

**The Data Challenge:  
Bumps on the Road to Customization**

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In order for a more individualized and choice-driven economy of education to develop, three prerequisites must be satisfied. Parents, teachers, and administrators need to understand the educational options from which they may choose. Potential providers must understand the needs of individual students and the other market segments they are intending to supply – that is, the needs of parents, teachers, and administrators. Finally, tracking and information systems must be developed that can handle individualization and choice. In theory, with these prerequisites in place, producers could organize to meet the demands of educational consumers and the market would function smoothly. Unfortunately, none of these information needs are being well met now. The challenges involved in bringing the current extremely inadequate levels of data management up to levels that could support decentralization and choice based on individual needs are substantial. Failure to meet data requirements could put a critical brake on the system's ability to separate the various components of education and provide robust, individualized educational programs. Indeed, for some of the more radical visions of choice, the data problems may prove insurmountable. While there are some promising efforts in this area, the jury is still out as to whether there will be any successful examples of the implementation of the kinds of data systems that will be needed.

This paper begins by arguing that good data is critical to the success of individualized, choice-driven education. It then examines more closely the full potential range of agents that could be empowered by a transition to an educational model oriented to individual student needs, revealing a potential wide range of data users and data needs to support the full array of choice that could potentially be implemented. In the next section, the chapter assesses potential data needs against current data capabilities, finding, in all cases, that current data capabilities fall

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short of what will be needed. Finally, the chapter identifies a number of steps that could be taken to move towards more adequate data systems.

## **Why Data Is Critical**

Why should data be considered necessary for individualized, choice-driven education? Markets develop all the time in response to needs and without easily available data. In fact, for proponents, this is one of the attractions of moving to a demand-driven system. Student and family needs may be too complex to know ahead of time, and simply by opening up the system to new players, innovators will arise. Those that meet a sufficient number of families' felt needs will succeed, those that do not will fail. A sorting will inevitably occur—not one driven by centrally available data systems but the type of sorting markets have been doing since time immemorial.

Indeed, there is already a robust market for private schools, after-school activities, and academic tutoring; and the unbiased, publicly available information on all of these providers' performance is far less than that which exists for most public schools. In fact, these schools and services are generally both exempt from the test reporting requirements of public schools and allowed to select their own students, decreasing the meaningfulness of what little achievement information there is. Yet, somehow parents interested in sending their children to these schools both compete to get in and develop clear opinions of how these schools rank relative to one another.

While this is indeed true, just because there is a demand-driven market does not mean that services will be well-matched or delivered. In many ways, allowing schools and parents choice in the education market without simultaneously ensuring that better information is

available to inform those choices risks creating a “market” similar to that which exists today in health care. Right now, it is exceedingly hard for patients to tell whether or not their doctor is particularly good or bad. Instead, patients tend to focus instead on their doctor’s interpersonal skills and subjective impressions of the doctor’s reaction to individual medical events. While there are some sites (such as Angie’s List) that allow consumers to rate their doctors, it is unclear how such ratings compare to the underlying efficacy of those rated. In addition, as health care consumers we are all bombarded with advertisements from pharmaceutical companies looking to push their product for a variety of sometimes vague conditions. Unless one is a medical professional, it is a challenge to understand the exact pros and cons of one treatment vs. another. Thus, while there is choice and a focus on individual needs in health care, it is not at all clear that the system is optimized for either cost-efficiency or health outcomes.

In a fully decoupled educational system, with multiple choices of educational services being made by parents, teachers, and students to meet individual needs, the situation could well be worse. In health care, at least there is a strong, well-regulated set of practices around determining the efficacy of particular treatments and of drugs. Most of the “treatments” available in education, however, have not gone through such rigorous, scientific review. Thus, without solving the above challenges, demand-driven education systems would be less like the health care market in 2009 than the health care market in 1909.

### **Whose Demand for What? The Scope of the Problem**

The simplest vision of demand-driven education reform is that of a system in which families are allowed to select a student’s school from a range of providers. For such an option to work well, families would need timely access to information about the schools available, how

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their instructional philosophies differ, how other aspects of the schools differ (for instance., strength of the athletic program), and, ideally, how the outcomes of the schools differ. In this vision the end consumer and purchaser are the same (the student and his or her family) and the decision is unitary – which school does Johnny go to?

However, this project rightly encourages us to think that this approach is far too simple for thinking about how to best match student instructional and development needs to educational offerings. First, it ignores the fact that many other layers of the system also can drive demand for educational goods and services – whether or not school choice is implemented. Schools could be (and often are) given the freedom to select the most appropriate professional development approach for their teachers. Districts could outsource more of their business operations. Thus, we should consider not only parent choices but also what information is required in order for all levels of the system to become better purchasers of the goods and services they need to serve their students. Just as in the purchasing of health insurance for employees by employers, the purchaser is not necessarily identical with the end consumer.

Second, in a truly “demand-driven” world, schooling could come to be seen as a network of services rather than a single activity. It is easy to see how this could be the case for schools themselves. Using charter schools as an example, the recruitment of many new teachers is already being outsourced to organizations such as Teach for America and The New Teacher Project; the training of teachers to new providers such as Teacher U; back office operations to ExED; food services to Aramark; and so forth. Essentially, schools are becoming less discrete individual institutions and more bundles of different decisions about who will provide which services to the students and staff.

But this still assumes that a family needs to acquire all of its education for a child from one primary source – a school. We could imagine a world in which schools as aggregators of educational services are an option, but not the only option. Rather than thinking about choosing schools as packages, why not think about education for the individual student as a collection of choices – maybe I would like my daughter to get her writing instruction from the local high school, her physics instruction from the community college, and train with a private fencing club for her physical fitness.

Needless to say, decoupling the various parts of schooling from one another would require not only that consumers have access to vastly more information than is currently available, but, as importantly, it would also require IT systems capable of organizing data to enable the monitoring of student progress and the integration of information coming in from many different sources.

Before exploring the challenges of meeting the data needs of a more decoupled system, it will be useful to highlight the key purchasing and decision-making levels that could exist in such a system and the types of demand they could generate.

- *Families and students* are the most commonly thought of consumers in the system.

Whether we think of them as simply choosing schools or as assembling an educational program out of a more granulated set of offerings will be critical to what kind of information systems are needed.

- *Teachers and networks of teachers* will also be key generators of demand in a world focused on individualized education programs. They will have both student- and self-focused needs. In trying to meet the individual needs of their students, they will want detailed, yet interpretable, information about their students' needs, access to a wide range

of materials, lesson plans, and strategies and, as importantly, a means to navigate the plethora of options available, matching offerings to students. Teachers will also have individual educational demands for themselves, demands that are unlikely to be met by “one-size-fits-all” professional development programs being pushed down from the districts or the state.

- *Schools* themselves, whether or not they are subject to parental choice, also will play a critical role in demand-driven reforms. Currently, most public, non-charter schools must take whatever professional development, curriculum, and maintenance services their district has to offer – irrespective of whether the school’s faculty actually have the needs the district professional development targets, whether the district curriculum is a good fit with the school’s student population, or whether a local contractor could paint the school at a much lower rate.

One could imagine, however, districts simply being one service provider amongst many for district schools. An early and intriguing example of this approach has been undertaken by the New York City Department of Education. In New York City, each public school chooses its own “school support organization.” These SSOs provide support to school principals and staff, professional development, mentoring, curriculum development, and help with academic compliance issues. While the New York City DOE offers its own SSOs, it also allows schools to choose from a number of third-party support providers as well. Thus New York City has essentially created its own instructional support market for its schools.

- *District and school networks.* Districts and school networks are, of course, along with schools, the traditional purchasers of textbooks, food, and an array of educational goods

and services. In addition, numerous districts outsource various parts of their operations (e.g., transportation, food services, etc.). Very few districts, however, fully outsource core education functions such as the recruitment, placement, and management of teachers; provision of professional development and school support; and curriculum development. One could *imagine* much more activity here – with districts leveraging the New Teacher Project or a similar organization not only to recruit, but also to place, manage, and evaluate teachers.

Another potentially radical extension of district and network demand power could be around accountability systems. States or other oversight agencies could allow districts to choose (within limits) the accountability system they would be under. If there were, for instance, a viable and appropriately rigorous set of national tests, states could allow districts to opt into using these alternate tests as their accountability mechanism. Districts that wanted to compare themselves to other parts of the nation (as opposed to merely other parts of the state) could find this an attractive option.

- *State and Federal Agencies.* States and federal agencies currently serve as shapers of demand by regulating what textbooks districts and schools may purchase, how school monies may be spent, what accountability targets schools and districts have, and how students will be assessed for state accountability purposes. For demand-driven, individualized education programs to take off, states will likely need to become *less* important to the market for inputs. No longer will textbook publishers need to focus primarily on what they can push through the California, Florida, Texas, and New York Departments of Education. Instead, they will need to focus their marketing efforts on newly freed teachers and students.

Allowing any of these levels of the system to generate and exercise more choice based on their identified needs will require radical upgrading of the capacities of our current command and control information systems, designed to capture and provide simple administrative data in systems where all students are presumed to need the same basic educational services. It is to the challenges presented by the gaps between the current state of data and the needs of a demand-driven system that we now turn.

### **Challenges to Unbundling Education**

*Challenge 1: The data currently available on individual public schools and their effectiveness is extremely limited.*

The first challenge to the development of robust demand-side school reform is getting useful data into the hands of key consumers and purchasers – families, teachers, and schools. Currently the types of data available to families about public schools are extremely primitive. Parents can find basic demographic and test score data on potential schools for their children either through the state or non-profit websites such as School Data Direct or GreatSchools.net. In addition, trends in test scores tend to be easily available to parents. Finally, some state “report cards” also include general information on teachers (such as how many are “highly qualified”) and a grab bag of other items such as disciplinary incidents. Finally, thanks to the impetus of No Child Left Behind, test scores are often broken down by ethnicity and socio-economic status (though not both at the same time).

This information is almost wholly inadequate for judging the quality of a school. First and foremost, the status data reported by schools is not very helpful. One generally cannot tell from what is reported whether the percent of students proficient on state tests is the result of the

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school or the performance levels of the students when they entered the school. While some states such as California have alternate measures of school performance that adjust for basic student demographics, this is not sufficient. There is more variation in performance within demographic groups than between them. Test trend data does not help either, as the trends could be caused either by changes in population mix or events at feeder schools.

At a minimum, parents should be able to tell whether and how much schools impact the academic growth of their students relative to other schools. In other words, the typical student growth or a school's "value-added" should be available to parents. For large schools, this information would be even more useful if broken down by ethnicity, grade, and socioeconomic status.

While better information about school impacts on student achievement is helpful, this information is only a small part of what the educated consumer in a demand-driven system would want. Presumably parents would want to know who the most effective teachers are, how less effective teachers are supported by the school, the quality of offerings outside of the tested grades and subjects, and, perhaps most importantly, the long-term trajectory of students at this school. This type of information would be particularly needed in a decoupled system, where students and parents assemble their educational package based on individual needs as opposed to pre-assembled whole school requirements.

In high schools the data challenge grows. Parents of potential students would want to know AP passing rates, controlling for students' incoming academic performance. They would also want to know how many students go to college, where, and whether they are successful. While sometimes AP passing rates are reported (though not controlling for either the percent of

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students taking the test or students' incoming academic achievement levels), none of the other data above is collected or reported for public schools in a systematic way.

Finally, before choosing educational services, parents might want to know how other parents feel about the school. While it is extremely simple to find both overall ratings and detailed user commentary on books, music, and electronics on Amazon.com, such robust feedback communities do not exist at scale in education.

*Challenge 2: The information available on the efficacy of third-party providers and products is biased and poor.*

When we turn from parents selecting schools as aggregators of services to schools (or parents) selecting individual educational programs and services to meet student needs<sup>\*</sup>, the data situation is even worse. Virtually all providers are able to produce some “evaluation” that purports to show their services have a positive impact. Unfortunately, many to most of these evaluations do not provide either reliable or useful data.

That this is so should not be surprising. First, much of this evaluation work is executed by the providers themselves – an obvious conflict of interest. In these situations the analyst, either consciously or unconsciously, may search especially hard for positive news while glossing over/explaining away any negative results. Second, even external evaluations performed for a provider can have serious challenges. Typically the provider pays for the evaluation themselves – this creates an incentive for the evaluator who wants continued employment not to find negative results. This structure is not so different from the current way bond issuers pay ratings agencies or the relationship between auditors and those they were auditing in pre-Enron days.

Choosing external evaluators also creates a challenge for providers. Generally, we would not expect providers themselves to be expert in evaluation. However, there are hundreds of small evaluation firms out there, of widely varying quality and competence. In selecting the right evaluator, providers, unfortunately, have to judge on technical issues that they do not understand, resulting in many poor choices driven by sales or “fit” rather than rigor. While one could get around this by only utilizing “brand name” evaluation firms such as Mathematica, MDRC, or RAND, small providers will not have anywhere near the amount of resources needed to hire such powerhouses.

Finally, even if bias and quality issues are overcome, it is often hard or impossible for third-party providers to get the information they would need to be able to determine impact. Impact evaluations need carefully constructed comparison groups who did not receive the treatment in order to distinguish between changes caused by the program and those that would have occurred anyway. To be confident a program is working, one generally needs individual student- or teacher-level data to avoid errors of composition. Unfortunately, third-party providers are often denied access by education agencies to this detailed data on those who did not participate in their program – and sometimes they are denied critical data – such as prior performance – even on those who did participate. As a result, these programs really have no way to determine whether they are effective or not – other than simply asking their participant. Not a good methodology.

The outcome in the education market is that purchasers or consumers of educational services are faced with a barrage of unsubstantiated claims mixed in with some claims backed by rigorous research. Unless the consumers happen to be experts in evaluation, all of this

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information (reliable and unreliable) will be of limited utility because they cannot differentiate between the two categories.

But this paints too rosy a picture. Since providers typically perform their own evaluations using their own outcome measures, results from evaluations coming out of two different providers are unlikely to be comparable. For instance, one provider of a math tutoring program may look at student improvement on an assessment tightly connected to what is tutored (say, an assessment focused on understanding and manipulating fractions) while another provider may report results against a broader assessment (for instance, the yearly state assessment). Even if both tutoring offerings had exactly the same effectiveness, we would expect far more growth on the first assessment than the second. As a result, the two claims are non-comparable and essentially useless for making intelligent choices.

*Challenge 3: The existing data captured on students and their families is crude relative to true academic needs and family preferences.*

The theory behind a student-needs driven approach to reform is that those who supply educational goods and services can tailor and target their educational services to schools, teachers, and students and thus better meet their needs than the current “command and control” systems. Ideally, some form of market discipline will force suppliers to identify and segment that market to provide consumers the specialized services they require.

However, for this to work well, potential suppliers need to be able to identify just what the needs of students and schools are and how they differ. In other words, in order to craft products and services that are responsive to the customer, suppliers need to understand and segment the market that they face.

Leaving aside the logistical and legal difficulties of third-party providers capturing or using this data (to which we will return below), the data that could be used to segment students largely doesn't exist. School districts themselves, the entities best positioned to do this, often capture in their IT systems only the crudest data on students – enrollment, attendance, grades, demographics, and test scores. The list of what is often not captured is long and somewhat disheartening. Many districts do not have robust longitudinal data warehouses to link student results over time. Some districts capture only the relatively crude measures found in state tests but do not capture more sophisticated diagnostic test results that would allow one to know not only that Johnny can't read, but why can't Johnny read – e.g. a lack of phonemic awareness, a lack of sufficient vocabulary, trouble with fluency. Parental (and student) satisfaction with schools and their concerns are also infrequently captured. Districts that do survey parents often have appallingly low response rates to the surveys, making any conclusions based upon them unreliable.

Districts, of course, will often be in competition with third-party suppliers in any demand-driven system. As a result, we might look to states (or other potentially “neutral” oversight agencies) to provide competitors the appropriate data. Unfortunately, states currently capture far less data than districts – with the likely result that student, teacher, and parent needs simply cannot be identified from the current data. Substantial new data collection and analysis efforts are needed to segment and identify the needs of students and their families. School systems are unlikely to do this on their own.

A related challenge for suppliers, familiar to anyone who has implemented interventions in a large district, is that very few district data systems accurately capture the interventions (individualized or not) *already underway* with students and teachers. In other words, what types

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of professional development teachers are already receiving and what specific strategies have already been used with specific students are rarely known at a level above the individual school. Almost no districts track professional development centrally above the level of credits received to increase teacher salaries. Likewise, many student information systems (SIS) do not track student pullouts, after school programs, and so forth. In fact, many SIS systems capture only the homeroom teacher in elementary school. Since elementary school teachers often either team teach or specialize in either math or reading, this means that many districts do not even know who is teaching a given child what subjects. This critical lack of data has two detrimental effects on the supplier market.

First, third-party providers may be hesitant to enter the market at scale as they have no idea what are actually the *unmet* needs within districts and schools. Indeed, the massive number of microscopic non-profits in education may at least partially be the result of the fact that these organizations can focus entirely on one or a few schools and invest the time to know what the unmet site needs are. While this ability to understand context and needs at the micro-level has some positive aspects, it does inhibit the development of scale competitors for supplying educational services. In addition, it inhibits the spread of successful innovations. Innovations are either copied (often poorly and without quality control) from other locations (see the spread of “Small Learning Communities”) or are rediscovered at each site. It is hard for best-practice providers to gain scale.

A second, more important, issue that arises from the lack of data is that it is exceedingly hard, given the data systems in place, for individuals, schools, districts and states to measure for themselves the efficacy of the services they are purchasing. It is simply impossible to know if you are getting a good value from “Wise Action Professional Development Inc.” if you do not

know who received the training, when, and why. Even if one provider is outperforming another in terms of raising student achievement, parents, the district, or the state will never know.

In many ways this situation is similar to the healthcare landscape before John Wennberg and others began to explore geographic differences in practice and treatment. Prior to the 1970s it was assumed that the underlying health of local populations drove treatment and, with treatment, the cost of health care. However, once health policy researchers began to look at the prevalence of treatments and their relation to the population's underlying health issues, massive variations in medical treatments of the same conditions began to appear – apparently largely driven by local medical culture. While these variations in care still persist (and are hotly debated) at least they are known. In the field of K-12 education, we don't even have the data to show who gets what treatment.

*Challenge 4: The data that does exist is either massively decentralized, captured by interested third-party providers, or simply unavailable to entrepreneurs.*

The fourth challenge to demand-driven education reform is that even when good data on student and school needs exist, it is often not available to be accessed by service providers outside of the district. Larry Berger and David Stevenson have aptly noted the quite decentralized demand that exists in the education sector – with 14,000 school districts, each of which needs to be sold independently.<sup>1</sup> Part of a good sales presentation is showing how one's product or service can match the needs of the customer district. However, given the paucity of publicly available data on students and schools, many potential suppliers will need access to non-public data to make their case. This puts an immense information burden on the supplier. School districts are rightly very hesitant to share protected, private data with third-party vendors.

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If we think of suppliers not selling to districts but rather to schools, teachers, and students individually, the data requirements go up dramatically.

There is, however, one class of supplier that has a clear advantage in this system. Companies that design, administer, and score tests should, over time, build incredibly powerful (and potentially longitudinal) datasets that allow detailed insights into emerging student needs, trends, and challenges. Mining this wealth of data should allow companies such as ETS, Pearson, Houghton Mifflin Harcourt, and others to target products and services particularly well (and have the data to back it up). Who better than Pearson to sell item banks for benchmark assessments leading to end-of-course tests that they themselves designed and score?

Given the immense competitive advantage that testing companies have, it is unlikely that they would be willing to share this data with potential competitors even if they could ensure appropriate privacy and confidentiality. To use Berger and Stevenson's coinage, "Big-Edu" has a clear, and, thanks to state testing regimes, mandated information advantage over attackers trying to enter the market.

Finally, the Family and Educational Rights and Privacy Act (FERPA) as well as numerous state laws can prevent entrepreneurs from gaining access to the data they need to adequately understand and meet demand. While it is obvious that these privacy protections are needed, they raise the challenge bar for entrepreneurs considerably. Moreover, it is often the case that entities within the wall of privacy are competing with attackers from outside. Districts (no less than testing companies) may be less than keen to share critical information about their student body<sup>2</sup> with charter schools or third-party providers who threaten to drain students and revenue away.

*Challenge 5: The current methods of collecting basic administrative and compliance data are not compatible with a fully decoupled system.*

A final challenge demand-driven school reform faces is the collection and administration of basic tracking, compliance, and achievement data. In the current system, State Education Agencies (SEAs) depend upon districts and charter schools (Local Education Agencies or LEAs) to collect, aggregate, and report up required administrative data to the state. The state in turn provides some data back to the LEAs (e.g., test results) and reports data up to the federal government. The LEAs are responsible for tracking student progress, ensuring that students receive appropriate services, and delivering the vast bulk of the child's educational experience. Under such a system, schools (with district support) act as unified deliverers of services to students and, as a result, generate, collect and hold the majority of the administrative data required by most students.

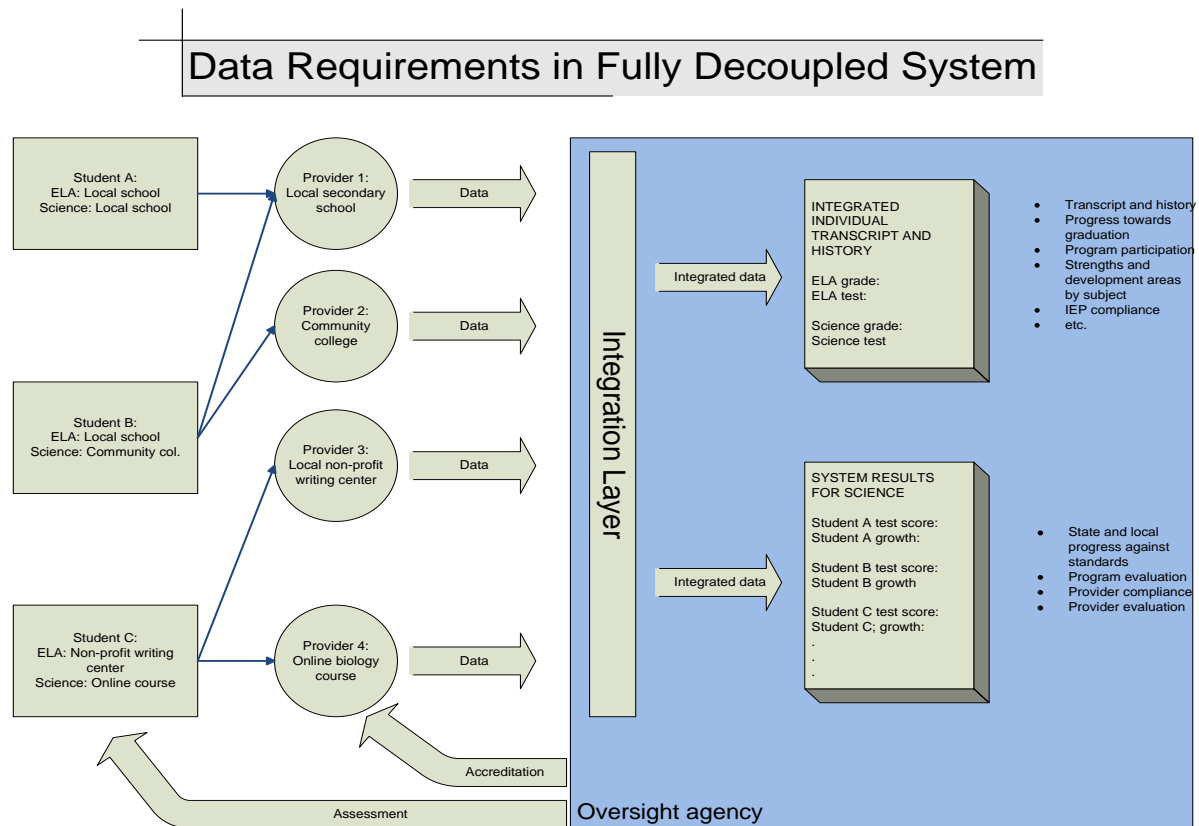
*However, who collects the data and how it is assembled would need to change dramatically in a fully decoupled world?*

Consider three high school students in a fully decoupled system. Student A is happy with her local high school, appreciates the community it provides, and takes advantage of the school for its offerings across all subjects.

Student B is also basically happy with the local school; however, he has a particular fascination with biology and is more advanced in science than many of the students in his grade. As a result, he and his parents decide that an intro course in biology at the local university would be more appropriate to his needs. Thus, he does not take any science at the high school, but goes three days a week to the university to take Bio 101.

The family of Student C takes a more radical approach to her education, looking for best-in-class offerings in each subject. As a result, Student C goes to a local and highly respected writing center for her language arts and takes an online biology course taught by a very well-known university biologist. Since Student C is very self-disciplined, this “buffet” approach allows her to accelerate her learning and assemble a learning plan that suits her needs.

The administrative data implications of the above hypothetical students’ choices are substantial (and depicted in figure 1). Schools and districts—the traditional collectors and aggregators of student enrollment, transcript, progress, and program participation data—may no longer be able to serve this role effectively. The reason that they performed this role in the first place is that they did in fact aggregate and provide the vast majority of educational services. However, in our example, this is no longer the case. Other agencies (most likely the state) may be more adept at integrating the data and providing oversight for student and system outcomes.



To do so, though, they would need to solve the following data challenges.

- First, many more providers would need to be connected to student data systems. Information about an individual student's performance now has the potential to come from many sources – not just a single school district.
- Second, the system providing oversight of student progress would now need to integrate multiple data sources to produce a single student record. In our example, student C might have as many as five or six different providers, data from all of which need to be integrated in order to determine her progress towards graduation.
- Third, if the oversight agency wants to do *any* quality control or monitoring of providers, it would need to integrate student outcomes by subject and provider.
- Fourth, a neutral oversight agency would likely need to generate and collect data in new ways. Most obviously, the delivery of assessments, which have traditionally been pushed out to schools to handle, would need to be rethought. Provider willingness and security issues would prevent all the new providers of educational services from becoming state testing agencies. (Indeed, this would be impossible for many online providers). Instead, the oversight agency itself may need to develop its own testing centers to deal with non-traditional providers.
- Finally, there are substantial data requirements around the monitoring, accreditation and reimbursement of all the new providers. If there is to be quality control, the state would need procedures to accredit multiple providers and to ensure that parents and their children know who is a legitimate provider and who is not. In addition, reimbursements become more complicated in a demand-driven system. Rather than providing a per student level of funding to a single provider, one could imagine individual student

accounts (the size of which would be driven by a student need formula) that are distributed to multiple providers according to the type and amount of services provided.

From an IT perspective, none of this is impossible, or even difficult, to imagine. Consumer-driven manufacturers commonly integrate their supply-chain's systems with their own. That said, this *would* require a fairly radical rethinking of data systems in most states. Most importantly the states themselves would need to provide fully functional SIS systems that could integrate across multiple providers and providers themselves would need to embrace common data transfer standards aggressively. This would require significant reworking of the IT systems at both the state and local level – and significant funding.

But just because a system can be imagined does not mean that it can be built or sustained. The first, and perhaps the most significant, challenge here is the organizational one: states, districts, and schools fundamentally rethinking their role in the larger education delivery system. States would have to give up dictating inputs, and take on the demands of building the IT structure to allow differentiation of delivery and monitoring of individual student choices. Districts, schools, parents, and students would get unprecedented levels of choice and flexibility, but in turn would have to participate in more rigorous, standardized, and thorough data collection than ever before. The creation of an adequate data system is not just the building of a sophisticated computer program—a true data system has to tackle the problem of making sure good data enters the program on a consistent basis and is sustained over time. This means building a system of incentives, consequences, and checks to ensure that data is collected and validated consistently for all students and all services.

Finally, note that even if we do not move to a system of individual, decoupled choice, allowing choice at other levels of the system creates similar (if less daunting) difficulties.

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Presumably, if schools can choose their own support providers, those support providers will need relatively seamless access into district data and management systems. The boundaries of who is within and who is outside of the school district begin to blur.

### **What Can Be Done (And What Is Being Done)?**

The argument above suggests that there are some very significant data and information challenges that need to be solved for a truly “demand-driven” system based on student-needs to be practical or desirable. Luckily, a number of these challenges are beginning to be solved in isolated pockets within education. Others are solvable, but will need political will and investment to overcome.

#### *Collect Better Data on Students and Teachers...and Use It*

First and foremost, to have a system truly driven by student and teacher need, the amount of data typically collected on student performance and challenges will need to grow exponentially. At a minimum, just for students, the system should be collecting longitudinally:

- Student summative assessment results;
- Benchmark and formative assessment results (finely grained enough to determine specific learning needs);
- Diagnostic test results;
- Courses taken, grade, and teachers information for the above;
- Additional interventions and pullouts – the responses to intervention;
- After-school program participation;
- Student learning preferences;

- Parental preferences and information about frequency and type of contact.

The above information on students is well beyond what most districts (not to mention states) collect and store on anyone who is not a special education student with an individual education plan (IEP). With teachers, the situation is somewhat worse, with very few districts able to track what individual teacher's strengths and weaknesses are.

However, a few providers and districts are experimenting aggressively with the power of collecting and leveraging data to actively meet their population's needs. The New York City Department of Education has two important data programs that can serve as exemplars. The first, ARIS (Achievement Reporting and Innovation System) is a data warehouse that collects and links detailed student achievement, performance and progress data from a variety of sources and provides tools to teachers and, importantly, now to parents to track student progress and analyze data. The level of detail available in ARIS is probably the minimum needed to realistically understand and track student needs.

The second program, New York City's experimental "School of One", is an excellent example of taking data to the next level to meet student needs. Students in this program are given a diagnostic test at the beginning of a summer school session to determine what they know and don't know relative to a "learning progression" mapped to state standards. Using this information, the computer generates a "playlist" of standards that need to be mastered for each student. Students are then dealt up lessons and accompanying assessments that teach to these standards in sequence. What form these lessons take (online, small group, etc.) is determined by a survey taken by the student to determine his or her learning style. The speed with which the student progresses through the material is determined by the student's mastery of the material,

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not an externally set pacing plan.<sup>3</sup> The result of this is, at least in theory, a completely individualized learning plan built entirely around individual students' needs.<sup>4</sup>

Thus, there are systems that do collect the type of data needed to build a system around demand. One could easily imagine a similar human capital system that identified teacher's development needs and provided a list of options for teachers to improve their skills relative to these development needs. However, these systems are expensive, new, and in their infancy. In addition, many districts and charter schools have also begun to use numerous formative assessments and assessments that provide real-time feedback (such as those provided by Wireless Generation) to better understand their students' learning needs. While nowhere at the level of School of One, there is a welcome focus on identifying more about actual student learning and needs. However, it is notable that all of these solutions (including those in New York) are being built by integrated, not decoupled, systems. The real challenge will be collecting this information so that it is not captured only by districts and schools, but also usable by families and alternative providers.

*Ensure that "Neutral" Third Parties (e.g., States) Provide Evaluative Data on Approved Provider Offerings.*

One experiment with demand-side reform that has been taking place over the last decade has been the provision of Supplemental Educational Services (SES) under No Child Left Behind. Families are entitled to enroll their children in SES if their children attend a school that has not made adequate yearly progress for more than one year. These tutoring services are intended to improve the learning and academic outcomes of the students who choose to enroll in them. Students are allowed to choose any provider from a state approved list and the fees are paid from

the sending district's Title 1 funds. Districts are required to make students aware of their options under this provision of NCLB.

One might assume that states would embrace this, run a rigorous selection process for third-party providers, and, most importantly, monitor how students who enroll with various providers do relative to those who don't. This has not been the case. Very few states provide any effectiveness information on providers. In Massachusetts, for instance, parents can access information of providers in which there is an evidence of effectiveness write up – but that evidence is simply whatever the provider chooses to highlight. One provider notes that students' "poems showed an overall improvement in creativity/ideas, voice, and the use of poetic devices over a six-month period,"<sup>5</sup> while another provider notes "four out of five of our students improved their scores by more than 10% [of what?] from pretest to posttest [on which test?], and half of our students improved by more than 25%."<sup>6</sup> This is not terribly useful information. This is disappointing as most states are well-situated to track which students receive what services and then to compare their academic growth to those in other services or those who did not take advantage of these services.

A welcome exception to this abandonment of the consumer can be found from the Chicago Public Schools. CPS leveraged its student data to compare provider impacts using relatively sophisticated multilevel modeling techniques. It then took the next step and actually put the results for each provider (in terms of ISAT gains) in the documentation of provider options distributed to parents.<sup>7</sup> While the meaning of the results are not made terribly clear in the documentation, at least some relevant data is being provided. The only challenge is that CPS is itself an SES provider (indeed, by far the largest provider to CPS students) and thus may not be the best organization to be providing this information.

As demand-driven reforms begin to accumulate, states need to step beyond their traditional compliance role and begin to play a role as a neutral and trusted provider of high-quality evaluative information to consumers.

*Encourage the Creation of Better Forums to Allow Consumers to Connect to Suppliers and Consumers to One Another.*

Online technologies and the collaboration tools developed as part of Web 2.0 have transformed the amount of information available to consumers. I can see what others think of any given album, book, or camcorder instantly on Amazon.com; market estimates of a house that I am considering bidding upon are available on Zillow.com; and reviews of professional and trade services are available on Angie's List. None of this information is infallible; reviews tend to be biased upwards<sup>8</sup>, Zillow's read of the market is an estimate at best, and interpersonal relationships between consumers and professionals can distort what does and doesn't get posted on Angie's list. Nevertheless, all of these sources provide helpful information and feedback both to potential purchasers and to producers that was not available before.

Education does have a number of sites that attempt to provide this type of consumer information to parents. SchoolMatters.com, GreatSchools.net, and Education.com, for instance, all have school information, the ability to compare school stats to one another, and "customer" reviews of schools. However, these sites, while better than nothing, don't have the consumer usage or review and discussion activity one might expect. Often schools have a few very general reviews – some of which are either completely information free ("I like this school") or clearly written by children mad at their teachers. The level of discourse around Jay-Z's latest offering on iTunes is far higher than the discussion around schools.

The anemia around school ratings likely has a number of causes. First, because the discussion is around whole schools – and not finer grained school offerings which one can choose between – there may be little beyond banalities to say. Second, the choice of school is not one that is made frequently, thus there is nothing to draw in repeat users over time. Third, many parents do not have any comparison points – if their kids all go to one school, how are they to know what it is like in other schools and whether their school rates highly relative to these other schools. Finally, as discussed above, the data on schools that most states provide and which is reproduced on these sites is not really that useful. Thus, there is not a particularly strong draw over time to the sites in the first place.

Demand-driven education has the potential to change this. Where we do find lots of user activity and collaboration is in sites that serve individual schools and on sites that help students make a real choice. While there are many issues with the reviewers, Ratemyprofessor.com does provide active and ongoing feedback to college goers about their potential instructor choices. Teacher networking and collaboration sites show early promise as well. For instance, BetterLesson is creating a searchable and structured platform for teachers to share and rate lesson plans and content, substantially easing their ability to find and use the information they need with at least some assurance of its quality.

If and as states take on the role of becoming neutral evaluators of schools, programs, and services, they should either establish their own easy to navigate consumer sites, with user feedback and discussion groups, or (more likely) work with one or more third-party community providers to get their evaluation data onto sites that can then host much richer user discussions than are currently available.

*Work to Develop Third-Party Market Researchers and Allow Them Access to Cleaned Data Sets for Analysis of Student Needs.*

One important tool used by companies considering entering new product spaces are reports by market researchers. In the IT industry, the Gartner Group, Forrester Research, and IDC amongst others provide market size estimates, trends, and guideposts for companies in the space. While there is some activity in the education sector by companies such as Market Data Retrieval and Simba Information, most of the reports produced are on technology purchases, textbooks, and materials – not on service needs. Given the almost completely nascent status of this market and the lack of good data discussed above, there is little reason to expect more.

However, if we want suppliers to enter this market and not provide one-size-fits-all solutions, they will need some insight into the various segments of the market and their likely size. One solution here could be to set up and fund third-party market researchers who focus on student educational needs and services that could be provided. To be effective, these researchers would need access to detailed, individual student level data and thus would need to work in partnership with states and districts. Setting up such data-privileged relationships with governmental agencies will not be easy, but states and districts themselves simply do not have the capacity to produce this type of analysis. Startup funding itself may be difficult to obtain and foundations may need to provide the initial proof-of-concept support. If a market for providers does develop, then those providers should be able to support the market research organization themselves.

*Transform the Role of the States to Be the Providers of Full SIS Systems and to Have More Responsibility for Assessment Administration.*

Finally, if we are truly interested in decoupling education from single school buildings, states will need to dramatically transform the type of support and services they provide. As discussed under challenge 5 above, states will essentially need to become SIS providers, data integrators, and testing coordinators for all students inside their borders, unless they want to dramatically loosen regulations around graduation requirements, testing requirements, and comparability between student programs.<sup>9</sup> For most states, this is a very new level of IT commitment and overall responsibility— one that could easily challenge their capabilities. On the other hand, the current regime in which districts each implement their own SIS systems results in a great deal of variation across districts in terms of system capacity and data quality. It is also somewhat expensive as hundreds or thousands of redundant implementations are taking place. The state becoming a provider of SIS services might be more efficient whether or not education becomes truly individualized or demand-driven.

## **Conclusion**

The data challenges to discovering needs and unleashing demand are significant. Better data on students needs to be captured, it needs to be used in more proactive ways (and by more organizations), and states need to take on new and uncomfortable roles to allow data on student needs to flow efficiently and to make true student choice a possibility.

That said, while the needed IT systems are not in wide use now in the education sector, they do not require particularly cutting edge technology. What they do require is funding and significant political will – a will of major players (for instance, districts) to act against their own short-term self interest to provide their potential competitors information and access to students.

To better understand the likelihood of the data challenges being solved, we need to ask several questions:

1. Do (or could) state education agencies have the operational capacity to take over the management and collection of individual student data on a real time basis – a job traditionally performed by schools and districts?
2. Do states and state education agencies have the political capacity to implement expensive, new IT solutions that fundamentally undermine districts and schools as the owners of data (and, by extension, as “owners” of students)? Or, are state education agencies too dependent upon district cooperation and the legislators who represent districts for this to be possible?
3. Are consumers ready to be responsible for assembling individual education programs, and, if so, which consumers (parents, teachers, students)? How can such “demand-driven” education be shaped so that it does not dramatically favor students with sophisticated parents and teachers who can best leverage the new information and choices available?

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\* For instance, an after-school tutoring program, a school redesign such as those promoted by New American Schools, or a third-party provider of teacher coaching services.

<sup>1</sup> Larry Berger and David Stevenson, “Barriers to Entry: Tales from a Tool Builder,” in *The Future of Educational Entrepreneurship: Possibilities for School Reform*, edited by Frederick M. Hess, Cambridge: Harvard Education Press, 2008.

<sup>2</sup> Not individual students.

<sup>3</sup> “School of One, Summer 2009,” [http://schools.nyc.gov/NR/rdonlyres/9D373430-A73A-4F50-A8BF-A121AB8E9689/0/Brochure\\_for\\_webhighres1.pdf](http://schools.nyc.gov/NR/rdonlyres/9D373430-A73A-4F50-A8BF-A121AB8E9689/0/Brochure_for_webhighres1.pdf) (accessed October 15, 2009).

<sup>4</sup> Note that the School of One, while completely constructed around students needs, is still not really “demand-driven.” The student’s experience is constructed *for* them, not selected *by* them.

<sup>5</sup> America SCORES New England, <http://www.doe.mass.edu/ses/details.asp?ProviderID=131> (accessed October 15, 2009).

<sup>6</sup> Smarties Tutoring Services, <http://www.doe.mass.edu/ses/details.asp?ProviderID=135> (accessed October 15, 2009).

<sup>7</sup> The Office of Extended Learning Opportunities, CPS, *Supplemental Educational Services Parent Handbook, 2009-2010*,

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[http://www.cps.edu/Programs/Before\\_and\\_after\\_school/ExtendedLearningOpportunities/Documents/SESGuide.pdf](http://www.cps.edu/Programs/Before_and_after_school/ExtendedLearningOpportunities/Documents/SESGuide.pdf)  
(accessed October 13, 2009)

<sup>8</sup> See, for instance, Geoffrey A. Fowler and Joseph de Avila, “On the Internet, Everyone’s a Critic, but they’re not very Critical,” *Wall Street Journal*, October 5, 2009.

<sup>9</sup> Christensen, Horn, and Johnson discuss the need for a new type of testing regime that could get around some of these issues in *Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns*, (New York: McGraw Hill, 2008), chapter 5.