makeSPACE for Agency and Readiness

Table of Contents

Project Narrative

A.   SIGNIFICANCE

A1. The Problem: The Middle-to-High School Transition. The transition that young

people make from middle school to high school can be incredibly stressful and negatively impact

their social and emotional well-being and academic achievement (Evans, Borriello, & Field,

2018). Student struggle in this transition can result in lower attendance and earning fewer credits

freshman year—both key indicators to being on-track to graduate (Pileggi & Strouf, 2018).

Research has suggested several intrapersonal and interpersonal factors during this key

developmental period of early adolescence that seem to be most consequential in supporting a

healthy transition for students.

First, across content areas, emphasizing mastery, while also prioritizing students' sense of

belonging and engagement, is more effective than promoting competition (Madjar & Chohat,

2016). Second, middle school students need to develop a sense of agency for academic success—

self-efficacy, control, and value in what they learn. According to longitudinal research with

thousands of students, student agency can be a protective factor against negative impacts of

transition, such as lower attendance and disengagement (Anderson et al., 2019). Third, teachers

must provide students multiple ways to engage with and understand increasingly complex and

challenging concepts and skills to develop learning strategies for the future (i.e., metacognition;

Beach, Anderson, Jacovidis, & Chadwick, 2020). Fourth, students should foster their creative

skills and attitudes in school so learning is more meaningfully linked to their personal and social

interests and developing identities in adolescence (Barbot & Heuser, 2017). In recent research,

students with stronger creative growth in middle school also transitioned to high school with

greater agency and academic preparedness (Anderson, 2019). In sum, to prepare students to be

adaptive and resilient in facing the stressful transition to high school, the proposed *makeSPACE*

for Agency and Readiness project aims to train teachers to integrate theater and drama-based learning across the core content areas in Grades 7–8 to (a) foster classroom environments for mastery and belonging and (b) prepare students to be creative, agentic, and ready for high school.

A2. Development and Demonstration of Promising New Strategies. Some districts, such as our project partner, the School District of Philadelphia (SDP), have addressed the issue of the high school transition through 9th Grade Academies that focus on providing students more individualized support. That type of approach ignores the importance of preparing students prior to high school. Other programs, such as the popular AVID program, focus primarily on academic knowledge and skills, such as study habits and notetaking. That type of program may not sufficiently address the need for consistent messaging, modeling, and learning environments across middle school needed for students' academic, agentic, and creative development. Also, those programs may not connect students during this key developmental period to their artistic interests and creative identities, which can disadvantage them. Based on data from more than 100,000 high school students, every visual or performing art course students enrolled in early on in high school substantially decreased their risk of dropping out (Thomas, Singh, & Klopfenstein, 2015). Though arts integrated learning has demonstrated effectiveness for a range of outcomes from scientific understanding (Hardiman, Rinne, & Yarmolinskaya, 2014) to empathy toward others (Goldstein & Winner, 2012), there does not exist an approach specifically designed and tested to prepare students for the high school transition.

This project would extend and scale the innovative makeSPACE professional development (PD) model in SDP where there is (a) a demonstrated commitment to the creative arts as key to a well-rounded education, (b) a demonstrated need for preparing students to be successful in their transition into high school, and (c) a demonstrated need and desire for teacher

makeSPACE for Agency and Readiness ● 2

training in quality arts integration. Currently, on average only 66% of first-time SDP 9th graders are *On Track to Graduate* by the end of freshman year (i.e., earned one course credit in each of the four core subjects and one additional course credit in any subject; Pileggi & Strouf, 2018).

Project Overview. The makeSPACE arts integration PD model *blends* online and face-to-face training to produce a research-based, collaborative, job-embedded, and sustainable approach. <u>In this proposed project, we will focus on developing Grade 7 and 8 teachers' skill across the content areas to integrate theater and drama-based techniques into content area learning with additional arts integrated strategies that fit the context best.</u> The primary goal is to increase students' creative, agentic, academic, and social and emotional learning (SEL) skills in Grades 7–8, which will result in increased indicators of successful high school transition in Grade 9, such as credits earned and GPA. The secondary goal is to increase key aspects of teachers' agency, creativity, knowledge, and skill for arts integration design, which, in turn, will lead to greater well-being in their work serving marginalized and traumatized students. This proposed project will organize existing PD materials, which have demonstrated a promising level of effectiveness, to create a sustainable model that builds the capacity of middle school teachers to cultivate key factors of student readiness for the high school transition.

The Field-Initiated makeSPACE Innovation. The makeSPACE approach is designed to effectively prepare K-12 teachers in their unique context to integrate creative and artistic practices to enhance student agency, creativity, metacognition, and resilience in learning. The acronym for makeSPACE is *Schoolwide Place-Based Access to Creative Engagement*, which highlights the focus on the inclusion of diverse creative and cultural assets in a school community. Unique among arts integration PD models, the makeSPACE PD system uses a *blended* approach that can fit different schedules and needs of schools and teachers. The PD

approach offers: (a) highly rated, self-guided online courses linked to graduate school credit; (b) bi-weekly synchronous, facilitated online collaboration; (c) face-to-face or online full-day institutes, (d) a searchable library of downloadable instructional materials; and (e) teacher-to-teacher collaboration across a growing national community of innovative educators.

Strong Evidence of Promise for Significant Impact. This proposal builds on extensive research led by ████████████, project director and principal investigator of the proposed makeSPACE for Agency and Readiness project. The existing *makeSPACE Project* is a 2018 Assistance in Arts Education grant (http://www.makespaceproject.org/; PR/Award# U351D180047), which builds on extensive work in the 2014 Arts in Education Model Development and Dissemination project, *ArtCore* (www.artcorelearning.org; PR/Award# U351D140063). Research from ArtCore resulted in four peer-reviewed teacher studies and six peer-reviewed student-level studies, which informed the makeSPACE project design, where ongoing research continues to be published (see Appendix G for study abstracts). That research demonstrated that creative teaching in arts integration can support the well-being of teachers (Anderson et al., 2021) and result in creative, academic, and agentic growth for students (Anderson & Haney, 2020). This growth can support students' well-rounded preparedness to transition from middle to high school (Anderson, 2019). This substantial body of collaborative research undergirds the conceptual framework (see Section B) and illustrates that teachers can experience remarkable professional growth by understanding how and why students' creative development in learning cultivates their academic engagement, agency, and resilience (see Anderson, Porter, & Adkins, 2019; Anderson & Beard, 2018; Anderson et al., 2020).

Student Outcomes. In a quasi-experimental study design with a non-equivalent comparison group in ArtCore, the agency and metacognition that goes into deciding *whether* to

makeSPACE for Agency and Readiness • 4

be creative (i.e., agency) and *how* to be creative (i.e., metacognition), were the driving factors that led to students' creative development at the end of Grade 8. Those factors also distinguished students who received arts integration in middle school from their peers who did not (Anderson & Haney, 2020). Evaluation of the ArtCore project linked students' enhanced development of creative metacognition and agency to academic improvement by showing a substantial and statistically significant 23% improvement in English language arts proficiency and double the average growth for racially, ethnically, and socioeconomically diverse ArtCore students compared to peers who did not receive arts integration (see Appendix G for more details).

Teacher Outcomes. Our recent research with more than 80 teachers working with high-needs students reveals that high-quality PD introducing new research and practice to develop students' agentic, creative, and metacognitive skills can support teacher growth and well-being simultaneously (Anderson et al., 2021; Anderson et al., in press; Anderson et al., in preparation). In a sample of 53 teachers, we found substantial positive effects on teacher mindset, joy, resilience, empathy for students, creative agency, and stress reduction, ranging from medium to very large effects, after they completed the first part of the makeSPACE PD program during the COVID-19 pandemic in the 2020–21 school year. We found important links between teachers' creative and agentic beliefs and skills and their well-being (Anderson et al., 2021), which is important given the link between teacher well-being and students' emotional support and positive classroom climate (Jennings, Frank, Snowberg, Coccia, & Greenberg, 2013).

A3. An Exceptional Approach to Program Priorities. This proposed project is comprehensive and timely, addressing three Absolute Priorities and two Competitive Priorities.

Addressing Absolute Priorities 1, 2, and 4: Fostering Academic, Agentic, Creative, and Social-Emotional Skills Through Drama-Based Learning for High School Readiness. The

makeSPACE for Agency and Readiness • 5

makeSPACE approach emerged from extensive research indicating that students—especially high-need students—can benefit greatly from learning across content areas through creative, drama-based approaches (see Lee, Patall, Cawthon, & Steingut, 2015) by developing key agentic, SEL, and metacognitive capacities (Anderson, Irvin, Bousselot, & Beard, 2021). For instance, if students learn drama-based approaches to make sense of abstract science concepts in Grade 8 science class, this embodied learning process will become a routine skill they know when and how to employ (metacognitive) and feel confident and in control (agentic) to use when needed. They gain SEL skills through their teamwork with others and are more likely to retain what they learned (Hardiman et al., 2014). In this way, students gain agency in learning tasks—a feeling of confidence, control, and value in what and how they learn (Bandura, 2006). They also develop metacognition— or purposeful *thinking about thinking*—which can be thought of as the gateway to regulating oneself and being strategic in learning (Beach, Anderson, Jacovidis, & Chadwick, 2020). Drama-based learning can also establish the important conditions for a sense of belonging (Katz-buonincontro, Anderson, & Manalang, 2020). This proposed project prepares students academically for high school, college, and career through (a) strong relationships and sense of belonging, (b) self-efficacy, adaptability, and resilience to overcome obstacles, and (c) creative metacognition and thinking skills for better problem-solving in school.

An Exceptional Approach to Competitive Priority 2: Providing PD That Supports Teachers' and Students' Well-Being in Response to the Trauma of the COVID-19 Pandemic in High-Need Schools. The proposed project design will engage teachers and school leaders in collaborative codesign of an effective, culturally responsive, and contextually appropriate program for SDP middle school teachers and students. The makeSPACE approach includes strategies to support teachers' mental health and well-being through artistic mindfulness

practices that can be integrated into their teaching and personal lives. Those experiences have resulted in two replicated studies illustrating enhancement of teacher well-being. The proposed makeSPACE for Agency and Readiness program will adapt existing materials and activities to support teachers in trauma-informed practice that build on therapeutic traditions in the arts.

An Exceptional Approach to Competitive Priority 3: Providing Collaborative, Job-Embedded PD that Develops Teacher Leadership and Increases Access to a Well-Rounded Education. This proposed project will bring two years of sustained, job-embedded, and collaborative makeSPACE PD experience to more than 200 teachers in hard-to-staff schools serving high-need, socioeconomically marginalized students. Once teachers engage in the makeSPACE online hub, they have ongoing access to the innovations and insights of dozens of teachers as well as supplemental training material and resources. The train-the-trainer model that will be developed in this proposed project also provides teachers with professional growth and leadership opportunities. Last, by increasing student opportunities to learn in and through the visual and performing arts in middle school within their core classes, this proposed project will also expand on students' access to a well-rounded education and to culturally responsive and sustaining learning opportunities in the arts within core content area learning.

A4. Expanding makeSPACE for Broad Impact. This proposed project aims to reach at least 3,505 socioeconomically marginalized youth making the middle-to-high school transition. The proposed *makeSPACE for Agency and Readiness* project adapts and tests the existing makeSPACE PD system for broad implementation in a large urban school district to prepare students with the agentic, creative, metacognitive, and SEL skills needed to transition to high school, adaptively. With this proposed funding, the existing makeSPACE teacher network will expand to impact <u>16 new school sites, preparing more than 240 middle school teachers</u> to

integrate creative learning through drama and theater across curricula in multiple core content areas. Moreover, the proposed project will produce new research and evidence disseminated broadly to the community of education research and practice through articles, reports, blogposts, podcasts, social media, and presentations. Socioeconomically marginalized schools across the country will be able to implement, replicate, or expand on the accessible online PD system for their own community. The resulting materials will provide a comprehensive and consolidated program that is cost-efficient, scalable, teacher-led, and adaptable to different contexts.

B.   PROJECT DESIGN

B1. Underlying Framework and Theory of Change. <u>In our conceptualization, creative teaching in arts integration combines the knowledge, skills, and beliefs necessary to generate learning experiences that build students' creative, social-emotional, and academic agency and resilience.</u> Figure 1 illustrates the underlying framework, including: (a) teachers' professional learning, (b) teacher-level outcomes, (c) student-level proximal outcomes in middle school, and (d) the resulting distal student-level outcomes in high school. First, teachers receive job-embedded, collaborative, and sustained PD that helps them understand and target students' academic agency and skills, creative problem-solving, and SEL skills, simultaneously. Second, teachers can engage and access the PD resources with self-directed flexibility and receive the support to design and adapt what they learn in a disciplined process, using a design-based approach to action research (Pine, 2008). The online platform allows them to share what they design and learn within and beyond their school. Third, teachers experience immersive and reflective professional learning that (a) develops their creative agency by addressing internal barriers of fixed mindsets, low self-efficacy, and anxiety about creative teaching and (b) provides creative and collaborative experiences inside and outside the classroom.

Figure 1. makeSPACE for Agency and Readiness Theory of Change Framework
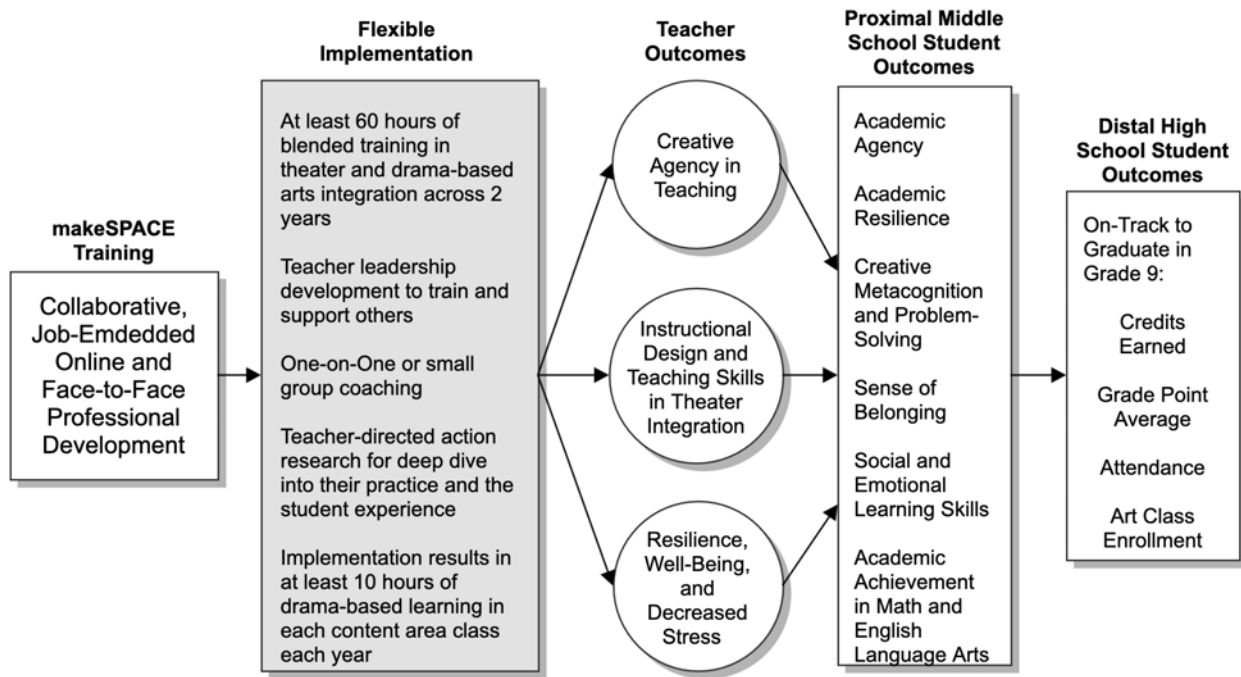
Fourth, when Grade 7 and 8 teachers develop creative agency and skill for effective arts integration, they build these processes into routine classroom learning, increasing their well-being in teaching. In turn, they enhance student academic agency and resilience, creative metacognition and problem-solving skills, SEL skills, a sense of belonging, and middle school academic achievement. Fifth, and finally, that preparation in middle school results in students being on-track to graduate after freshman year with higher attendance and GPA and enrollment in visual and performing arts classes. SDP students can attend a variety of high school options. That circumstance makes training Grade 9 teachers for continuity prohibitive for this specific project but a possible future pathway to consider. This proposed project will fully test the theory of change framework to evaluate how well students agentic, academic, and creative development prepares them for the high school transition, no matter what high school environment they enter.

B2. Teachers' Beliefs, Skills, and Leadership Development. The makeSPACE PD approach follows small, scaffolded, and iterative steps toward more complex instructional design, implementation, and teacher-driven action research. The approach allows teachers to select and adapt specific instructional routines that fit their context best and leads them through the disciplined inquiry cycle of design-based action research in collaboration with their peers. The online experience requires teachers to engage creatively on their own and share their work with peers, as they process new research-based concepts, such as *Conditions for Creative Engagement*, and reflect on their own creative strengths as teachers and learners (see syllabi and sample course pages in Appendix J). Follow-up face-to-face training opportunities cement the concepts and instructional skills, experientially. Throughout PD in both online and face-to-face settings, teachers receive feedback and new ideas from peers and facilitating specialists. Through basic creative and artistic routines that teachers can adapt to their Grade 7 and 8 content areas, they learn how to set the conditions for a responsive and inclusive creative learning environment**.**

Theater Arts Integration for Universal Design for Learning. Teachers across content areas without prior experience can learn to integrate drama-based theater learning experiences into their instruction and curriculum (Anderson & Beard, 2018). Universal design for learning is an important and complementary framework encouraging teachers to offer multiple modalities and means for students to (a) engage in content and learning, (b) access content for understanding, and (c) express and communicate their thinking and learning (Rose, 2000). Our approach to drama-based integration begins with basic routines and exercises that develop students' understanding and skill development in using their bodies in dramatic enactment to enhance their understanding, interpretation, expression, and retention of what they learn. This approach to learning taps into embodied, collaborative, SEL, and metacognitive skills and has a

growing body of evidence indicating positive effects on SEL and academic skill development, especially for students struggling academically (Lee et al., 2015). The makeSPACE approach focuses on foundational building blocks to theater and drama, such as *tableaux vivants* (i.e., living pictures), where students form frozen scenes to convey meaning and tell a story about the content and ideas they are learning. Tableaux vivants is accessible to educators, adaptable to different instructional needs, and establishes consistent opportunities for the development of student agency, creative problem solving, a sense of belonging, and SEL skills (Anderson & Beard, 2018; Katz-Buonincontro, Anderson, & Manalang, 2020).

Teachers have successfully used the technique to enhance student understanding about ancient civilizations, to model scientific phenomena, such as the water cycle, to interpret and reenact key points in a book, and to develop a gestural glossary of key terms learned in math. This technique sets the stage for accessible and manageable integration across content areas and more advanced drama-based experiences. To complement the drama-based integration routines and strategies in a universal design for learning approach (Rose, 2000), project partners will add more modalities for student engagement, understanding, and expression from existing PD materials in the visual arts, music, media, and dance. For instance, music listening and rhythm exercises target active listening skills—key to the development of perspective-taking, empathy, and social awareness. Brief routines actively listening to sounds in the environment or qualities of music can respond to students' cultural assets and engage students in different aspects of the world around them—cultural, scientific, mathematical, emotional, and literary. Visual arts exercises from makeSPACE can be incorporated to promote self-awareness and metacognition.

Advanced Arts Integration Design-Based Action Research. Action research is a teacher-led process of disciplined inquiry to learn in-depth about the student experience and gauge the

effectiveness of classroom innovations for intended outcomes. After completing the

makeSPACE Foundation Course and Theater Arts Integration Course, teachers will proceed

through a design process that links design choices to specific student SEL, creative, and

academic learning outcomes. They receive feedback from peers and specialists at key stages of

the process. By blending the stages of design with action research methods (Pine, 2008), this

course supports teachers to conduct critical inquiry about their instruction, curriculum, and their

students' development, adopting the proposed makeSPACE for Agency and Readiness

framework and adapting it to their teaching context. Teachers pose questions and design

possibilities, conduct empathy interviews with students, design and test arts integrated routines

and curriculum, and develop new understanding about how and why their innovations work. The

makeSPACE platform houses an interactive resource library, where teachers will contribute

the results of their work and seek out the innovations of others.

Training for Sustainability. Comprehensive and accessible programs to develop teacher

capacity for theater arts integration at scale are currently not available to most U.S. educators,

including SDP teachers. Online professional learning can be more effective than training in

person (Fishman et al., 2013), expanding accessibility to teachers in high-needs settings. In a

blended approach, the self-directed online work in makeSPACE is augmented with collaborative

face-to-face trainings, facilitated by teacher peers, making PD more actionable, personalized, and

embedded in practice. To create a sustainable model for whole grade levels, this project will

build new *Train-the-Trainer* PD materials to support makeSPACE School Teams (MST) of three

teacher leaders and their principal in each participating school. Materials will include a 3-day

Teacher Leader Summer Institute and online hub of grade-level PD facilitation techniques and

planning tools. MST roles and responsibilities will include staff training facilitation, subject-

makeSPACE for Agency and Readiness • 12

specific and cross-content area collaboration, coordination of grade-to-grade efforts, and gathering input from staff. The online makeSPACE portal will help facilitate ongoing support to MST facilitators, connect MSTs across schools, and provide new staff hired after the program has begun with the necessary scaffolded, personalized support to be acclimated.

Table 1. *Characteristics of Partnering Schools in the School District of Philadelphia*

Schools	Grade 7–8 Student Enroll.	Middle Grade Teachers	BIPOC %	FRL %	2018–2019 Proficient in Reading/Math
Washington Grover Jr. School	300	22	99%	100%	29%/ 16%
Academy for Middle Years NW	209	12	95%	100%	63% / 22%
Academy for Middle Years at J.M.	267	19	67%	100%	36% / 13%
Cook Wissahickon (K-8)	114	6	57%	100%	46% / 22%
Charles W Henry School (K-8)	108	6	70%	100%	56% / 36%
Feltonville School of Arts and Sciences	445	38	86%	100%	24% / 11%
Science Leadership Academy (5-8)	246	12	84%	100%	49%/ 17%
Overbrook Education Center (K-8)	66	5	98%	100%	49% / 25%
Total treatment schools	1,755	120	82%	100%	44% / 20%
Comparison group school estimates	1,750	120	86%	100%	38% / 22%
Totals for SDP	**3,505**	**240**	**86%**	**100%**	**38% / 22%**

Note. The percentage of BIPOC (Black, Indigenous, and People of Color), FRL, and proficient students in Reading/Math were all retrieved from the SDP sources https://schoolprofiles.philasd.org.

B3. Collaborative Partnership with School District of Philadelphia. This proposed project will extend the makeSPACE program to the School District of Philadelphia (SDP) in Pennsylvania. SDP is the primary school partner in this proposed project for several key reasons. (a) Six SDP schools worked with project lead, Children First PA (formerly Public Citizens for Children and Youth), for two years developing their arts integration approach. (b) An evaluation completed by project evaluation partner, Research for Action, identified the need for comprehensive arts integration training to enhance their schoolwide approach. (c) SDP and Children First PA have established the *Blueprint for an Arts-Rich School* (Gibbon, Farlino, &

Project Goal 1: Provide high-quality and sustained blended professional development to more than 240 teachers in Pennsylvania and increase their agency, skills, knowledge, and arts integrated instructional time.

Measurable Objective 1.1: Reach at least 240 teachers with training in theater and drama-based arts integration at approximately 30 hours per year (60 hours total) following the makeSPACE approach—at least 75% of teachers enrolled in online courses complete all training requirements.

Measurable Objective 1.2: At least 75% of teachers report implementing theater and drama-based integration and creative routines for > 10 hours of instructional time per year in content area classes.

Measurable Objective 1.3: On average 3 teachers at 16 schools and their principals complete 75% of Train-the-Trainer series and demonstrate preparedness to facilitate makeSPACE strategies.

Measurable Objective 1.4: On average, teachers demonstrate small-to-medium effect size growth (Hedges g = .20–.50) in creative and agentic beliefs in teaching, knowledge and skills for instructional design and teaching in theater and drama arts integration and key factors of well-being in teaching after two years of PD compared to control group teachers.

Measurable Objective 1.5: To adapt or create at least 60 hours of PD materials through collaborative codesign with teachers to target student readiness for high school.

Measurable Objective 1.6: Develop *Train-the-Trainer* PD materials to support teacher leadership, principal support, and sustainability of programming at participating schools.

Measurable Objective 1.7: Document at least 100 teacher-generated arts integrated instructional or curricular materials and share through searchable *Virtual Library* in makeSPACE online portal.

Project Goal 2: Reach at least 3,505 high-needs Grade 7 and 8 students with high quality theater and drama-based arts integrated learning and demonstrate a positive impact after one and two years on academic, agentic, SEL, and creative outcomes.

Measurable Objective 2.1: Reach at least 3,505 students with at least one year (> 40 hours or 10 hours in each content area) of high-quality theater and drama-based learning in core content areas.

Measurable Objective 2.2: Demonstrate small-to-medium standard deviation effects (Hedges g = .30–.45) on student academic agency and resilience and academic achievement in math and English Language Arts compared to comparison group.

Measurable Objective 2.3: Demonstrate small-to-medium standard deviation effects (d = .30–.45) on SEL skills (e.g., social awareness, perspective-taking, empathy), sense of belonging, and creative metacognition and problem-solving compared to comparison group.

Measurable Objective 2.4: Demonstrate small-to-medium effects (Hedges g = .30–.45) for On-Track to Graduate indicators of credits earned, GPA, attendance, and elective high school art class enrollment at the end of Grade 9 compared to comparison group.

Project Goal 3: Disseminate information and research about the project to the education research and practice communities through articles, presentations, social media, blogposts, and podcasts.

Measurable Objective 3.1: Publish at least 3 practitioner articles or book chapters, 10 blogposts, and 10 podcasts to share different perspectives on the progress of the project.

Measurable Objective 3.2: Publish at least 4 scholarly articles, alongside more than 6 national research presentations, to contribute new ideas and evidence to the field.

Cooper, 2019) calling for arts integration for every K-12 student in Philadelphia. (d) The long-standing partnership between Children First PA and SDP sets the stage for scaling the makeSPACE program across more schools in the future. (e) The need for support and resources in Philadelphia is high: Philadelphia has the second highest poverty rate among U.S. cities[1] and SDP reports that 65.14% of families are considered "economically disadvantaged," receiving public benefits[2]. Table 1 describes the participating schools in the proposed project. School recruitment will be finalized in Grant Year 1 with the additional selection of comparison sites, who will complete the makeSPACE for Agency and Readiness program starting in Grant Year 5.

B4. Program Goals, Measurable Objectives, and Implementation Plan. The goals and measurable objectives detailed on the previous page target EIR program priorities and align with the underlying conceptual framework. Section D describes the approach to tracking progress toward these objectives. By gradually embedding training into existing school PD schedules at participating districts, the proposed model will achieve at least 30 hours per year and a minimum of 60 hours total without adding a large burden on teacher out-of-contract time. By offering 20 hours of virtual collaboration sessions, annually, some participants could reach 100 hours. Each year of training becomes progressively more intense in terms of individual ownership and adaptation for teachers to make creative and artistic routines a weekly norm in their classes, with the goal of participating students experiencing at least 40 hours of arts integrated instruction per year. The implementation plan explained in Table 2 and the following section illustrates a phased-in approach to collaborative design, development, implementation, and evaluation.

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[1] Source: Statista found at https://www.statista.com/statistics/205637/percentage-of-poor-people-in-the-top-20-most-populated-cities-in-the-us/
[2] Future Read PA Index, Data Files, District Fast Facts2019-2020: https://futurereadypa.org/Home/DataFiles

Table 2. Project Implementation Timeline of makeSPACE for Agency and Readiness	
Year 1 2021–22	• Project capacity-building and planning with partners and schools • Recruitment and orientation of additional middle level SDP schools and school leaders to serve as comparison group schools with delayed treatment (to start PD in Year 5) • Project partners work with selected teachers to design program from existing makeSPACE materials and plan for additional materials that need developing • Project partners design Train-the-Trainers model with development of additional assets
Year 2 2022-23	• Design and development of program model and materials continues • Grade 7 and 8 teacher teams in treatments schools begin Program Year 0: makeSPACE School Teams (MSTs) recruited, use planning tools, and provide staff orientation • MSTs (teachers and principals) attend 3-Day *Train-the-Trainer Summer Institute* • Children First PA Coach trained in makeSPACE support; Principals begin engagement with monthly collaboration sessions to ensure school-level support for sustainability
Year 3 2023-24	• Schools begin Program Year 1: Complete Foundation Course and Theater Strategy Course; monthly workshops and coaching sessions for MSTs • Classroom implementation is documented through course; data collection begins • All MSTs attend 3-Day *Train-the-Trainer Summer Institute;* Principals and MST teachers focus on building the makeSPACE approach into long-range school planning
Year 4 2024-25	• Treatment teachers start Program Year 2: Complete advanced arts integration practicum and additional theater and arts integration trainings; monthly workshops for MSTs • MSTs attend 3-Day *Train-the-Trainer Summer Institute.* • Comparison school Grade 7 and 8 teachers begin Program Year 0 with MSTs engaging in Foundation Course in Spring and their grade level teams starting in the Summer
Year 5 2025-26	• Treatment school MSTs and Principals support teachers to prepare for sustainability and adopt specific arts integration strategies as schoolwide approach to learning • Comparison Group schools begin Program Year 1; MSTs attend 3-Day *Summer Institute* • Research–Evaluation Team completes (a) fidelity of implementation study and (b) impact evaluation studies of student and teacher outcomes

Program Year 0: Planning. In Year 0, with support from project partners, school leaders

will recruit a team of three diverse teacher leaders from Grades 7 and 8, who begin engaging in

the makeSPACE Foundation Course as the MST. This MST will use a template for multi-year

planning to embed the makeSPACE training program into the existing school structures (e.g.,

school goals, staff PD, staff meetings, etc.) and complete the Foundation Course by the end of

the school year. During March–June, the MST will use staff meetings and school PD time to introduce the program, so that all teachers complete the first 3 of 12 modules in the Foundation Course before the end of the school year (see syllabus in Appendix J).

Program Year 1: Foundations and Routines. Prior to the start of Year 1, MST members from each school attend the face-to-face 3-day *Train-the-Trainers makeSPACE Summer Institute* in preparation for integrating creative and drama-based integrated routines into back-to-school PD for Grades 7 and 8. MSTs receive guidance and funding to incorporate local artists in staff PD and teachers' arts integration design. During the first half of Program Year 1, all teachers complete Modules 4–12 of the Foundation Course during school-level and independent PD time, implementing foundational arts integrated creative routines in their teaching. Teachers will join content area affinity groups across schools, facilitated through the online system. The MSTs will also facilitate collaborative and creative experiences for the school staff, including opportunities to share what each staff member attempted, innovated, and learned. MSTs and school leaders attend monthly workshops facilitated by project partners with regular 1-on-1 check-ins focused on developing strong school support and rollout plan for arts integration (occurs each program year). During the second half of Program Year 1, all staff select and complete the Theater Arts Integration Strategy Course, developing an initial plan for integration in Year 2.

Program Year 2: Advanced Design and Action Research. Prior to the start of Year 2, MST members attend the face-to-face 3-day *Train-the-Trainers makeSPACE Summer Institute* to reinforce foundational understanding and develop facilitation skills and plans to lead school-embedded PD. MSTs kick off the school year with experiential training for their staff in arts integration strategies. All teachers engage in additional modules on theater strategies (e.g., improvisation techniques) as well as complementary routines in other modalities, and engage in

the *Advanced Arts Integration Design Course.* The advanced modules will help teachers apply

what they have learned in the strategy courses within a practicum context structured by action

research methods and design thinking stages. The self-guided *Advanced* modules include peer-

to-peer feedback within and across content area teachers and small group coaching from

specialists. Teachers receive guidance to design, plan, implement, evaluate, and refine high-

quality arts integrated classroom experiences to be documented and shared across the

makeSPACE network. MSTs meet with project partners monthly to plan for sustainability.

C. ADEQUACY OF RESOURCES AND QUALITY OF MANAGEMEMT PLAN

This proposed project is a national partnership between one of the country's 20 largest

school districts (the School District of Philadelphia), a community-based organization (Children

First PA), researchers and professional development designers in arts integration teaching and

learning (Creative Engagement Lab, LLC), and experts in rigorous evaluation methods

(Research for Action). This proposed project is led by a dynamic community-based organization,

Children First PA, who address systemic inequities at multiple levels—education, vulnerable

youth, early learning, and family health. For instance, since launching the arts-based Picasso

Project in 2002, PCCY has enhanced access to and quality of arts education for more 55,000

children through innovative art projects. The first year of in-kind contribution is provided by

Creative Engagement Lab through their contracted work in the current makeSPACE grant (see

Appendix H). Matching and in-kind contributions in Years 2–5 will be managed by Children

First PA, who has received funding for arts-related education initiatives from over 17 private

trusts and foundations, such as the William Penn Foundation and Neubauer Family Foundation.

C1. Key Personnel. Key personnel and contributors (see Appendix for CVs and resumes) from all partnering organizations will share responsibilities for project management, design, development, implementation, research, and evaluation.

Children First PA. A full-time project manager, with experience in the arts integrated teaching and professional development and under the leadership of Executive Director, Donna Cooper, will be appointed primary responsibility to coordinate all project activities (e.g., project meetings, coordination of activities, school-level planning and budgeting, contracts, and connecting artists and schools). Former teacher and school principal with 30+ years of experience in education, ███████████, will receive training on the makeSPACE approach in order to provide school principals and MST teacher leaders coaching and contribute to the development of the *Train-the-Trainer* materials, and other related resources. ███████████ brings an in-depth understanding of school leadership and existing relationships across SDP to facilitate continued commitment and sustainability of the project.

Creative Engagement Lab, LLC (CEL). ███████████, a CEL co-founder, will serve as project director and principal investigator (see CV in Appendix). ███████████ brings 15 years of leadership overseeing more than $15 million in grant-funded research and development work in K-12 education. He has developed scholarship and expertise in creative teaching and learning, arts integration, and blended professional learning models. His leadership in two previous US Department of Education grants resulted in promising evidence for student and teacher development, dissemination of dozens of arts integrated curricular, instructional, and PD resources, and publications and presentations for research and practice, including a recent TEDx talk on the potential of integrating drama and creative gesture in learning. His scholarship on student and teacher creative development and methodological innovations has led to 32

publications in the form of journal articles in high-impact publications, book chapters, frameworks, and reports for practitioners.

CEL co-founders and arts integration specialists, ███████, ███████, and ████ ████, bring more than 45 years of experience in education, the arts, and working with teachers to provide strong arts integrated learning experiences to students in high-needs schools. The CEL team has trained, collaborated with, and supported more than 300 teachers in the past eight years. They are the primary authors and designers of the blended online and face-to-face makeSPACE PD program. CEL includes consultants with expertise in computer programming to design additional features into the existing online learning management system and videography and graphic design to develop additional training materials. CEL will oversee the collaborative design process to build and implement all new proposed training material in collaboration with local Philadelphia partners.

School District of Philadelphia (SDP). The SDP Office of the Arts and Creative Learning, under the leadership of ███████, will serve as an important partner to ensure optimal alignment to district policies, structures, goals, and resources at all stages of development related to teacher and student participation. This office will participate in quarterly partner-wide meetings to provide iterative input and feedback on training materials, schoolwide implementation, and research and evaluation activities. This office will also support school implementation and recruitment. Participating SDP schools will provide the necessary support and facilitation to engage in the activities laid out in this proposal.

Research for Action (RFA). RFA will serve as the independent evaluator, drawing on significant experience and expertise for impact evaluations to evaluate teacher PD programs in SDP. ███████ will oversee the evaluation. With expertise in complex research and

makeSPACE for Agency and Readiness • 20

evaluation, ██████████ brings over 10 years of experience in conducting implementation and impact evaluations to improve outcomes for underserved students. ██████████ will ensure the quality and rigor of the research and its execution and dissemination, drawing on deep experience conducting longitudinal multi-site, mixed methods evaluations. She will also lead the quantitative data collection and analysis. ██████████ will lead qualitative data collection and analysis, drawing on her extensive experience evaluating professional development supports for teachers in large, high-poverty school districts.

C2. Management Plan and Delegation of Responsibilities. As the project lead, Children First PA will provide (a) fiscal oversight, including executing contracts, paying invoices for partners, financial reporting, and paying teacher stipends, among other responsibilities; (b) project leadership to hit milestone targets for implementation and strategic visioning for sustainability and growth, regionally; (c) recruitment and stewardship of SDP school and district partners; (d) coordination of teacher engagement and payment; (e) support to other partners for organizing face-to-face trainings; (f) MST and school leader development and rollout planning; and (g) development of local dissemination plan inside and outside of SDP.

CEL's ██████████ will provide (a) project leadership, strategic visioning, and sustainability planning, nationally; (b) oversight of research and evaluation activities in collaboration with RFA to evaluate trends and impact at the teacher, student, and school levels; (c) oversight of timeline, deliverables, partner roles, and stewardship of a collaborative culture; (d) direction to partners on theory-driven and research-based teacher and principal training material that reflects current education research; (e) iterative research and development cycle of new materials; (f) annual federal reporting; (g) oversight of grade-level implementation approach and MST guidance and facilitation; and (h) dissemination through professional presentations and

publications in scholarly and practitioner venues and networks, including a project blog. CEL specialists will provide (a) facilitation of collaborative design with partners for design and development of additional PD, instructional, and curricular materials; (b) instructional design and development of new training content to support teachers, MSTs, and principals; (c) facilitation of online community of practice across SDP schools and integration into existing network in Oregon; (d) facilitation of face-to-face training and direction to videographer for documentation and editing; (e) collaboration with local artists and specialists for place-based approach to arts integration; and (f) oversight of makeSPACE platform licensing and additional course development. CEL staff will oversee all aspects of videography, programming, and other instructional design tasks to meet project Goal 2.

Research for Action will be responsible for (a) research design, organization of data collection, analysis, and evaluation of change; (b) school visits, observations, interviews, and focus groups to support evaluation of performance measures; (c) support to PI ███████ to conduct additional data collection and research on implementation; (d) collaborate with PI ███████ to produce annual federal reports, evaluation papers and recorded webinars for various stakeholders, and research and practitioner articles for further dissemination; (e) lead the identification, consenting, and data collection and analysis of selected SDP treatment and comparison schools for impact evaluation to achieve the most rigorous comparative analysis; and (f) submission and oversight of Institutional Review Board (IRB) materials.

SDP school and district partners will be responsible for (a) disseminating opportunities to schools and teacher participants; (b) supporting data collection and sharing of administrative data; (c) supporting the development and sustainability of school support, culture, and shared instructional practices (e.g., creative routines) in participating schools; (d) envisioning, planning,

and supporting future scaling to additional schools at the conclusion of grant period and support for comparison schools starting in Year 5; and (e) providing iterative feedback on program.

C3. Iterative Development Process to Ensure Quality and Reach Milestones.

Ongoing feedback for iterative development and improvement to all aspects of the proposed makeSPACE for Agency and Readiness project will be accomplished through several means. 1) Quarterly meetings organized by the Project Manager and Project Director will include all project partners, including teacher and principal representatives, and include documents and materials to be reviewed in advance of the meetings. 2) Teacher feedback will be collected through the online platform and through in-person surveys after every training experience, including those conducted by teachers. 3) All new training material developed will include a beta-testing pilot version with extensive feedback gathered by participants to inform revisions before final versions are implemented fully. 4) MSTs and principals will be consulted regularly on the progress of school support and buy-in for sustainability and effective implementation. 5) RFA will review the proposed development goals and the timeline planned by Children First PA and CEL and conduct quarterly internal monitoring on progress toward those goals.

C4. Sustainability and Cost. The in-kind support for school costs organized by Children First PA from a range of funders will continue supporting the project by funding the second program year for the eight comparison schools (e.g., teacher stipend, facilitator costs) after Year 5 of the grant concludes. Upon dissemination of the results, project partners will also aim to get additional support from SDP administration to fund makeSPACE teacher PD. The cost of the external evaluation is 20% of the total budget. By reaching 3,500 high need students, the total cost of the project, excluding evaluation, is $1,000 per student. By using a technology-driven blended PD approach to balance efficiency, quality, and effectiveness, the teacher PD experience

makeSPACE for Agency and Readiness • 23

is relatively inexpensive. By estimating implementation costs of the training program for teachers at 55% of the Year 3–5 budget for the contractor Creative Engagement Lab, we estimate the per teacher estimate of training implementation costs at $2,230.

D.   PROJECT EVALUATION

The evaluation will be performed by Research for Action. This entity is an external evaluator using the US Department of Education's definition of having no managerial or implementation responsibilities for the project. The project's goals and objectives form the basis of the evaluation which includes tracking of process measures and monitoring expected outcomes to determine the impact on students, teachers, as well as site and district administrators, to determine the degree to which specified outcomes have been met.

D1. Meeting What Works Clearinghouse (WWC) Standards. Because the intervention is ultimately for students, treatment effects will be estimated using a delayed treatment quasi-experimental design (Cook, Campbell, & Shadish, 2002) to meet WWC Standards with reservations where (a) treatment sites have been selected in collaboration with SDP school and district personnel and (b) non-equivalent comparison schools serving Grades 7–8 with similar school characteristics will be identified and recruited. Because collection and analysis of implementation data is integral to the makeSPACE training program, the CEL's PI ███████ will be the primary collector of these data, following WWC guidelines and monitored by RFA. Data collected by PI ███████ will aid in the evaluation of the implementation fidelity.

Teachers in the comparison group condition will be offered access to start the makeSPACE training in Year 5 of the project, after the two-year implementation in treatment schools is complete. Teachers in each comparison school will be required to wait to form MSTs and begin implementation and sharing of materials until the end of that school year to avoid

contamination. Because all teachers in all study schools will be offered eventual access to the

makeSPACE for Agency and Readiness training, the proposed quasi-experimental design

increases the chances of meeting the recruiting goals for schools, teachers, and students resulting

in the study having adequate statistical power to detect hypothesized effects of the program at the

end of the study. Given a threat of contamination of information shared across teachers in both

conditions, PI ▮▮▮▮▮▮▮ and RFA will build in contamination checks throughout the project.

RFA and PI ▮▮▮▮▮▮ will take the following additional methodological steps to increase

the chances that the study will meet WWC evidence standards: (a) Use teacher and student

outcomes with demonstrated validity and empirical reliability (What Works Clearinghouse

House, 2020, p.83); (b) provide teacher study participants with stipend incentives and use

monitoring systems to foster participant retention leading to low missing data, attrition, and non-

response (What Works Clearinghouse House, 2020, p.4-24); (c) guard against design decisions

that introduce confounds (What Works Clearinghouse House, 2020, p.85); and (d) administer all

measures of all teacher and student outcomes before the makeSPACE for Agency and Readiness

intervention is delivered to create pre-intervention measures of outcomes that can be used to

establish baseline equivalence if there is high attrition or joiners in the analysis samples at the

end of the study (What Works Clearinghouse House, 2020, p.4-34).

D2. Statistical Power and Minimum Detectable Effect Sizes. To calculate the

statistical power for the *confirmatory* impact of makeSPACE for Agency and Readiness on Year

4 teacher outcomes, we treat analysis of teacher outcomes separately from student outcomes.

Teachers will be grouped into two groups, treatment ($n = 120$) and comparison ($n = 120$) groups,

with three measurement occasions—pre-training, mid-training after Year 1, and post-training

after Year 2. We assume 10% teacher attrition across Years 3–4 of the study resulting in a Year 4

analysis sample of 216 teachers, which will result in analytic power to attain a minimum

detectable effect size (MDES) of 0.24 standard deviations, equivalent to a small effect.

For student outcomes, we calculate the statistical power for the *confirmatory* impact by

defining the multilevel model with schools at level 2, and students at level 1 (Figure J2,

Appendix J). The school is the level of selected assignment for treatment, so the indicator

variable (1 = makeSPACE for Agency and Readiness group and 0 = Comparison group) is at

level 2 with the pre-intervention measure of each student outcome as a covariate. We assume a

student sample of 1,755 Grade 7 and 8 students receiving treatment in Year 3 with a sample of

1,750 Grade 7 and 8 peers in the comparison group at recruited schools. Half of each group (the

Grade 8 students) will advance to Grade 9 in Year 4. As such, we will analyze effects after one

year of programming with this full sample using two measurement occasions—pre-intervention

and post-intervention after one year. Given the similarity in the SDP schools selected (e.g.,

student demographics and academic proficiency rates), we expect an ICC in the range from .05

to .10, which we use to estimate the MDES. We expect a 10% attrition with a total analytic

sample of 3,150 students in 16 schools—an average of 197 students per school, which will result

in analytic power to attain a MDES ranging from 0.34 to 0.48 standard deviations, a small-to-

medium effect for outcomes of interest.

We will analyze a second model to test for effects of two years of programming on

student outcomes with the cohort of students that began the program in Grade 7. For this group,

all outcome measures will be collected three times: at the start and end of Program Year 1 and at

the end of Program Year 2.We expect 20% attrition resulting in 1,400 students (or ~88 students

per school) in 16 schools with a MDES in the range of .30 to .42 standard deviations, based on

similar assumptions to the previous model. We expect analytic power to improve by using

growth analyses with three measurement occasions for that group across two years of programming (Maxwell, 1998; Venter et al., 2002). We will collect administrative data from SDP linked to Objective 2.4 and use the same 2-level model to evaluate effects of two years of programming on *On-Track to Graduate* indicators.

D3. Strategies Suitable for Replication of the Intervention. The flexible teacher PD experience facilitated through a sophisticated learning management system provides an advantage to the research and evaluation team to collect a detailed repository of information on implementation fidelity, successes, and challenges across teachers within schools. RFA will collaborate with PI ███████ to monitor this data collection to ensure it is consistent with EIR implementation standards, including periodic checks for teacher completion of modules on schedule, uploading of documentation on classroom implementation of strategies, and potential diffusion of the intervention from treatment teachers to comparison site teachers prior to Year 5. The accumulation of these data will be used to continually refine the generalizable proposed PD model that presents adaptable integration approaches for middle level teachers depending on content area, student assets and needs, and school structures and context. To further understand both the fidelity of implementation and contextual adaptations, RFA with support from PI ███████ will supplement the quantitative data with focus group and interview data collection with teachers and students sampled carefully to gather a diversity of perspectives.

D4. Implementation of makeSPACE for Agency and Readiness in Years 3 and 4. To measure initial implementation readiness across districts, RFA and PI ███████ will build from the *Implementation Drivers Assessment of Best Practices* developed by ███████ and colleagues (Fixsen et al., 2015). Members of the research team will serve as facilitators to conduct this self-assessment with MSTs in partnering schools. The results will provide important

feedback about the policy context, infrastructure, and supports needed in each school to ensure readiness for the PD program, for embedding the program in existing teacher PD time allocations and schedule, for supporting the stipend system, and for setting implementation targets for each school according to the proposed timeline (e.g., number of PD hours completed, grade-level MST-facilitated trainings, etc.). The overarching aim of the implementation study is the annual collection of implementation data in Year 3 and Year 4 that will allow for a deep understanding of the implementation factors that affect teacher access to and application of the makeSPACE trainings and the strategies for replication of the program in other settings.

An integrated monitoring system within the online makeSPACE learning management system will be used to assess teacher progress through trainings and implementation through a standard set of indicators connected to Project Goal 1 and Objectives 1.1–1.3. Creating a generalizable pathway for professional learning that still honors teacher choice and personalization will be an iterative process, which results in the creation of benchmarks to indicate the low, medium, and high levels of implementation fidelity across multiple key components of the program. Those levels will emerge as we learn from teachers' adaptations, choices, designs, and changes in teacher outcomes. By Year 5, the research and development teams expect to have sufficient data for analyses to identify which PD formats, opportunities for choice, and levels of implementation may be key to shift teacher and student outcomes.

D5. makeSPACE for Agency and Readiness Effects on Year 3 and 4 Teacher and Student Outcomes. The model proposed to estimate statistical power for the teacher sample will be used to estimate the average treatment effect of the program on teacher outcomes in five domains: 1) Creative Agency in Teaching (i.e., Beliefs and Mindsets), 2) Joy and Resilience in Teaching, 3) Anxiety and Stress in Teaching, 4) Empathy for Students, and 5) Knowledge and

Skills for Instructional Design and Teaching in Theater and Drama-based Arts Integration (See measures in Table J3 in Appendix J). All measurement tools have evidence of reliability and validity in past research with teacher samples. These estimates will serve as confirmatory evidence of the programs impact on teachers in Year 4 of the study. The same analysis model will be used to estimate the average treatment effect of the program on teacher subgroups by including dummy variable indicators for the subgroup (e.g., teacher years of experience and content area) and interacting those indicators with the treatment indicator in the analysis model. These estimates will be exploratory and used to inform future research. In any given domain, the Benjamini-Hochberg adjustment will correct for multiple comparisons for each outcome.

The two-level model used to estimate statistical power for the student sample will be used to estimate the average treatment effect for both one and two years of the program on student outcomes in five domains: 1) Academic Achievement in Math and English Language Arts[3] 2) Academic Agency and Resilience, 3) Creativity Metacognition and Problem-Solving, 4) SEL Skills and Sense of Belonging, and 5) the lagging On-Track to Graduate indicators shared by SDP toward the end of Year 5 (See Table J4 in Appendix J). These estimates will serve as confirmatory evidence of the makeSPACE for Agency and Readiness impact on students after one year of programming in Year 3 (for Grade 7 and 8 students) and after two years of programming in Year 4 (for Grade 7 student cohort, only). The same analysis model will be used to estimate the average treatment effect of the program on student subgroups by including dummy variable indicators for the subgroups (e.g., ethnicity, socio-economic status, or gender) and interacting those indicators with the treatment indicator in the analysis model. These estimates will be exploratory and used to inform future research. In any given domain, the

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[3] Only grades 4 and 8 are assessed in science, so it is not possible to evaluate effects on science achievement.

Benjamini-Hochberg adjustment will correct for multiple comparisons for each outcome.

The outcomes for all measures will exhibit face validity and demonstrate internal consistency, as measured by Cronbach's Alpha, of at least .60, to meet WWC outcome standards for reliable and valid measures (What Works Clearinghouse House, 2020, p.83). To ensure the study is still eligible to meet WWC Standards if attrition exceeds the conservative boundary, RFA will establish baseline equivalence of analytic samples on the pre-intervention measure of the outcomes. Allowable adjustments will be made for baseline differences between .05 and .25 standard deviations, ensuring that the study is eligible to receive a rating no lower than meets WWC Standards with reservations (What Works Clearinghouse House, 2020, p.4-34).

Reporting Effects on Teachers and Students. The reporting of Year 4 confirmatory impact of the program on teacher and student outcomes will include the Hedges *g* effect size, 95% confidence interval, and exact *p*-values to display the magnitude of the effect (i.e., the effect size point estimate), the sampling variability (i.e., the lower and upper limits of this estimate at 95% confidence), and the probability of the observed effect if the "true" effect of the program were zero (i.e., $p > .05$ under the null hypothesis). The advantage of reporting a confidence interval with an effect size is that even if effect sizes are not statistically significant, the magnitude of the effect size may still be of practical significance and can be interpreted in the context of sampling variability as represented by the 95% confidence interval. In sum, the quasi-experimental design, statistical power analysis, and multilevel estimate of effects that account for the nested structure of the data (Raudenbush & Bryk, 2002) will provide internally and statistically valid evidence for an EIR early-phase validation study.

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