2022 CommonLit, Inc. EIR Submission: Early Phase Addresses Absolute Priorities 1 & 2

Project Title:

CommonLit 360: Expanding Access to a Content-Rich Digital English Language Arts Program to Accelerate Learning Among Underserved Students

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Introduction. CommonLit is a 501(c)(3) nonprofit education technology company dedicated to closing persistent opportunity gaps in literacy education through the development of open educational materials ("OER") and cutting-edge technology tools. Under a 2016 Innovative Approaches to Literacy ("IAL") grant, the Department of Education awarded CommonLit \$3.89 million to build a free digital OER library that could be printed or assigned digitally, along with a suite of supportive interactive technology under Universal Design for Learning principles to maximize accessibility for students reading below grade level, multilingual learners ("MLLs"), and students with learning differences. In 2018, the Department awarded CommonLit a second \$2.99 million IAL grant to develop a set of valid, normed formative assessments using the IPL/Rasch model (see Section E.1(a)) that are integrated into every lesson, and available for free for teachers, schools, and caregivers at CommonLit.org. CommonLit also developed CommonLit Español and secured copyright permissions and commissioned diverse authors to bring more culturally-relevant OER materials to its digital library of over 2,500 lessons. During the pandemic, CommonLit.org became a staple of remote instruction with over 20 million teachers and students representing 76% of all schools nationwide, registered with a free account.

From 2018 to 2022, with support from The Bill and Melinda Gates Foundation, Robin Hood Foundations and others, CommonLit co-designed a rigorous, grade-level aligned, content-rich, full-year ELA program called CommonLit 360 ("CL360") with 50 schools across the country. During the pandemic, CommonLit optimized CL360 for blended learning environments, combining digital assignments, paper-based lessons, synchronous and asynchronous instruction, and new technologies. Two studies of CL360 conducted during the 2020-21 school year suggest promising evidence, despite the challenges associated with school

closures, teacher turnover, and learning loss. The first study involved seven New York City middle schools serving predominantly economically disadvantaged and Black and Latino students. There was a dosage effect. Students who completed a minimum of 11 digital lessons saw gains above 0.23 standard deviations (Horst, 2022a), more than what students typically see in middle school ELA after one full year of instruction (Hill et al., 2008). Conversely, students who completed no CL360 lessons experienced literacy declines. English Language Learners and students with disabilities saw gains similar to their peers without these designations. In a second study of a rural district in Tennessee, high schools implementing CL360 achieved the highest possible developmental ELA gains on the TNReady, moving the district from among the lowest in the state in terms of value-added growth to among the highest (Horst, 2022b). This proposal seeks additional resources to (1) further develop CL360, (2) pilot and refine the intervention to address additional disparities in the wake of COVID-19, and then (3) support a three-year randomized controlled trial managed by the Consortium for Policy Research in Education ("CPRE") at Teachers College, Columbia University. This grant will directly reach roughly 12,000 students who will use CL360 in the pilot year, and almost 60,000 students in each of three full implementation years. Beyond the grant period, CL360's OER curriculum will continue to be available, for free, to every student and teacher in the United States, on a platform that traffics about 7-10 million site visits per month. Because CL360 leverages technology to deliver its services, the full intervention, once developed, will cost roughly \$4/student/year – roughly the cost of one paperback book.

A. Significance. A.1: The Project Involves Development and Demonstration of Promising New Strategies that Build on Existing Strategies. CL360 offers a fully packaged academic program for English Language Arts ("ELA"), grades 6-12. The full program includes

(1) high quality and culturally-responsive OER curriculum delivered on an interactive digital platform, (2) aligned assessments (formative and benchmark) to encourage targeted teaching, student grouping, and intervention, (3) sustained, collaborative, and content-based professional development ("PD"), (4) supportive technology and curriculum components to scaffold instruction for students reading below grade level, and (5) a school/district support framework designed to onboard teachers to the program, build community buy-in, monitor progress, and introduce a committee of local stakeholders to drive continuous improvement. These services are packaged and delivered via an innovative technology platform that collects activity logs on all site behavior of teachers and students in real-time. The program leverages this utilization and student performance data to inform recommendations to teachers, school leaders, and caregivers to address disparities and accelerate student academic progress. The full CL360 framework document is in Appendix E.

Through this grant, CommonLit will continue to develop and test CL360, which builds on four existing research-based strategies. *First*, CL360 ensures equitable access to rigorous, content-rich grade-level aligned curriculum within a coherent full-year instructional system. Experts estimate that as much as 74 percent of class time is spent on activities not aligned to grade-level expectations (TNTP, 2018). CL360 responds to this need through: (a) six interconnected, cross-disciplinary units of study per grade featuring interrelated texts that build background knowledge on a single topic of high relevance (Guthrie et al., 2004); (b) embedded formative assessments within every lesson to drive instructional decision-making and feedback; (c) benchmark assessments to measure growth 3x per year; (d) aligned PD, and; (e) a school/district engagement data dashboard and meeting protocol to drive community engagement, intervention efforts, and continuous improvement.

Coherent initiatives such as CL360, implemented over a sustained period, are more likely to advance student achievement than multiple, unrelated efforts (Cobb & Jackson, 2011; Newman et al., 2011; Forman et al., 2017). Moreover, with content-rich units, CL360 leverages the well-documented link between student text comprehension and knowledge (Best et al., 2008), arguably the "sixth pillar of reading instruction" in addition to phonemic awareness, phonics, fluency, vocabulary, and comprehension (Cervetti & Hiebert, 2015). CL360 intentionally builds this background knowledge through: (1) units that feature interrelated texts about a high-interest topic to answer an essential question (e.g. "How does being in a group affect a person's behavior?"); (2) explicit Tier 2 vocabulary practice related to the topic (Lesaux et al., 2010); (3) daily student-led academic discussions to reinforce the knowledge (Applebee et al., 2003), and; (4) a robust culminating project that demonstrates the knowledge gained (Johnassen, 2002). Knowledge in one unit builds in the subsequent unit, motivating students to read deeply for meaning (Guthrie, 2001), improving student communication, comprehension, and inquiry skills (Adams & Bushman, 2006). Combined, these practices capture the WWC Practice Guide recommendation backed by strong evidence for building students "world and word knowledge" so that they can make sense of a text (Vaughn et al., 2022).

Second, the CL360 platform features real-time formative feedback for reading and writing, a highly effective method to encourage student learning (Reitsma, 1988; Hattie & Timperley, 2007; Shute, 2008). CL360 provides teachers formative assessments including during-reading checks for understanding, digital exit tickets, "I need more time" alerts, and digital class polls offering instantaneous information to guide teacher pacing and gradual release of responsibility. Formative assessment is critical for improving student acquisition of knowledge and skills (Pridemore & Klein, 1991) because it allows students to develop cognitive

strategies to rectify misconceptions (Sadler, 1989; Doubet, 2012) and build an inclusive, highly responsive classroom. Integrating formative assessment into teacher practice is one of the most effective methods to encourage student achievement (Hattie, 2009, 2012; Spector et al., 2016). However, teachers often lack the digital tools necessary to effectively implement best practices regarding formative assessment, and instead are forced to create ad hoc systems to collect and assess student work, and organize the errors that students make to inform next steps (Spector et al., 2016). CL360 responds to these challenges through its digital platform, which quickly understands trends in student habits and misconceptions, presenting data in an actionable way consistent with the literature (Shute & Ventura, 2013; Webb et al., 2013).

With writing, CL360 implements the Model-Practice-Reflect cycle (National Center for Education Evaluation and Regional Assistance, 2016), one-click rubric-based scoring, and technology-supported teacher feedback. This creates a feedback-rich writing experience with consistent, specific commentary on areas for improvement. The materials also employ peer-to-peer feedback, which is associated with enhanced text quality among adolescents, improved social skills and interactions, and confidence in writing (Graham, 2018).

Third, CL360 offers cultural and technological supports to meet the needs of diverse student populations. The digital platform includes research-backed accessibility features based in the Universal Design for Learning principles to ensure all students can access grade-level materials, which are key to equitable student learning opportunities (Hitchcock et al., 2002). These proven supports include: a tool to hear text read aloud by a human voice while following along on the screen on all reading passages (Schiavo et al., 2021); one-click translation into 27+ languages (Proctor et al., 2007); and Guided Reading Mode, a proprietary CommonLit feature that selectively displays and obscures text, and employs scaffolded comprehension questions,

which improve self-regulation for struggling readers (Dalton & Strangman, 2006). An independent evaluator found that CommonLit's Guided Reading Mode was positively associated with student reading performance, even when controlling for socioeconomic status and special education status (Ad Hoc Analytics, 2021).

Ensuring diversity in pedagogical materials supports equal access to educational opportunities for students who have traditionally been underrepresented (Colby & Lion, 2004). Across CL360, authors and characters represent a range of identities and cultural experiences. Over 50 percent of texts in CL360 were either written by an author of color and/or feature a protagonist of color. And while women are traditionally underrepresented in STEM fields, over half of the scientific articles within CL360 were authored by women. CommonLit also partners with authors and publishers to showcase a range of experiences including the experience of immigrants, Americans in the military, and people with disabilities, addressing the well-documented need for literature that represents the diversity of students' families, identities, and cultural experiences (Tschida et al., 2014; McNair, 2008; Fox & Short, 2003).

Fourth, CL360 features high quality PD for teachers, ELA department leaders, and school and district leaders. Teacher professional development is rarely aligned to actual practice, collaborative, or sustained (Ball & Cohen, 1999; Jacob, Hill, & Corey, 2017). Within CL360, PD for teachers is content-based and tied to the actual materials teachers will use and the culturally-responsive teaching practices articulated in the materials and technology to build an inclusive and accessible classroom (see Section B.3). PD is linked to the curriculum and formative assessments, on-demand, and delivered via an interactive digital platform that guides school-based ELA departments to work collaboratively. CL360 offers two content-specific PD modules per unit: the first to support internalization of the materials, and a second to build

teacher capacity to respond to the formative data quickly processed on the platform. Each module includes a mini "practicum" and live classroom footage of an expert teacher modeling the best practice. CL360 also includes five PD modules and a meeting protocol for ELA departments that focus on their capacity to work collaboratively and respond to trends in formative data. Finally, CL360 will support a local steering committee of diverse stakeholders (e.g. district ELA leaders, school-based leaders, special education coordinators, school counselors, technology coordinators, parents and caregivers), to enhance local buy-in and implementation fidelity, and inform continuous improvement efforts (Bruhn & Hirsch, 2017; Collier-Meek et al., 2013). CL360 instructional coaches will also conduct virtual kickoff trainings, and facilitate mid-year and end-of-year meetings and reflections to examine data and address disparities proactively.

Finally, CL360 is built on CommonLit's effective digital platform, which already delivers measurable and equitable student outcomes with proven scalability. CommonLit has strong brand awareness and exposure, with over 22 million registered teacher and student users. A federally-funded third-party evaluation found that classrooms using the CommonLit supplemental Library platform higher rates (10+ assignments) were more likely to see gains on the Florida ELA assessment (Ad Hoc Analytics, LLC., 2021). As noted above, CL360 has demonstrated promising early outcomes in two studies from the 2020-2021 school year.

B. Project Design. B.1: A High-Quality Conceptual Framework Underlies the Proposed Research and Demonstration Activities. The logic model for this project, Appendix G, posits that giving teachers access to the research-based best practices described in Section A.1 through a scalable digital platform will lead to improved teaching and learning practices at the school/district, teacher, and student levels – and, in turn, lead to measurably improved student

outcomes in reading and writing achievement, particularly for underserved students. This section describes the conceptual framework underlying the logic model.

Distressingly, 66% of eighth graders, and 80% and 82% of economically disadvantaged and Black eighth graders, respectively, read below grade level (NAEP, 2019). These inequitable outcomes represent a basic failure of public education to deliver on a core promise. Four key contributors which CL360 seeks to address are: (1) lack of equitable access to high-quality, grade-level curriculum (RAND, 2020); (2) insufficient academic supports for underserved students (TNTP, 2018); (3) limited opportunities for high-quality teacher professional learning and collaboration, particularly in schools serving predominantly underserved students (Green & Allen, 2015), and; (4) challenges in employing formative assessment and actionable feedback to students, teachers, school leaders and families (Spector et al., 2016). Section A.1 describes CL360's capacity to address each of these concerns: it is a high-quality digital OER ELA curriculum that makes formative assessment and feedback-based strategies easy for teachers to employ; incorporates both cultural and technological supports; is accessible for underserved students; and provides PD embedded in both the school community and in the curriculum itself.

In the second column of the logic model, **Objective 1.1** is revising CL360 curriculum based on stakeholder feedback collected over the past year, a best practice (Pogrow, 2015), to drive accelerated outcomes for underserved students. This includes creating an integrated vocabulary experience and stronger Tier 2 supports for struggling writers. **Objective 1.2** is to engineer curriculum and technology to better support learner variability within a blended learning environment, including the Target Lessons, IEP accommodations within assessments, and student grouping recommendations. **Objectives 1.3 and 1.4** will address the impact of COVID on student social emotional well-being and family engagement through goal-setting

frameworks and Career Connection lessons, and an alert system to help teachers identify and respond to patterns of missing assignments to re-engage students. **Objective 1.5** focuses on creating a district rollout protocol to address common problems with deploying a new curriculum broadly and to ensure that once deployed, districts continue to improve on practice. Indeed, social validity or buy-in (Heineman et al., 2005) for an intervention can affect treatment integrity.

CL360's outputs are measurable changes in teaching and learning. At the school/district level, high-fidelity adoption of high-quality ELA materials will ensure vertical alignment across grades 6-12, offer expanded access to effective PD, and generate actionable student performance data to help districts identify and remedy opportunity gaps during the year. At the teacher level, CL360 builds teacher capacity to employ best practices in ELA instruction by building student knowledge, engaging students, utilizing formative assessment, and creating an inclusive learning environment. The content-based professional development increases teacher domain knowledge in ELA in general, and in the specific texts and topics of each instructional unit, while fostering data-driven collaboration among the ELA department. Students are, as a result, increasingly engaged in *active* minutes of reading, writing, speaking and listening while receiving important and consistent feedback to build language, knowledge, skills, and confidence in ELA.

B.2: The Goals, Objectives, and Outcomes Are Clearly Specified and Measurable. The project has two goals: (1) to optimize CL360 such that it dramatically improves student literacy development, especially among underserved students (2) to evaluate the efficacy of CL360 by conducting a rigorous RCT that meets WWC standards without reservations. The objectives necessary to meet these goals are set out with specificity in Appendix J, the management plan. The project outcomes are set out in the right column of the Logic Model in Appendix G. Each is specific, measurable, achievable, relevant to the goal, and time-bound.

- B.3: The Design of the Proposed Project Will Appropriately and Successfully Address the Needs of the Target Population. Consistent with the Notice definition, this proposal defines underserved students as students experiencing poverty, students of color, English Language Learners, and students with disabilities. Everything within CL360 was designed with this target population in mind.
- (a) **Student Level.** CL360 curriculum writers have already collected over five thousand surveys directly from students to better understand their needs and preferences, including engagement and usefulness ratings for each lesson within the 6-10th grade curriculum. This project implements those preferences, resulting in unit topics and texts that are high-interest, culturally-affirming, relevant to students, with diverse protagonists that offer "windows and mirrors" to the world (Bishop, 1990). All units include discussion-rich materials, regular group work, and collaborative classroom routines that encourage an environment that supports students social/emotional selves through: active listening protocols, classroom culture-building activities, checklists for constructive peer feedback, academic discussion routines, explicit goal-setting and monitoring activities, and "I need more time" or "call on me" alerts for teachers. Units are robustly scaffolded and consistent with CCSS standards in reading and writing to support access to rigorous grade-level coursework for all students. Every unit includes a variety of knowledge-building supplemental texts in English, with translations offered in 37 different languages for remediation and extension. Each lesson includes a set of guiding questions to help teachers monitor comprehension, and teacher notes to help teachers address misconceptions in real-time. Digital lessons also include technology supports (described in Section A.1) for including students with special needs. CL360's platform is mobile optimized, offers adjustable text sizes, and supports students outside of school with intermittent internet

access by collecting answers even when connection is lost.

- **Teacher Level.** Existing ELA curricular offerings vary wildly in quality, rigor, (b) and alignment (RAND, 2020). CL360 addresses this problem through rigorous and grade-level appropriate, content-rich OER materials (print and digital) and aligned formative assessments delivered through a digital platform that supports blended learning. It was co-designed with extensive teacher input in 50 schools serving majority underserved student populations, and where technology and internet can be scarce or unreliable. Teacher surveys demonstrate that CL360 saves teachers hours of time each week, and received an 83/100, "world class," Net Promoter Score. The CL360 platform bridges the technology barrier through 24/7 technical support offered via live chat, phone, and email. Moreover, CL360's embedded PD builds teacher capacity to implement several research-backed pedagogical routines in ELA: asking rigorous text dependent questions to build meaning (Fisher & Frey, 2012), teaching vocabulary explicitly (Lesaux, 2012), and fostering a discussion-rich (Applebee, 2003) and culturally-affirming classroom environment (Brown-Jeffy & Cooper, 2011). The platform itself – through live class polls, digital exit tickets, digital checks for understanding – builds teacher capacity to utilize formative assessment to remedy student misconceptions in real time, to proactively track progress via data dashboards, to intervene early to close opportunity gaps, and to proactively monitor and identify patterns of missing assignments and re-engage students and families most impacted by pandemic disruptions.
- (c) **School/District Level.** Vertical alignment of curriculum, with rigor building year-over-year, is a powerful lever for increasing student achievement in ELA (Marzano, 2003; Squires, 2009; Center for Comprehensive School Reform and Improvement, 2006; Virginia Department of Education, 2000). However, ELA curricular rigor frequently dips in the middle

grades (Eccles & Roeser, 2011). Underserved students are disproportionately affected by curriculum inappropriate to grade-level expectations (TNTP, 2018). CL360 promotes universal access to grade-level appropriate instructional materials through a vertically-aligned curriculum in which rigor builds from unit to unit, and year over year – preparing students for advanced coursework and building essential habits and skills to pursue different careers. As one district leader from Tennessee put it, with CL360, "We know exactly where people are going and how they are supposed to get there."

C.2 Key Project Personnel Are Well Qualified. This project taps personnel with extensive expertise in their fields with track records of success in serving underserved students.

M.Ed., CommonLit Director of Instructional Support, will serve as the Project Director, drawing on years of expertise leading large-scale education evaluation efforts at CommonLit, coordinating with evaluators at Mathematica and 50 schools nationally, and drawing on her experience as school administrator in a high poverty school serving

predominantly students of color. School outreach and coordination will be led by , CommonLit Director of U.S. Programs, who served in this school liaison role in a large-scale grant with 50 schools and holds a B.A. in Spanish from Princeton University. Professor of Education and Public Policy, and Director of the Consortium for Policy Research in Education, at Teachers College, Columbia University will serve as Principal Investigator. His extensive experience on large-scale education evaluations has received over \$17 million in support from private and public institutions, and has focused on how policies and programs moderate or exacerbate socio-demographic disparities in student outcomes. CPRE's work will be supported by both full-time staff and advanced graduate , CommonLit Lead Engineer, will oversee technical and product students. development activities and accessibility-related milestones for the project. She is a member of the International Association of Accessibility Professionals, certified in Accessibility Core Competencies. A dedicated team of diverse writers and professionals will lead the revision efforts to the curriculum itself, including , CommonLit Director of Curriculum, who previously served as the Director of ELA at EdReports where she gained extensive experience evaluating and designing criteria for high-quality instructional materials (HQIM) and culturally-responsive teaching practices.

Resumes for key personnel are in Appendix B, and the responsible person for each activity under this grant is set out in the management plan in Appendix J.

D. Management Plan: The Project Will Be Completed On Time and Within Budget.

A management plan with clear timelines, detailed milestones, and personnel assignments is in Appendix J. From July 2023 to July 2024, the project team will refine the curriculum and engineer new technologies, piloting in two high-need districts while making iterative

improvements. From August 2024 to June 2028, CPRE will rigorously evaluate the program through a three-year, randomized controlled trial, which we describe below. CommonLit has successfully managed two prior federal grants of comparable size, hitting every milestone and outcome on time and within budget. Over the past several decades CPRE has successfully evaluated and managed dozens of large-scale federal grants.

E. Evaluation. E.1: The Evaluation Will Meet WWC Standards Without Reservations.

The implementation of CL360 will involve approximately 60,000 students per year and almost 80 schools across four school districts. The combined impact and implementation study we describe below will involve two distinct though interrelated research strands. The first strand will entail a cluster randomized controlled trial to estimate the causal impact of CL360 on student literacy development, an approach that meets WWC standards without reservation (What Works Clearinghouse, 2020). A second qualitative strand will examine aspects of CL360 and its implementation in these schools, with a particular focus on variability in program efficacy across grades, schools, and districts. Although we describe the analytic approaches separately, we view the evaluation as an integrated and mutually reinforcing mixed-methods system of activities.

(a) Quantitative Impact Evaluation

The proposed implementation has instructional advantages for teachers and schools while simultaneously enhancing our ability to identify the causal effects of CL360. This strategy will allow us to address the following research questions:

- 1. Do students who experience CL360 gain more literacy skills compared to their peers who continue with their traditional ELA curriculum?
- 2. To what extent does the impact of CL360 vary across student academic and sociodemographic backgrounds? Do these patterns of effectiveness evolve as students

and teachers become more comfortable with CL360's approaches and materials over time?

We will begin by randomizing all schools to one of several implementation conditions, stratified by school district, as shown in *Figure 1* below. Shaded squares indicate years in which specific grades will implement CL360. In middle schools randomly assigned to Option A, sixth-grade students will constitute the treatment group in year one, while students in grades 7 and 8 will serve as control groups, continuing with their traditional ELA curriculum. In year two, the cohort of new sixth graders will receive the treatment, while the previous year's sixth graders will continue to engage CL360 as seventh graders; eighth graders will again serve as a control group. The implementation pattern remains the same in Option A schools in year three.

Middle schools randomly assigned to Option B will implement CL 360 in grades 7 and 8 each year, with sixth-grade students constituting the control group. The pattern is reversed in Option C middle schools, where sixth-grade students will participate in the treatment across all three implementation years, and seventh and eighth grades will serve as control groups. A key benefit of this implementation strategy is that once teachers in a particular grade implement CL360, they do so for the remainder of the study for their classes within that grade. Importantly, all schools and grades will have the option to implement CL360 in year 4. *Figure 1* also indicates the implementation strategy for the two schools that enroll only grades 7 and 8, as well as the participating high schools. Note that CL360 content for eleventh and twelfth grades will be available starting in implementation year three.

Figure 1. Implementation Plan by School Type and Year

	Schools with 6-8 th Option A (16 Schools, ~9582 Students)			Schools with 6-8 th Option B (15 Schools, ~9582 Students)			Schools with 6-8 th Option C (15 Schools, ~9582 Students)			ents)		
	Year 1	Year 2	Year 3	Year 4 Optional	Year 1	Year 2	Year 3	Year 4 Optional	Year 1	Year 2	Year 3	Year 4 Optional
Grade 6												
Grade 7												
Grade 8												

		ools with Opti School, ~1	on A		ools with Opti School, ~	on B		
	Year 1	Year 2	Year 3	Year 4 Optional	Year 1	Year 2	Year 3	Year 4 Optional
Grade 7								
Grade 8								

	(17 8		vith 9-11 th on A 4158 Stud		(16.5	Opti	vith 9-11 th on B 14158 Stud	lents)
	Year 1	Year 2	Year 3	Year 4 Optional	Year 1	Year 2	Year 3	Year 4 Optional
Grade 9								
Grade 10								
Grade 11	N/A	N/A			N/A	N/A		

Analytic conceptualizations. The implementation and randomization strategy described above will support two distinct analytic approaches. The first approach leverages the school-level randomization of implementing grades and compares same-grade treatment and control students across schools. For example, with middle schools in year one, sixth-grade treatment students in Option A and C schools will be compared to sixth-grade control students in Option B schools; seventh-grade treatment students in Option B schools will be compared to seventh-grade control students in Option A and C schools; and eighth-grade treatment students in Option B schools are compared to their eighth-grade control peers in Option A and C schools. The statistical model associated with this first approach takes the form,

(1)
$$Y_{ijkt} = \beta_1 CommonLit_{jkt} + X_{ijkt} + \eta_j + r_{ijkt}$$

where Y_{ijki} is the ELA assessment score for student i in grade j in school k in year t. CommonLit $_{jki}$ is a binary indicator that grade j was assigned to CommonLit in school k in year t, and β_1 is the average causal effect of being assigned to the treatment group. Under normal assumptions, the random assignment process will provide unbiased treatment estimates and it is not necessary to control for other student or school characteristics. However, including pre-assignment covariates that are correlated with the outcome, but not affected by the treatment, will improve the precision of the impact estimates (Gerber & Green, 2012). To this end, we include a vector of student-level social and academic background measures as indicated by X_{ijkt} , which includes the immediately prior same-assessment ELA test score. Grade fixed effects are represented by η_{j} , and r_{ijkt} is the error term. We will use robust standard errors clustered at the school level. Students who change schools during the academic year (but remain within the same district) will remain analytically nested within their original school. As such, we interpret the treatment effect here as an "Intent-to-Treat" (ITT) estimate, typically thought of as the more policy relevant effect of an intervention or program (Glennerster & Takavarasha, 2013).

The second approach constrains all comparisons to within schools while still providing impact estimates for all grades. Specifically, the inclusion of school fixed effects affords comparisons of students in treatment and control grades within the same school. Although the randomization should eliminate differences across schools associated with implementing grades, this second approach (by definition) removes all unmeasured school-level differences across grades as all comparisons are made within schools. This within-school approach also has the benefit of increased statistical power, which we describe in more detail below. Similar to the between-school model (1) above, the within-school model can be described as,

(2)
$$Y_{ijkt} = \beta_1 CommonLit_{jkt} + X_{ijkt} + \delta j_k + r_{ijkt}$$

with the key departure from Model 1 being the substitution of grade fixed effects with school fixed effects (δ_k) and the clustering of standard errors at the grade rather than the school level. The inclusion of both between- and within-school modeling strategies provides a valuable robustness check. We will confirm that the estimates are consistent across approaches, and explore explanations if we find otherwise. We will construct identical between- and within-school models with the high-school samples, the only difference being the inclusion of measures in years two and three capturing students' exposure to CL360 in prior years.

In addition to these main treatment effects, we are also interested in the extent to which CL360 influences student literacy development differently across student characteristics, such as prior achievement, primary language and special education status, and racial/ethnic and socio-economic background. To explore this possibility, both the within- and between-school analyses will include a series of models that test cross-level treatment-by-student covariate interaction terms. We also recognize that the quality and efficacy of the "business-as-usual" ELA curricula might vary across school districts, thus producing differential treatment estimates. To address this we will explore differences in estimates across school districts using both our quantitative data and information from our qualitative field work (described below).

Standardized ELA assessment outcomes. As outcomes, these analyses will employ two distinct sets of literacy assessments. The first set includes mandated Oklahoma and Maryland state ELA assessments, with Spring 2023 individual student-level scores used as baseline measurements. These scores will be available only for middle school students. The second set of outcomes will include separate valid growth assessments created by CommonLit in both reading and writing, which will be administered in fall, winter, and spring of each implementation year. Importantly, these growth assessments are not tied to the content of the CommonLit curriculum

and are thus able to capture literacy development among students in both the treatment and control group. Each assessment has strong content validity, with items and passages mapped to include robust standards coverage and both informational and literature passages. The CommonLit assessments also show strong convergent validity with state standardized tests and have been evaluated for fairness across student populations (e.g., race/ethnicity, ELL status, etc.). Assessment scores are calibrated using the 1PL/Rasch model and are able to measure growth over time on a valid scale. The CommonLit assessments are also highly reliable (α from 0.814 to 0.877). Writing assessments will be scored by Measurement, Inc. at baseline and endline. All scores from each assessment will be separately standardized (z-scored) within grade, year, and district

Power analyses. We conducted separate power analyses for both the between- and within school analytic approaches described above. We discuss statistical power in terms of a minimum detectable effect size (MDES), which can be thought of as the smallest true impact that an experiment has a good chance of detecting (Jacob et al., 2009). Smaller MDESs indicate greater likelihood of detecting impacts of a smaller magnitude (i.e., "smaller is better"). For the between-school (within-grade) random effects model, we assumed 230 students per grade in each school, and 208 grade-level cohorts nested within 79 schools. We paired these sample sizes with a series of traditional assumptions, including 80% power, 0.05 significance levels from two-tailed tests of statistical significance, a student-level R^2 of 0.6 (given the pre-test and other covariates), and an adjusted school-level ICC of 0.1. These parameters indicate an MDES of 0.103. Because the within-school model compares same-school cohorts, the statistical power is somewhat improved. Using similar assumptions to those employed with the between-school

models, we find an MDES of 0.062 for the within-school approach. MDESs for both approaches are improved further in year three with the addition of the eleventh-grade student cohorts.

In sum, these power analyses suggest that the study is very well powered. An analysis of 37 IES-funded clustered randomized controlled trials conducted between 2012-2018 found a much higher average MDES of 0.21 (Spybrook et al., 2020). In terms of empirical effects, an analysis of almost 500 randomized controlled trials involving literacy interventions found an average effect of 0.17 SD (Kraft, 2020). Our study is capable of identifying effects much smaller than those previously supported by IES, and studies of literacy interventions more broadly.

Risks. The nature of CL360 combined with the implementation strategy outlined above suggests that our ability to make causal claims regarding the impact of CL360 on student literacy outcomes will face low-levels of risk. CL360 is not an add-on or supplementary instructional tool, but will instead serve as the primary ELA curriculum of record for treated groups. As such, student attrition is unlikely to flow from treatment assignment (e.g., families of treatment students will not place their child into a different grade nor move their student to another school in the district, as all schools will be participating). We expect individual-level non-response to be limited to non-participation in standardized assessment administration. We do not anticipate differential levels or types of assessment non-participation across treatment and control grade-level cohorts. Moreover, strong school district buy-in, again combined with the core nature of CL360, suggests low levels of school attrition.

(b) Qualitative Process Evaluation

The second research strand will deepen the evaluation by examining the design and implementation of CL360, highlighting how stakeholders experience the intervention, and

providing insights into the impact findings" In doing so, the second strand addresses the following questions:

- 1. How do schools experience CL360? What do students, teachers, and other school staff see as its strengths and limitations?
- 2. What factors facilitate or impede the implementation of CL360 and its effectiveness? What types of support do teachers and staff need to feel successful?
- 3. To what extent do schools tailor CL360 to match their local contexts and perceptions regarding their students' needs?

Case study site selection. To structure the qualitative study components and portray the experiences of schools implementing CL360, we will use a comparative case study methodology with embedded cases (Yin, 2016). We conceptualize each participating district as a single "case" and will further select three embedded case study schools within each district, which will be selected based in part on baseline measures of academic achievement and demographics to identify a pool of "typical" schools within each district. From this pool we will purposely select one case study school from each of the randomization options described above.

Data collection. We will survey all treatment and control teachers and school leaders at four points during the study period: a baseline at the beginning of the first implementation year and follow-up surveys at the end of implementation years 1-3. Our baseline survey will measure teachers' prior experiences with technology-enabled literacy platforms and content-rich curriculum materials; their preparedness and expectations for using the CL360 materials, including prior use of CommonLit; and baseline instructional self-efficacy. Follow-up surveys will capture teachers' implementation and impressions of the program and their evolving sense of self-efficacy. All surveys will be administered using the Qualtrics online platform, and teacher

instructional self-efficacy will be measured using an adapted version of the Teacher Self-Efficacy for Literacy Instruction scale (Tschannen-Moran & Hoy, 2001).

In addition to surveying teachers and leaders at all participating schools, we will conduct qualitative field work at each of the twelve embedded case study schools during the spring of the first and third implementation years. We will interview school leaders and a subset of teachers during the first implementation year to gain insight into their experiences with CL360 content and training, probing for early strengths and challenges. During the final implementation year, interviews will continue to focus on educators' perceptions of CL360, any modifications they made to the curriculum, and their plans for future use of the curriculum in the post-study period. Our implementation strategy will provide the opportunity to speak to multiple teachers within the same school and grade each year, and to teachers who have been implementing CL360 for multiple years. Interviews will be semi-structured and last approximately 45 minutes. During both years of qualitative work, we will also conduct observations in the classrooms of teachers we interview, which will provide additional context for the information gleaned during our conversations.

Data analysis. We will use the DIVE (describe, integrate, visualize, and expand) method for multiple case study analysis (Bush-Mecenas & Marsh, 2018). We will begin by analyzing survey data across schools within each district to develop a holistic picture of district implementation. We will then review documents and transcripts from each embedded case, developing a set of thematic codes, writing detailed within-case memos based on those codes, and triangulating our qualitative data together with survey data. Cross-case analyses using matrices, figures, and cross-case memos will help us identify thematic patterns across cases and potential differences in implementation between and within schools and districts. We will use

Stata statistical software to analyze survey responses and Dedoose qualitative software to facilitate coding and analysis of interviews, observations, and documents.

E.2: The Evaluation Will Provide Performance Feedback and Periodic Assessment of Progress Toward Intended Outcomes. CPRE will support continuous improvement in the pilot year (see Appendix J), collecting formative information through usability statistics, PD attendance, fidelity of implementation, teacher satisfaction surveys, and student achievement. CPRE will provide reports that reveal patterns in these formative data and will also lead corresponding quarterly debriefs to support CommonLit in implementing changes based on these early findings. By the end of the study, the evaluation will have provided performance feedback quantifying whether students in CL360 schools gain more literacy skills, whether results vary across academic and/or socio-demographic backgrounds, and whether patterns of effectiveness changed during the course of implementation (see E.1(a) research questions). It will also have provided qualitative feedback on student, teacher, staff, and family views of CL360 strengths and limitations; potential impediments to effectiveness and supports to overcome them; and the extent to which schools tailor the OER to local context (see E.1(b) research questions).

E.3: The Project Articulates Clear Components, Objectives, Mediators, and a Threshold for Acceptable Implementation. CommonLit's nonprofit mission is to close the literacy opportunity gap. Doing this requires the delivery of accelerated learning to underserved students. Prior research on CL360 establishes a minimum "dosage" of 11 digital assignments, or roughly 21 weeks of instruction (three 7-week units). Following this, we will define implementation fidelity as teachers using CL360 as their primary curriculum tool for ELA instruction, teaching a minimum of three CL360 units (~21 weeks).

Prior research also underscores factors that contribute to variability in implementation across teachers/schools/districts. These factors include: a lack of buy-in, teacher and administrator turnover, changes in district level priorities, and implementation of additional/competing programs. To mitigate these risks, the intervention includes stakeholder steering committee who will adopt CL360 as the *core* ELA program, monitor implementation, discuss variations in fidelity, and intervene to drive the outcomes they want to see. Since CL360 is built on a robust, data-rich platform, we can leverage daily activity logs, tracking user behavior in real-time to monitor the extent to which participants are meeting implementation thresholds.

F.1: The Project Satisfies Absolute Priorities 1 and 2. It demonstrates a rationale (Sections A.1, B.1, and Logic Model in Appendix G), and develops and scales an entrepreneurial, evidence-based field-initiated innovation to improve student achievement (Sections A.1; B.1; B.3).

F.2: The Project Fully Satisfies Competitive Preference Priority 1. This project promotes equity in student access to high-quality educational resources and opportunities through the development and demonstration of an OER curriculum, CL360. First, by making a high-quality, culturally-responsive, technology-enabled, openly-licensed ELA middle and high school curriculum free for teachers and students on a highly scalable platform that is supported in print/digital environments, and in times of intermittent internet access. Second, by employing Universal Design for Learning principles in all technical builds, and in every lesson through scaffolding, to ensure equitable access to the rigorous, grade-level aligned curriculum materials. Third, by offering culminating projects 6x per year for students, that prepares students for the heavy reading and writing demands in high school courses, including AP and college-prep coursework. Fourth, through Career Connection and goal-setting lessons 6x per year, that will

be developed as part of Objective 1.3 to support the specific content of the unit and motivate students to develop new habits and skills. *Fifth*, by employing technological supports that allow students with special needs, English Language Learners, and those reading well below grade level to engage with full-class instruction. *Sixth*, by developing strategies for schools and districts to successfully deploy blended learning aligned to relevant college- and career-ready standards and a multi-tier system of supports (e.g. embedded professional development that explains how to use formative data for instructional decision-making) (A.1; B.1; B.3).

F.3: The Project Fully Satisfies Competitive Preference Priority 2. Since March 2020, 8.9 million teachers and students have registered for an account on CommonLit.org. CL360 has subsequently completed multiple iterations to address high rates of student depression, loss of social skills, disengagement of students and families, and high teacher attrition. This project fully satisfies Priority 2 through several means. *First*, by deploying tools and encouraging practices to re-engage students and strengthen relationships through engaging, culturally relevant assignments featuring authors from diverse cultural, linguistic, and socioeconomic backgrounds (B.3(a)). **Second**, by engineering a system of alerts for teachers and administrators about patterns of disengagement and missing assignments, with corresponding training for how to proactively re-engage with families (Objective 1.4). *Third*, by addressing the profound ELA learning loss via differentiated materials and tools including new "Target Lessons" that can be completed asynchronously, at home, and/or in person or in after-school learning environments (Objective 1.2). *Fourth*, by elevating student engagement in ELA class through culturally-responsive OER materials that provide a safe and student-centered classroom, with aligned PD to reinforce these practices for teachers, and technology supports to ensure teachers are adept at creating an affirming, empowering, joyful, and highly effective ELA class.

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