

2011

# Next Generation Learning – Scaling the Opportunity

*Paper 2 of 2*



**THE OPPORTUNITY EQUATION**  
*Excellence and Equity in Mathematics and Science to Transform Education*



## Introduction

As described in the first paper, this vision of personalized learning is enabled by two significant developments in the field. A primary enabler is the development and ongoing adoption of the Common Core standards and aligned assessments, which are beginning to give schools, new school developers, and school systems (for the first time in history) the ability to measure student learning along a common set of expectations aligned to post-secondary readiness. Together, the Common Core and associated assessments will allow entrepreneurs to develop school models that measure student progress not in hours or years, but in skills learned and knowledge attained. A second enabler is the development of information technology, particularly with respect to the collection and analysis of student data.

The recent growth in aspiring next generation learning models raises a pressing question for entrepreneurs, funders, and school officials alike: How can the field enable this promising vision of personalized learning to become a national movement and eventually the standard for public education?

This second paper explores the path to NGL scalability by a) examining barriers at the district, state, and federal levels that could ultimately block large-scale NGL implementation and b) considering how various actors in the field—policymakers, administrators, entrepreneurs, and funders—can address these issues. Interviews with over a hundred district and state leaders, foundations, and entrepreneurs identified three key categories/questions that demand attention: “Are you allowed to implement NGL?,” “Do you want to?,” and “Can you?” In the following section, we take those questions in turn.

## Next Generation Learning Barriers

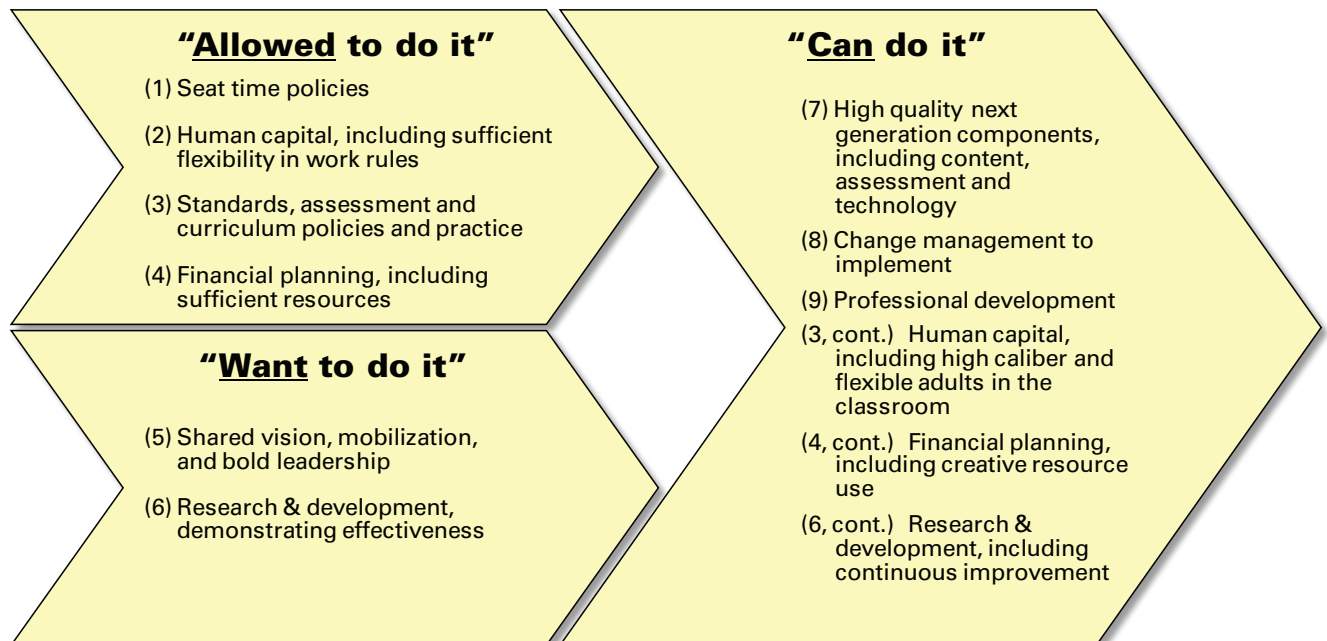
### “Are You Allowed to Implement NGL?”

Currently, several policy barriers stand in the way of large-scale NGL adoption. Although in certain cases committed leaders have developed workaround strategies, NGL expansion will ultimately require system-level policy, practice, and structure change.

Legislative and administrative policies, such as state **seat time policies** present perhaps the most significant NGL barrier. In many states, students receive credit based on the amount of time they are physically present in a classroom, while NGL classrooms typically allow students to progress at their own pace toward commonly held post-secondary readiness standards. A small number of states have begun to amend seat time policies, often through waivers. Schools in Florida, for instance, can request that students complete an end-of-course assessment as evidence of mastery. A handful of states have moved beyond waivers; Utah’s State Board of Education actually requires districts to implement content mastery policies.

**Human capital policies** can also restrict a state or district’s ability to implement NGL. Online schools represent a dilemma for current teacher certification requirements, as teachers often connect with students over the internet in states where they lack the proper license. As a result, online schools often seek out states with liberal certification reciprocity policies. Collective bargaining agreements capping the number of out-of-field teachers also represent a potential barrier, as teachers in NGL classrooms typically deliver lessons on a skill-by-skill basis.

Figure 1: Barriers to Implementing NGL at Scale



Overall, only a very small number of states and districts have implemented supportive policies or waivers for either human capital or seat-time policies. Although various organizations are working to remove these barriers, no existing organization has currently taken a lead role in spearheading the effort.

District, state, and federal **standards, assessment, and curriculum policies** also have an enormous impact on the success of NGL models. (Financial planning and policies are also critical, and are discussed further in the “Can You?” section.) NGL necessitates modularized content broken down by individual skill, and the Common Core provides a uniform language across vendors, schools, districts, and states. Conversely, a state or district-mandated textbook adoption process represents a barrier, as next generation schools typically tap a wide variety of online and print content in order to provide students with lessons tailored to their individual needs and interests. Finally, regulations on how and where summative assessments can be administered can have a significant impact on district and state progress toward systems that emphasize content mastery.

The Common Core represents a monumental, historic step in the right direction, but states, districts, and all stakeholders must not forget that this is only the beginning. Future next steps include: ensuring that a) the standards reflect more complex, deeper learning skills and b) that the standards be fully implemented and integrated into curriculum and assessment.

### “Do You Want To?”

Change necessarily begins and ends with **local leaders**. “A committed leader simply makes things happen,” explained one entrepreneur. “When deciding where to build new schools, local leadership is the first thing we consider.” Fortunately, a large number of state and district leaders are actively looking for new ways to close the achievement gap, both among American students and between the United States and other countries. There is much left to do, however, to build the kind of capacity at the state and district level required to migrate systems from status quo to the point where they can deliver next generation learning at scale.

At a regional level, **a shared vision, bold leadership, and mobilized constituencies** are critical to long-term success. Although political and education leaders often speak approvingly of technology in the classroom, a commitment to NGL requires a different type of mobilization. “Supporting NGL isn’t about quick wins like online textbooks or smartboards,” said one interviewee. “It’s about making the necessary long-term and potentially unpopular changes in preparation for a different type of learning.” Building a common understanding of what NGL might look like in practice and what will be gained in terms of student learning, will be critical to motivate local leadership and support.

Teachers, students, and parents are crucial but commonly ignored groups of stakeholders. “Your most influential community members were successful under the old system,” explained an interviewee. “You have to work doubly hard to convince them that change is necessary.” Interviewees noted that the U.S. Department of Education (through the Race to the Top and i3 competitions), the National Governors Association, and the Council of Chief State School Officers provide excellent examples of successful strategies for mobilizing stakeholders behind the vision for Common Core standards. Despite the current limited activity around mobilizing stakeholders around a common NGL vision, these organizations have the potential to be important leadership vehicles.

Finally, change is ultimately motivated by **research and development to demonstrate effectiveness**. If proven effective, next generation models have the potential to serve as effective, motivating proof points for further mobilization. Although policymakers are primarily concerned with student outcomes, they are also looking for easily replicable strategies that are, at a minimum, cost neutral. “Cost is a huge driver,” explained one interviewee. “We’re really going to see next generation learning take off when we can convince districts it is both effective and not significantly more expensive.” This analysis has shown that next generation models can be cost neutral as compared to current models.

Interviews and research revealed limited investment in R&D around next generation learning. The field requires shorter, less rigorous evaluations that focus both on student learning gains and the potential costs and scalability of new models.

### “Can You?”

Of course, even an ideal policy environment and an aligned, mobilized community are insufficient in the absence of necessary NGL support functions. Interviewees identified six necessary school and district level NGL supports. Our analysis considers the current state of development, in terms of ability to enable next generation learning, by both quality and scale.

#### **Instructional Components**

Perhaps most critical are **high quality next generation components (including content, assessment and technology)** that help enable personalized learning at the classroom and school-level. The School of One, for instance, created a content bank of thousands of lessons, a daily assessment system, and an algorithm designed to identify a unique lesson for each student based on skill and interest. Although comprehensive models like the School of One are still rare, the market for NGL components has grown rapidly in recent years.

Current next generation learning content is both vertically aligned and modular, enabling a skill-by-skill learning progression. At the School of One, students might learn from content provided

by over twenty vendors in a single week, with each vendor delivering a different skill. Formative assessments must be brief diagnostics that can be used on a daily basis, but also accurate and standards-aligned, with the ability to feed automatically into data systems at both the school and district level. As innovative content and assessments platforms are introduced to a consolidated market, their success or failure will depend ultimately on district and state interest.

## **Change Management**

Another important function, as districts with an NGL focus rethink their organizational structure, is the implementation of reform strategies and initiatives through **change management**. Virtually any district-level innovation, interviewees noted, is accompanied by major system changes including school openings/closings, district reorganization, human capital support/training, and more. Successful implementation requires change management, what one interviewer described as “Being able to follow through on a great idea,” and another explained as, “What you do when you finish the PowerPoint.”

Effective change management includes strong leadership combined with stakeholder engagement, utilizing data-driven decision-making without sacrificing efficiency, and the ability to maintain flexibility while striving for a vision. In most districts, effective change management is often a combination of both internal and external resources. Although a small number of large consulting firms engage in change management, especially in the wake of Race to the Top, they mainly focus on large districts or states. Additionally, a looser and highly fragmented market of smaller firms and independent consultants can also provide project management support. Whether change management support comes from inside or outside of the district, implementing NGL (or shifting a system to NGL) takes a focused effort, integrated with district priorities, and resourced with effective project managers.

## **Professional Development**

Repurposing **professional development** (PD) to support new and current employees during the transition to NGL is an important, but complicated task for a traditional school district. Professional development is a fragmented and mostly ineffective \$17 billion industry with projected growth of 4%.

Despite a large market of outsourced PD players, very few PD organizations have the skills and resources to help schools reallocate and retrain their current staff to fit a next generation school model. The implications of retraining an entire staff to personalize instruction school-wide are complex and time-consuming. The strongest candidates for this type of work are job-embedded data training programs that develop long range plans to assist schools in developing the skills to collect, analyze, and respond to data.

## **Human Capital**

In conjunction with change management, the **human capital** implications of next generation learning are enormous. In order to scale effectively, districts require principals, teachers, and other employees with detailed technological expertise, knowledge of content mastery, an understanding of how to use data to drive personalized learning, and more. Some interviewees argued for a focus on graduate schools of education, to ensure that graduates exit with at least a basic understanding of technology and data systems. Alternative certification programs represent a different option; these programs have experience connecting nontraditional candidates to schools and districts where their expertise is valued.

## **Finance**

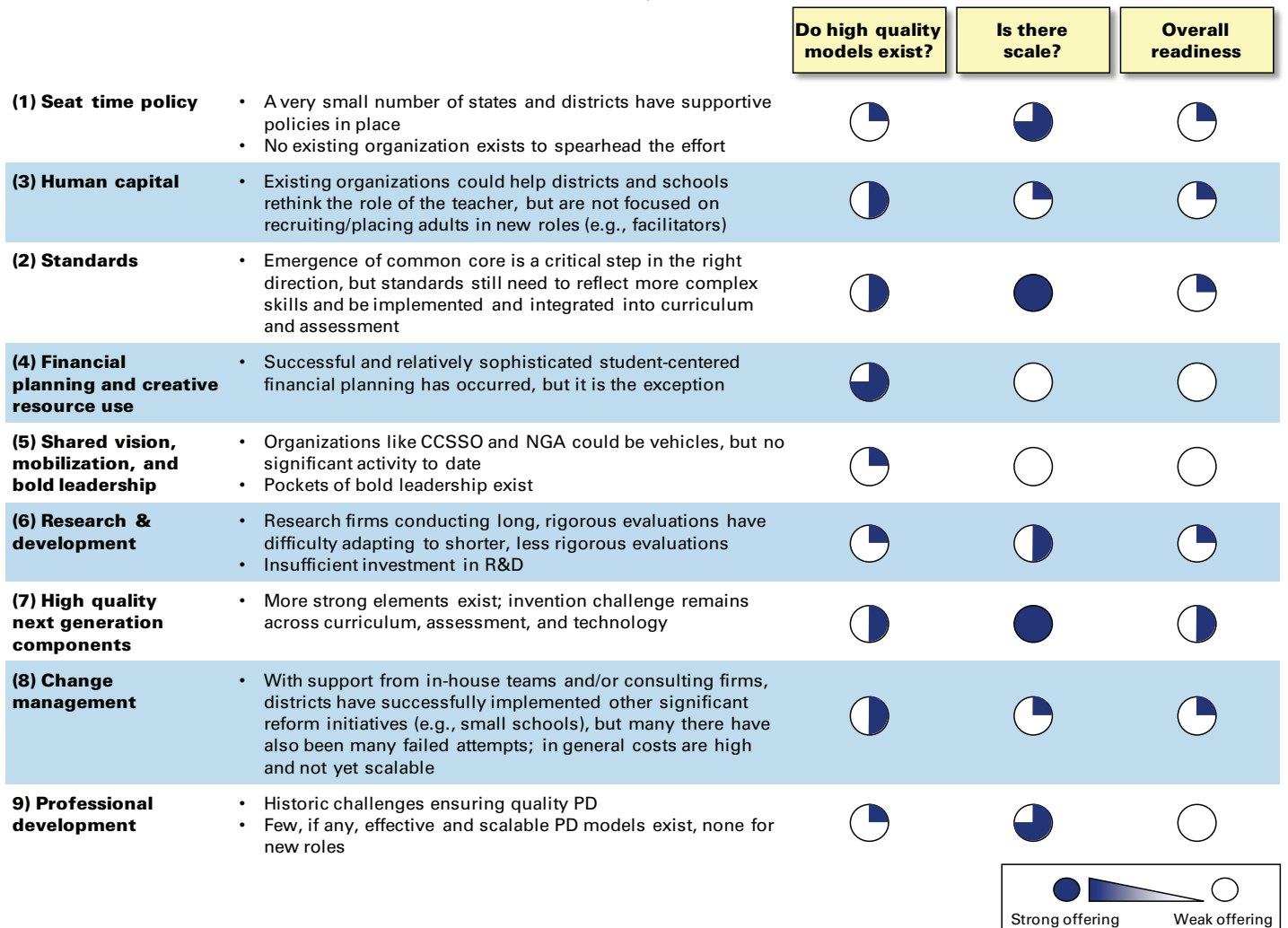
Next generation learning also necessitates a detailed analysis of system-level budgets, resource allocation, and overall **financial planning**. In the short-term, next generation financial planning is predominantly about providing schools with the necessary funding for various NGL components. In the long-term, NGL offers a new way to measure student progress (and evaluate teachers, districts, content providers) through skill attainment. “No teacher or content provider is all good or bad,” explained one interviewee. “Let’s pay them for what they do well.” The Florida Virtual Academy, for instance, is one of the few next generation schools to begun experimenting with this pay-by-skill system for its vendors. Although there are a handful of existing innovative approaches to resource allocation strategies, none currently exist at scale.

## **R&D**

Finally, **research and development** is an important function, not only as a motivator (see “Do You Want To?”), but also to inform the entire field’s understanding of what is and isn’t working. One interviewee noted, “To really support NGL, you need an organization that not only completes the research, but sticks around to help the school or district implement the necessary changes. There are almost no organizations that do this.” Interviewees identified a need for a different type of research organization, one that could work with schools and districts to help them learn from their mistakes. The millions of dollars currently spent on R&D in education are primarily focused on content and technology, with relatively little money spent on the broader structures and practices in which learning happens.

In summary, various levels of scale and quality exist across these nine critical next generation learning components. Our research of the organizations that play in each field revealed that none have reached adequate levels of overall readiness. The table on the next page summarizes our findings. In the following section, we look to examine potential solutions towards closing these gaps.

Figure 2: Next Generation Learning Readiness by Support Area



## Solutions

Eliminating barriers to next generation learning requires participation from four key stakeholder groups: districts and states; funders; evaluation, policy, and advocacy organizations; and NGL entrepreneurs inside and outside the education system. Each will play an essential role in generating demand and building capacity for next generation learning. But first, each group should acknowledge the barriers and supports outlined above and understand the steps necessary to promote next generation learning. Figure 3 (next page) outlines those critical steps, while the following section considers the critical stakeholder roles.

### District and State Officials: “Generate demand from the ground up”

The most obvious task for district and state officials is removing important policy barriers. Less obvious but also critical at the local level is delivering a coherent, reassuring message to all constituents. Local leaders must recognize that teachers,

parents, and students are often skeptical of new and different learning models. Local leaders set the pace of change within a district and are responsible for convincing key stakeholders of the benefits of innovation. “Our technology department supports the iPhone because employees stood up and demanded it,” explained one interviewee. “The challenge for the local leader is to get students, teachers, and parents to demand next generation learning.”

### Funders: “Generate demand and build capacity”

The distinctive contribution of the philanthropic community is seeking out and funding a wide variety of high-quality, innovative NGL models. “Betting on a single school model is like betting on a computer company in the ‘80’s; it’s too early to know who’s going to win,” explained one representative of a national foundation. “But we still fund them because want to show that this type of education is possible.” Certain foundations have chosen to fund a diverse group of NGL entrepreneurs to serve as evidence that there is no one single approach to student-centered learning.



Figure 3: Next Generation Learning System Support Readiness

	Why isn't it NGL ready today?	What would make it NGL ready?	
Large scale/distribution, but lower or mixed quality	<b>R&amp;D</b>	<ul style="list-style-type: none"> <li>Some questions around whether we have the right assessments</li> <li>R&amp;D institutions tend to be academic and slow</li> </ul>	<ul style="list-style-type: none"> <li>Development of next generation summative assessments</li> <li>Adaptation of existing organizations or emergence of new orgs to conduct evaluations</li> </ul>
	<b>PD</b>	<ul style="list-style-type: none"> <li>Too often unrelated to immediate classroom needs, undifferentiated by teacher need, off-site, and not integrated into everyday work</li> </ul>	<ul style="list-style-type: none"> <li>Repurposing existing dollars into much more aligned and personalized programs</li> <li>Funds are there but may be difficult to redirect; NGL may facilitate through rethinking the school day schedule</li> </ul>
	<b>Seat Time Policy</b>	<ul style="list-style-type: none"> <li>Most states have restrictive regulations</li> </ul>	<ul style="list-style-type: none"> <li>New regulations and more lenient granting of waivers</li> </ul>
	<b>Standards</b>	<ul style="list-style-type: none"> <li>Some question whether Common Core makes sufficient progress towards 21<sup>st</sup> century skills</li> <li>Many states are still far from implementation</li> </ul>	<ul style="list-style-type: none"> <li>Continue to push development of standards</li> <li>Alignment to content, assessment and PD</li> </ul>
Innovative or high quality, but without scale	<b>Financial Planning</b>	<ul style="list-style-type: none"> <li>Most is compliance-driven, not strategic or linked to instructional strategies</li> </ul>	<ul style="list-style-type: none"> <li>Significant increase in both demand and supply capacity (capacity in either the districts or by vendors); supply should follow demand</li> </ul>
	<b>Change Management</b>	<ul style="list-style-type: none"> <li>Significant underinvestment today</li> <li>As a result, little capacity in the field among experts in both change management and education issues</li> </ul>	<ul style="list-style-type: none"> <li>Need to build both demand and supply</li> <li>Some potential opportunity to repurpose PD dollars for school-level change management</li> </ul>
Small scale, lower or mixed quality	<b>Human Capital</b>	<ul style="list-style-type: none"> <li>Need to redefine role of the teacher, and adjust all aspects of human capital value chain accordingly</li> </ul>	<ul style="list-style-type: none"> <li>R&amp;D to develop the appropriate tools</li> <li>Seeding organizations which can bring the tools to the field at scale</li> </ul>
	<b>Mobilization</b>	<ul style="list-style-type: none"> <li>No common vision for NGL</li> </ul>	<ul style="list-style-type: none"> <li>An organization (perhaps modeled after Achieve or the Data Quality Campaign?) to organize and represent the growing momentum behind NGL</li> </ul>
	<b>Integration</b>	<ul style="list-style-type: none"> <li>Few players have integrated all needed elements of a complete next gen learning experience</li> </ul>	<ul style="list-style-type: none"> <li>Continuing innovation by vendors and school leaders; market appears to be beginning to move in this direction</li> </ul>

Investment in specific NGL components (not just assessments and algorithms, but also building and training an NGL-ready workforce) is also critical to creating an actionable future. Building capacity takes time, particularly the creation of a qualified teaching force with the appropriate skills. One entrepreneur explained, “The teachers of tomorrow are already in high school. Preparing them for a new type of teaching must begin today.”

**Evaluation, Policy, and Advocacy Organizations: “Support change management and transformation”**

Even organizations without a specific NGL mission can have an important impact on the movement. Evaluation organizations play a critical role; next generation models require short effectiveness studies that can be completed in weeks or months (not years) and distributed quickly to funders and district officials. Similarly, policy organizations can work to change public opinion regarding outdated policies and explain how they actually prevent personalized learning. Finally, through support for the Common Core and other enabling conditions, advocacy organizations such

as CCSSO and NGA can help transform enthusiasm and interest among all stakeholders, including students and parents, into a national movement.

**NGL Entrepreneurs: “Build it and back it with research”**

The challenge for NGL entrepreneurs is to convince funders and policymakers that specific models are not only effective and scalable but *easily replicable* in a variety of circumstances and locations.

In short, the overall goal for entrepreneurs is to demonstrate that better student outcomes (including higher student learning gains and higher rates of high school graduation and post-secondary acceptance and persistence) are possible, and often for less money. Interviewees named documentation as a critical priority. “If it works, everyone will want to know how you did it. Your goal is to create a blueprint that anyone can follow,” explained one entrepreneur. Interviewees identified *cost savings* as a critical but often-overlooked piece of documentation. “It’s the second

thing everyone wants to know,” explained one interviewee. “The first: how did your students do? The second: how much did it cost?”

Together, these various actors should agree on a shared sector-wide sequencing of effort if a movement in support of NGL is to emerge. First, the stage needs to be set through mobilization and foundational policy change, particularly around seat time and flexible use of resources. Second, R&D cycles should facilitate rapid innovation, testing, and growing. The data from these experiments should serve to build momentum. Finally, intentional scaling strategies should be defined that leverage different financial models, new approaches to PD, and more holistic and transformational approaches to change management.

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Despite recent next generation learning progress, this assessment of our educational system’s current ability to support next generation learning reveals a number of significant gaps in both capability and capacity. Pockets of success do exist, and scale has been reached in certain areas; yet the field is not truly NGL-ready in any of the identified areas of system support. More readiness exists in individual schools, many of which are putting emerging tools in content, assessment, and technology to use to support personalization.

Given the low levels of quality and scale across such a wide spectrum of supports, a coordinated sequence of philanthropic investment across the educational landscape may be required to achieve widespread readiness for NGL. Public interest in next generation learning could also spur the necessary market forces by creating demand for large-scale implementation. Multiple system-level barriers currently block the path between existing NGL models and future scalability, yet these pockets of innovation may serve as proof of what the future could look like.



## **Carnegie Corporation of New York**

Carnegie Corporation of New York is a philanthropic foundation created by Andrew Carnegie in 1911 to do “real and permanent good in this world.” The Corporation makes grants to promote international peace and to advance education and knowledge—primary concerns to which Mr. Carnegie devoted the foundation. Through its urban and higher education programming, the foundation strives to enable all students, including historically underserved populations and immigrants, to achieve academic success and perform with high levels of creative, scientific, and technological knowledge and skill. Current priorities include upgrading the standards and assessments that guide student learning, improving teaching and ensuring that effective teachers are well deployed in our nation’s schools, and promoting innovative new school and system designs.

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## **THE OPPORTUNITY EQUATION**

*Excellence and Equity in Mathematics and Science to Transform Education*

### **The Opportunity Equation**

The Opportunity Equation promotes equity and excellence in mathematics and science education for all students. A partnership between the Institute for Advanced Study and Carnegie Corporation of New York, Opportunity Equation engages national and local decision makers and thought leaders to establish common mathematics and science standards that are fewer, clearer, and higher, coupled with high-quality assessments; improve math and science teaching, along with methods to recruit, prepare, support, and manage the nation’s teaching talent; and redesign schools and systems to deliver math and science learning more effectively. The initiative was created to carry out the recommendations of the Carnegie-IAS Commission on Mathematics and Science Education in its 2009 report, *The Opportunity Equation: Transforming Mathematics and Science Education for Citizenship and the Global Economy*.



### **The Parthenon Group**

The Parthenon Group is a leading advisory firm focused on strategy consulting, with offices in Boston, London, Mumbai, and San Francisco. Since its inception in 1991, the firm has embraced a unique approach to strategic advisory services built on long-term client relationships, a willingness to share risk, an entrepreneurial spirit, and customized insights. Parthenon’s education practice—the Education Center of Excellence (ECE)—is the first of its kind across management consulting firms, and operates under the explicit mission and vision to be the leading strategy advisor to the global education industry. Parthenon invests significantly in dedicated ECE management and team resources to ensure that its global expertise extends across public sector and non-profit education providers, foundations, for-profit companies and service providers, and investors.

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### **Stupski Foundation**

The Stupski Foundation works to improve life options for children of color and poverty by contributing to the transformation of the K-12 public education system. We seek to catalyze a new student-centered system for public education rooted in personalization and to develop a new learning paradigm that take advantage of recent research and technology advances. The foundation works with students, parents, teachers, and education and community leaders. We are partnering with the Council of Chief State School Officers (CCSSO) to form the Partnership for Next Generation Learning Innovation Lab Network. This Network will incubate new models both inside and outside of the public education system and support innovation in practice, policy, and structure at the state, district, school, and student levels.

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