

Is Personalized Learning Meeting Its Productivity Promise? Early Lessons From Pioneering Schools

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Many innovative new schools are investing in efforts to tailor the learning experience—in content, style, and pace—for each student, all within the constraints of public revenue. Teachers, school principals, and district leaders across the country, in both the public and private sectors, are exploring what is possible with new software and school models where technology complements teacher-led instruction. The promise: to better educate kids by allowing schools to organize and prioritize staff (and related costs) in more productive ways.

The Center on Reinventing Public Education is midway through a two-year cost study to examine whether that promise is being realized. We have been analyzing the financial plans of 20 schools that received grants from the [Next Generation Learning Challenges \(NGLC\) initiative](#)—a multi-year, collaborative effort between the Bill & Melinda Gates Foundation, the William and Flora Hewlett Foundation, educators, innovators, and technology leaders—that seeks to dramatically improve college readiness through digitally enhanced personalized learning.¹ Our study is designed to learn about the financial side of NGLC schools: how they allocate their resources, how they manage start-up costs of technology, and whether they ultimately become financially sustainable.

The schools participating in this study provided us with five-year financial plans and actual financial results from their planning year and their first year of operation. In addition, schools provided administrative data about students, teachers, and staff. In interviews, administrators explained how their schools use technology to alter traditional uses of time, modes of instruction, and student grouping. For example, one school allows students to take computers home to watch lectures on video and then complete projects during class. Another school is designed around stations where some students learn from online modules while others collaborate with peers or receive tutoring in small groups.

This brief presents early findings from eight new charter schools that launched in the fall of 2012.² Each was awarded NGLC grants of \$150,000 in their planning year and a matching grant of up to \$300,000 in their first year of operation. (Overall, the median grant from NGLC totaled \$387,000.) The table presented at the end of this

brief describes each school's mission, how they organize students and teachers, and curriculum and technology. For this first cohort of schools in our analysis, we wanted to know whether their first-year start-up costs and revenues were in line with what they had projected. We wanted to know whether the ways they spent their money in the first year were different than the ways traditional schools spend their money. And we wanted to begin to make predictions about whether these initial budgets would be sustainable in the long run.

What we found is that these pioneers in innovation encountered many missed projections during their first year of implementation, forcing them to make tough choices about how to spend their resources while balancing their budgets. Five out of the eight schools cut their technology budgets and, as a result, may not be on track to realize the full promise of technology-enhanced classrooms.

MISSED PROJECTIONS LED TO BUDGET GAPS

The schools in our sample missed both their private and public revenue projections, leading to significant shortfalls in total revenue. The median shortfall in private revenues (donations from philanthropic entities) was \$120,600 per school, or 30 percent of predicted donations. Seven of the eight schools also missed their enrollment forecast. The median school missed by 18 students (14 percent of the total forecast), costing \$135,000 in lost public revenue. Taken together, these two shortfalls over the first two years cost the typical school in this study \$250,000 in lost revenue, or \$2,000 per student.

One school leader we spoke with, who missed his enrollment target by a significant amount, felt that his enthusiasm for technology-enhanced learning—something few parents in his community were aware of in 2011 when he was opening the school—resulted in an overly optimistic enrollment forecast. Given the chance to start the school again, he would have invested more resources on the communications effort needed to inform parents and students about his school's unique instructional approach and to combat the misperception held by some that personalized learning is just a cheaper way to teach kids with computers instead of teachers.

1. NGLC grants were awarded to both school districts and charter school operators that used the funds to either start new schools or convert existing schools to a personalized-learning model.

2. Ten of the remaining twelve schools have yet to launch, and two have yet to submit useable financial data.

SCHOOLS REVERTED FROM TECH-HEAVY BUDGETS TO MORE TRADITIONAL SPENDING PATTERNS

When revenues fall short of expenses, schools typically view everything but labor costs as non-essential. This is in part due to labor contracts that might prevent schools from easily laying off teachers, and in part due to the belief that technology and other supports are not essential to core instruction. With the innovative instructional approaches NGLC schools proposed, such as the flex model in which students spend as much as four hours per day learning on their computers, we wondered whether the same pattern would hold—and it did.

Our sample schools planned, at their creation, to spend 34 percent of their budget on human capital and 27 percent on technology; in fact, they spent 58 percent on human capital and only 10 percent on technology. They protected teachers and staff while cutting technology spending, even though most of these schools do not operate under the labor agreements common to traditional school districts.

Altogether, the eight schools we studied planned on spending \$2.5 million on technology (hardware and software) during their planning year and their first year of operation, but wound up spending just \$1 million. The average amount schools spent on technology per student dropped by 35 percent, from \$1,824 to \$1,176. Actual spending on human capital during the first year of operations was 11 percent higher than planned.³

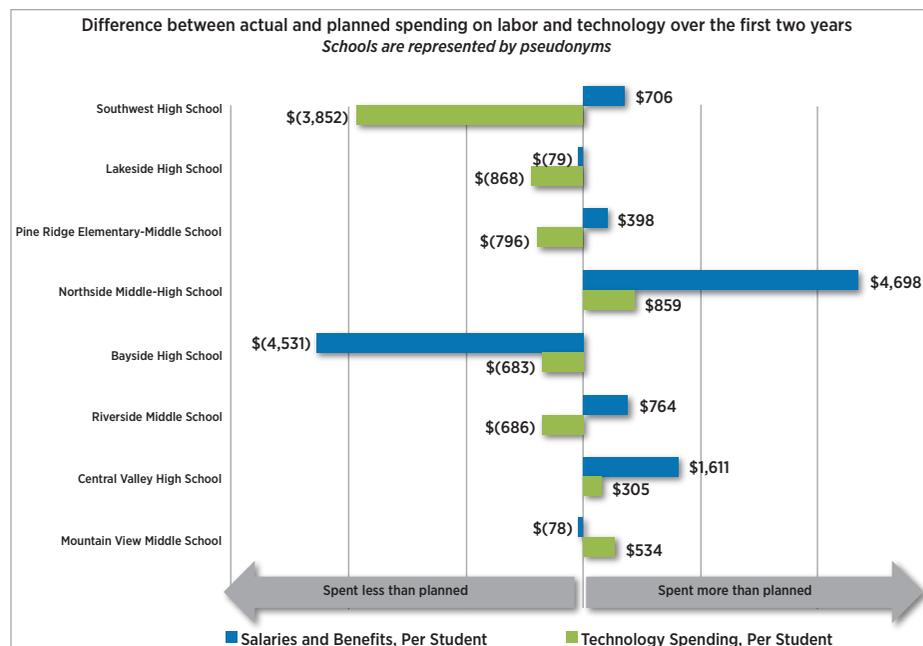
Figure 1 reports the difference between how much each of the eight schools planned to spend on labor and technology and how much they actually spent during their planning year and first year of operation combined. For example, Southwest High School spent \$706 dollars more per student on labor and \$3,852 fewer dollars per student on technology than planned.

Figure 1 shows that six out of eight schools reverted to a more traditional model of resource allocation that invests heavier in labor and lighter in technology when they implemented personalized learning, compared with what they had planned to spend. Three of the schools in our sample (Southwest High School, Pine Ridge Elementary-Middle School, Riverside Middle School) cut spending on technology and increased spending on labor. Lakeside High School cut spending on technology by \$868 per student and cut spending on labor by \$79 per student. Two schools with more resources available than planned, Northside Middle-High School and Central Valley High School, invested those additional resources in labor much more heavily than in technology. Mountain View Middle School cut spending on labor slightly, by \$78 per student, and increased spending on technology by \$534 per student. Bayside High

School, which cut spending on both labor and technology, made much larger cuts to spending on labor (\$4,531 per student) than technology (\$683 per student).

These shifts in budget priorities postponed some schools from fully implementing their personalized-learning strategies because they had fewer computers or other hardware devices. Part of the promise of personalized learning is the potential to personalize instruction for students, both through time spent on tailored, computerized lessons and through small-group interactions with a teacher made available while others in the class are using computers. But that depends on having enough hardware. We visited a personalized-learning class with 37 students and 20 computers—the teacher wanted to work with students in small groups, but could not pull out groups smaller than 17 students. The school plans to move to a one-to-one student to computer ratio next year.

Figure 1. Schools revert from tech-heavy to traditional spending patterns



3. The school names used throughout this brief are pseudonyms.

Technology cuts were not limited to hardware. We visited a school that cut funding for dashboard software. Dashboards automatically pull performance information from multiple applications and present the information in a single snapshot. A teacher we interviewed had regularly used the dashboard because it synthesized performance information from her students' mathematics and language arts applications. Now that the dashboard software has been defunded (there was a recurring user fee that the school stopped paying in order to balance its budget), she does not use that performance information regularly because it is too cumbersome to gather manually.

Fortunately, not all technology cuts compromise the educational model. The principal of one school in our study cut over \$100,000 from the school's technology budget by switching from MacBook Air laptops to less expensive Chromebooks, and says he can still do everything he needs to with that technology. He also cut his budget for applications and devolved application purchasing authority to teachers who have firsthand experience with the software and thus are better equipped to determine the right trade-offs between price and quality. Each teacher receives an application budget of \$3,000 for every subject they teach. Through these changes in hardware and decisionmaking authority, technology spending has fallen significantly and quality is up compared with the previous approach, according to the principal.

SUSTAINABILITY RELIES ON HIGHER STUDENT-TEACHER RATIOS

Seven out of the eight schools in our sample balanced their budgets—that is, their current revenues matched expenditures. (The eighth school reported a small deficit of \$2,000.) But that only shows part of the picture, given the large initial investments in hardware, software, and professional development required to start a personalized-learning school, as well as the large one-time grants at play. For instance, the school that switched to Chromebooks to save over \$100,000 still spent \$1,350 per student on technology. To determine if a school model really is fiscally sustainable, we must also conduct a structural budget analysis, analyzing the relationship between recurring revenues and recurring expenses.

By comparing public revenue sources to spending on resources that must be repurchased every year—like teachers, supplies, and facilities—we see a less positive picture. Five of the eight schools in our sample are operating with structural deficits, meaning that their recurring costs exceed their public (recurring) revenues. According to their five-year financial plans, the schools we studied plan to reduce their future costs by increasing the student-teacher ratio from 17:1, on average, to about 23:1. These schools had expected that technology-based learning would allow them to increase class size without sacrificing learning, but first-year technology cuts call that assumption into question.

EARLY LESSONS FOR PERSONALIZED-LEARNING SCHOOLS

These are still very early days for the personalized-learning sector. It is not surprising to see budget adjustments in a start-up year, but the early findings from this study offer several cautions and lessons for those who hope to implement personalized-learning models in the future and for those that are in the first or second year of operations.

Lessons for personalized-learning schools getting started

- Invest in student recruitment efforts up front to ensure enrollment targets are met.
- Revisit initial budget estimates to assess whether they are realistic. Schools should develop a 'worst-case scenario' budget where fundraising and enrollment estimates fall 20–25 percent below target so that an alternate budgeting strategy can be developed in advance.

General lessons for personalized-learning schools

- Consider, when budget cuts are necessary, delaying the hiring of additional staff by a quarter or a semester, hiring fewer staff than planned, contracting for part-time personnel (such as tutors), and reducing the number of days per week that the campus is fully staffed.
- Assess the feasibility of generating revenue by adopting a technology user fee for students (students who qualify for free or reduced-price meals would be exempt from paying the fee).
- Reduce hardware costs by developing a voluntary bring-your-own-device program (students who do not have their own device would be provided one by the school).
- Establish performance requirements before purchasing hardware, and then choose the lowest-cost option that meets the school's needs.
- Explore lower-cost technology support programs. Two schools we visited train students to become certified tech support specialists. Other schools are using partially or fully subsidized staff from AmeriCorps and CityCorps.
- Partner with other schools and districts to negotiate bulk license fees for software.
- Negotiate a trial period before signing long-term contracts with software vendors, to make sure that the product meets the school's needs.

The schools included in this study are at the forefront of this movement and are only just getting started. There is much to learn from them about the cost of personalized learning over the next year as they continue to innovate, scale up operations, and gain experience educating students in a new way. In the next phase of this study, we will report our results from two deep-dive case studies that examine how technology and teachers' time are allocated within personalized-learning classrooms. That work is helping us understand how much it costs to offer tutoring, small-group instruction, advising sessions, and other teacher-intensive interventions.

We will explore the extent to which the NGLC schools are seeking and achieving “anytime, anywhere learning”—a proposed benefit of providing more curriculum content through technology. Finally, we will continue to track spending in all 20 NGLC schools this year, examining how new schools face their first-year challenges and how schools heading into their second year of operation hone and adjust their models. Most importantly, we will follow those schools that cut back on their technology spending to see if they return to their original vision.

Table 1. Characteristics of the 8 personalized-learning schools that participated in this study

Southwest High School	Mission	To address the dropout problem
	Organization of students and teachers	<ul style="list-style-type: none"> • Staff includes tutors, advisors, teachers, and subject matter experts • Large open space with small breakout rooms • Students direct their own schedule
	Curriculum and technology	<ul style="list-style-type: none"> • 1:1 student-to-computer ratio • Students spend about half their time using digital content for math and literacy
Lakeside High School	Mission	To graduate students at greatest risk of dropping out
	Organization of students and teachers	<ul style="list-style-type: none"> • Students learn on-site early in the program, and off-site at local colleges, businesses, and community organizations later in the program • Students are members of a team for the duration of the program • Team leaders spend an hour per day with the team tracking individual progress on academic and social dimensions toward graduation and beyond
	Curriculum and technology	<ul style="list-style-type: none"> • 1:1 student-to-computer ratio • Students spend considerable amount of time learning independently online with staff support available when needed
Pine Ridge Elementary-Middle School	Mission	To close the gap between student performance and state proficiency standards
	Organization of students and teachers	<ul style="list-style-type: none"> • Organizes students by instructional level rather than age or grade level • Teachers recruited and trained to use real-time analytics to customize education for every student
	Curriculum and technology	1:1 student-to-computer ratio that emphasizes prescriptive, real-time analytics, and collaboration with peers, teachers, and parents

Northside Middle-High School	Mission	To set high expectations for students and for personalized learning
	Organization of students and teachers	<ul style="list-style-type: none"> • Pull-outs for tutoring, peer projects, and teacher-led seminars • Daily advisory sessions • Large, open workplace with flexible furniture
	Curriculum and technology	<ul style="list-style-type: none"> • Students given access to a customized daily instructional plan • Spend 50% of literacy and math time using digital content
Bayside High School	Mission	To institutionalize design thinking and innovation in public education
	Organization of students and teachers	School employs a station rotation model and students spend about two-thirds of their time using digital content for literacy and math
	Curriculum and technology	<ul style="list-style-type: none"> • After each learning block, students are assessed and real-time feedback is provided to instructors • Emphasizes digital content developed in-house
Riverside Middle School	Mission	To ensure all students have the knowledge and skills needed to attend and graduate from college
	Organization of students and teachers	Flexible furniture allows classroom to support frequent changes from lecture hall, to clusters for peer learning, to separate stations for individualized learning
	Curriculum and technology	<ul style="list-style-type: none"> • 1:1 student-to-computer ratio • Students spend about half the instructional day learning online
Central Valley High School	Mission	To prepare students to be college and career ready
	Organization of students and teachers	<ul style="list-style-type: none"> • Differentiated staffing model includes relationship, relevance, and rigor managers, success coaches, and certified teachers • School gives students more freedom and privileges as they progress toward mastery of concepts and skills • Large capacity workspaces house 75 cubicles, with classroom space for small-group work, projects, and direct instruction
	Curriculum and technology	Data dashboards reflect student progress in real time, and serve as the basis for weekly advisory sessions
Mountain View Middle School	Mission	To ensure students thrive in college and in life
	Organization of students and teachers	<ul style="list-style-type: none"> • Technology used to halve the student-teacher ratio during direct instruction in math and English • Students work in pairs on projects in social studies and science
	Curriculum and technology	<ul style="list-style-type: none"> • 2:1 student-to-computer ratio • Students spend half their literacy and math time using digital content

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