



A Blueprint for Scaling Tutoring Across Public Schools

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In this thought experiment, we explore how tutoring could be scaled nationally to address COVID-19 learning loss and become a permanent feature of the U.S. public education system. We outline a blueprint centered on ten core principles and a federal architecture to support adoption, while providing for local ownership over key implementation features. High school students would tutor in elementary schools via an elective class, college students in middle schools via federal work-study, and full time 2- and 4-year college graduates in high schools via AmeriCorps. We envision an incremental, demand-driven expansion process with priority given to high-needs schools. Our blueprint highlights a range of design tradeoffs and implementation challenges as well as estimates of program costs. Our estimates suggest that targeted approaches to scaling school-wide tutoring nationally, such as focusing on K-8 Title I schools, would cost between \$5 and \$15 billion annually.

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Abstract

In this thought experiment, we explore how tutoring could be scaled nationally to address COVID-19 learning loss and become a permanent feature of the U.S. public education system. We outline a blueprint centered on ten core principles and a federal architecture to support adoption, while providing for local ownership over key implementation features. High school students would tutor in elementary schools via an elective class, college students in middle schools via federal work-study, and full time 2- and 4-year college graduates in high schools via AmeriCorps. We envision an incremental, demand-driven expansion process with priority given to high-needs schools. Our blueprint highlights a range of design tradeoffs and implementation challenges as well as estimates of program costs. Our estimates suggest that targeted approaches to scaling school-wide tutoring nationally, such as focusing on K-8 Title I schools, would cost between \$5 and \$15 billion annually.

Keywords: Tutoring, COVID-19, learning loss, AmeriCorps, individual instruction

Program Vision and Principles

This paper is about an idea. Our premise is that all students could benefit from individual instruction by a tutor. Tutoring is among the most effective education interventions ever to be subjected to rigorous evaluation (Dietrichson et al., 2017; Fryer, 2017; Nickow et al., 2020). The *average* effect of tutoring programs on student achievement is larger than the effects found in approximately 85% of studies evaluating education interventions and equivalent to moving a student at the 35th percentile of the achievement distribution to the 50th (Kraft, 2020). Private tutoring is now a \$47 billion dollar industry in the United States alone (Global Industry Analysts, 2020). This enormous demand for tutoring further attests to its efficacy, yet access to tutoring services remains inherently unequal.

We seek to understand what it would take to equalize access to tutoring by integrating it into the U.S. public school system. We see tutoring not as an ancillary, compartmentalized, and temporary intervention for remediation, but becoming a core feature of public school instruction over time. This is a long-term vision for change in the public school system, similar to the expansion of public kindergarten over a 30-year period. We outline one possible blueprint for taking tutoring to scale nationally and highlight a range of design tradeoffs and implementation challenges that are inherent to such a foundational change to public schooling. We then use the blueprint to construct credible estimates for the total cost of scaling tutoring nationally as well as for a range of more targeted approaches. Such evidence is critical for informing whether, as a society, we believe that tutoring at a national scale is a goal we can and should pursue.

Our blueprint is centered on ten core design principles and the expansion of existing federal organizations to support adoption, while providing for local ownership over key implementation features. High school students would tutor in elementary schools via an elective

class, college students in middle schools via Federal Work-Study (FWS), and full-time 2- and 4-year college graduates in high schools via AmeriCorps. We propose a design where students work with the same tutor either in person or online as part of a regular class. Ideally, tutoring would be part of an extended school day, rather than as part of a pull-out, in-class, afterschool, or out-of-school tutoring approach. Tutoring classes should supplement — not supplant — classroom instruction, the arts, and physical education.

We envision an incremental, demand-driven expansion process that prioritizes schools serving students most in need of individualized instruction. Our estimates illustrate that targeting funding for school-wide tutoring via a range of equity-based approaches would cost a comparable amount to existing federal education programs such as Title I, the National School Lunch Program, and Head Start. For example, a program targeting all schools in the lowest quartile of academic proficiency rates would cost approximately \$10 billion annually. Expanding tutoring across K-8 Title I schools would cost approximately \$15.8 billion annually. These estimates reflect the total program costs, which we envision being primarily funded by the federal government but could also include contributions from state, district, philanthropic, and private-sector partnerships.

Even an exercise in envisioning national tutoring is prime for critique. The history of education reform is littered with failed attempts to take promising ideas and evidence-based programs to scale. An initiative of this expense and magnitude would face enormous pressure to show immediate results. Lofty promises and outsized expectations that can aid in the coalition-forming process could jeopardize its perceived success. Efforts to scale tutoring will be highly variable in their success and are unlikely to achieve the large effects found in efficacy trials of smaller to mid-sized programs often implemented under best-case circumstances. We should be

clear-eyed about this reality and the need for a sustained commitment to program improvement. Tutoring is not a silver bullet, but even scaling reasonably good tutoring with just half the average impact found in the research literature would meaningfully benefit students.

There are also many reasons to be optimistic that tutoring would have benefits beyond supporting students' academic development. Positive, caring relationships with tutors might support students' social-emotional development, enhance their attachment to school, and expose students to older peers who can serve as mentors for successfully navigating the education system (Balfanz & Byrnes, 2018; Bowman-Perrott et al., 2014; Christensen et al., 2020; DuBois et al., 2011). In fact, tutoring may also have reciprocal benefits for tutors' academic and social emotional development as well as tap into teenagers' need to contribute and feel respected (Allen et al., 1994; Allen et al., 1997; Eskreis-Winkler et al., 2019; Fuligni, 2018; Yaeger et al., 2018). Tutoring could provide valuable employment opportunities and experiences for youth, and create an expanded and more diverse pipeline of potential educators within local communities. Further, to the extent that tutoring increases educational achievement it would have economic benefits for both individual tutees as well as the nation's economy as a whole (Hanushek & Woessmann, 2020). None of these benefits are guaranteed, but there are few educational interventions with such a range of potential returns.

We make several contributions with this thought experiment. We provide the first systematic analysis of the costs associated with scaling tutoring nationally across a range of grade-level and school-type combinations. We also identify a variety of tradeoffs and implementation challenges relevant for scaling tutoring that have remained largely unaddressed in the literature. A growing number of scholars, policymakers, and pundits have made compelling cases for a rapid, often temporary, scale-up of tutoring programs that target the

students most adversely affected by the COVID-19 pandemic. While our blueprint differs in important ways, we believe it offers insights that can further support the success of these efforts. Finally, we shine a light on key areas in the research literature, such as peer and virtual tutoring, where there is a clear need for further causal evidence.

Ultimately, we hope to inform efforts to reduce COVID-19 learning loss and catalyze a national dialogue about coordinating these efforts as part of a larger vision to make tutoring a permanent feature of public schooling. Imagine the ideal. What if tutoring were a regular class where students developed sustained relationships with tutors who looped with them across several grades? What if tutoring helped make college a reality for students who never thought it was possible? What if this experience motivated many more students to serve as tutors themselves, refining their skills throughout high school, college, and beyond? What if most new teachers started on day one with years of experience connecting with students and delivering individual instruction? Nothing has ever been accomplished that wasn't first imagined.

The Potential and Perils of the Present Moment

Mounting evidence documents how the COVID-19 pandemic has resulted in substantial learning loss and increased educational inequity (Bacher-Hicks et al., 2020; Chetty et al., 2020; Dorn et al., 2020a; Engzell et al., 2020; Kraft et al., 2020; Maldonado & De Witte, 2020). Recent analyses of standardized tests administered at the beginning of 2020-21 school year identify double-digit drops in achievement growth compared to the year prior, particularly for math, with larger declines and higher rates of attrition for students of color relative to their white peers (Dorn et al., 2020b; Kuhfeld et al., 2020; Stein, 2020). Educators are now facing the enormous task of helping students make up for lost instructional time while teaching classes with

increasingly diverse skill levels. These broadening gaps within classrooms further strain on our traditional, group-based instructional approach to education.

At the same time, there has been a groundswell of interest in tutoring as an approach to address COVID-19 learning loss around the world. Scholars, educators, philanthropists, journalists and policymakers have made compelling cases for major expansions to tutoring and national service programs (Brooks, 2020; Burgess, 2020; Campbell et al., 2020; DiPerna, 2020; Dynarski, 2020; Goldrick-Rab & Yoshikawa, 2020; Kraft & Goldstein, 2020; Oreopoulos, 2020; Slavin, 2020; Wong, 2020). The Annenberg Institute at Brown University has established the National Student Support Accelerator as a research, innovation, and resource hub for scaling high-impact tutoring. Maryland has allocated \$100 million towards tutoring services this year (Salmon, 2020) and the Los Angeles United School District is paying teachers to serve as outside-of-school tutors for students (Blume, 2020). The Gates and Haslam Foundations as well as Citadel are funding expansions of tutoring programs in New York, Chicago, Broward County (FL), and across Tennessee (Citadel, 2020; Gates, 2020; Tamburin, 2020). Large international tutoring initiatives are under way in the U.K., Netherlands, and Australia (“A Class Apart,” 2020; Smith, 2020; UK Department for Education, 2020; “Victoria to employ thousands,” 2020).

The pandemic has also forced us to reconsider long-held norms and practices in public education, creating a rare opening for fundamental, structural change. The sprawling, decentralized nature of the U.S. public education system has traditionally made it difficult to scale and sustain change to core educational practices (Tyack & Cuban, 1995). Amidst the pandemic, schools have had to redesign systems, redefine roles, and rearrange schedules at an unprecedented speed and scale. If ever there were an opportunity to fundamentally change the way we deliver public education, the time is now.

The immediate need, growing enthusiasm, and window of opportunity for a rapid expansion of tutoring could also imperil its potential longer-term success. We face the risk of implementing tutoring in hasty and uneven ways due to a lack of coordination and system-wide capacity. Rapid scale-up of a diffuse set of tutoring models with philanthropic backing might benefit pockets of students but could also erode support for tutoring if it is viewed as only a short-term, add-on solution and perceived as ineffectual. Attempts to scale tutoring might be more successful and sustainable if they are part of a larger effort to incrementally integrate tutoring within the structures of the public school system.

Lessons Learned from the Past

Taking tutoring to scale in the U.S. is not a new idea. Two prior national efforts provide important lessons on how an attractive idea can fall short. President Clinton's America Reads initiative aimed to marshal one million volunteer and college tutors to support early literacy. The accompanying legislation, however, was never funded, and the idea dissipated into a loose network of programs with highly variable structures and goals (Fitzgerald et al., 2002; Worthy et al., 2003). America Reads tutors often volunteered in classrooms and became de facto teachers' aides rather than serving as tutors.

The No Child Left Behind Act, in contrast, delivered over \$2 billion annually to fund Supplemental Education Services (SES) for students in Title I schools to access private afterschool tutoring services. Although districts were required to contract with proven providers, few programs had credible evidence of their effectiveness (Barnhart, 2011; Deke et al., 2012; Springer et al., 2014), and states had little funding or capacity to vet providers (Burch et al., 2007). Tutoring via SES also suffered from low take-up and attendance given the burden it placed on parents to select and transport students to the off-campus programs, the lack of

coordination with schools, and the challenge of establishing rigorous academic cultures in the afterschool settings in which they took place (Heinrich et al., 2010; Heinrich et al., 2014).

In practice, both federal initiatives placed high demands on schools and families to coordinate tutoring while providing limited funding and support. They also delivered a relatively low dosage of tutoring for far fewer students than intended (Deke et al., 2012; Heinrich et al., 2014; Worthy et al., 2003; Zimmer et al., 2010). Ultimately, both programs fell well short of their lofty goals.

Goals & Design Principles

We envision the primary goals of national-scale tutoring would be to accelerate foundational skill development in math and reading and promote persistence and engagement in school. However, we recognize that districts are best positioned to shape program implementation to their own local contexts. Thus, we prioritize district-level flexibility that might include tutoring in other core subjects as well as social-emotional learning. We also see connecting students with older peers who can serve as mentors and role models as a primary goal of this program. Over time, we can imagine undergraduate and graduate teacher education programs collaborating with tutoring programs to develop an expanded pipeline of potential future educators from local communities.

Successfully taking education reforms to scale is a balancing act between maintaining fidelity to the core components of a program and providing flexibility for local actors to shape implementation within their contexts. Here we propose a set of ten design principles which constitute the fundamental structure of our proposed tutoring program. These design principles are informed by emerging research on practices of highly-effective tutoring programs (Fryer,

2017; Nickow et al., 2020; Worthy et al., 2003) and the implementation science literature (Coburn, 2003; Elmore, 1996; McLaughlin & Mitra, 2001).

Design Principles

Tutoring is a school-wide program. Every student can benefit from tutoring and mentorship. School-wide programs do not stigmatize tutees as low-performing students in need of remediation. Tutoring all students can foster a collective commitment to supporting the program because it is seen as a core practice rather than an ancillary program.

Tutoring is individualized instruction. Effective tutoring programs maintain low student-to-tutor ratios — no higher than 4:1, and preferably 2:1 — to preserve the ability for tutors to personalize instruction. Student-to-tutor ratios pose a tradeoff between individualization and cost-effectiveness (Fryer & Howard-Noveck, 2020). As ratios increase, tutoring becomes more affordable but requires tutors to increasingly divide their focus across multiple students and teach to the middle of the skill distribution. Larger student-to-tutor ratios require that tutors have a much broader set of pedagogical skills than those necessary for individualized instruction.

Tutoring is a high-dosage intervention. Tutoring programs that meet more frequently are more effective. The most successful tutoring programs typically meet three to five times a week for at least thirty minutes per session (Nickow et al., 2020).

Tutoring is with the same tutor all year. Relationships are at the heart of tutoring. Effective programs ensure continuity in tutor-student pairings to support the development of these relationships and allow tutors to learn about students' individual strengths and areas of instructional need (Balfanz & Byrnes, 2020). Such an approach may also support the development of positive, caring relationships between tutors and students (Hill & Jones, 2018).

Tutoring is a part of the school day. Incorporating tutoring into the school day promotes regular attendance, better coordination with teachers, and a stronger academic culture (Cook et al., 2015; Fryer, 2014). Rather than delivering tutoring by pulling students out of their core classes or displacing enrichment classes, we envision tutoring as a supplemental class incorporated into an extended school day.

Tutors receive intensive, ongoing training. Tutors are more effective when supported by adequate training and ongoing coaching (Hänze et al., 2018; Jacob et al., 2015; Kraft, 2015). Prioritizing tutor training through a combination of ongoing professional development, peer learning communities, and on-the-job feedback supports continual improvement.

Tutoring is curriculum-based. Tutors use proven curricular materials and scaffolded tutoring models for individualized instruction that are selected by states/districts to support students' success in grade-level content (TNTP, 2018). The success of cross-age peer tutoring depends critically on high-quality instructional resources to guide tutors' efforts and align tutoring with class content.

Implementation Principles

District adoption is voluntary. Successfully scaling tutoring should follow a ground-up process of voluntary local adoption rather than a top-down, federally mandated or incentivized expansion. There is little reason to expect that schools lacking parent and teacher support or that are not committed to integrate tutoring into their core structures would succeed in implementing tutoring in a way that benefits students.

Districts shape program implementation. Districts would be supported to implement the design principals of the program with fidelity, but also have the flexibility to determine a range

of program characteristics. Local school administrators will have the best expertise in how the program can suit their schools' needs.

District experiences should inform ongoing revisions to the blueprint. The blueprint we provide is only an initial framework. It should be revised and amended based on lessons learned from districts piloting new programs and results from ongoing evaluations. This will require a systematic approach to improvement by experimenting with different implementation models, testing the efficacy of promising program features, and building a networked system for sharing best practices (Bryk et al., 2015).

The Blueprint

On average, U.S. students spend about 1,200 hours in school each year.¹ We propose delivering tutoring by extending students' K-12 school year by approximately 100 hours, or 30 minutes a day, and using this additional time to reinforce and accelerate the development of students' core literacy and numeracy skills. In order to make this feasible at scale, we envision a tiered structure of cross-age peer tutors: high school students tutor elementary school students as an elective course, college students tutor middle school students as a Federal Work-Study job, and recent college graduates tutor high school students as full-time tutors. Tutors at each level would voluntarily choose to participate and be compensated with elective course credit, Federal Work-Study wages, or living stipends analogous to AmeriCorps members, at each respective level. Tutoring would take place virtually or in person with one to four students per tutor.

Our program is dependent on support for school and district implementation and operation. We expect the federal government would need to fund the program and support districts via a new office in the Department of Education (ED), which we will refer to as the

National Tutoring Institute (NTI). The NTI could serve three main purposes: support implementation and operation in districts, coordinate full-time Education Corps opportunities, and lead efforts to improve the program over time. These functions could also be instituted as a part of Title I or at the state level, but we believe that a national office within ED would provide clarity of mission and a center of coordination. Federal support, both financial and technical, is intended to minimize costs and burden to districts and colleges for establishing and operating programs.

Participation in this program would be completely voluntary for districts. The tiered system of tutors across grade levels creates a modular framework that allows districts to roll out tutoring in stages. K-12 teachers would be encouraged, but not required, to serve as tutoring homeroom teachers for additional pay, overseeing students during tutoring, and coordinating efforts between teachers and tutors. A key tension for teachers is that tutoring could save them time by substituting for some of the additional individualized support teachers provide to students, but it could also demand additional time to coordinate and communicate with tutors.

We propose additional, fully funded positions to administer the program, support tutors, and oversee operations, including peer leadership, school site managers, and district coordinators. Districts would have autonomy over adapting instructional materials curated by the NTI or adopting alternative curricular materials as well as a range of implementation decisions. We propose rolling out the program in equity-based phases, first targeting Title I schools or schools in the bottom quartile of academic proficiency rates given potential limitations to federal funding and tutor supply.

Cross-age Peer Tutors

Tutoring at a national scale is a human resource challenge. How can we recruit and support enough effective tutors for millions of students? Research demonstrates that younger, less-experienced tutors can be effective with strong oversight, ongoing training, and structured curricula (Allor & Mccathren, 2004; Hänze et al., 2018; Juel, 1996; Lindo et al., 2018; Markovitz, et al., 2019; Moore-Hart & Karabenick, 2009). Our idea is to match cross-age peer tutors from a range of school-age populations with tutee grades according to the increasing difficulty of subject content. While peer and cross-age tutoring has a long history in practice,² our blueprint highlights the need for more research on its effectiveness because it is a logical solution for scaling tutoring. In Table 1, we provide estimates of the total students reached and tutors needed for each module across all public schools as well as more targeted approaches focusing on Title I and low-proficiency schools.³ At any scale, an immense number of tutors are necessary to implement our program design. We expect that tutor supply will constrain program scale initially but would expand over time.

Elementary School Students and High School Tutors: We propose that high school students tutor local kindergarten through fifth grade students in pairs as part of an optional high school elective. Available evidence suggests cross-age tutoring can be effective at raising achievement and developing mentorship relationships across a range of age differences (Dennis, 2013; Sprinthall & Scott, 1989; Topping, et al., 2003, 2011, 2012). However, much of the existing research is limited by small samples, weak research designs, and use of self-reported proximal outcomes. Training appears to be a critical feature of effective cross-age peer tutoring programs (Alegre-Ansuátegui, et al., 2018; Hänze et al., 2018).

Middle School Students and College Work-Study Tutors: We propose that college students tutor middle school students in groups of three as part of FWS programs. There is ample

evidence that college students can be effective tutors, particularly when they follow highly structured curricula (Astin & Sax, 1998; Courtney et al., 2008; Denton et al., 2004; Fitzgerald, 2001; Lachney, 2002; Spear-Swerling, 2009; Young et al., 2018; Allor & McCathren, 2004; Juel, 1996; Lindo et al., 2018; Moore-Hart & Karabenick, 2009).

High School Students and Full-Time Tutors: We propose expanding AmeriCorps to fund grants for 2- and 4-year college graduates to serve as tutors for high school students in groups of four through local, state, and national non-profit partners. Many programs that employ AmeriCorps members to serve in schools, such as City Year, engage Corps members as teachers' aides or staff for afterschool programs. We envision organizations employing tutors via AmeriCorps' Education Corps program to exclusively serve as tutors in standalone tutoring classes during the school day. Evaluations of AmeriCorps tutoring initiatives and other full-time tutoring interventions have shown this can be an effective delivery method for individualized instruction and that tutor development is a central component of successful programs (Cook et al., 2012; Fryer, 2014; Jacob, et al., 2015; Kraft, 2015; Markovitz, et al., 2014; Markovitz, et al., 2018; Markovitz, et al., 2019; Parker, et al., 2019).

Students with Disabilities and Paraprofessionals: A greater level of skill and individualization is necessary to work with students with substantial learning differences. Of the 6.6 million students currently receiving special education services, 1.1 million spend less than 40% of their time in regular classroom instruction. We budget for paraprofessionals to work one-on-one with this high-need population of students with disabilities, but would expect school-based teams that manage students' Individual Education Plans to decide whether a student should instead be in the school-wide cross-age peer tutoring classes. Placing paraprofessional in

tutoring roles might not be possible in some districts without changes to existing collective bargaining agreements and would certainly require targeted training and support.

The Organizational Structure

We propose an organizational infrastructure where a federal office housed within the Department of Education administers funding and helps coordinate the efforts of districts, colleges, and service organizations, which in turn assume primary responsibility for staffing, training, supporting, and overseeing tutors. Our organizational blueprint is intended to project the personnel and infrastructure necessary to minimize the burden on existing K-12 and college resources. We expect district and school-level staff would be locally hired but federally funded. Designing the managerial infrastructure surfaces a clear tension between providing adequate operational support for districts and creating expensive bureaucratic positions that can become coopted for other administrative tasks.

Our current structure includes five community-level leadership roles charged with shaping program scope, implementation, and operation. These positions consist of District Coordinators, Work-Study Directors, School Site managers, Tutor Homeroom Teachers, and tutor Peer Leadership. Each respective position would assume responsibility for managing program operations at the district, college, school, classroom, and tutor-group levels. We include a visual of this organizational structure in Figure 1.

National Tutoring Institute: Critical to our blueprint is an institute within ED that serves as a central hub for coordinating efforts to scale tutoring nationally and administering funding. The NTI would be primarily responsible for (1) publicizing the expanded AmeriCorps' Education Corps program, (2) working in partnership with state AmeriCorps offices to expand the supply of local organizations employing full-time tutors funded via AmeriCorps, (3) hosting

convenings and networking opportunities to build a community of practice around tutoring, (4) facilitating local partnerships between districts, colleges, and AmeriCorps affiliates, (5) processing district and university applications for program funding, and (6) collecting implementation data about program operations and expansion.

We envision the NTI would also contract with independent organizations such as the National Student Support Accelerator at Brown University to (1) develop tutor training material and guidance for districts about evidence-based practices for tutoring program designs and operations, (2) curate a library of instructional materials and formative assessment for tutors, (3) provide technical assistance and implementation support for districts, colleges and AmeriCorps funded tutor programs, and (4) provide targeted support for high-needs districts to establish program partnerships and submit funding applications. We imagine the NTI would work closely with the Institute of Education Sciences to commission program evaluations to inform ongoing improvement efforts.

District Coordinators: Coordinators would be district employees responsible for defining the goals of the tutoring program, managing partnerships with local colleges and AmeriCorps funded affiliates, and coordinating schedules across schools to facilitate tutoring between elementary and high school students. They would assume primary responsibility for managing the selection process for high school tutors interested in tutoring younger students for elective credit and would oversee program operations. Coordinators would also identify curricular materials for tutors to use.

Work-Study Directors: Directors at participating colleges would lead newly expanded Federal Work-Study programs with a focus on service and program improvement as well as tutoring placements with local districts. Their responsibilities would include coordinating with

district partners, overseeing the tutor selection process, selecting and managing tutor peer leadership, and supporting peer leaders in tutor development efforts.

School Site Manager: Managers would be full-time administrators that oversee school-based program operations. All tutors and tutor homeroom teachers would report directly to these managers. Their responsibilities would include matching students and tutors, training tutors on the schools' curriculum and standards, observing and providing feedback to tutors, overseeing peer leaders, and communicating with families. We see this role as critical to the success of any program. Effective managers would lead on-the-ground efforts to solve ongoing implementation challenges and promote continuous improvement efforts. They would also have to be proactive about protecting their time from being coopted by administrative tasks unrelated to tutoring.

Tutor Homeroom Teachers: We envision employing a group of teachers in each school to work an extra 30 minutes a day for additional pay to oversee tutoring for a homeroom of students. The primary responsibility of this position will be to help coordinate communication and align instructional efforts between tutors and teachers. It is also necessary to have an adult presence in each classroom where tutoring occurs given tutoring may take place online and many tutors will be only teenagers.

Peer Leaders: Similar to existing AmeriCorps programs, experienced tutors at all levels could apply for peer-leadership roles and be compensated with an additional stipend. Peer leaders would take primary responsibility for observing and providing frequent feedback to tutors to help them improve their practice. Tutors at all levels would meet as a group with peer leaders weekly during a regularly-scheduled block, likely on the non-tutoring day of the week.

Applying, Adapting, and Implementing

We imagine a process where districts choose to apply to the NTI for federal funds to support a tutoring program. A streamlined application might ask districts to identify: (1) what school level(s) they will target for tutoring, (2) the high school, college and/or service organization(s) they will partner with, (3) the schedule they will use to offer tutoring as part of the school day, (4) the instructional materials they intend to use, and (5) evidence of sufficient interest among teachers to serve as tutoring homeroom teachers. All districts that have submitted these plans would be approved according to funding capacity, target school priorities, and tutor supply. Districts would then be responsible for determining how to take the core design principles of the tutoring program and adopt them to their context. We expect local implementation will include making the following initial choices:

Online vs. In Person: Districts determine if tutoring will take place in person or remotely. There are clear tradeoffs here. Virtual sessions have the benefit of expanding the pool of tutors when local supply is limited as well as reducing time costs and logistical obstacles associated with commuting to schools. However, on-line programs impose additional costs for providing and maintaining the necessary technological infrastructure and web-connected devices. The evidence in support of tutoring is almost entirely based on in-person programs. While the nascent literature on virtual tutoring programs is encouraging, it mostly focuses on one-to-one tutoring rather than with multiple students (Burch et al., 2016; U.S. Department of Education, 2010; Roschelle et al., 2020). It remains an open question if on-line tutors can establish the rapport necessary to support students who are reluctant to engage in tutoring.

Scheduling: Districts will have two key scheduling decisions to make: whether to extend the school day, and whether tutoring is offered during a single period or integrated throughout the school day. As shown in Table 2, these choices will determine three key features of local

programs: (1) whether tutoring supplements or supplants existing classes, (2) whether schools will need to extend teachers' workday, and (3) how many tutors are required and how much they can work. We recommend extending the school day by 30 minutes across all K-12 schools, with tutoring taking place for 30 minutes a day Monday through Thursday and Fridays being an early release for K-8 students. We see extending the day for high school students as essential given that our blueprint requires many of them to serve as tutors for 30 minutes in addition to being tutored.

A critical but underappreciated challenge with extending the school day is the need for union approval through collective bargaining and fair compensation for teachers' additional time. Our proposed model of extending the school day would not rely on extending teachers' workday. For this to be feasible, tutoring has to happen at the same time for all students either during the first period or last period to allow some teachers to start their days after tutoring or end before tutoring. The tradeoff here is that simultaneous tutoring sessions require more tutors than if districts integrate tutoring across the full school day. Extending the teacher workday would allow tutoring to be integrated throughout the school day and for tutors to work across multiple classes, requiring fewer overall tutors.

The large supply of high school students who could serve as tutors means that it is likely feasible to offer tutoring during a single period in elementary schools. Limiting tutoring to a single period in middle school is possible but more challenging given the more limited supply of college students. It would also limit Federal Work-Study students to tutoring only two hours a week which may be optimal for some but less so for others. Full-time Education Corps members would need to work with high school students in classes integrated throughout the school day. For high schools, we can imagine an extended day schedule with tutoring and core classes during

the traditional school day and then electives, including tutoring elementary school students, during the additional period. This might allow schools to stagger the workdays of core-subject teachers and elective teachers to avoid extending the teacher workday. Across grade levels, scheduling options may be constrained by local tutor supply.

Tutor Training: We envision training as an integral aspect of the tutor experience, with an emphasis on ongoing observation and coaching via peer and school leadership. The NTI would provide training guides that districts could opt to use and adapt. We expect that leadership at the high school and college level would administer initial training sessions. Training would likely include topics such as relationship-building strategies, setting appropriate boundaries, questioning techniques, student learning differences, local curriculum and content standards, diversity training, and responsible community engagement (especially for tutors not from the local community). Peer leaders would need additional training on how to provide ongoing feedback and coaching to their fellow tutors.

Tutoring Content: Districts would determine the core goals and associated curriculum for tutoring. A challenge for any national instructional change is granting local autonomy over curricular decisions, while still ensuring programs benefit from evidence-based content. The political battles over the Common Core State Standards make this a particularly contentious issue. The NTI would make a range of content and formative assessments for math and reading available that districts could choose to use or adapt. Districts could also choose to focus on other core subjects and blend elements of formal mentoring or social-emotional learning into the tutoring program. Regardless of the focus, district coordinators should ensure tutoring content is aligned with district curriculum and state-level standards.

Tutor Selection: Tutor selection would be managed locally by districts, colleges, and AmeriCorps affiliated organizations. The NTI would provide resources for tutor selection and make suggestions for considering different qualifications such as ability to connect with students, content knowledge, and a minimum GPA, but ultimately the selection criteria would be left to local discretion. Approaches to tutor selection present a clear tradeoff between maintaining a committed and qualified corps of tutors and constraining tutor supply.

Student Grouping and Tutor-Student Matching/Ratios: Districts would determine the process for grouping students and matching tutors as well as exact student-to-tutor ratios with a ceiling of 4:1. We imagine students would be grouped based on common learning needs and can envision a variety of matching priorities related to a tutor's experience level, fluency in students' home language, individual background, and subject-specific interests.

Costs and Funding

We estimate total program costs at a national scale and do not assume cost-sharing across federal and local stakeholders. However, there are a number of tradeoffs associated with the distribution of costs across federal, state, and local levels. Requiring districts to cover some fraction, perhaps 10%, of program expenses would lower costs from the federal perspective and possibly enhance local commitment to the program's success. We hesitate to recommend states or districts take on a large share of costs given the longstanding racial and socio-economic gaps in per-pupil funding across states and within states across districts (Corcoran & Evans, 2015; Knight, 2017).

Program Cost Projections

In Table 3, we break down total and per-pupil cost estimates across three different target populations and within each grade range. This breakdown helps to illustrate that the total costs of a more targeted tutoring model would be on par with many current federally funded education initiatives such as Title I programs (\$16 billion), the National School Lunch Program (\$14 billion), and Head Start (\$9 billion). We estimate that a national program to tutor the 6.4 million elementary and middle school students in schools in the bottom quartile of student proficiency rates would cost \$4.7 billion annually. Alternatively, targeting all 22.3 million public elementary school students would cost \$14.4 billion. Tutoring the 28 million K-12 students attending Title I schools would cost \$25.5 billion. At the highest end, tutoring every public-school student in the U.S. would cost \$49.1 billion.

We make several assumptions when calculating these estimates that suggest they capture the high end of the program's potential cost range. We assume a model that is fully funded by new federal funding, rather than through a reallocation of existing funds. We also assume every district in a given target population would choose to opt into the program and that two thirds of districts would need additional technical resources to support virtual tutoring. We derive our estimates by pricing the primary inputs of the tutoring model and provide the details of input costs, model assumptions, and data sources in the Appendix. Personnel expenses comprise 83 percent of our estimated costs, which is consistent with prior literature on intervention costs (Hollands et al., 2016) as well as evidence from IRS filings of non-profit tutoring organizations.⁴ Per-pupil costs vary by grade ranges (\$643 elementary; \$907 middle; \$1,462 high) primarily because of the differential costs associated with tutors for each level.

Costs for tutoring high school students are also higher because we estimate the all-in costs of Education Corps members, which in the current AmeriCorps model are shared across

federal and community stakeholders. We budget for an average Education Corps stipend of \$30,000 annually, just above the AmeriCorps maximum, to attract a larger and more diverse supply of potential tutors and to make participation more practical for recent college graduates from low-income backgrounds. If Education Corps stipends were \$22,340 per service year (the recommended minimum stipend in the CORPS Act), our program would cost \$46 billion to reach all students in all schools, and high school costs would drop to \$1,256 per-pupil.

Potential Funding Channels

Our blueprint would require four main funding channels. The federal government could take a number of avenues to distribute program funding, including an initial stimulus bill. Here, we focus on reauthorizing and amending existing funding mechanisms to cover program costs.

National Investments: The National Tutoring Institute might be funded by increasing the ED budget by \$111 million annually, a 0.15% increase and roughly the budget of the National Center for Education Statistics. This would need to be established and funded through an act of Congress similar to the Education Sciences Reform Act of 2002, which established the Institute for Education Sciences.

AmeriCorps Funding: Tutoring for high school students would require an expansion of up to 307,000 Education Corps positions within AmeriCorps. This would be a massive expansion of the existing AmeriCorps program, of which over 44,000 of the 75,000 funded members work in education. The CORPS Act, a bipartisan bill championed by Sen. Coons, was introduced in the Senate on June 16, 2020, and proposes an increase of 250,000 total positions each year for three years.

District Funding: K-12 districts will need funding for district and school managerial positions, additional pay for teacher supervision, stipends for peer leadership, IT investments,

and all management roles. Currently, most federal funding to K-12 districts is through Title I of the Elementary and Secondary Education Act (ESEA). We imagine district funding could be distributed through a stimulus bill in the short-term but inclusion in the next reauthorization of ESEA would ensure program continuity in the long run.

Higher-Education Funding: Colleges involved in the program will need support for expanded Federal Work-Study programs and coordinator roles. About 731,000 college students receive FWS grants each year. Increasing FWS would improve college affordability and also likely increase diversity in the pool of tutors, which could be important for the “role model effects” found for teachers (Gershenson et al., 2019). This expansion fits with initiatives to improve college affordability and accessibility with the reauthorization of the Higher Education Act and proposed service-learning credit for AmeriCorps service (Goldrick-Rab & Yoshikawa, 2020).

The Challenges of Scale

The success of any effort to take tutoring to scale will depend critically on a clear-eyed understanding of the implementation challenges that can scuttle even the most promising education reforms. Successfully scaling education initiatives requires navigating a complex and decentralized organizational environment where shifting political priorities, competing demands, and high rates of administrative turnover serve to reinforce the status quo. Districts are often risk-averse organizations that are wary of partnering with outside programs. We have intentionally designed the blueprint so that the actors and organizations required to implement tutoring at scale all stand to benefit from either direct compensation, new administrative positions, increased funding, instructional support, mentoring relationships, or job experience.

Too often, education reformers focus on scale as a narrow, numerical expansion of a program. Scaling successfully requires attending to the depth as well as the breadth of consequential change, the spread of practices across actors within organizations, and the sustainable transfer of ownership to local districts (Coburn, 2003). Expansion efforts commonly fail due to an excessive focus on superficial features of program adherence (Spillane et al., 2002). Scaling successfully requires a balance between empowering implementers to shape programs to their local contexts and ensuring knowledge transfer of core design principles to avoid “lethal mutations” (McLaughlin & Mitra, 2001).

The blueprint we propose is predicated on a fundamental shift in our collective understanding and norms about what schools do. We see individual instruction complementing group-instruction as an integrated strategy to support the learning of all students. For this to happen, administrators, teachers, tutors, students, and parents would need to view tutoring as a core part of students’ schooling experience. An effective tutoring structure would also mean a departure from the egg-crate norms of schooling, where teachers work in isolation, towards a more collective effort where teachers and tutors coordinate to support students’ learning.

Our proposed blueprint would also require substantial structural changes to education systems and ongoing skill development for young adults. Schools will need to make major, coordinated changes to their schedules across grade levels and in partnership with local colleges to align the timing of tutoring with the schedules of high-school and college students. Scaling tutoring is highly dependent on the will of young adults to serve as tutors and the skill required of them to succeed. Ongoing on-the-job training is critical for program success.

We have attempted with this blueprint to create a structure that recognizes these challenges. Our aim is to provide an architecture for supporting schools’ efforts to make tutoring

widely accessible, while providing for local ownership over key implementation features. The modular nature of the blueprint is intended to provide flexibility in program design, while still maintaining a “family resemblance” across programs (Elmore, 1996). Scaling tutoring successfully will likely require a scaffolded sequence of implementation support and capacity building (Durlack & DuPre, 2008; Quinn & Kim, 2017).

Conclusion

There are often large gaps between what we know about effective education interventions and what we can successfully implement at scale. This paper attempts to bridge this gap for tutoring. We view individualized instruction as a promising intervention not only for supporting struggling students and addressing COVID-19 learning loss, but also as pedagogical practice that should become a core part of all students’ educational experiences in school. Accomplishing this goal will take a substantial federal commitment and a shift in the norms and structures of schooling. It will also require patience and persistence in the face of implementation challenges. We hope our blueprint helps to pave the way forward.

Endnotes

- (1) Authors' calculations based on the 2014-15 National Teacher and Principal Survey.
- (2) Programs such as Reading Buddies and Peer Assisted Learning Strategies that incorporate elements of peer tutoring have been used in schools for decades (Fuchs et al., 2002; McMaster et al., 2005; Stein et al., 2008). Evidence on Peer-Assisted Learning Strategies is summarized for math and literacy in What Works Clearinghouse (2012, 2013).
- (3) We define low-proficiency as schools in the bottom quartile of student proficiency rates on state assessments, according to public achievement data from the U.S. Department of Education (2020). We average proficiency rates on math and English language arts assessments and sort schools based on the indexed score.
- (4) Tax-exempt organizations with gross annual receipts greater than \$50,000 publicly file the IRS 990 form. We reviewed the proportions of reported costs attributable to personnel, operations, facilities, etc., for a range of tutoring organizations that file the 990. The average share of total costs for personnel was 69%.

References

- A Class Apart: as schools reopen, how can pupils make up for lost time? (2020, July 18). *The Economist*. Retrieved from <https://www.economist.com/international/2020/07/18/as-schools-reopen-how-can-pupils-make-up-for-lost-time>
- Alegre-Ansuátegui, F. J., Moliner, L., Lorenzo, G., & Maroto, A. (2018). Peer tutoring and academic achievement in mathematics: A meta-analysis. *EURASIA Journal of Mathematics, Science and Technology Education*, 14(1), 337-354
- Allen, J. P., Kuperminc, G. P., Philliber S., Herre K. (1994). Programmatic prevention of adolescent problem behaviors: The role of autonomy, relatedness, and volunteer service in the teen outreach program. *American Journal of Community Psychology*, 22(5), 595-615. <https://doi.org/10.1007/BF02506896>.
- Allen, J. P., Philliber S., Herrling S., Kuperminc G. P. (1997). Preventing teen pregnancy and academic failure: Experimental evaluation of a developmentally based approach. *Child Development*, 64(4), 729–742. <https://doi.org/10.1111/j.1467-8624.1997.tb04233.x>.
- Allor, J., & McCathren, R. (2004). The efficacy of an early literacy tutoring program implemented by college students. *Learning Disabilities Research & Practice*, 19(2), 116-129.
- Astin, A. W., & Sax, L. J. (1998). How undergraduates are affected by service participation. *Journal of College Student Development*, 39(3), 251.
- Bacher-Hicks, A., Goodman, J., Mulhern, C. (2020). *Inequality in household adaptation to schooling shocks: Covid-induced online learning engagement in real time* (Working Paper 27555). Cambridge, MA: National Bureau of Economic Research.

- Balfanz, R. & Byrnes, V. (2018) Using data and the human touch: Evaluating the NYC inter-agency campaign to reduce chronic absenteeism. *Journal of Education for Students Placed at Risk (JESPAR)*, Retrieved from <https://doi.org/10.1080/10824669.2018.1435283>
- Balfanz, R. & Byrnes, V. (2020, May). *Connecting social-emotional development, academic achievement, and on-track outcomes: A multi-district study of grades 3 to 10 students supported by City Year AmeriCorps members*. The Everyone Graduates Center at the Johns Hopkins University School of Education. Retrieved from https://www.cityyear.org/wp-content/uploads/2020/05/EGC_CityYearReport_BalfanzByrnes.pdf
- Barnhart, M. (2011). The impact of participation in supplemental education services on student achievement: 2009–10. Los Angeles Unified School District Research Unit No. 379. Los Angeles, CA: Los Angeles Unified School District.
- Blume, H. (2020, October 9). Help is on the way for some of L.A.'s most vulnerable students. *Los Angeles Times*. Retrieved from <https://www.latimes.com/california/story/2020-10-09/tutoring-deal-for-los-angeles-students>
- Bowman-Perrott, L., Burke, M. D., Zhang, N., & Zaini, S. (2014). Direct and collateral effects of peer tutoring on social and behavioral outcomes: A meta-analysis of single-case research. *School Psychology Review*, 43(3), 260-285.
DOI: [10.1080/02796015.2014.12087427](https://doi.org/10.1080/02796015.2014.12087427)
- Brooks, D. (2020, May 7). We need national service. Now. *The New York Times*. Retrieved from <https://www.nytimes.com/2020/05/07/opinion/national-service-ameri-corps-coronavirus.html>

- Bryk, A. S., Gomez, L. M., Grunow, A., & Lemahieu, P. G. (2015). *Learning to improve: How America's schools can get better at getting better*. Cambridge, MA: Harvard Education Press.
- Burch, P., Good, A., & Heinrich, C. (2016). Improving access to, quality, and the effectiveness of digital tutoring in K–12 education. *Educational Evaluation and Policy Analysis*, 38(1), 65–87. DOI: 10.3102/0162373715592706
- Burch, P., Steinberg, M., & Donovan, J. (2007). Supplemental educational services and NCLB: Policy assumptions, market practices, emerging issues. *Educational Evaluation and Policy Analysis* 29: 115–133.
- Burgess, S. (2020, June 16). How we should deal with the lockdown and learning loss in England's schools. *VoxEU*. Retrieved from <https://voxeu.org/article/how-we-should-deal-lockdown-learning-loss-england-s-schools>
- Campbell, N., Quirk, A., & Chatterji, R. (2020, August 10). *The opportunity and counseling corps: helping K-12 students and young adults recover from the coronavirus crisis*. Washington, DC: Center for American Progress. Retrieved from <https://www.americanprogress.org/issues/education-k-12/reports/2020/08/10/489168/opportunity-counseling-corps-helping-k-12-students-young-adults-recover-coronavirus-crisis/>
- Chetty, R., Friedman, J. N., Hendren, N., Stepner, M., & The Opportunity Insights Team. (2020). *The economic impacts of COVID-19: Evidence from a new public database built using private sector data* (Working Paper 27431). Cambridge, MA: National Bureau of Economic Research.

- Christensen, K. M., Hagler, M. A., Stams, G. J., Raposa, E. B., Burton, S., & Rhodes, J. E. (2020). Non-specific versus targeted approaches to youth mentoring: A follow-up meta-analysis. *Journal of Youth and Adolescence*, *49*, 959–972.
<https://doi.org/10.1007/s10964-020-01233-x>
- Citadel. (2020, August 10). Ken Griffin and the Bill and Melinda Gates Foundation Scale Tutoring Program to Address Persistent Opportunity Gaps in Major Urban Districts. [Press Release] Retrieved from <https://www.citadel.com/news/ken-griffin-and-the-bill-and-melinda-gates-foundation-scale-tutoring-program-to-address-persistent-opportunity-gaps-in-major-urban-districts/>.
- Coburn, C. E. (2003). Rethinking scale: Moving beyond numbers to deep and lasting change. *Educational researcher*, *32*(6), 3-12.
- Cook, P. J., Dodge, K., Farkas, G., Fryer, R. G., Guryan, J., Ludwig, J., Mayer, S., Pollack, H., & Steinberg, L. (2012) *The (surprising) efficacy of academic and behavioral intervention with disadvantaged youth: Results from a randomized experiment in Chicago (Working Paper 19862)*. Cambridge, MA: National Bureau of Economic Research.
- Corcoran, S. P., & Evans, W. N. (2015). Equity, adequacy, and the evolving state role in education finance. In H. F. Ladd & M. E. Goertz (Eds.), *Handbook of research in education finance and policy* (2nd ed., 353-371).
- Costrell, R. M. & Podgursky, M. (2009, February). Teacher retirement benefits: are employer contributions higher than for private sector professionals? *Education Next*, *9*(2).
- Courtney, M. E., Zinn, A., Zielewski, E. H., Bess, R. J., Malm, K. E., Stagner, M., & Pergamit, M. (2008). *Evaluation of the early start to emancipation preparation tutoring program, Los Angeles County, California*. Administration for Children & Families.

- Deke, J., Dragoset, L., Bogen, K., & Gill, B. (2012). *Impacts of Title I Supplemental Educational Services on student achievement* (NCEE 2012-4053). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.
- Dennis, L. M. G. (2013). *Multiplication achievement and self-efficacy in third-and fifth-grade students: Effects of cross-age peer tutoring and skill training*. The University of Arizona.
- Denton, C. A., Anthony, J. L., Parker, R., & Hasbrouck, J. E. (2004). Effects of two tutoring programs on the English reading development of Spanish-English bilingual students. *The Elementary School Journal*, 104(4), 289-305.
- Dietrichson, J., Bøg, M., Filges, T., & Klint Jørgensen, A. M. (2017). Academic interventions for elementary and middle school students with low socioeconomic status: A systematic review and meta-analysis. *Review of Educational Research*, 87(2), 243-282.
- DiPerna, P. (2020, August 18). A national tutor corps could help students learning online, ease the burden on parents & create jobs for recent college grads. *The 74*.
- Dorn, E., Hancock, B., Sarakatsannis, J., & Viruleg, E. (2020a). *COVID-19 and student learning in the United States: The hurt could last a lifetime*. McKinsey & Company, Insights. Retrieved from <https://www.mckinsey.com/industries/public-and-social-sector/our-insights/covid-19-and-student-learning-in-the-united-states-the-hurt-could-last-a-lifetime>.
- Dorn, E., Hancock, B., Sarakatsannis, J., & Viruleg, E. (2020b). *COVID-19 and learning loss – disparities grown and students need help*. McKinsey & Company. Retrieved from <https://www.mckinsey.com/industries/public-and-social-sector/our-insights/covid-19-and-learning-loss-disparities-grow-and-students-need-help>

- DuBois, D. L., Portillo, N., Rhodes, J. E., Silverthorn, N., & Valentine, J. C. (2011). How Effective Are Mentoring Programs for Youth? A Systematic Assessment of the Evidence. *Psychological Science in the Public Interest*, 12(2), 57-91.
<https://doi.org/10.1177/1529100611414806>
- Durlak, J. A., & DuPre, E. P. (2008). Implementation matters: A review of research on the influence of implementation on program outcomes and the factors affecting implementation. *American Journal of Community Psychology*, 41(3/4), 327–350.
- Dynarski, S. (2020, May 7). The school year really ended in March. *The New York Times*. Retrieved from <https://www.nytimes.com/2020/05/07/business/school-education-online-money.html>
- Elmore, R. (1996). Getting to scale with good educational practice. *Harvard Educational Review*, 66(1), 1-27.
- Engzell, P., Frey, A., & Verhagen, M. D. (2020, October 29). Learning inequality during the COVID-19 pandemic. *SocArXiv Papers*. <https://doi.org/10.31235/osf.io/ve4z7>
- Eskreis-Winkler, L., Milkman, K. L., Gromet, D., Duckworth, A. L. (2019, July 23). A large-scale field experiment shows giving advice improves academic outcomes for the advisor. *Proceedings of the National Academy of Sciences of the United States of America*, 116(30), 14808-14810.
- Fitzgerald, J. (2001). Can minimally trained college student volunteers help young at-risk children to read better? *Reading Research Quarterly*, 36(1), 28-46.
- Fitzgerald, J., Morrow, L. M., Gambrell, L., Calfee, R., Venezky, R., Woo, D. G., & Dromsky, A. (2002). Federal policy and program evaluation and research: The America Reads example. *Reading Research and Instruction* 41(4): 345-370.

- Fryer Jr, R. G. (2014). Injecting charter school best practices into traditional public schools: Evidence from field experiments. *The Quarterly Journal of Economics*, 129(3), 1355-1407.
- Fryer Jr, R. G. (2017). The production of human capital in developed countries: Evidence from 196 randomized field experiments. In *Handbook of economic field experiments* (Vol. 2, pp. 95-322). North-Holland.
- Fryer, R. G. & Howard-Noveck, M. (2020). High-dosage tutoring and reading achievement: Evidence from New York City. *Journal of Labor Economics* 38(2): 421-452.
- Fuchs, L. S., Fuchs, D., Yazdian, L., & Powell, S. R. (2002). Enhancing first-grade children's mathematical development with Peer-Assisted Learning Strategies. *School Psychology Review*, 31(4), 569–583
- Fuligni, A. J. (2018). The need to contribute during adolescence. *Perspectives on Psychological Science* 14(3): 331–343. <https://doi.org/10.1177/1745691618805437>.
- Gates, B. (2020). How to help students get to college in the COVID era. [Blog post] Retrieved from <https://www.gatesnotes.com/Education/Pathway-to-success>.
- Gershenson, S., Hart, C. M. D., Hyman, J., Lindsay, C., & Papageorge, N. W. (2019). *The long-run impacts of same-race teachers* (EdWorkingPaper 19-43). Retrieved from Annenberg Institute at Brown University: <https://doi.org/10.26300/9419-nw68>
- Global Industry Analysts. (2020). Private tutoring global market trajectory & analytics. *Global Industry Analysts, Inc.* Retrieved from: <https://www.strategyr.com/market-report-private-tutoring-forecasts-global-industry-analysts-inc.asp>.
- Goldrick-Rab, S., Yoshikawa, H. (2020, September 28). Let's offer college credit for national service. *Education Post*. Retrieved from <https://educationpost.org/lets-offer-college->

[credit-for-national-service/?fbclid=IwAR3Jf3nX5UyqmOSRG0hkdw2nZod1y29Qhl-SQ44WDhUTKbNCjpAFUVXE](https://www.facebook.com/credit-for-national-service/?fbclid=IwAR3Jf3nX5UyqmOSRG0hkdw2nZod1y29Qhl-SQ44WDhUTKbNCjpAFUVXE).

- Hanushek, E.A. & Woessmann, L. (2020, September) The Economic Impacts of Learning Losses. *The Organization for Economic Co-operation and Development*. Retrieved from http://hanushek.stanford.edu/sites/default/files/publications/The%20Economic%20Impacts%20of%20Learning%20Losses_final_v1.pdf
- Hänze, M., Müller, M., & Berger, R. (2018). Cross-age tutoring: How to promote tutees' active knowledge-building. *Educational Psychology*, 38(7), 915–926.
- Harold, B. (2017, September 19). Schools making 'extraordinary progress' with high-speed internet access, analysis finds. *Education Week*, 37(5), 11. Retrieved from <https://www.edweek.org/ew/articles/2017/09/20/schools-making-extraordinary-progress-with-high-speed-internet.html>.
- Heinrich, C. J., Burch, P., Good, A., Acosta, R., Cheng, H., Dillender, M., Kirshbaum, C., Nisar, H., and Stewart, M. (2014). Improving the implementation and effectiveness of out-of-school-time-tutoring. *Journal of Policy Analysis and Management*, 33(2), 471–494.
- Heinrich, C. J., Meyer, R. H., & Whitten, G. (2010). Supplemental education services under No Child Left Behind: Who signs up, and what do they gain? *Educational Evaluation and Policy Analysis* 32: 273–298.
- Hill, A. J., & Jones, D. B. (2018). A teacher who knows me: The academic benefits of repeat student-teacher matches. *Economics of Education Review*, 64, 1-12.
<https://doi.org/https://doi.org/10.1016/j.econedurev.2018.03.004>
- Hollands, F. M., Kieffer, M. J., Shand, R., Pan, Y., Cheng, H., & Levin, H. M. (2016). Cost-effectiveness analysis of early reading programs: A demonstration with recommendations

- for future research. *Journal of Research on Educational Effectiveness*, 9(1), 30-53. DOI: 10.1080/19345747.2015.1055639
- Jacob, R., Armstrong, C., & Willard, J. (2015, March 4). *Mobilizing volunteer tutors to improve student literacy: Implementation, impacts, and costs of the Reading Partners program*. New York, NY: MDRC. Retrieved from <https://eric.ed.gov/?id=ED558508>.
- Juel, C. (1996). What makes literacy tutoring effective? *Reading Research Quarterly*, 31(3), 268-289.
- Knight, D. S. (2017). Are high-poverty school districts disproportionately impacted by state funding cuts? School finance equity following the great recession. *Journal of Education Finance*, 43(2), 169-194.
- Kraft, M. A. (2015). How to make additional time matter: Integrating individualized tutorials into an extended day. *Education Finance and Policy*, 10(1), 81-116.
- Kraft, M. A. (2020). Interpreting effect sizes of education interventions. *Educational Researcher*, 49(4), 241-253.
- Kraft, M. A. & Goldstein, M. (2020, May 21). *Getting tutoring right to reduce COVID-19 learning loss*. Washington, DC: Brookings Institution, Brown Center Chalkboard.
- Kraft, M. A., Simon, N. S., & Lyon, M. A. (2020). *Sustaining a sense of success: The importance of teacher working conditions during the COVID-19 pandemic* (EdWorkingPaper 20-279). Providence, RI: Annenberg Institute at Brown University.
- Kuhfeld, M., Tarasawa, B., Johnson, A., Ruzek, E., & Lewis, K. (2020). *Learning during COVID-19: Initial findings on students' reading and math achievement and growth*. Portland, OR: NWEA.

- Lachney, R. P. (2002). Adult-mediated reading instruction for third through fifth grade children with reading difficulties. *LSU Doctoral Dissertations*. 3483. Retrieved from https://digitalcommons.lsu.edu/gradschool_dissertations/3483
- Lindo, E. J., Weiser, B., Cheatham, J. P., & Allor, J. H. (2018). Benefits of structured after-school literacy tutoring by university students for struggling elementary readers. *Reading & Writing Quarterly*, 34(2), 117-131.
- Maldonado, J. E., & DeWitte, K. (2020). *The effect of school closures on standardized student test outcomes*. Discussion Paper Series DPS20.17, Katholieke Universiteit (KU) Leuven.
- Mancini, C. (2017). *The average teacher's salary plus benefits in the U.S.* Careertrend.com, <https://careertrend.com/average-teachers-salary-plus-benefits-30171.html>.
- Markovitz, C. E., Hernandez, M. W., Hedberg, E. C., & Neishi, K. (2018). *Impact evaluation of the Wisconsin Reading Corps Program*. Chicago, IL: NORC at the University of Chicago.
- Markovitz, C. E., Hernandez, M. W., Hedberg, E. C., Satorius, J. L., & Kubelka, J. (2019). *Impact evaluation of the Florida Reading Corps PreK Program*. Chicago, IL: NORC at the University of Chicago.
- Markovitz, C. E., Hernandez, M. W., Hedberg, E. C., & Silberglitt, B. (2014). *Outcome evaluation of the Minnesota Reading Corps K3 Program*. Chicago, IL: NORC at the University of Chicago.
- Markovitz, C. E., Hernandez, M. W., Hedberg, E. C., Whitmore, H. H., & Satorius, J. L. (2018). *Impact evaluation of the Minnesota Reading Corps K-3 Program (2017-18)*. Chicago, IL: NORC at the University of Chicago.

- McMaster, K. L., Fuchs, D., Fuchs, L., Compton, D. L. (2005). Responding to nonresponders: An experimental field trial of identification and intervention methods. *Exceptional Children, 71*(4), 445–463.
- McLaughlin, M. W., & Mitra, D. (2001). Theory-based change and change-based theory: Going deeper, going broader. *Journal of educational change, 2*(4), 301-323.
- Moore-Hart, M., & Karabenick, S. A. (2009). Becoming successful readers: A volunteer tutoring program for culturally diverse students. *Literacy Research and Instruction, 48*(2), 149-171.
- National Center for Education Statistics (2018). *Average class size in public schools, by class type and state: 2017–18*. U.S. Department of Education, National Center for Education Statistics, National Teacher and Principal Survey (NTPS), "Public School Teacher Data File," 2017-18 [Table]. Retrieved from https://nces.ed.gov/surveys/ntps/tables/ntps1718_fltable06_t1s.asp
- Nickow, A., Oreopoulos, P., & Quan, V. (2020). *The impressive effects of tutoring on prek-12 learning: A systematic review and meta-analysis of the experimental evidence* (Working Paper 27476). Cambridge, MA: National Bureau of Economic Research. Retrieved from: <https://ssrn.com/abstract=3644077>
- Oreopoulos, P. (2020, November 24). Scale Up Tutoring to Combat COVID Learning Loss for Disadvantaged Students. *Scientific America*. Retrieved from <https://www.scientificamerican.com/article/scale-up-tutoring-to-combat-covid-learning-loss-for-disadvantaged-students/>
- Parker, D. C., Nelson, P. M., Zaslofsky, A. F., Kanive, R., Foegen, A., Kaiser, P., & Heisted, D. (2019). Evaluation of a math intervention program implemented with community

- support. *Journal of Research on Educational Effectiveness*, 12(3), 391-412. DOI: 10.1080/19345747.2019.1571653
- Quinn, D. M., & Kim, J. S. (2017). Scaffolding fidelity and adaptation in educational program implementation: Experimental evidence from a literacy intervention. *American Educational Research Journal*, 54(6), 1187-1220. DOI: 10.3102/0002831217717692.
- Roschelle, J., Cheng, B. H., Hodkowski, N., Neisler, J., & Haldar, L. (2020). Evaluation of an online tutoring program in elementary mathematics. *Online Submission*.
<https://digitalpromise.dspacedirect.org/handle/20.500.12265/94>
- Salmon, K. B. (2020, July 22). Fall 2020 Reopening of Maryland Schools. *Updates from the State Superintendent*, Maryland State Department of Education. [Press Release]
Retrieved from <http://marylandpublicschools.org/newsroom/Pages/COVID-19/Superintendent.aspx>.
- Slavin, R. (2020, May 7). A Marshall Plan for Post-COVID-19 recovery. [Blog post]. Retrieved from <https://robertslavinsblog.wordpress.com/2020/04/23/a-marshall-plan-for-post-covid-19-recovery/>
- Smith, A. (2020, November 10). Students get free tutoring after falling behind during COVID-19 remote learning. *The Sydney Morning Herald*. Retrieved from <https://www.smh.com.au/national/nsw/students-get-free-tutoring-after-falling-behind-during-covid-19-remote-learning-20201109-p56cy7.html>
- Spear-Swerling, L. (2009). A literacy tutoring experience for prospective special educators and struggling second graders. *Journal of Learning Disabilities*, 42(5), 431-443.
<https://doi.org/10.1177/0022219409338738>.

- Spillane, J. P., Reiser, B. J., & Reimer, T. (2002). Policy implementation and cognition: Reframing and refocusing implementation research. *Review of educational research, 72*(3), 387-431.
- Springer, M.G., Pepper, M.J., & Ghosh-Dastidar, B. (2014). Supplemental Educational Services and Student Test Score Gains: Evidence from a Large, Urban School District. *Journal of Education Finance 39*(4), 370-403. <https://www.muse.jhu.edu/article/546720>.
- Sprinthall, N. A., & Scott, J. R. (1989). Promoting psychological development, math achievement, and success attribution of female students through deliberate psychological education. *Journal of Counseling Psychology, 36*(4), 440–446.
- Stein, M. L., Berends, M., Fuchs, D., McMaster, K., Sáenz, L., Yen, L., & Compton, D. L. (2008). Scaling up an early reading program: Relationships among teacher support, fidelity of implementation, and student performance across different sites and years. *Educational Evaluation and Policy Analysis, 30*(4), 368–388.
- Stein, P. (2020, October, 30). In D.C., achievement gaps widens, early literacy progress declines during pandemic, data show. *Washington Post*.
- Tamburin, A. (2020, May 12). Former Gov. Bill Haslam, Crissy Haslam launch summer tutoring program to address COVID-19. Retrieved October 14, 2020, from <https://www.tennessean.com/story/news/2020/05/12/governor-bill-haslam-tutoring-school-closures-coronavirus/3109206001/>
- TNTP. (2018). The Opportunity Myth: What Students Can Show Us About How School Is Letting Them Down—and How to Fix It. Retrieved from https://tntp.org/assets/documents/TNTP_The-Opportunity-Myth_Web.pdf

- Topping, K. J., Campbell, J., Douglas, W., & Smith, A. (2003). Cross-age peer tutoring in mathematics with seven- and 11-year-olds: influence on mathematical vocabulary, strategic dialogue and self-concept. *Educational Research*, 45(3), 287–308.
- Topping, K. J., Miller, D., Murray, P., Henderson, S., Fortuna, C., & Conlin, N. (2011). Outcomes in a randomized controlled trial of mathematics tutoring. *Educational Research*, 53(1), 51–63.
- Topping, K. J., Thurston, A., McGavock, K., & Conlin, N. (2012). Outcomes and process in reading tutoring. *Educational Research*, 54(3), 239–258.
- Tyack, D. B., & Cuban, L. (1995). *Tinkering toward utopia*. Cambridge, MA: Harvard University Press.
- U.K. Department for Education. (2020, June 19). Billion pound Covid catch-up plan to tackle impact of lost teaching time. [Press Release] Retrieved from <https://www.gov.uk/government/news/billion-pound-covid-catch-up-plan-to-tackle-impact-of-lost-teaching-time>.
- U.S. Bureau of Labor Statistics. (2019a, May). Occupational Employment and Wages: 11-9039 Education Administrators, All Other. Retrieved from <https://www.bls.gov/oes/current/oes119039.htm>.
- U.S. Bureau of Labor Statistics. (2019b, May). Occupational Employment and Wages: 15-1231 Computer Network Support Specialists. Retrieved from <https://www.bls.gov/oes/current/oes151231.htm>.
- U.S. Bureau of Labor Statistics. (2019c, May). Occupational Employment and Wages: 15-1244 Network and Computer Systems Administrators. Retrieved from <https://www.bls.gov/oes/current/oes151244.htm>.

- U.S. Department of Education. (2020). *2018-19 Achievement Results from State Assessments in Math and Reading/Language Arts*. [Dataset]. Retrieved from <https://www2.ed.gov/about/inits/ed/edfacts/data-files/index.html>.
- U.S. Department of Education, Office of Planning, Evaluation, and Policy Development. (2010). *Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies*, Washington, D.C.
- Victoria to employ thousands of tutors to help students catch up after coronavirus lockdown (2020, October 13). *ABC News Australia*. Retrieved from <https://www.abc.net.au/news/2020-10-13/victoria-to-hire-tutors-to-help-students-after-home-learning/12760838>.
- What Works Clearinghouse (2012, May). *Beginning reading: Peer-assisted learning/literacy strategies*. *Institute of Education Sciences*, WWC Intervention Report. Retrieved from https://ies.ed.gov/ncee/wwc/Docs/InterventionReports/wwc_pals_050112.pdf
- What Works Clearinghouse (2013, January). *Elementary school mathematics: Peer-assisted learning strategies*. *Institute of Education Sciences*, WWC Intervention Report. Retrieved from https://ies.ed.gov/ncee/wwc/Docs/InterventionReports/wwc_pals_012913.pdf
- Wong, A. (2020, August 10). 'Time for innovation': How tutoring could be a key to lifting kids out of 'COVID slide.' *USA Today*. Retrieved from <https://www.usatoday.com/story/news/education/2020/08/10/how-tutoring-could-key-lifting-kids-out-covid-slide/3319070001/>
- Worthy, J., Prater, K., & Pennington, J. (2003). "It's a Program That Looks Great on Paper": The challenge of America Reads. *Journal of Literacy Research*, 35(3), 879-910.

- Yeager, D. S., Dahl, R. E., & Dweck, C. S. (2018) Why interventions to influence adolescent behavior often fail but could succeed. *Perspectives on Psychological Science, 13*(1), 101–122. Retrieved from <https://doi.org/10.1177/1745691617722620>.
- Young, C., Pearce, D., Gomez, J., Christensen, R., Pletcher, B., & Fleming, K. (2018). Read Two Impress and the Neurological Impress Method: Effects on elementary students' reading fluency, comprehension, and attitude. *The Journal of Educational Research, 111*(6), 657-665.
- Zimmer, R., Hamilton, L., & Christina, R. (2010). After-school tutoring in the context of no child left behind: Effectiveness of two programs in the Pittsburgh public schools. *Economics of Education Review, 29*(1), 18-28.

Tables & Figures

Table 1: Paired Grade Ranges and Tutors Needed for Schools

Panel A: All Schools				
	Students		Tutors Needed	
			#	% of Population
Grades K-5: HS Students	22,337,730		10,950,129	74.40
Grades 6-8: College Students	11,528,775		3,754,007	33.12
Grades 9-12: Education Corps	15,155,056		306,615	52.68
Total	49,021,561		15,010,751	

Panel B: Title I Schools				
	Students		Tutors Needed	
	#	%	#	% of Population
Grades K-5: HS Students	16,137,188	32.82	7,911,256	53.75
Grades 6-8: College Students	6,215,935	12.68	2,024,116	17.86
Grades 9-12: Education Corps	5,600,405	11.42	113,268	19.46
Total	27,953,528	57.02	10,048,640	

Panel C: Low Proficiency Schools				
	Students		Tutors Needed	
	#	%	#	% of Population
Grades K-5: HS Students	3,892,061	7.94	1,908,083	12.96
Grades 6-8: College Students	2,497,233	5.09	813,182	7.17
Grades 9-12: Education Corps	2,958,745	6.04	59,841	14.84
Total	9,348,039	19.07	2,781,106	

Notes: Percent of population gives the share of potential tutors who would be needed to serve the respective number of students. The college population is based on the total number of full-time students. The Education Corps population is based on the reported total applications to AmeriCorps in 2012. Low proficiency schools are in the bottom quartile by school-level student proficiency rates on state assessments, indexed across math and English language arts achievement reported by the Department of Education (2020).

Table 2: Tutoring Scheduling Decisions and Implications

	Regular School Day	Extended School Day
Single Period	<ul style="list-style-type: none"> - Supplant a class - Regular teacher workday - More tutors/fewer hours 	<ul style="list-style-type: none"> - Supplement classes - Regular teacher workday - More tutors/fewer hours
Integrated Throughout	<ul style="list-style-type: none"> - Supplant a class - Regular teacher workday - Fewer tutors/more possible hours 	<ul style="list-style-type: none"> - Supplement classes - Extended teacher workday* - Fewer tutors/more possible hours

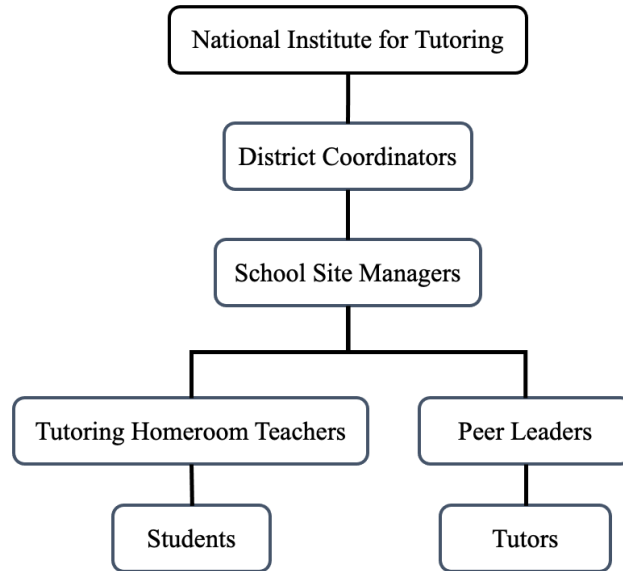
*It is possible that a creative staggered start for different teachers would make it possible to avoid extending the workday for teachers with this schedule

Table 3: Estimated Total and Per Pupil Funds by School Level

	All Schools		Title I Schools		Low Proficiency Schools	
	Total Cost (\$ billions)	Per Pupil Cost	Total Cost (\$ billions)	Per Pupil Cost	Total Cost (\$ billions)	Per Pupil Cost
Elementary	14.37	\$643	10.28	\$637	2.53	\$651
Middle	10.45	\$907	5.47	\$880	2.17	\$869
High School	22.16	\$1,462	8.24	\$1,472	4.57	\$1,545
Program Total	49.11	\$1,002	25.51	\$913	10.04	\$1,062

Notes: Low proficiency schools are in the bottom quartile by school-level student proficiency rates on state assessments, indexed across math and English language arts achievement reported by the Department of Education (2020). Program Totals includes costs that are not attributable to specific grade ranges such as district and federal expenses.

Figure 1: Sample Organizational Chart



Appendix: Detailed Cost Tables and Assumptions

Table A.1: Populations and Program Cost Inputs

	Grades K-5	Grades 6-8	Grades 9-12	Program Totals
Total students	22,337,730	11,528,775	15,155,056	49,021,561
# students (excl. sped)	21,900,258	11,262,021	14,717,517	47,879,796
# special education	437,472	266,754	437,539	1,141,765
Tutors needed	10,950,129	3,754,007	306,615	15,010,751
students reached per tutor	2:1	4:1	48:1	3.19
tutor type	HS students	College FWS	Education Corps	
% of tutor population	74.40%	33.12%	52.68%	
Paraprofessionals needed	437,472	266,754	437,539	1,141,765
Hours tutors work per week	2	2.5	30	
# weeks	36	36	36	
Average class size	26.2	25.5	24.2	
Classroom supervisors	835,888	452,290	631,653	1,919,831
% of teachers to supervise				54.16%
School coordinators	61,091	15,780	21,287	100,986

Table A.2: Detailed Personnel & Materials Costs

Personnel Costs	Grades K-5			Grades 6-8			Grades 9-12			Total
	Hours	Wage	Cost	Hours	Wage	Cost	Hours	Wage	Cost	
Peer-training	72	\$10	\$394,204,644	72	\$12.5	\$168,930,315		\$2,000	\$30,661,494	\$593,796,453
Tutor Pay				90	\$12.5	\$4,223,257,875		\$46,000	\$14,104,287,125	\$18,327,545,000
Paraprofessionals	90	\$20	\$787,449,600	90	\$20	\$480,157,200	90	\$20	\$787,570,200	\$2,055,177,000
Teacher supervision	72	\$56	\$3,366,860,166	72	\$56	\$1,822,780,390	72	\$58	\$2,622,840,197	\$7,812,480,753
School Site Managers		\$94,580	\$5,777,986,780		\$94,580	\$1,492,472,400		\$94,580	\$2,013,324,460	\$9,551,255,880
District Coordinators										\$1,732,800,180
Programming Subtotal			\$10,326,501,190			\$8,817,598,180			\$19,558,683,476	\$40,073,055,266
Network & System Admin	100	\$40	\$244,364,000	100	\$40	\$63,120,000	100	\$40	\$85,148,000	\$392,632,000
Network & Comp Support	180	\$30	\$329,891,400	180	\$30	\$85,212,000	180	\$30	\$114,949,800	\$530,053,200
IT Support Subtotal			\$574,255,400			\$148,332,000			\$200,097,800	\$922,685,200
Personnel Total			\$10,900,756,590			\$8,335,930,180			\$19,758,781,276	\$40,995,740,466
Materials Costs	Units	Price	Cost	Units	Price	Cost	Units	Price	Cost	Total
Chromebooks	14,891,820	\$229	\$3,410,226,780	9,187,453	\$229	\$2,103,926,691	10,409,986	\$229	\$2,383,886,703	\$7,898,040,175
Laptops for Coordinators	61,091	\$599	\$36,593,509	15,780	\$599	\$9,452,220	21,287	\$599	\$12,750,913	\$71,464,893
Internet Access / Support	40,727	\$50	\$18,327,300	10,520	\$50	\$4,734,000	14,191	\$50	\$6,386,100	\$29,447,400
Material Total			\$3,465,147,589			\$2,118,112,911			\$2,403,023,716	\$7,998,952,468
Personnel + Materials Costs			\$14,365,904,179			\$10,454,043,091			\$22,161,804,992	\$48,994,692,933
% of item subtotal			28.91%			21.48%			45.13%	
Per Pupil Cost			\$643			\$907			\$1,462	
Variable + Federal Support Organization Cost										\$49,718,422,808
% of total education spending										7.60%
Total Per Pupil Cost										\$1,002

Personnel Cost Assumptions:

For all estimates of personnel costs based on hourly wages, we assume the program runs for 36 weeks each year and that each student receives two hours of tutoring each week. Total wage estimates for part-time personnel follow this formula:

$$\text{Total wage} = \text{weekly hours} * 36 \text{ weeks} * \text{hourly wage} * \text{number of tutors needed}$$

Federal Work-Study Tutors: We assume college FWS tutors would work with one group of three middle school students each day, for a total of two paid hours each week. Additionally, tutors would be compensated for the 30-minute meetings with peer leaders every Friday. FWS hourly pay is usually determined by the type of work, required skills, and college policies, but must be at least minimum wage. We assume FWS tutors are paid \$12.50 an hour.

Paraprofessionals: We assume that paraprofessionals work one-on-one with all special education students who spend less than 40% of their time in regular classroom instruction. We add an additional 30 minutes each week to budgeted hours to account for an hour-long staff meeting every two weeks or other form of training. We assume hourly pay for paraprofessionals is \$20.

Peer leadership pay: We include compensation for two hours each week for peer leadership to prepare and run development sessions with other tutors. We assume one in twenty tutors at the each level will take on a peer leader role. For pay, we assume high school students earn \$10 an hour, college students earn \$12.50, and Education Corps earn an additional \$200 each month – the same as in current AmeriCorps VISTA leader roles.

Teacher pay for classroom supervision: Teachers would be compensated at their regular rate, including benefits, for the two total hours each week that they could opt to supervise classrooms for tutoring. We approximate these total costs with hourly rates by grade level, as estimated by the Bureau of Labor Statistics and reported by Career Trend (Mancini, 2017). Hourly rates including benefits are \$56 for elementary and middle and \$58 for high school teachers. We estimate the number of teachers needed to supervise classrooms by dividing the total students being tutored by the average class size for each school level: 26.2, 24.3, and 23.3 students at the elementary, middle, and high-school levels, respectively (National Center for Education Statistics, 2018)

Computer & network support: We appropriate funds for each school for 100 hours of system administrator labor and 180 hours for network support specialists. The Bureau of Labor Statistics estimates the hourly rates for these positions are \$40 and \$30, respectively (U.S. BLS 2019b, 2019c). This is a possible overestimate of the support needed, as many schools already have technological infrastructure and support.

Full-time Education Corps salaries: We estimate Education Corps salaries will cost \$46,000 per tutor based on an average gross pay of \$30,000, a Segal Education Award of \$6,000, and the assumption that benefits will increase salary costs by 33%, which is an approximation method for total teacher compensation costs (Costrell & Podgursky, 2009). This estimate represents the all-in cost of supporting an Education Corps member, rather than estimating the costs to just the federal government in the current dollar-for-dollar matching structure leveraged between AmeriCorps and grantee partners. Note that this base pay is slightly above the maximum allowable stipend of about \$28,000, which we chose intentionally to make the

program accessible to a more diverse pool of applicants. As we note above, a lower stipend of \$22,340 would decrease our total program cost to \$46 billion.

District coordinator, school site manager, and university coordinator salaries: We budget for each of these full-time positions to earn a total compensation of \$94,580, including benefits. Using the approximation that benefits are roughly 33% of total pay, these positions would earn roughly \$71,000 in gross pay. This salary is from the Bureau of Labor Statistics estimated salary for education administrators for educational support services from June, 2018 (U.S. BLS, 2019a).

Materials Cost Assumptions:

Tutoring content and resources: We assume that the National Tutoring Institute would make available adequate resources and tutoring content for districts that choose to select that option. Those costs are assumed under our umbrella budget for the NTI of \$111 million.

Technology: We assume the government would need to fund purchases of a Chromebook or similar device (valued at \$229) for two thirds of public-school students. This is operating under the assumption that one third of students either have access to a personal device, are in a district or school with an adequate device, or are participating in in-person tutoring. We additionally include funds to provide Chromebooks for two-fifths of college tutors, assuming the remaining tutors either have a personal device or access to a computer lab or library through their school. For all program coordinators at districts, schools, and colleges, we include funds for a \$599 laptop. Finally, we approximate costs for internet which may go to either providing Wi-Fi, strengthening connections, or other network needs. We assume half of schools have adequate

internet, and for the remainder we budget \$50 for 9 months of internet costs. Given that 88% of schools reportedly had Wi-Fi in 2017 (Harold, 2017), we believe this is a reasonable assumption.