Chapter 4

Innovating Toward Sustainability: How Computer Labs Can Enable New Staffing Structures and New Savings

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Hopes, Fears, & Reality

A BALANCED LOOK AT AMERICAN CHARTER SCHOOLS IN 2012

National Charter School Resource Center

CRPE REINVENTING PUBLIC EDUCATION

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For a long time, even as new educational technologies have emerged, staffing innovations have seemed all but impossible in American schools. Even in charter schools, which do not have the typical labor constraints that traditional schools have, technology has merely been a layer added to the existing personnel structure, rather than a catalyst for delivering education—and staffing schools—in fundamentally new ways. Charter and district schools alike long ago surrendered to the notion that education requires at least as many core teachers as determined from dividing a school's enrollment by the average class size.

But does it? Or are there ways of organizing instruction so that schools need fewer teachers?

Finding an answer to these questions is more important than ever. Resources for public education are likely to be highly constrained for many years. Even as revenues climb, those increases will not be sufficient to cover the steady growth in labor costs, as salaries increase to keep pace with other fields and as benefit and retirement costs steadily increase as well. With staffing costs set to escalate faster than revenues, schools are likely to cut services, with students receiving less and less. As one Colorado superintendent put it, "We can cut and cut and cut, but that only works for so long, since we'll always need a teacher for every classroom" (personal communication, 2011).

However, that scenario is not necessarily the case. Some new school designs suggest that we can fundamentally alter the basic schooling model so that a given number of students can be taught—and taught well—by fewer teachers, who are leveraged in new ways. Although some tasks require new technology and thus new technology staff, these new school designs are just as much staffing innovations as technological innovations.

The innovations come with the promise of fundamental cost redesign. If schooling could indeed be reorganized to rely on a different mix of staff (typically, fewer teachers offset by more lower salaried lab aides), then district and charter leaders could alter the cost curve. They could step off the cycle of cost escalation and budget cuts that have consumed them in recent years and onto more financially sustainable footing.

Of course, any large-scale adoption of new school designs should depend most on whether the models are effective with students. Even if the models are effective, many states have formidable barriers to staffing innovations, including funding formulas rigidly tied to student-teacher ratios. Policymakers are unlikely to let go of some of these barriers without relevant evidence of what such reforms might mean for their states. This report provides that evidence. Using real wage and staffing data from each state, we project the financial and staffing implications of one innovative model—the lab rotation—to highlight the potential implications for the schooling workforce and total per-student spending.

In one possible permutation of the lab rotation, one fourth of each day's instructional time is spent in a computer lab, which is staffed by an instructional aide instead of a classroom teacher. Money saved on staffing is then reinvested elsewhere.[1] The lab rotation model is not a solution for all schools, districts, or states. But it illustrates the extent to which staffing innovations can change cost structures and offer greater financial sustainability. If all public elementary schools adopted it, states could unlock nearly $10 billion in funds to reinvest elsewhere for students and achieve the financial sustainability that would otherwise elude them. Of course, the universal adoption of lab rotations is implausible, but there is no reason to think that lab rotations could not be embraced on a far larger scale than they are now. This innovation, and others like it, should be given serious consideration, before our current cost structures begin to deteriorate the quality of schooling.

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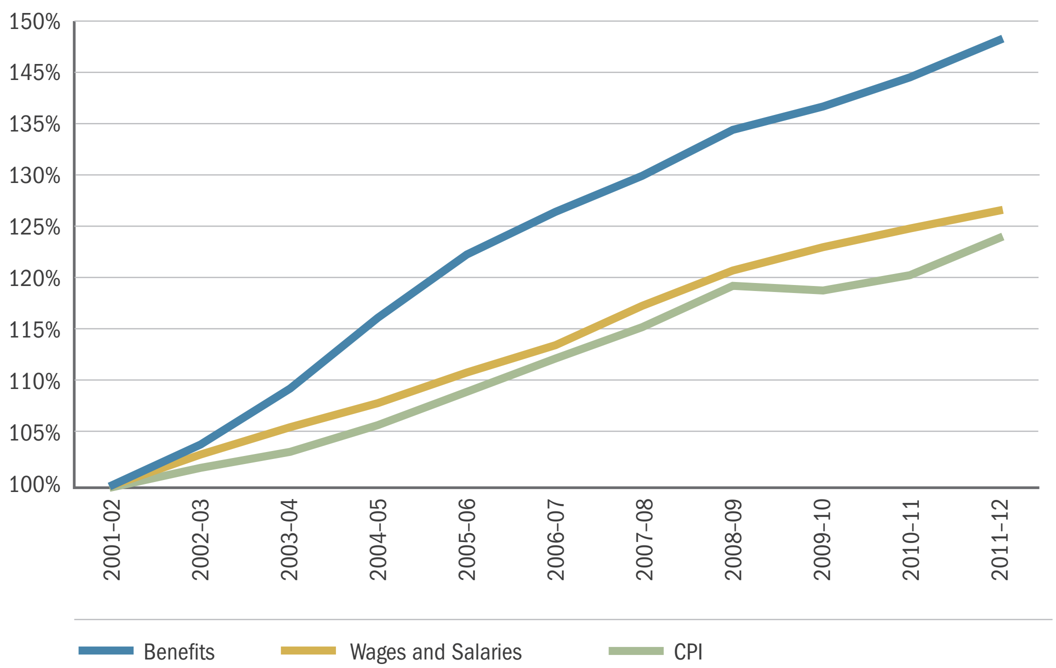
1 Lab rotation is defined in Staker and Horn (2012).

REDUCING THE QUICKEST RISING COSTS

Schooling, of course, is and likely always will be a labor-intensive enterprise. In the last decade, school reform efforts have hinged on adding more and more staff to schools. From 2002 to 2008, the number of public elementary and secondary teachers increased by 10 percent, a rate faster than student enrollment growth (National Center for Education Statistics, 2011a). Some projections suggest that staffing will continue to grow (National Center for Education Statistics, 2011b). As Figure 1 illustrates, among the production inputs typical in education, cost escalation has been greatest for benefits (particularly health benefits), followed by wages and salaries. On the flip side, the prices of technology, equipment, and software have effectively fallen (Rampell, 2011). As long as reforms continue to rely on the addition of labor, labor costs will likely increase faster than public revenues (Hill & Roza, 2010).

Figure 1. Personnel Costs Have Climbed Faster Than Consumer Price Index



Note. Compiled from *Databases & Tools,* Employment Cost Trends (http://data.bls.gov/pdq/SurveyOutputServlet?request_action=wh&graph_name=EC_ectbrief) and *Consumer Price Index* (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt). U.S. Department of Labor, Bureau of Labor Statistics.

The precise mix of labor in schools does not need to be fixed in stone, which some innovative schooling networks have shown. With financial sustainability a critical issue, school designs that rely less on high-cost labor and more on technological innovations might prove more viable in the long run. The recent explosion of technology-based options in schooling—combined with the falling price of technology—suggest that the timing is ripe for more innovations that rethink staffing. New content providers that customize learning for individual students, including lower-cost (or free) products, such as those offered by Khan Academy and the CK-12 Foundation, are increasingly accessible for use in schools (Belissent, 2011).

Even as these promising tools proliferate, most forward-thinking schools and school networks, including most charters, have yet to fundamentally change their staffing structures. Many still rely on the basic personnel model used by traditional schools and offer only improvements in staff effectiveness, performance management, and school culture. Although some of these strategies have indeed yielded improved outcomes for students, the spending patterns of such schools look similar to those of traditional schools, with similarly problematic cost structures (Lake, Dusseault, Bowen, Demeritt, & Hill, 2010).

ROCKETSHIP: FEWER TEACHERS, GROWING LEARNING

Rocketship Education, which created an innovative lab rotation model, provides a notable exception.[2] Rocketship operates K–5 charter schools in San Jose, California, where approximately 90 percent of the students come from low-income families, and 75 percent are English language learners. Rocketship schools outperform schools with similar demographics, including some that are more affluent.[3]

Figure 2 shows how lab rotations similar to the system that Rocketship pioneered can change the traditional staffing structure. Imagine that the third grade in a school has four classrooms. At the typical elementary school, each classroom would be assigned its own dedicated teacher, who would teach all subjects—four teachers for four classrooms. Rocketship assigns only three teachers for

2 Others pioneering blended learning with new staffing models include Carpe Diem Schools in Arizona and the Knowledge Is Power Program: Empower Academy in Los Angeles.

3 Based on the 2012 California Academic Performance Index reported by Rocketship Education at http://www.rsed.org.

those four classrooms plus one lab aide for every 70 students. The classroom teachers specialize: Each of two humanities teachers covers two classrooms, whereas one mathematics and science teacher splits his or her time among all four classrooms. Students spend 25 percent of their time in a computer lab, called the learning lab, which is supervised by uncertified staff. While in the learning lab, students work on mathematics and literacy software programs, receive individual tutoring as needed, and take time out to participate in other special classes, including physical education and art.[4]

Figure 2. Switching Up Staffing

Traditional elementary school: four teachers for four classrooms

	3rd-Grade Class 1	3rd-Grade Class 2	3rd-Grade Class 3	3rd-Grade Class 4
1st Period	Teacher A	Teacher B	Teacher C	Teacher D
2nd Period	Teacher A	Teacher B	Teacher C	Teacher D
3rd Period	Teacher A	Teacher B	Teacher C	Teacher D
4th Period	Teacher A	Teacher B	Teacher C	Teacher D

Rocketship lab rotation: three teachers plus lab staff

		3rd-Grade Class 1	3rd-Grade Class 2	3rd-Grade Class 3	3rd-Grade Class 4
8 AM start	1st Period	Teacher A	Teacher C	Teacher B	Learning Lab
	2nd Period	Teacher A	Learning Lab	Teacher B	Teacher C
	3rd Period	Teacher C	Teacher A	Learning Lab	Teacher B
4 PM end	4th Period	Learning Lab	Teacher A	Teacher C	Teacher B

Teacher A	Teaches Humanities
Teacher B	Teaches Humanities
Teacher C	Teaches Math/Science
Teacher D	N/A
Learning Lab	Teaching Aides and Computers

Note. Compiled by the Center on Reinventing Education (CRPE) from a presentation by John Danner at the Washington Education Innovation Forum, June 9, 2011.

[4] For an in-depth case study of Rocketship, see Bernatek, Cohen, Hanlon, and Wilka (2012).

On the face of it, each teacher has an increased student load. But because the teachers specialize, they do not need to prepare for as many subjects (Public Impact, 2012). In addition, the learning lab software removes the need for some tasks, such as assigning and grading basic mathematics problems and individualized literacy work. In this manner, a single teacher reaches one third more students, whereas noncertified instructors, computers, and the students themselves take on a portion of the previous responsibilities—and costs—of the teacher. This reduced reliance on teachers enables the school to hire more selectively and spread scarce mathematics and science expertise across more students.

Rocketship Education is now testing iterations of the lab rotation, with different mixes of staffing and computer-based instruction conducted in the classroom instead of the lab. In the coming years, its schools may look quite different. The network's innovation in the past several years, however, still stands as a useful and exciting example of what is possible for other schools.

FREEING FUNDS FOR REINVESTMENT

The lab rotation model implemented by Rocketship produces a substantially different cost structure than what is typical nationally. In a traditional public school district, salaries and benefits combined consume, on average, 60 percent to 80 percent of the budget (Roza, Wepman, & Sepe, 2010). At Rocketship, that total is about 47 percent (Rocketship Education, 2011).

It is important to note that Rocketship schools have not simply used technology to reduce overall staff; they have shifted staffing to rely on a different mix of staff: fewer classroom teachers and more technology staff. That mix has allowed Rocketship to reinvest some funds, enabling its schools to operate with a longer school day and pay teacher salaries at a rate greater than the market rate.

Determining the cost implications of the lab rotation model across different school settings requires some isolation of the features that might be more broadly adopted. Although this report focuses on the implications of subject specialization and the lab rotation structure, other elements of the Rocketship design affect the cost structure of its schools. For instance, Rocketship schools have larger class sizes than the national average and deliver their noncore electives differently (National Center for Education Statistics, 2012a). Rocketship also remands some administrative tasks to parents, who are asked to volunteer

30 hours per school year. Although these additional features may not be scalable across other settings, the basic staffing innovation could be. So we analyzed this question: Leaving class sizes and administrative structures as is, what if more schools simply adopted the concept of having four classrooms taught by three teachers, along with a lab rotation?

Keeping constant national norms for elementary school class sizes, Table 1 demonstrates the staffing and the cost implications of adopting this staffing innovation for Grades 1 through 5 (National Center for Education Statistics, 2012a). Current core staffing costs are based on state average salaries for elementary teachers, and benefits are included as a projected 33 percent of salary costs.[5] The lab rotation assumes using 25 percent fewer core teachers and one technology aide per 70 students, whose total compensation we based on the national average for paraeducators (38 percent of the earnings of the average teacher; NEA Research, 2012).

Table 1. Rotation Model Frees Up Funding, Even at Current Class Sizes

	Average Class Size[a]	Core Classroom Teachers Required (per 1,000 Students)	Lab Aides Required (per 1,000 Students)	Total Teachers Plus Lab Aides (per 1,000 Students)	Staff Cost at Current Compensation Levels for Core Teachers and Lab Aides[b] (per Pupil)
Traditional one teacher per classroom model	20.1	49.75	–	49.75	$3,710.04
Lab rotation model	20.1	37.31	14.29	51.60	$3,185.02
Change if shifted to a lab rotation model	0	-12	14	2	-$525.01

[a] Kept at the current national average for elementary students.
[b] Benefits are assumed to be 33 percent of the base salary.

[5] Average salaries are from NEA Research (2010); benefits and salary costs are from the National Center on Education Statistics (2010b).

Based on Table 1, the rotation model relies on fewer teachers and more lab aides; for every 1,000 students, the system uses 12 fewer teachers but adds 14 more lab staff. Although the number of total jobs increases, the per-pupil staffing costs decrease by $525 per pupil (or about 5 percent; National Center for Education Statistics, 2012b).[6] That enables some investment in necessary lab equipment and software, with additional funds available for other reforms.

Clearly, implementing the lab rotation model comes with additional implications for schools.

- Because these schools use teachers differently, they may need a different mix of teacher expertise (namely, elementary teachers able to specialize in mathematics and science or in humanities).
- There will certainly be cultural challenges that come with changing practices in organizations that have run things the same way for a long time.
- The lab experience requires that schools assemble their computers in a single location and purchase relevant software to enhance learning. The costs for equipment and software to transition to this model will depend on both software choices and the extent to which a school already has appropriate computers. In 2008, the most recent year for which data are available, the ratio of students to instructional computers with Internet access was 3.1 to 1 (National Center for Education Statistics, 2010a). The lab rotation model demands even fewer computers than that because a computer is needed for only every four students. Some schools may not necessarily have to buy more computers but rather rearrange them. How much schools now spend on software varies widely, and it is unclear how much they will have to spend to adopt the new model.

With the educational technology sector still in transition and many free options available, technology costs are expected to grow more slowly than labor costs and have been omitted from these projections.

[6] Based on the average $11,467 per-pupil spending in 2012 as reported by the National Center for Education Statistics (2012b).

NEARLY $10 BILLION TO GROW ON

All told, our analysis shows that a universal shift to the lab rotation model in U.S. elementary schools would yield more than $9.8 billion for reinvestment elsewhere in education. The financial implications differ by state, given the variance in teacher salaries and the number of students per teacher. As Table 2 demonstrates, if all public elementary schools moved to a lab rotation model and class sizes remained the same, the United States could operate with 232,564 fewer teachers, which would be offset by 263,674 more lab aides. That would free up, on average, $531 per student. In some states, it would be far more. In New York, for example, the model would make available $943 per student, for a total of nearly $1 billion.

Table 2. Staffing and Cost Changes If States Shifted to a Lab Rotation Model for Elementary Schools

State	Total Change in the Number of Teachers	Number of Additional Lab Aides Needed	Added Number of New Jobs	Funds Available to Reinvest	Funds Freed Up per Elementary Student
United States as a whole	**(232,564)**	**263,674**	**31,110**	**($9,805,828,613)**	**($531)**
Alaska	-654	710	56	($33,128,252)	($667)
Alabama	-3,844	4,160	317	($129,594,929)	($445)
Arkansas	-2,325	2,635	311	($75,032,641)	($407)
Arizona	-4,478	6,010	1,532	($113,856,476)	($271)
California	-26,948	33,086	6,139	($1,556,331,903)	($672)
Colorado	-3,745	4,544	798	($120,739,768)	($380)
Connecticut	-2,656	2,952	295	($148,506,625)	($719)
District of Columbia	-320	348	28	($18,518,603)	($761)
Delaware	-572	698	126	($24,416,810)	($500)
Florida	-13,749	14,339	590	($449,978,756)	($448)
Georgia	-9,218	9,266	48	($399,799,448)	($616)
Hawaii	-856	1,008	152	($34,302,135)	($486)
Iowa	-2,191	2,504	313	($76,994,225)	($439)
Idaho	-1,140	1,542	402	($28,462,677)	($264)
Illinois	-8,962	10,957	1,995	($442,281,557)	($577)
Indiana	-4,696	5,717	1,022	($153,722,953)	($384)
Kansas	-2,298	2,559	261	($71,803,132)	($401)
Kentucky	-2,906	3,668	763	($85,659,312)	($334)
Louisiana	-3,776	3,905	129	($139,261,920)	($509)

State	Total Change in the Number of Teachers	Number of Additional Lab Aides Needed	Added Number of New Jobs	Funds Available to Reinvest	Funds Freed Up per Elementary Student
Massachusetts	-4,718	5,054	336	($303,200,711)	($857)
Maryland	-3,786	4,374	588	($204,648,920)	($668)
Maine	-1,005	973	-32	($35,638,123)	($523)
Michigan	-5,983	8,372	2,389	($230,370,269)	($393)
Minnesota	-3,264	4,352	1,088	($108,365,374)	($356)
Missouri	-4,395	4,860	465	($134,349,277)	($395)
Mississippi	-2,509	2,767	258	($78,267,340)	($404)
Montana	-733	763	30	($24,460,458)	($458)
North Carolina	-7,560	8,397	836	($234,512,662)	($399)
North Dakota	-521	488	-33	($16,911,513)	($495)
Nebraska	-1,446	1,557	111	($47,535,540)	($436)
New Hampshire	-947	1,027	80	($37,560,721)	($523)
New Jersey	-6,315	7,141	827	($335,699,317)	($712)
New Mexico	-1,709	1,839	129	($54,923,906)	($427)
Nevada	-1,959	2,410	451	($70,242,069)	($416)
New York	-13,423	13,783	360	($909,657,853)	($943)
Ohio	-7,829	9,479	1,649	($329,516,940)	($497)
Oklahoma	-3,126	3,519	393	($104,734,333)	($425)
Oregon	-2,292	3,046	754	($86,050,539)	($404)
Pennsylvania	-7,817	9,299	1,482	($367,394,139)	($564)
Rhode Island	-634	750	115	($30,269,076)	($577)
South Carolina	-3,707	3,917	210	(133,345,908)	($486)
South Dakota	-647	660	13	($11,698,970)	($253)
Tennessee	-5,319	5,382	63	($181,160,053)	($481)
Texas	-26,336	26,591	255	($927,032,600)	($498)
Utah	-2,446	3,350	904	($57,113,637)	($244)
Virginia	-6,407	6,658	251	($251,748,937)	($540)
Vermont	-472	452	-19	($18,716,575)	($591)
Washington	-4,239	5,533	1,294	($147,414,058)	($381)
Wisconsin	-3,851	4,315	464	($144,915,253)	($480)
West Virginia	-1,384	1,474	90	($45,459,968)	($441)
Wyoming	-453	484	31	($20,521,451)	($605)

Of course, it is unlikely that this innovation would be appropriate for every school in the United States. Some might be too small to benefit from the model or may have a particular student population for whom the approach may not be a good fit. It is worth noting, however, that the lab rotation model is not intended only for special schools or unusual student populations. Rather, the model is intended for typical elementary schools, including those with substantial numbers of students from low-income families or students who are bilingual. Toward this end, the analysis highlights the potential relevance of such an innovation for the larger cost and staffing structure of states, including how much money is at stake.

The costs of salaries and benefits are likely to grow faster than technology costs, leaving schools vulnerable as budgets flatten. At a time of profound revenue constraints, it is worrisome to see how few schools have embraced innovative staffing structures that leverage technology and frequently produce great outcomes for students. Rather than zero in on financially sustainable models, charters and other innovative schools have sought improved student outcomes often at any cost.

It is clear that many of their strategies are helping students. But it is also clear that schools will not be able to continue their current approaches forever, unless they explore models that can be scaled and sustained across a larger set of schools. School and network leaders should be actively investigating the potential of new staffing innovations that will move them toward greater financial sustainability, and those promoting education reforms and innovations should lend support for these efforts. Furthermore, federal, state, and private grants should prioritize staffing innovations because these reforms may indeed hold more practical promise going forward.

Finally, despite how much money these models could free up, most state policies are still a long way from enabling the adoption of such models, in part because the state regulatory environment can be prohibitive. Student-to-staff ratios, formulas that dictate resource use, seat time regulations, salary schedules, and other such requirements inhibit even considering these kinds of models. Where states are serious about seeking innovations that alter the cost curve, they will need to remove these constraints—likely replacing process-based regulations with systems that manage schools based on outcomes measures. And, more importantly, these models will require more flexibility in how funds are applied.

For districts, it means moving away from rigid, one-size-fits-all school models and seeking purposeful variation in school design. Schools with staff attrition might be the first to try out new models because a vacant position provides some opportunity to rethink a school's delivery model. Where relevant, districts also would need to relax rigid work rules and school day scheduling requirements to accommodate redesigned service delivery models.

The lab rotation that Rocketship created is only one model; there will be many more. As individual innovators continue to break the mold on how schools can be staffed and students can be educated, we will see whether states and districts are up to the challenge of rethinking schooling to create more financially sustainable options. For public education, there is much at stake. Without such improvements in delivery, public education will likely face a decade of erosion in services.

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APPENDIX A. COST FACTORS USED IN THE ANALYSIS IN TABLE 2

State	Current Number of Core Teachers	Total Core Teachers Needed With Rocketship Lab Rotation Staffing	Average Class Size	Current Core Teaching Staff Cost	Rocketship Staffing Cost
Alaska	2,616	1,962	19.00	$212,521,164	$179,392,912
Alabama	15,374	11,531	18.94	$987,247,308	$857,652,378
Arkansas	9,299	6,974	19.84	$597,124,313	$522,091,672
Arizona	17,910	13,433	23.49	$1,132,741,341	$1,018,884,865
California	107,790	80,843	21.49	$9,954,121,396	$8,397,789,493
Colorado	14,981	11,236	21.23	$995,027,364	$874,287,596
Connecticut	10,626	7,969	19.44	$926,660,463	$778,153,838
District of Columbia	1,278	959	19.03	$113,248,541	$94,729,938
Delaware	2,289	1,717	21.35	$176,358,430	$151,941,619
Florida	54,994	41,246	18.25	$3,415,905,874	$2,965,927,118
Georgia	36,871	27,653	17.59	$2,643,484,934	$2,243,685,486
Hawaii	3,424	2,568	20.60	$250,762,321	$216,460,186
Iowa	8,763	6,573	20.00	$590,155,574	$513,161,350
Idaho	4,561	3,421	23.67	$287,632,383	$259,169,705
Illinois	35,848	26,886	21.40	$3,003,964,637	$2,561,683,080
Indiana	18,783	14,087	21.31	$1,259,207,409	$1,105,484,456
Kansas	9,192	6,894	19.49	$575,579,983	$503,776,851
Kentucky	11,623	8,717	22.09	$756,048,939	$670,389,627
Louisiana	15,106	11,329	18.10	$997,183,498	$857,921,577
Massachusetts	18,871	14,153	18,75	1,782,408,744	$1,479,208,033
Maryland	15,145	11,359	20.22	$1,311,548,629	$1,106,899,710
Maine	4,020	3,015	16.95	$252,745,533	$216,607,409
Michigan	23,932	17,949	24.49	$1,865,037,959	$1,634,667,690
Minnesota	13,054	9,791	23.34	$923,910,921	$815,545,547
Missouri	17,578	13,184	19.35	$1,085,058,927	$950,709,650
Mississippi	10,036	7,527	19.30	$624,918,430	$546,651,090
Montana	2,933	2,200	18.21	$183,845,567	$159,385,109
North Carolina	30,241	22,681	19.44	$1,884,341,282	$1,649,828,620
North Dakota	2,083	1,563	16.40	$122,657,597	$105,746,084
Nebraska	5,784	4,338	18.84	$365,575,675	$318,040,135
New Hampshire	3,788	2,841	18.97	$265,949,212	$228,388,492
New Jersey	25,259	18,944	19.79	$2,227,605,732	$1,871,906,414

State	Current Number of Core Teachers	Total Core Teachers Needed With Rocketship Lab Rotation Staffing	Average Class Size	Current Core Teaching Staff Cost	Rocketship Staffing Cost
New Mexico	6,836	5,127	18.82	$426,892,516	$371,968,610
Nevada	7,835	5,877	21.53	$552,558,088	$482,316,019
New York	53,691	40,268	17.97	$5,191,979,394	$4,282,321,541
Ohio	31,317	23,488	21.19	$2,386,300,192	$2,056,783,253
Oklahoma	12,503	9,377	19.70	$815,484,443	$710,750,110
Oregon	9,167	6,875	23.26	$687,482,945	$601,432,406
Pennsylvania	31,270	23,452	20.82	$2,517,602,079	$2,150,207,941
Rhode Island	2,537	1,903	20.68	$205,552,165	$175,283,089
South Carolina	14,827	11,120	18.49	$974,847,686	$841,501,778
South Dakota	2,589	1,942	17.85	$121,227,049	$109,528,080
Tennessee	21,276	15,957	17.71	$1,331,198,465	$1,150,038,412
Texas	105,345	79,009	17.67	$6,704,911,147	$5,777,878,548
Utah	9,784	7,338	23.97	$605,992,576	$548,878,939
Virginia	25,627	19,220	18.19	$1,757,319,131	$1,505,570,194
Vermont	1,887	1,415	16.78	$125,840,002	$107,123,427
Washington	16,957	12,717	22.84	$1,213,223,966	$1,065,809,908
Wisconsin	15,404	11,553	19.61	$1,065,988,880	$921,073,627
West Virginia	5,536	4,152	18.63	$347,920,991	$302,461,023
Wyoming	1,814	1,360	18.69	$136,678,751	$116,157,300

Author Biographies

Suzanne Simburg is a research consultant at CRPE, where her work explores the cost implications of digital learning and redesigned school models. Her upcoming projects investigate resource allocation in blended-learning schools and other topics related to student-based allocation. Her interest in school innovation grew out of her first jobs, working with youth, and following professional experiences with innovative businesses. In the past, she was an Education Pioneers Fellow at Aspire Public Schools and a Fulbright Fellow at New Ventures, a business accelerator in Mexico City. Ms. Simburg has a bachelor's degree, a master of business administration degree, and a master of public administration degree from the University of Washington; prior to graduate school, she worked for YouTube/Google and Americorps.

Marguerite Roza, Ph.D., is the director of the Edunomics Lab at Georgetown University and senior research affiliate at the CRPE. Dr. Roza's research focuses on quantitative policy analysis, particularly in the area of education finance. Recent research traces the effects of fiscal policies at the federal, state, and district levels for their implications on resources at both school and classroom levels. Her calculations of dollar implications and cost equivalent trade-offs have prompted changes in education finance policy at all levels in the education system. She has led various projects, including the Finance and Productivity Initiative at CRPE and the Schools in Crisis Rapid Response paper series. More recently, she served as the senior economic advisor to the Bill & Melinda Gates Foundation. Her work has been published by Education Sector, the Brookings Institution, *Public Budgeting and Finance, Education Next*, and the *Peabody Journal of Education*. Dr. Roza is the author of the highly regarded education finance book *Educational Economics: Where Do School Funds Go?*

Dr. Roza earned a Ph.D. in education from the University of Washington. Prior to that, she served as a lieutenant in the U.S. Navy, teaching thermodynamics at the Naval Nuclear Power School. She has a bachelor's degree from Duke University and has studied at the London School of Economics and the University of Amsterdam.

This chapter was originally produced by CRPE as part of its $chools in Crisis: Making Ends Meet Rapid Response brief series: Simburg, S., & Roza, M. (2012). Innovating toward sustainability: How computer labs can enable new staffing structures, and new savings*. Seattle: Center on Reinventing Public Education. It has been adapted and posted to the National Charter School Resource Center website with permission from CRPE.*