educators to challenge existing schools (and other providers) and the reigning orthodoxies and habitual practices.

Market-based quality control also exhibits particular weaknesses, however, including the opportunities it offers to inept or unscrupulous providers—a problem that is familiar to any education observer who has followed the travails of problematic charter schools in states like Texas and Ohio. Some educators or parents will make poor choices or opt for low-quality providers, maybe because they don't know any better, maybe because they don't much care, or maybe because they'd rather engage with an easy or easy-to-satisfy program than a difficult one. It is wishful thinking to suppose that markets can prevent bad choices from being made. Markets permit consumers to satisfy their preferences, including preferences that strike observers as misguided. (Consider the millions who eat at fast food joints or buy “as-seen-on-TV” gizmos—choices many would deem poor ones.) The crucial thing in fostering an effective marketplace is that good and reliable information on provider quality be available for users. Otherwise, low-quality providers can hide their problems, inaccurately represent the quality of their service, and use aggressive and misleading marketing to woo clients.

How can markets ensure that users have good information on provider quality? The kinds of metrics used for outcome accountability can be useful here. But four additional kinds of measures can also prove useful in this realm:

- Professional, systematic ratings on customer satisfaction, something akin to the kind of information reported by sources like J. D. Powers and Associates. These make it easy for consumers to draw on the judgments of the universe of users.
- Scientific evaluation by credible third-parties, such as those offered by *Consumer Reports*. The idea is for experts to put new educational products through their paces and then score them on relevant dimensions of performance, as well as price.
- Expert evaluation of services like that provided by the British School Inspectorate. Unlike input accountability, this type of evaluation focuses on revealing processes and hard-to-measure outcomes. And, unlike the *Consumer Reports* model, such evaluations draw more explicitly on informed, subjective judgment and far less on laboratory-style experimentation.
- Data reflecting user experiences—essentially, drawing on the wisdom of crowds. TripAdvisor, eBay, and Amazon allow the public to readily access

quality rankings, while also letting users offer detailed accounts of their experiences with providers. Unlike professional rankings, these results do not aspire to be systematic or scientific; but for that reason they are especially well suited to flagging narrow or particular concerns.

It is not essential that all users access or employ these data; it is necessary only that enough do so that others can follow their lead, and that providers have reason to be responsive. In studying consumer behavior in other sectors, economists have suggested that the critical mass needed for such a “tipping point” is probably in the vicinity of between one-fifth and two-fifths of users. (In the case of technology, however, the influence of a small group of tech-savvy early adopters is legendary.)

One other weakness of market-based quality control in education rests on the fact that paper credentials, such as a certificate of mastery or a high school diploma, have some value—whether or not the recipient has actually learned anything. Education providers can satisfy customers by helping them acquire degrees or certificates that they covet, even if those credentials signify no actual educational attainments. This practice is particularly common in the “credit recovery” segment of the K–12 digital sector. In higher education, the term “diploma mill” has historically referred to institutions that provide a diploma in return for little or no demonstrated performance. The crude market equivalent is cash for diplomas. In most transactions, such a deal wouldn’t make sense—few consumers would write a check for a car that lacks an engine. In education, however, there is some value to even a hollow credential.

Guarding against such chicanery will require some combination of external graduation exams (to demonstrate that students have learned the requisite content), other forms of outcome regulation, and potentially input regulation. However, it is again worth noting that there are no perfect solutions. The diploma-mill problem is one that accreditors have struggled with for decades with mixed success. They have tried to address it via input requirements that monitor whether institutions have the requisite number of books in their library, appropriately credentialed faculty, an acceptable student-teacher ratio, sufficient seat time, passable campus facilities, and so forth. The consequences of such regulation are particularly severe for online providers, as they force providers to assume a number of unnecessary costs or risk being denied accreditation.

It is not yet clear how savvy educators and parents will prove to be in the digital-learning marketplace. They will have some opportunity to observe online

instruction and monitor the outcomes, but the amount that they will be able to glean and their vigilance are not yet known (and are likely to vary tremendously). Reformers must also be wary that any efforts to monitor providers could fall prey to a modern-day Horace's Compromise, where students are free to coast in return for turning a blind eye to mediocre instruction; hard experience teaches that youths have typically been quite happy to embrace lax instruction if it means less work for them. Because participation in markets is ultimately a voluntary transaction, the risk that both sides might choose mediocrity is real, so long as even unearned credentials have value. Policymakers must either decide the risk is minimal or devise safeguards that counter or police such behaviors (such as insisting upon graduation exams that penalize students who have opted for insufficiently rigorous instruction).

Balancing the Three Quality-control Mechanisms in the Digital Era

Education posed enormous quality-control challenges even before the advent of digital learning. Any given approach to regulating inputs, basing accountability on outcomes, or trusting markets brings risks, imperfections, and unintended consequences. Though these negatives cannot be eradicated, the alternative—no quality control at all—is far worse. So we're well advised to recognize and acknowledge the problems with available tools and mechanisms and then do our best to monitor, minimize, and combat them.

Regulating inputs like class size, instructional time, and staff credentials offers some minimal assurance as to what digital providers are actually doing, but carries a high cost in terms of stifling potential innovation, customization, and cost-efficiency. Policing outcomes offers the opportunity to ensure that providers are delivering results that meet a given standard for pupil growth or achievement, but encourages gamesmanship and disputes over the right metrics, even as it deters providers whose service doesn't map neatly onto existing outcome measures. Markets offer diversity and scope for customization, but invite shoddy providers to profit, allow some families to be taken advantage of, and encourage online providers to focus more on marketing than on delivering a high-quality service.

The risks can be mitigated, if not eliminated, by thoughtful design and by combining these approaches judiciously. But there is no golden mean or foolproof formula. (See the sidebar "How Might Quality Control Work in Practice?") Various combinations mostly alleviate some concerns by posing new ones. Hence,

How Might Quality Control Work in Practice?

Presume that state policymakers wish to aggressively embrace digital learning but, for the reasons discussed earlier, are unwilling to leave questions of quality to consumer choice or to the market. What then? First, they could stipulate that for whole-school providers or providers of currently assessed courses (i.e., the instruction for which conventional measures of performance already exist), acceptable performance will be spelled out in terms of student outcomes. One challenge is that many state assessments may measure student proficiency in a subject without gauging student growth, even though the more relevant measure of provider quality is growth rather than an absolute level of achievement. Unless growth is taken into account, there is a huge incentive for digital providers to recruit high-achieving students (who will post terrific results) and to shy away from low-achievers (who may learn a lot but still not be proficient). Just as in the brick-and-mortar world, these challenges require the attention to unintended consequences that has too often eluded policymakers.

Second, for those providers offering courses or units for which such outcomes cannot (currently) be measured, policymakers leery of trusting the market have two options. One is to put forward a set of input regulations governing the time, manner, and nature of provision for at least this set of providers. The other is to permit these providers to proffer evidence of their own that documents their effectiveness, though policymakers would need to be confident that their education officials could distinguish acceptable evidence from unacceptable. To help this along, policymakers must opt to set up an input-driven process, but agree to provide a waiver from teacher credentials, hours of instruction, and class size for those providers that can prove to an independently constituted review board that their student outcomes pass muster.

Third, school and district officials would be empowered to contract with any provider that has met the state's approval criteria. They can opt for whole-course or more specialized providers, and can integrate them into their offerings as they wish.

Finally, families would make choices among the offerings, both the "schools" and the courses offered by those schools. As they do with Advanced Placement or vocational education, school officials will inevitably try to steer the choices that families make. But families, armed with multiple sources of information from online communities and philanthropically supported third parties, will ultimately choose from the array of options yielded by the state's approval process and the decisions of local, charter, and virtual school officials.

A bucolic vision? Certainly not. A messy, flawed system sure to be plagued by instances of mediocrity, rigidity, and bad decision making? Assuredly. But also a sensible, flexible framework that realistically and responsibly mixes and matches our three approaches.

given our scant experience with digital provision, it seems prudent to avoid sweeping national policies or requirements, at least at this stage.

While talk of assessment often trends toward the hypertechnical, the truth is that accountability and quality control are not technical exercises. Instead, they require fundamental judgments about how to weigh the risks and opportunities posed by mediocrity, red tape, standardized outcome measures, and markets. While the details of any approach will prove as crucial as they are variable, it is possible to discern the outlines of a blended approach that seems a sensible way forward for digital learning.

The first step is to create a relatively uncomplicated vendor-approval process that ensures minimal fiduciary and academic standards are being met. Providers should have to document to a designated public entity that their books are clean and to report basic metrics for services provided. For those providers that offer certain categories of services—especially services that directly impact student achievement—it’s reasonable to have a state review process that features some kind of authorization and renewal.

Second, as providers deliver their wares—and as families choose among them and students engage with them—it is essential that some institution or institutions collect various kinds of data on performance. Data collection is apt to be a state responsibility but can easily be delegated to any number of third-party monitors, each of which would bring its own strengths and weaknesses. But whether a state agency acts directly or relies on others, a wide array of data needs to be collected, gains measured and analyzed, and findings made public in transparent fashion. Just as important is to gather and disseminate information on consumer satisfaction and expert reviews of programs and providers.

Third, families need to acquire a vested interest in cost-effectiveness and new opportunities by being given control over some discrete portion of spending. This step is essential if parents are to approach schooling as more than a unitary service and to start thinking about the quality of particular services, and if education officials are to enjoy the encouragement and support they need in order for them to revisit and change deep-seated routines.

Conclusion

In the end, creating an authentic and vibrant environment for high-quality online learning is about creating a new world of schooling that is hospitable to unbundling. That world will demand that we make pivotal shifts.

First, we must begin to think of education in terms of segmentation, not just whole schools. Second, we must begin to gauge educational quality in terms of cost-effectiveness as well as student achievement. Third, we must see that parents and educators benefit when they make choices that are cost-effective as well as educationally beneficial. Finally, we must provide both parents and educators with workable, comparable metrics by which to gauge both cost and effectiveness.

The challenges involved in effecting these shifts are simultaneously familiar and new. In a sense, they are essentially the same challenges—to be addressed by the same tools—that educators and policymakers have wrestled with for decades. But in their current incarnation, they can be met only with a degree of granularity, agility, and precision that is new to the world of K–12 schooling.

Moving into the digital-learning era, we are burdened by our deep-seated habit of regarding schooling as a unitary “thing” that happens in “a building” rather than a suite of discrete services that can be offered in many locations. This creates a tendency to define improvement as “better schools,” and to discourage efforts to improve discrete services or components. Moreover, schooling in America is primarily a public service and thus subject to the demands of partisans and interest groups, an arrangement that conceals from both parents and educators the true costs of goods and services while giving them no incentive to emphasize cost-effectiveness. These long-standing realities combine to stifle new technologies, discourage labor-saving improvements, and diminish cost-consciousness. So it’s no great surprise that technological innovation in schooling has consistently disappointed.

Changing that state of affairs means changing the rules that shape schooling. The most significant of these govern how schooling itself is provided, paid for, and evaluated. Reshaping those rules entails addressing the quadruple challenge described above. If the emphasis is on learning rather than mere credentialing, and especially if the aim is to encourage cost-effective learning, it’s necessary to relax input regulations in exchange for a focus on accountability as measured by student outcomes and parental judgments. This step means eliminating caps on enrollment, rules that restrict class size and student-teacher ratios, geographic and regulatory barriers to what online courses students may take, and “school

site” definitions that limit blended models where a portion of student learning occurs outside of a traditional school building. It also requires clarifying outcome measures by gauging student progress based on demonstrated competency or gains rather than seat time.

Transformative improvement also requires stripping away conventional rules governing certification and licensure so that schools can use unconventional personnel in instructional roles, can extend the reach of effective teachers, and can tap instructional talent from far away. It requires allowing schools to redefine instructional roles and staffing, pay, evaluation, and scheduling.

Accountability rooted in student learning requires the construction of assessments that measure mastery of specific courses or, preferably, of particular units and skills. Freeing schools from the long-outdated nineteenth-century school calendar involves allowing students to take the requisite assessments at any point during the year.

Finally, enabling parents and educators to select individualized online services creates market opportunities for providers to specialize in and focus on meeting specific needs. Those needs might be for tutoring in specific learning objectives or skills or for a complete course of instruction. Making such a market viable requires funding models that allow fractional per-pupil funds to follow students to individual courses, and perhaps even to individual instructional units or kinds of support. If dollars flow only in chunks that reflect the entire allotment per student, or the entire allotment of a particular course, then it will be difficult for digital providers to thrive while delivering anything that’s more finely grained.¹⁴

Quality control in education, to repeat, is an imperfect science, and every approach brings its own shortcomings. The search for the perfect quality-control mechanism is a futile one, just as a *laissez-faire* disregard for quality control is sure to yield practical disappointments and political backlash. The sensible course, when dealing with a public mission and billions in public funds, is to seek an arrangement that addresses concerns about malfeasance and mediocrity without stifling innovation—and that is able to grow and evolve as we learn and as technology and tools mature. A formidable task? Surely; because it is one that will ultimately determine whether the advent of digital learning revolutionizes American education or becomes just another layer of slate strapped to the roof of the nineteenth-century schoolhouse.

Endnotes

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13. Tom Vander Ark, "Three Pivot Points to a Performance-Based Education System," Vander Ark Associates, February 25, 2010, <http://www.varpartners.net/?p=1545>.
14. For more on this topic, see chapter three, "The Cost of Online Learning," by Tamara Butler Battaglino, Matt Haldeman, and Eleanor Laurans, and chapter four, "School Finance in the Digital-Learning Era," by Paul T. Hill.