Changing Methods and Mindsets: Lessons from Innovate NYC

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About This Report

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ABOUT THE AUTHOR

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Through research and policy analysis, CRPE seeks ways to make public education more effective, especially for America's disadvantaged students. We help redesign governance, oversight, and dynamic education delivery systems to make it possible for great educators to do their best work with students and to create a wide range of high-quality public school options for families.

Our work emphasizes evidence over posture and confronts hard truths. We search outside the traditional boundaries of public education to find pragmatic, equitable, and promising approaches to address the complex challenges facing public education. Our goal is to create new possibilities for the parents, educators, and public officials who strive to improve America's schools.

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Introduction

As schools and classrooms explore technology-based, student-centered, personalized approaches to teaching and learning, their efforts to innovate can be hamstrung by archaic district operating systems that do not allow them to take advantage of new technologies, to work with smaller startup companies, or to quickly make and implement decisions. When he was at the helm of the New York City Department of Education (NYCDOE), Chancellor Joel Klein attempted to remedy this problem by creating the iZone, an office explicitly charged with fostering innovation from within the school district. From 2012 to 2014, I designed and served as executive director of Innovate NYC Schools, the iZone project that focused on new structures for district procurement and decision making. As the first urban school system to make design thinking a routine part of its practice with educators, we created alternatives to established procurement processes and built collaborations between the school district and early-stage education technology companies. We also provided regular support to entrepreneurs, investors, and innovators who sought to do business with NYCDOE. Using the philosophy and examples from NYCDOE, this paper lays out steps school systems can take to foster innovative practices throughout the organization and develop new instructional tools and practices through nimble procurement procedures.

A Brief History of the NYCDOE iZone

In 2002, Michael Bloomberg became the first mayor of a large city to be granted effective control of his schools. He appointed Joel Klein as chancellor, who, over the next eight years, proceeded to make changes of unprecedented depth, breadth, and controversy in the structure, governance, and operations of both schools and the NYCDOE central office. These changes were carried on by his successors, Cathie Black and Dennis Walcott, until the 2014 election of Mayor Bill de Blasio.

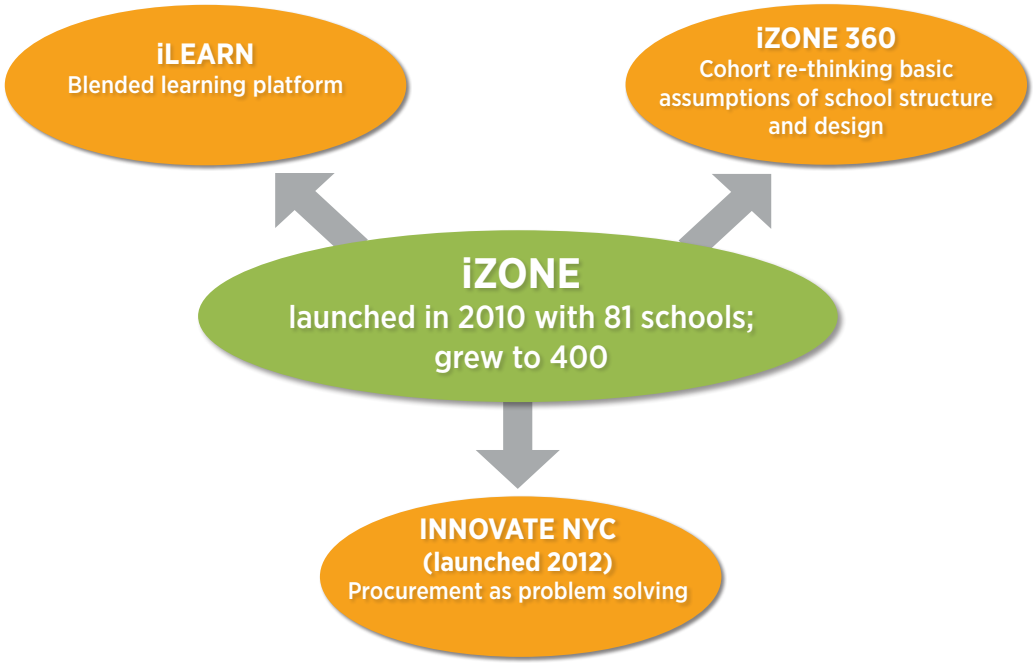
Among these changes was the creation in 2010 of an Office of Innovation, also known as the "iZone," to pursue approaches to personalized learning that were new, unfamiliar, or antithetical to the prevailing habits and practices within the district. The iZone was to be the research and development lab for the district at large, developing and testing new technologies, approaches to teaching and learning, and resource allocations that, if proved promising, could then be rolled out more broadly. iZone projects were initially funded from the city's $400 million portion of New York State's *Race to the Top* grant, augmented later with *Investing in Innovation* grants, foundation support administered through the Fund for Public Schools, and ordinary tax levy monies.

As with NYCDOE's precedent Autonomy and Empowerment Zones, participation in the iZone was a voluntary decision by principals and teachers. In exchange for certain benefits (access to new instructional tools, encouragement and support in reimagining many of the conventional inputs to school structure, release time and money for professional development, participation in professional learning communities, etc.), iZone schools agreed to design and adopt new instructional practices and to participate in research to monitor their impacts.

The iZone Philosophy

The goal of the iZone was to enable effective personalized teaching and learning. Over time, its theory of action came to depend on three interlinked assumptions:

1. If you want teachers to instruct differently, you must be in the classroom showing them how.
2. In order for teachers to have the freedom, support, and incentives to instruct differently, you must be active in reshaping policy at the district, state, and national levels.
3. Since everything schools do is enabled by things they buy, you must be active in the marketplace, functioning as "smart demand" to help vendors build better products for the district to procure in better ways.



Obtaining and optimizing for new technologies: The iZone launched in 2010 with a strong focus on obtaining the tools of instructional technology. Laptops, iPads, learning management systems platforms and the like were seen as innovative. At launch, therefore, a central role of the iZone was to prepare and support schools in these efforts—negotiating vendor contracts, coordinating network upgrades, and providing schools with laptops and tablets.

The iZone's debut effort was iLearn, a blended learning platform populated with content from a dozen publishers and supported by extensive training and professional development provided by iZone staff. Eighty-one schools joined iLearn in its first year; eventually iLearn grew to more than 300 middle and high schools whose intensity of use varied from occasional online credit recovery to full-blown blended learning and flipped-classroom models.[1]

Creating new school models and new regulatory mindsets: But some schools wanted to go beyond simply providing new technologies and focus on whole-school redesign. In parallel with iLearn, iZone360 launched to work with a different cohort of schools to design new school models in which personalized practices could take root. An initial cohort of 28 middle and high schools (ultimately growing to 50) would work with dedicated "innovation coaches" to rethink school

inputs like place, space, time, scheduling, and teacher roles. This would be accompanied by a massive infrastructure upgrade at those schools to prepare them to intersect with the technology-enabled vision of iLearn.[2]

From the outset, regulatory change in the areas of credit-granting, accountability frameworks, professional development, and scheduling and staff assignment was an integral objective. For example, in addition to the schools participating in iZone 360, another half-dozen iZone schools spent a year developing their own competency-based models in which students would progress, not as age-based cohorts, but at whatever pace was necessary for them to demonstrate mastery. Known as the "asynchronous pilots," this work in particular required regulatory revamping of student accreditation and teacher evaluation regulations.

The iZone architects recognized that these changes had to be durable options—not idiosyncratic exceptions—so that future innovation would have fewer obstacles to overcome.

Shifting to smart demand: The third programmatic leg of the iZone, coming more than a year after the launch of iLearn and iZone360, was focused on the marketplace. Known as "Innovate NYC Schools" (henceforth, "Innovate"), this program was based on the often-ignored reality that everything that schools do is purchased in one way or another. Still, districts are terrible customers, and the process, culture, and incentive structures of school and district purchasing drive away the most potentially high-value vendors. Those vendors that do participate are rewarded not for creativity or collaboration but for their compliance with processes and cultural norms that are not in any way optimized for high-quality outputs. The goal of Innovate's marketplace work was to create examples of how New York City (and by implication, other districts) could change its behaviors in ways that would free vendors and other problem solvers to do better work. The frameworks employed by Innovate for its projects—User-Centered Design and Lean Startup methodology—were themselves borrowed from the startup community.[3] They would initiate a shift in the way the iZone thought about its work, from innovation as the adoption of new tools, to innovation as a set of habits and processes for iterative problem solving in any domain. An essential component of the work was finding novel ways to bring educators and innovative providers together.

Innovate NYC Schools

BRIDGING THE GAP WITH THE STARTUP COMMUNITY

While the rest of the iZone staff, including the iLearn and iZone360 teams, was based in district offices, we began the Innovate project by locating the team in a public co-working space that housed startups. It was important for both practical and symbolic reasons that Innovate be embedded in the startup community, easily accessible to potential collaborators without their having to present identification and clear security. The fact that we were coming to them rather than having them come to us was also a way of signaling our respect for the value of their time; absence of respect was one of the most common complaints of NYCDOE vendors. Crucially, locating outside of the central administration was also a kind of insurance policy: innovation skunk-works inside large organizations seldom succeed, mostly due to the difficulty of escaping the gravitational pull of the surrounding culture. Those that do succeed are almost always located separately from the parent organization because they are then able to develop their own norms and practices. The effort to relocate was an important first step, which carried as much weight as subsequent Innovate projects, and helped shape public opinion about the work.

In the case of Innovate's relocation, the NYCDOE had never before rented co-working space and their legal department was unsure as to whether and how it could be done. We recruited the support of two deputy chancellors, whose pressure on the legal department not only enabled us to execute the co-working membership agreement but also sent an important signal that novel and unconventional ways of operating were possible and would be supported.

THE VALUE OF INFORMAL CHANNELS

Of the many frustrations experienced by startups when dealing with the central DOE, perhaps the most maddening and most characteristic was the inability to get timely, actionable answers to routine questions. At the same time, most principals and central administrators had never had an informal conversation with an employee from a startup (as opposed to a sales pitch). An important goal of Innovate NYC Schools was to bridge this gap. In our first year we ran a number of trials of different formats to see which were most productive, best liked, and easiest to administer.

BRIDGING THE COMMUNICATIONS GAP

Monthly Office Hours: Anyone (though mostly startups) could book time with an Innovate staffer to talk or ask about anything related to education technology or the NYCDOE.

Reverse Field Trips: We rented buses, packed lunches, and bundled startups off to visit schools. There they would observe classes and have a series of open-ended conversations with principals, teachers, and tech coordinators about the day-to-day challenges they faced. Although they could describe their product in response to questions from the educators, the startups were barred from doing product demos or pitches: the point was for them to learn, not to sell.

Fireside Chats: We held informal 90-minute afternoon sessions with no set agenda at our co-working space, hosting school and central office staff to talk about their work and answer questions to a broad audience.

Shark Tanks: Our most popular effort. Education technology developers could receive direct feedback on their products and sales pitches from teachers, administrators, parents, and students. These evening events, held at co-working spaces or other neutral ground, were typically organized by theme: for example, formative assessment dashboards, classroom management tools, or assistive technology for special-needs students. Each startup would have the chance to demonstrate their product to a panel reflecting their target audience, who would then provide constructive feedback on its perceived strengths and weaknesses. While the field trips and fireside chats appealed to startups' general curiosity and need for context, the shark tanks provided undiluted doses of what they most wanted: concentrated feedback from potential customers on product/market fit, which supported the creation of more relevant and effective education technology tools for the classroom.

REFRAMING PROCUREMENT AS PROBLEM SOLVING

The goals of refining the district's procurement process went beyond creating the ability to buy better things on better terms—they represented a shift in mindset. Whereas before, procurement signified a series of bidding and contracting procedures to comply with and used to minimize risk, Innovate's approach to procurement focused more directly on the needs of the end users.

New York, like all large districts, offered numerous examples of deeply flawed frameworks at every stage of procurement: problem definition, solution sourcing, selection, and implementation and evaluation.[4] When the Innovate work began, teachers, principals, parents, and students—the intended users of much of what is acquired—had a negligible role in defining any of the processes through which decisions were made. For vendors, having a product that pleased the end user mattered much less than being able to persevere through an opaque process of indeterminate length and uncertain outcome, a trait which tilted the odds in favor of large established companies whose products educators were frequently trying to escape from, not toward.[5]

The disconnect between these conditions and the proliferation of useful, well-designed, inexpensive education technology was particularly apparent in New York, which had become a powerful center of edtech entrepreneurship. Many of these young companies were eager to connect with educators and administrators, not just for sales opportunities, but to create collaborative relationships that would result in better products built on a better understanding of the day-to-day realities of schools.

Traditional Procurement	Innovative Procurement
Experts identify and define problem.	Problem is defined by those who will use solutions.
Problem is framed as a specification to be met.	Problem is broadly defined to encourage large and diverse community of problem solvers.
Incentives to participate are either compliance with a mandate or financial.	Incentives to participate are the development of new skills, relationship building, and participation in a rewarding experience.
Experts winnow the submissions, the "best" are implemented at scale, as-is, across many schools. One large, high-stakes decision.	Practitioners choose those that will be implemented and refined in their classrooms. Many small, low-stakes decisions.

Over the course of two years, Innovate hosted a series of procurement initiatives. They were similar in that they relied on field research to identify the problem to be solved and empowered the end user to have a say in the solution that was developed. What differed was the length of time and means of procuring the solutions.

THE GAP APP CHALLENGE: AN OPEN CALL TO SOFTWARE DEVELOPERS

The Federal Investing in Innovation grant that funded Innovate's work was focused on identifying the key problems of middle school math learning. Finding solutions to these problems would become the object of an open call to software developers, with the best products identified and then pushed out to hundreds of schools.

A search of the math deficit literature returned no useful conclusions as to the nature of the problem.[6] Working with a design firm, we spent a month speaking with middle school math teachers, instructional coaches, principals, and students across the city about what they perceived to be the problems with middle school math.

What emerged was that, from an instructional perspective, the problem was structural. Teachers and coaches grappled with a broad range of mathematical understanding and ability within a single middle school classroom, making effective personalized instruction nearly impossible. Teachers wanted tools to help them manage and bridge that gap within the typical urban classroom.

For the five month-long "GapApp Challenge," educators and edtech startups were the participants as well the audience. Their motivations for participating were symmetric: for teachers, to be more effective as instructors; for the startups, to sell more of their products. With that in mind, we set up the Challenge to embody teacher voice at each significant step.

1. Teachers' needs were distilled and transmitted via the problem definition.
2. Startups were given numerous informal opportunities to interact with teachers, principals, and central office staff to ask questions and absorb the cultural and practice norms.
3. The key factor in selecting winners was teachers' evaluations of the submitted apps.

We also added a uniquely valuable incentive for the startups: any company entering the Challenge—regardless of whether they advanced to the finals—was eligible to be selected by an iZone school to be in residence on their campus, working with teachers to refine their product to meet the needs of real urban classrooms. Although there were also financial incentives, our surveys showed the most powerful motivation for both the teachers and the startups was the opportunity for that deep collaboration.[7]

Since the GapApp Challenge was the first attempt at this type of matchmaking and collaboration, our primary goals were visibility, widespread participation, and delight in the process. We wanted to remain deliberately open-minded about what sort of software we were looking for to encourage creativity. We anticipated a few dozen submissions and ended up with almost 200. The Challenge was widely covered in print and social media. The test beds established between iZone schools and edtech startups became models for national grant programs from major foundations and the US Department of Education.[8] Most importantly, surveys of the educators and startups involved were highly favorable, with Net Promoter scores of 87.[9]

MUSIC EDUCATION HACKATHON: WEEKEND CROWD-SOURCING

We developed a second crowd-sourcing matchmaking event that took place over a weekend with the goal of establishing a generalizable toolkit—a set of habits and attitudes that could be pointed at any problem. User research for GapApp took one month; for this challenge, it was conducted during one evening. Like the math teachers in GapApp, the music educators sought tools to tailor instruction for students with a wide range of abilities.

Like GappApp, the goal of this challenge was to channel the voice of educators into a provocation that problem solvers could build for, and then close the loop by having those educators choose products for their classrooms or teams to collaborate with for further development. Though we partnered with a high-level sponsor (Spotify), there were no prizes for participation and any follow-on collaboration would have to be organized among the participants. As with GapApp, participation and satisfaction levels were high. NYCDOE arts educators who had felt overlooked and underfunded by the reforms of the prior few years were pleased to be the subject of an unusual amount of attention and work. We demonstrated that we could quickly negotiate and deliver a low-stress partnership with a well-known mass-market brand without compromising the dignity or integrity of the NYCDOE. Most importantly, the success of MusicEdHack demonstrated that the GapApp was not a fluke. It enabled the credibility that comes with a track record, and gave us momentum.

SEEKING CENTRAL OFFICE BUY-IN

We wanted to establish the utility of our problem-solving approach to central district workers by developing a program that would directly benefit them and their constituents—the families whose children were enrolled in the school district.

New York City has the most extensive program of high school choice in the country: with rare exceptions every middle school student must actively select her high school. This high-stakes decision was made more stressful and complex by the proliferation of new themed schools during Joel Klein's administration, such that families had to select from more than 700 program choices. Students rank 12 choices in order of preference and then are algorithmically matched in a process that consistently provides 70 percent of students with one of their top three choices. Despite the favorable outcomes, the process confounded parents, students, principals, and guidance counselors.

We began as before, with user research, spending several weeks in schools and homes interviewing middle school students, families, principals, and guidance counselors, as well as 9th grade students and families who had been through the complete admissions process. What emerged was frustration with the dearth of tools available to provide information, guidance, and management for this daunting process. Each year, the Office of Student Enrollment (OSE) staff laboriously produced and distributed over 100,000 copies of the "Handbook," a two-inch thick compendium of information about each school that cost more than $6 per copy for printing alone. They held school fairs in each borough where high school program representatives gathered at tables in cafeterias and gyms to answer questions from prospective students and parents. Middle school guidance counselors received updates each year on any changes to the process and instructions on how to advise students in filling out their machine-readable preference sheets.

Yet there were no tools to help anyone manage this daunting process, nothing like what we have come to expect in daily life for even routine search-and-decision—like movie search—let alone for high-stakes decisions. Many of our families didn't speak English at home, had never had to navigate a choice process like this, and so could do little to help their children make one of the most consequential decisions of their lives thus far. School guidance staff was simply overwhelmed and lacked the tools to help students or even manage their own processes in a reasonable way. Our field research revealed this to be a major factor in the opacity and stress people experienced when dealing with high school choice, and it was something we hoped that Innovate could help to improve.

THE SCHOOL CHOICE DESIGN CHARETTE: PARTICIPATION BY INVITATION

Because the New York City high school admissions process would require particular solutions—not applicable to other markets—instead of an open software challenge we held an invitation-only school choice design charette (SCDC). We reached out to builders of decision-support tools for other areas of overabundant choice, including consumer products, college and graduate school, job search, and dating sites. Six were selected to participate in a two-month charette in which they would have access to our research and panels of parents, students, and counselors for testing and feedback, and sessions with OSE employees to explain the rules, logic, and constraints behind the admissions process. Rather than compete for a prize, participants would receive a $12,000 stipend for their participation, contingent only on producing a useful free tool, maintained for at least one year. The tool had to draw from official NYCDOE school data (it could also use other data sources but must include ours) and not inappropriately collect student information.

Again, our core objective was to change the perspective and behaviors of the institutional actors; in this case, getting OSE to attend to the experience of families participating in school choice by creating simple, open public access to data and paying companies for participating in a process rather than delivering a product. One of the SCDC provisions was that, since the developers would make their applications freely available, OSE would publicly promote their availability. This might seem uncontroversial given that the project was designed to provide families with tools to support OSE's process, but it represented a major change from a system where information and process were tightly controlled and specified at each step of the way.

The charette resulted in the development of six different online school information tools for families to work with. Students were invited to vote on the app they found most useful, and all six were made available to families through the DOE's website. The open data was also maintained for 18 months so that other developers (as well as policy analysts and other stakeholders) could make use of it.

NAVIGATING POLITICAL CHANGE

After the 2014 mayoral election and the announcement by Chancellor Walcott that he would be stepping down, we decided to host a "Chancellor's Challenge," in the hopes of institutionalizing our problem-solving frameworks so they could carry over to a new administration.

THE CHANCELLOR'S CHALLENGE: INNOVATIVE AND TRADITIONAL PROCUREMENT

We invited any central DOE employee to submit an intractable problem, an idea that seemed impractically blue-sky, or a project that had been previously rejected as too high risk. In turn we required that the winning office commit two dedicated staff members for one day each week and that the deputy chancellor responsible for the office be available to meet with us as necessary.

We received applications from about a dozen offices on topics ranging from school lunch participation to facilities maintenance. We chose one that was particularly knotty, relating to transportation for special education students. Those services are provided by two separate offices working jointly: the offices of Special Education and of Pupil Transportation, which, though they report to the same deputy chancellor, have very different practice cultures and management styles.

This project was a hybrid of our innovative procurement process and the bureaucracy's traditional decision-making framework. The research phase would lead to a set of ideas for potential prototypes, the deputy chancellor would select which of those ideas to pursue in the prototyping phase, and then, the prototypes would be tested and refined in small-scale trials.

For the field research, we took Special Education and Pupil Transportation staff to interview students and their parents, teachers, and principals. We brought them on early morning depot visits to chat with bus drivers. We rode the buses and shadowed assistant principals at dismissal time, and dove into the legal and practical arcana that define special education busing. Not surprisingly, we gleaned a great deal of local expertise and wisdom very close to the ground that had never been part of any systemic service feedback loops. Existing processes for bus scheduling and routing, for example, did not draw on the day-to-day experiences of bus operators or families and so were much less efficient than they otherwise could be. As with the SCDC problem definition, these kinds of information inefficiencies readily lent themselves to service and tool improvements.

In December 2013, the final month of the Bloomberg/Wolcott administration, the field research was distilled into a report recommending three service prototypes to test. Since a key issue for both parents and bus operators was the poor communication of routine information related to routes, pickup times, and student needs, these proposals focused on that low-hanging fruit—a series of simple, well-designed forms to gather information and communicate it in a timely manner to those who needed it. While we could have suggested instead an expensive, technology-intensive approach to these problems, this inexpensive, low-tech approach lent itself much more readily to the quick experimentation and refinement that would lead to a more robust and useful solution.

However, the following months were marked by significant turnover at the middle and upper levels of the DOE corresponding to the change in administration, its priorities, and its attitude toward work begun under its predecessors. It took four months for the new divisional leadership to authorize the design of two prototypes. Those were completed in just two months and presentations made to the divisional leadership outlining how to proceed to testing and deployment. However, no further meetings took place, and the prototypes were never implemented. There was never a definitive communication that the work would not proceed. Rather, as is often the case in bureaucratic organizations, it was simply left to die from lack of active support.

The Evolution of the iZone

By September 2014, less than a year into the de Blasio/Fariña administration, 80 percent of iZone senior leadership had departed. iZone360—the original whole-school redesign program—which had later also taken up the framework of User-Centered Design/Lean Startup Challenges and pioneered it as a uniquely powerful approach to practitioner-driven school reform—was dissolved. The remainder of the Innovate NYC Schools team was transferred—along with iLearn—from the disbanded Division of Talent, Labor, and Innovation to the IT Division, subsumed within one of the offices whose behavior it had sought to change.

Those aspects of the Innovate marketplace work that were directly connected with validating and improving edtech products continued. Funding was secured from the Bill & Melinda Gates Foundation to extend the existing Innovate test beds for three more years. The popular #SharkTankEDU program would continue as a lightweight, low-overhead process for connecting edtech developers to educators and parents for product feedback.

What would not continue were the arcs of work with arguably the greatest leverage: modeling for the central office and for school leaders a new way of defining problems and seeking solutions. In essence, Innovate returned to a narrower focus on classroom technology, a focus we had sought to go beyond.

That is not to say the work of those two key years, 2012 and 2013, left no trace. Much of what was created there, like the test beds, shark tanks, and school design challenges, became a template for work that is continuing in other districts and in cross-regional collaborations. The User-Centered Design and Lean Startup principles, which had never been systematically applied by a district across many levels and many projects, are now generally accepted professional development activities around the country. Among policymakers, the centrality of procurement, contracting, and IT policy that was the focus of the Innovate district-level work, is now widely recognized as a bottleneck to the successful implementation of governance and instructional improvements. In New York, too, of course, the iZone-introduced blended learning and edtech outreach efforts continue.

What has been dropped in NYC and not yet picked up elsewhere is the example of a district creating ongoing provocations to itself. What was innovative in Year 1 is by definition not innovative in Year 3, nor is it "innovative" for the instigators to simply refine, reproduce, or scale that work. Those are worthwhile activities, to be sure, and the originators of that work have a role to play in helping others spread those activities. A district edtech office that ran such programs would be unusually forward thinking.

But that cannot be the primary work of an "Office of Innovation." To make it so is to critically undermine the ability of that group to act in an authentically innovative manner. Once you are concerned primarily with the replication of successful past projects, once you have more answers than questions, once you are comfortable within an organization you have sought to change and the organization is comfortable with you, you aren't "innovating" anymore.

Endnotes

1. Another example of the iZone's emphasis on the transformative possibilities of software was the School of One program, in which math students received a personalized computer-generated "playlist" detailing the day's learning activities, based on their mastery of concepts.

2. It later turned out that many principals were far more motivated by the chance to get free laptops than they were by the promise of whole-school transformation.

3. In a nutshell, User-Centered Design is "a framework of processes … in which the needs, wants, and limitations of end users of a product, service, or process are given extensive attention at each stage of the design process." Lean Startup methodology advocates investing only small amounts of time and money in each of the early stages of design for a new product or service. This allows assumptions and decisions to be tested with users early and often, and those changes to be incorporated into the next rapid iteration. At the very least, these are processes for minimizing the risk and the costs of failure, though very different from those that schools have traditionally employed.

4. The establishment of the Fund for Public Schools, which administered a portion of iZone funding, was itself an attempt to route around procurement by having an entity controlled by the district that was yet not required to follow its procurement practices. Without this flexibility, much of the iZone work would have been impossible.

5. See Tricia Maas and Robin Lake, *A Blueprint for Effective and Adaptable School District Procurement* (Seattle, WA: Center on Reinventing Public Education, 2015); Robin Lake and Steven Hodas, "The Procurement Tightrope Shouldn't Tie Districts in Knots," *The Lens* (blog), Center on Reinventing Public Education, January 6, 2015.

6. The framing assumption was that the "problem" would be topical or curricular, that if only students could properly perform ratios or percentages or equations that the remainder of their math education would proceed more successfully. This was the type of evidence the researchers sought.

7. This was not surprising, since in most hackathons, challenges and open-source collaborations financial incentives are minimal to non-existent. The cash prizes served more as a means to capture attention than to drive participation.

8. In the summer of 2013 the Bill & Melinda Gates Foundation released the first of a series of RFPs to promote new models for evaluating the efficacy of edtech products, which came to be known as "Short-Cycle Evaluation Challenges" (SCEC). Like the GapApp, the SCEC were designed to facilitate school-based test beds in which educators and developers would each benefit from extended collaboration.

9. The NetPromoter score is a cross-industry standard for gauging user satisfaction, consisting of one question: "How likely are you to recommend this to a friend?" Scores above 70 are considered excellent. For example, Apple is the only electronic company consistently scoring in the low 70s.