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(a) Significance

Since Covid-19 lockdowns ended, K12 education in the U.S. continues to struggle with students' waning academic, social, and emotional engagement (Ladson-Billings, 2021). Social-emotional learning (SEL) has long been recognized as needed to improve K12 student engagement (academic, behavioral, and cognitive engagement), while organizations like CASEL have suggested "transformative SEL" work (Ozer, Shapiro, & Duarte, 2021) that begins from students' lives and that sees cultural, racial, and economic awareness in schools as critical for re-engaging students (Jagers et al., 2021).

Reengaging youth in schooling is a significant problem across K16 students. For example, kindergarteners are still missing from enrollments (Harris & Chen, 2022). K12 chronic absenteeism (15+ days per year), especially among low-income students, also *continues to increase as of the 2021-22 school year* (Fortin, 2022). Post-secondary enrollment is experiencing historic drops, particularly for Black, Hispanic/Latinx, English Learners, and students with disabilities (Harris & Chen, 2022). Less K12 engagement means that students will likely have future academic struggles in core subjects such as mathematics and reading (Contini et al., 2022). If large groups of low-income and minoritized students continue to disengage in school, these students' performance will decline, and race, income, and gender achievement gaps will grow (Dyer, 2015).

Student Re-Engagement as a Key Lever for Change. *Student re-engagement* in the act of schooling sits at the center of this issue. As students re-entered school from virtual (and arguably spotty) instruction, students were less willing or able to engage in the routines of schooling: attendance, classwork, homework, discussions, projects, etc. Annie E. Casey Foundation's Youth Education and Families (YEF) explains: "when formal learning settings lose their connections with young people, the young person and the community alike face harmful long-term effects on

earnings, employment, housing, and health that can last well into adulthood and put entire generations at risk (Annie E. Casey Foundation, 2022).

This proposal – LISTEN LAB – uses <u>Y</u>outh <u>P</u>articipatory <u>A</u>ction <u>R</u>esearch (YPAR) strategies to tackle the question of how to best increase student engagement, responding to Absolute Priority (AP) 1: Demonstrates Rationale; AP 4: Meeting Students Social, Emotional, and Academic Needs; Competitive Preference Priority (CPP) 1: Promoting Equity; and CPP 2: Addressing the Impact of COVID. Taking CASEL's notion of "transformative SEL" seriously, the LISTEN (<u>L</u>isten and <u>I</u>nquiring with <u>S</u>tudents <u>T</u>hrough <u>E</u>ngagement <u>N</u>etworks) LAB aims to directly engage high school youth from low-income, racial minoritized groups in YPAR to study and innovate on increasing school engagement. The LISTEN LAB will use YPAR as a decidedly student-driven (rather than teacher-driven) approach as it partners with 24 student teams and 24 teachers to investigate and address school engagement and climate issues across 12 high schools. Through the LISTEN LAB, students will define and drive critical research questions on school engagement and climate.

Implications for Student Achievement. Engagement is vital to remedying low student achievement rates (Fredricks et al., 2005). Engagement has different facets: behavior, emotional, and cognitive. Behavior involves following school norms and procedures, whereas emotional refers to how students feel about school (such as belonging, feeling important at school, and/or valuing school success) (Finn, 1989; Voelkl, 1997). Cognitive engagement requires students to go beyond school requirements and pursue challenging work (Fredricks et al., 2005). Regardless of type, engagement promotes student well-being. Engaged students are 4.5 times more likely to be hopeful for the future and 2.5 times more likely to say they do well in school (Calderon & Yu, 2017).

Like engagement, school climate supports student achievement (Brookover et al., 1978; Hoy & Hannum, 1997). For over four decades, research has shown healthy school climates support student achievement (Brookover et al., 1978). School climates can be transformative when students feel that the norms, goals, values, relationships, teaching and learning practices, and structures support them and their identities, racial, and cultural backgrounds (Cohen et al., 2009; ██████████ et al., 2009). Through YPAR, LISTEN LAB works with students and teachers in 12 schools to study and promote active student engagement and healthier school climates.

National Significance. Across the United States, reduced student engagement is a national crisis (Ladson-Billings, 2021). San Diego County is a microcosm of this crisis and has struggled with chronic absenteeism as well. In 2020-2021 school year, San Diego Unified School District (SDUSD) (2nd largest in California) reported that 14% of its students were chronically absent – an 8% increase from 2019-20 and a 12% jump from 2018-2019 (Taketa, 2021). California Department of Education (2022) data show that San Diego County districts experienced chronic absenteeism (15 days or more) among nearly 70,000 K12 students.

The LISTEN LAB's YPAR methods will engage low-income and racial minority students to help unpack the reasons behind student disengagement. As part of this process, the LISTEN LAB will work closely with teachers and provide them with professional development in YPAR methods to help educators re-engage these populations of students. Teachers have cited student disengagement as one of the reasons contributing to the mass exodus of educators from the field (Garrett, 2022). When successful, the LISTEN LAB's findings will have national significance and applicability by addressing this key crisis of student disengagement.

Additionally, the LISTEN LAB's Principal Investigator (PI) and several members of the Design Team have been working on a novel three-year National Science Foundation project

called CS-LISTEN (███████ et al., 2021). CS-LISTEN works through YPAR with 16 teams of diverse, high school students and educators for two years to investigate issues limiting Computer Science equity and access in low-income schools. The LISTEN LAB will leverage these learnings, in addition to the long history of student voice research by the PI (Jones & ███████, Dec. 2008-Jan. 2009; ███████ & Jones, 2007; ███████ & Jones, 2009; ███████ et al., 2009) to inform the design and student engagement techniques and strategies. The LISTEN LAB will **investigate how incorporating YPAR can increase students' academic and post-secondary outcomes, school engagement, self-efficacy, and experience of school climate in participating high schools.** Over the four years, 24 participating LISTEN LAB Teacher Participants, and 480 LISTEN LAB Student Participants will gather, analyze, and present data on student engagement and school culture measures at their 12 high schools through YPAR Research Cycles.

(b) Quality of the Project Design

The project timeline follows with an in-depth description of the two intervention years 2-3. **Year 1 (~ Jan 2023-August 2023)** will focus on a) hiring of Design Team members (Graduate Students, Lead Teacher Facilitators, etc.), b) modifications and development of YPAR curriculum (adaptations of work from the PI's prior YPAR work), c) recruitment of schools/districts, d) establishment of district/school agreements, e) approval of IRB, f) evaluation refinement, and g) recruitment of Participating Teachers and Students. A note about student recruitment**:** The San Diego Education Research Alliance (SanDERA) will evaluate the YPAR model's effect on student engagement and school climate. This robust evaluation described in Section E uses a Randomized Control Trial (RCT) to select participating students from a larger pool of interested students. To ensure that students who are not selected feel adequately

supported, the Design Team will offer all students (treatment and control) additional rewards (e.g., special lunch college/ postsecondary advising session, etc.). **Year 2 (~ Sept 2023-June 2024)** will finalize the recruitment of 6 high schools in the San Diego Region (from outside of the schools that have already participated in PI-led YPAR activities). The Southern California Professional Development Federation (SCPDF) and San Diego County Office of Education (SDCOE) will assist with recruitment (see Appendix C). From these 6 high schools, a total of 12 teachers (two per school) will be recruited as LISTEN LAB Teacher Participants, and a total of 240 students (two teams of 20 per school; 40 students total per school) will be randomly selected from a list of (~ 480) interested students as LISTEN LAB Student Participants. The LISTEN LAB Design Team will then work throughout the year with these 12 teachers and 240 students (from six high schools) on the YPAR Research Cycle (described on page 7). Summer months (July 2023-August 2023) will be reserved for program modifications. **Year 3 (~ Sept 2024-June 2025)** will have the Design Team recruit 6 (new) high schools, 12 (new) Teacher Participants (2 per school), and 240 (new) LISTEN LAB Student Participants. Similar to Year 2, the Design Team will work with these new Teacher and Student Participants to complete the YPAR Research Cycle. **Huddle Teams:** At the end of Years 2 and 3, respectively, each participating high school will participate in a two-session "Huddle" of at least three educators (e.g., administrators, counselors, teachers, or other adults). Led by the Design Team, the Huddles will co-construct the next steps educators could take, building from Student Participants' research and findings. A small but meaningful budget will be provided to each school to enact their ideas. **Year 4 (~ July 2025-August 2026)** will be reserved for a third cohort of (new) participating schools, teachers, and students, should it be required for the evaluation. YPAR curricular modifications and dissemination activities will occur with all Design Team members. The

Design Team will submit articles and conference papers to national venues, including the American Educational Research Association (AERA) Annual Meeting, in partnership with the AERA YPAR Special Interest Group, with whom we have partnered in the past. Student and Teacher Participants will participate in dissemination whenever possible.

The LISTEN LAB Intervention. For the evaluation, the total LISTEN LAB project will measure both student and school level outcomes among the (combined) 24 teachers and 480 student participants and across the 12 LISTEN LAB high schools. The Participants will engage in the following five key activities: A) LISTEN LAB Launch (teachers); B) LISTEN LAB YPAR Weekly Meetings (teachers and students); C) LISTEN LAB Quarterlies (teachers); D) LISTEN-UP End-of-Year Event (teachers, students, administrators, counselors); and LISTEN LAB Huddles (school administrators, teachers, counselors primarily) as described below.

A) LISTEN LAB Launch (Fall): The LISTEN LAB Design Team will lead a two-day LISTEN LAB Launch focusing on the professional development (PD) of the LISTEN LAB Teacher Participants; details follow. Launch Day 1: Through interactive activities, participants will learn the theories and practices behind YPAR, basic YPAR approaches and see examples of prior YPAR work and impact. Teachers will also brainstorm how YPAR might be enacted in school contexts, how to handle student recruitment, and explanations of the student-level randomization. Launch Day 2: Teacher Participants will work with the Design Team to learn about the YPAR curriculum and pedagogical approaches and to adapt them to their teaching style and diverse school populations. Teachers will brainstorm underlying factors that could suppress student engagement at their schools. The Design Team will provide school site, district, and SD County data regarding student engagement and climate outcomes by race and income subgroups. Teacher Participants and Design Team members will then work to co-create a team-

and teacher-informed driver diagram visualization to help identify potential student engagement gaps and drivers to share with students later. Day 2 will also involve teachers finalizing recruitment strategies and planning their weekly LISTEN LAB Student Participant meeting dates, times, and locations to share with their LISTEN LAB Student Participants. *Note: Substitute pay will be provided for teachers who attend on a school day. If any part of the Launch is held outside of contracted hours, teachers will also be compensated for that time.*

B) LISTEN LAB Weekly Meetings

(Fall – Late Winter): After randomization and Launch, weekly meetings with students will begin (approximately in October). Each LISTEN LAB Student Team will hold weekly meetings before or after school, during lunch, or (occasionally) on weekends and holidays. Teacher Participants will lead weekly meetings. LISTEN LAB Design Team Members

Figure 1: YPAR Design Cycle

will support the LISTEN LAB Teacher and Student Participants virtually or in-person (depending on site preference) initially and may gradually release Teams to a bi-weekly support model depending on readiness. Figure 1 shows the YPAR Design Cycle that each LISTEN LAB Student Team will move through while supported by the Teacher Participants and Design Team.
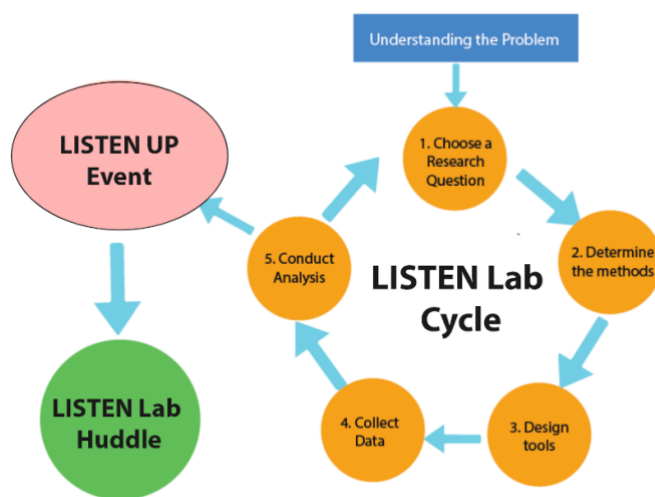
Student Participants will 1) investigate the problem (of student engagement & school climate); 2) choose a team research question; 3) learn about and design methods to study the team research question; 4) design data collection instruments/processes (including securing

permissions as needed); 5) collect data; 6) analyze data, and 7) disseminate findings &

recommendations (at the year-end LISTEN UP Events in the spring of Year 2 and Year 3). The

complete YPAR Research Cycle typically takes between 16 and 18 weeks with some of the

above tasks (1-7) requiring more or less time depending on team composition and specific

research questions/methods/analysis as well as when accommodating school events, testing, and

vacations.

While the LISTEN LAB Design Team will provide tailored support to each school team,

they will also provide all schools with: a) background information on the problem(s) of

engagement and school climate that the LISTEN LAB aims to tackle with them (typically weeks

1-2); b) opportunities to dive into data relevant to their school site (e.g. weeks 3-4); c) and

modules on various research methodologies (e.g. surveys, focus groups, interviews, pre-post

measures, document analysis, observations) (e.g. weeks 5-6).

After Student Participants design research instruments and gather data, the Design Team will

advise them and Teacher Participants on data analysis based on the teams' research questions.

While we might imagine some student engagement and school climate topics Student

Participants might tackle, youth-led research is just that – youth-led – therefore we can only

surmise what research questions Student Participants will embrace. That said, some boundaries

will exist: research questions might examine features of student engagement or school climate;

academic, behavioral, cognitive, and social-emotional engagement; student-teacher or student-to-

student relationships; bullying/harassment; postsecondary transitions; and counseling;

grading/assessment, etc.

C) LISTEN LAB Quarterlies (Fall, Winter, Spring, and Late Summer): The Design

Team will meet quarterly with Teacher Participants in three-hour workshops to deepen teachers'

knowledge of YPAR practices, provide teachers chances to give feedback to improve the curriculum, celebrate successes, assist with emergent challenges, and provide evaluators access for ongoing survey administration/focus groups and to share formative results.

D) LISTEN-UP End-of-Year Event (Spring): LISTEN LAB Student Participants and their Teachers will present their findings at a year-end event. This event, which will include invited district, school, and county administrators, families, and students, and other YPAR researchers, will allow Student Participants to showcase their research findings and recommendations on student engagement and climate. The event will be interactive with poster sessions and flash talks by Student Teams, plus a brief keynote speaker. Later all materials will be shared on the LISTEN LAB and UCSD CREATE website for public dissemination. At least 3-5 administrators, counselors or teachers from each participating school will be asked to attend the LISTEN UP Event to hear the Student Participants' findings and to inform their subsequent LISTEN LAB Huddle (described next). In addition, LISTEN LAB Student Participants may present at other research conferences and school change forums over the course of the grant.

E) LISTEN LAB Huddles (Late Spring): Following the LISTEN UP End-of-Year Event, each high school will form a site level Huddle that will meet at least twice to design a planned school-intervention built from the Student Teams' work. LISTEN LAB Design Team members will attend the Huddles to help facilitate and to gather information to report to LISTEN LAB Student Teams as to the next steps the Huddles enact. Each Huddle will get a small discretionary budget to enact next-step ideas.

(1) Quality of the conceptual framework

The LISTEN LAB includes design features that are grounded in evidence. Youth participatory action research (YPAR) involves young people constructing knowledge by

identifying, researching, and addressing social problems through youth–adult partnerships (Cammarota & Fine, 2010; Checkoway & Richards-Schuster, 2003; Jacquez, Vaughn, & Wagner, 2013; Shamrova & Cummings, 2017). YPAR centers on three key principles. It is 1) *inquiry-based –* topics of investigation are grounded in youths' lived experiences and concerns; 2) *participatory –* youth are full collaborators in the methodological and pedagogical process; and 3) *transformative –* actively intervenes to change knowledge and practices to improve the lives of youth and their communities. In YPAR, youth and adults share power throughout an iterative process that includes some elements of developing an integrated research and action agenda; training in and applying research and advocacy methods; practicing and discussing strategic thinking about how to create social change; and building alliances with stakeholders (Ozer & Douglas, 2015).

YPAR programs have a growing research base on which to build their work. Over 60 studies on YPAR efforts have been published as of 2018 (Anyon et al., 2018). Most YPAR studies focus on student outcomes. YPAR researchers are interested in the impact of YPAR on students' agency and leadership (n = 39 studies, 75.0% of studies), academic or career development (n = 29, 55.8%), social development (n = 19, 36.5%), critical consciousness (n = 16, 30.8%), interpersonal development (n = 18, 34.6%), and cognitive skill development (n = 12, 23.1%) Anyon et al., 2018). Yet despite this growing body of evidence, only one YPAR study as of 2018 used a Randomized Control Trial (RCT) to investigate the effects of YPAR on *school level* outcomes (Anyon et al., 2018). Randomization occurred at the school level (not the *student level*), nevertheless, the researchers suggest that youth leadership (i.e. YPAR) may serve as an important "proxy" supporting self-efficacy and engagement (Dzewaltowski et al., 2009).

The LISTEN LAB project, as proposed, aims to add to the research literature by randomizing students, not schools, over a two-year period. **This study will be the first to use an RCT methodology to assess YPAR related to academic outcomes and student engagement. It will also contribute understanding of YPAR impact on students' perceptions of school climate. Student Participants' research, findings, and recommendations to Huddle Teams will be novel from prior studies (Owens et al., 2022).**

(2) Goals, objectives, and outcomes are clearly specified and measurable

<u>Goal 1</u>: **Student Participants in the YPAR LISTEN LAB Design Cycle will have improved school engagement resulting in** *improved academic outcomes.* <u>Objective 1a</u>: Design Team recruits and trains/develops 480 Treatment Student Participants for YPAR LISTEN LAB Design Cycle; and recruits 480 Control Students (non-treatment). <u>Objective 1b</u>: 90% of Treatment Student Participants attend at least 50% of YPAR Design Cycle meetings supported by the Treatment Teacher Participants and Design Team. <u>Objective 1c</u>: Academic achievement data (Treatment and Control students) gathered annually. **<u>Outcome 1</u>:** Treatment Student Participants show measurable gains (compared to Control) in passing of core classes, (e.g. college preparatory/Career Technical Education courses) and standardized test scores.

<u>Goal 2</u>: **Student Participants in the YPAR Design Cycle will have improved school engagement resulting in** *increased knowledge and skills related to self-direction and employability.* <u>Objectives 2a & 2b</u>: (same as 1a & 1b above). <u>Objective 2c</u>: Students' knowledge and skills related to self-direction and employability data from Treatment and Control students gathered annually. **<u>Outcome 2</u>:** Treatment Student Participants show measurable gains (compared to control) in knowledge and skills related to self-direction and employability, specifically citizenship grades and attendance.

Goal 3: Schools will use their Student Participant YPAR results to guide Huddles to improve School Climate. Objective 3a: 90% of Student Participants attend at least 75% of the LISTEN LAB meetings set by their teacher/team, and supported by the Design Team. Objective 3b: 90% of Student Participants share findings at the LISTEN UP Event. Objective 3c: 100% of participating schools enact Huddle Teams supported by the Design Team and enact Students' recommendation(s). **Outcome 3:** Students' perceptions of school climate, particularly on items related to students "being heard," improve as measured by the California Healthy Kids Survey.

Goal 4: Teacher Participants in the LISTEN LAB will increase their capacity for engaging and supporting diverse students in YPAR. Objective 4a: A total of 24 Teacher Participants are recruited, trained, and retained by the Design Team to work with 20 students per teacher at their school sites. Objective 4b: 100% of Teacher Participants complete the Teacher's Sense of Self-Efficacy (TSSE) Scale (pre-post) and 100% are interviewed by the evaluation team. **Outcome 4:** Teacher Participants reveal increased sense of self-efficacy related to YPAR pedagogy.

(3) Project is appropriate and will successfully address the needs of the target population

The LISTEN LAB will recruit at least two high school teachers in 12 total schools over a two-year period (6 schools per year) for a total of 24 Participating Teachers. The PI/co-Is have a long history of working with the two largest K12/secondary districts in the state (SDUSD and Sweetwater Union High School District). These districts will be approached, but the Design Team will also work with larger countywide K12 organizations to recruit more broadly across SD County. Student Participants will reflect the San Diego County population, which consists of 42 districts, serving over half of a million students – about 17% are English Language Learners; 3.1% experience homelessness; almost 14% have disabilities; over 50% of students qualify for free/reduced price meals; almost half of the San Diego County students are Latinx. The LISTEN

LAB Design Team will make every effort to ensure that Teacher Participants also reflect the San Diego student population.

(c) Quality of Project Personnel

University of California San Diego's CREATE (Center for Research on Educational Equity, Assessment & Teaching Excellence) will be the fiscal agent for the LISTEN LAB. All Design Team members are well-versed in YPAR pedagogy and processes; collectively they represent 70+ years of teaching experience with racially and economically diverse high school populations. The team includes three Asian Pacific American females (███████████ █████████), three Latino males (██████████████████████), one White female (███████, and one African American male (████████. ███████████████ **PI** (Ph.D. Education Policy, UCLA) is the Associate Director of CREATE, a research and practice educational equity center that employs approximately 60+ researchers, staff and student workers (graduate students and undergraduates) and oversees an annual $7.5M budget (combined internal and external funding). She helps lead educators and researchers at CREATE in design-based research and evaluation on educational practices K-20. She has published over 14 book chapters, 13 journal articles, 35 technical reports, and numerous national, peer-reviewed journals including the *American Educational Research Journal, Teachers College Record,* and *Harvard Educational Review* and has received funding from the Gates, Spencer, Carnegie, Price, Yankelovich, and Nellie Mae philanthropic foundations as well as the Office of Naval Research, National Science Foundation, UC Office of the President, and the U.S. Departments of Defense and Education. As PI, ███████████ will oversee hiring and supervision of the Design Team; intellectual and applied support of the LAB's YPAR Cycle; coordination with evaluators and advisory board; communication with K12 administrators; and overall dissemination. ███████████ is a

Nisei/Sansei Japanese American female. ███████████ **Co-I** (Ph.D. Educational Policy Studies, University of Wisconsin-Madison) is a Researcher Practitioner at CREATE, studying opportunities for inner-city youth, especially those from first-generation and low-income backgrounds. ████████ is an active team member on the CS LISTEN grant, serves as the Program Coordinator for San Diego's Regional Code.org, which trains K12 teachers in Computer Science. She is active on the board of the Computer Science Teachers Association (CSTA) San Diego where she works directly with districts, schools, teachers and students to create opportunities-to-learn for low-income young women of color to learn computer science. She has published in multiple journals and news outlets, including *Social Sciences, British Journal of Educational Technology, and the San Diego Union Tribune.* As Co-I, she will help lead the Design Team and co-design teacher professional development activities. ████will also help lead efforts to disseminate project findings with the larger scholarly community. ████████ is a first-generation Vietnamese female. █████████████████████, **Co-I** (Ed.D., Educational Leadership, San Diego State University (SDSU)) is an Academic Coordinator at CREATE who works with low-income, racial minority high school students and underrepresented groups in STEM. A locally born and raised, Latino male,████████████ leverages his personal and professional experience to work closely with K16 community organizations throughout San Diego, particularly in underserved communities. He has spearheaded multiple initiatives for marginalized populations such as foster, low-income, and incarcerated youth, and students of color, and has a particular expertise in the development of culturally relevant lessons. As Co-I, he will help ensure that the LISTEN LAB reaches historically vulnerable populations. Two **Graduate Student Researchers** will serve on the Design Team and assist the PI/Co-Is to co-design YPAR agendas, modify curriculum, support Teacher and Student Participants, and

oversee CREATE-housed undergraduate student workers. Two YPAR-knowledgeable graduate students █████████████████) will likely fill these positions. Both are men of color (Black and Latino) who have a long history of working with low-income students of color. Additionally, **an Advisory Board** (█████████████████) will meet with the Design Team 4x/yr to advise on data collection, organization, and dissemination. The four-member board is comprised of professors, researchers, and non-profit practitioners at universities and research centers in Texas, California, and Missouri; letters of support can be found in Appendix C. Three **LISTEN LAB LEAD Educators** █████████████████) will help curate and create content to support Teacher and Student Participants through the YPAR Cycle. They will use their knowledge as K12 educators and YPAR to develop teacher- and student-friendly materials and to crosswalk YPAR Hub (UC Berkeley) and YELL (Stanford) (████████████, 2007) materials with the LISTEN LAB's. They will adjust materials to accommodate students with learning differences and language minority students. The **Program Coordinator** (PC-TBD) will assist with website development, curriculum editing, and scholarly dissemination. The PC will oversee digital communications, logistics, advertising, attendance, surveys, and access to research findings.

(d) Quality of the Management Plan

CREATE is a 25-year research center on the UC San Diego campus, and oversees over $7.5M of state, federal and philanthropic funds annually. CREATE has participated as a sub-awardee on two other EIR grants in San Diego within the past three years, and has long, trusting relationships with the San Diego K12 community over the past two decades. The LISTEN LAB will rely on the expertise of CREATE and UC San Diego to ensure the project is managed on-time, and within budget, human subjects, and fiscal and data privacy controls. The PI/Co-Is built a management plan, (see Table 1), to ensure that the LISTEN LAB meets project objectives.

Table 1: Roles, Activities, Milestones, and Timelines

LISTEN LAB Implementation Project Timeline	Responsibility	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Year 1 (ORANGE) : Initiate & Prepare for LISTEN LAB Implementation (Jan 2023-Dec 2023)													
Establish MOUs & secure complete IRB approvals	Design Team (DT) (PI & coPIs)	▇											
Develop recruitment tools & materials	DT (All)	▇											
Identify & recruit districts, schools, teachers	DT (PI & coPIs)		▇	▇									
Begin student recruitment for RCT for academic year	DT (PI & coPIs)				▇	▇							
Crosswalk YPAR curriculum (YELL, YPAR Hub, CS LISTEN)	DT (LEAD Educators + All)	▇											
Adapt & write new YPAR curriculum & interactive lessons	DT (All)			▇	▇	▇	▇						
Design LISTEN LAB Launch Days 1-2	DT (All)							▇	▇				
Meet with Advisory Board for input on further dissemination	DT (All) & Advisory Board		▇		▇				▇			▇	
Establish data sharing agreements with districts/schools	SanDERA (evaluation)		▇	▇	▇	▇	▇	▇					
Submit report to US Department of Education	DT (PI & coPIs)											▇	▇
LISTEN LAB Implementation Project Timeline	**Responsibility**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**
Year 2: (GREEN) Conduct YPAR Research Cycle with 6 schools, 12 teachers, 240 students (Jan 2024-Dec 2024)													
Hold LISTEN LAB Launch Days 1-2 with Participating Teachers	DT (All)									▇	▇		
Finish student recruitment	DT (All) & Teacher Participants									▇			
Weekly YPAR Research Cycle Mtgs for Teachers & Students	SanDERA (evaluation)											▇	
Hold post-secondary advising lunch for all students	DT (All)											▇	
Weekly YPAR Research Cycle Mtgs for Teachers & Students	DT & All Participants (T &S)	▇	▇	▇	▇	▇							▇
Quarterly LISTEN LAB Meetings with Teacher Participants	DT & All Teacher Participants	▇		▇	▇		▇						
Meet with Advisory Board for input on further dissemination	DT (All) & Advisory Board		▇		▇				▇			▇	
Evaluation team gathers student level data & teacher data	SanDERA (evaluation)				▇	▇	▇						
LISTEN LAB - Year End Event	DT & All Participants (T &S)					▇							
LISTEN LAB School-Based Huddle Meetings 1-2	DT (PI & coPIs) w/ Huddles					▇							
Submit report to US Department of Education	DT (PI & coPIs)											▇	▇
Adjust YPAR Research Cycle Activities & Curriculum for Year 3	DT (PI & coPIs)									▇	▇		

LISTEN LAB Implementation Project Timeline	Responsibility	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Year 3: (BLUE) Conduct YPAR Research Cycle with additional (new) 6 schools, 12 teachers, 240 students (Jan 2025-Dec 2025)													
Hold LISTEN LAB Launch Days 1-2 with Participating Teachers	DT (All)									▓	▓	▓	
Finish student recruitment	DT (All) & Teacher Participants									▓	▓		
Run RCT randomization	SanDERA (evaluation)											▓	
Hold post-secondary advising lunch for all students	DT (All)											▓	
Weekly YPAR Research Cycle Mtgs for Teachers & Students	DT & All Participants (T &S)	▓	▓	▓	▓	▓	▓						▓
Quarterly LISTEN LAB Meetings with Teacher Participants	DT & All Teacher Participants	▓		▓		▓		▓					
Meet with Advisory Board for input on further dissemination	DT (All) & Advisory Board		▓		▓				▓			▓	
Evaluation team gathers student level data & teacher data	SanDERA (evaluation)				▓	▓	▓	▓					
LISTEN LAB - Year End Event	DT & All Participants (T &S)				▓								
LISTEN LAB School-Based Huddle Meetings 1-2	DT (PI & coPIs) w/ Huddles				▓	▓							
Submit report to US Department of Education	DT (PI & coPIs)											▓	▓
LISTEN LAB Implementation Project Timeline	**Responsibility**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**
Year 4: (PURPLE) Evaluation/dissemination (Jan 2025-2026) (Additional YPAR teams wil only be recruited if needed for the evaluation metrics)													
Disseminate findings via conferences & presentations	DT (All)	▓	▓	▓	▓	▓	▓		▓	▓	▓	▓	▓
Create Sharable YPAR Resource materials (slide decks, activities, etc.)	DT (All)	▓	▓	▓	▓	▓	▓			▓	▓		
Complete RCT analyses of student-level data	SanDERA (evaluation)	▓	▓	▓	▓	▓	▓		▓	▓	▓	▓	▓
Meet with Advisory Board for input on further dissemination	DT (All) & Advisory Board		▓		▓				▓			▓	
Submit final report to US Department of Education	DT (PI & coPIs)											▓	▓

(e) Quality of the Project Evaluation

The project evaluation will be led by ▮▮▮▮▮▮▮▮, a professor of economics at the University of California San Diego, and Executive Director of the San Diego Education Research Alliance at UCSD (SanDERA, sandera.ucsd.edu). ▮▮s has three decades of experience studying the economics of education. ▮▮▮▮ has served on three National Academy of Sciences panels, the Consensus Panel of the National Charter School Research Project, and numerous advisory groups for the U.S. Department of Education. He has been a standing member on thirteen IES review panels (twice as chair). His Ph.D. is in economics from Queen's University, Kingston, Ontario, Canada with an M.Phil. degree in Economics from Oxford University. His colleagues at SanDERA include ▮▮▮▮▮▮▮▮, who holds a Master's degree in Public Health, and has over two decades of experience statistically analyzing large administrative education datasets, and ▮▮▮▮ ▮▮▮▮▮▮, who holds a Master's degree in Educational Psychology, and has been with SanDERA for five years and prior to that for 14-years leading research/evaluation efforts at the San Diego Unified School District (SDUSD). SanDERA is located in the Department of Economics at UCSD, and will work with the Design Team at CREATE, which is in a different unit of UCSD, at arm's length in terms of decisions about evaluation methods and interpretation of results.

(1) Well-implemented methods of evaluation will produce evidence that meet the WWC standards with or without reservations as described in the WWC handbook

Desired outcomes and outputs will include (1) improved students' academic outcomes for students who participated in YPAR (attendance, passing of core classes (e.g. University of California's a-g requirements, and standardized test scores)); (2) improved students' knowledge and skills related to self-direction and employability; (3) improved school climate (e.g. strong student-teacher relationships, students' "sense of belonging"); and (4) improved teachers' capacity to engage and support racial minority and low-income students in YPAR.

To answer the first three questions, we will use a Randomized Controlled Trial (RCT) with randomization at the student level, which should meet WWC standards without reservations. To analyze question (4), on teacher's capacity, we will use a non-experimental qualitative approach including the gathering of information via student and teacher surveys and focus groups.

i) Causal Impact on Students through an RCT. After instrument design, recruitment, and district data agreements in Year 1 by the Design Team, in each of Years 2 and 3, six schools will enter the program, for a total of 12 schools. Two teachers at each school will participate in the training, and will recruit 40 students each. The evaluation team will randomize half of the students into a control group (C) and half into a treatment group (T). To ensure that enough students apply, as an incentive, all students in both C and T groups will be offered free activities related to college preparation, which have been described earlier. For one school year under the guidance of one of the teachers who received YPAR training, each treated student will participate in sessions to learn how to conduct research through the YPAR Design Cycle. Each student will study how his or her school functions, and what types of changes could improve the quality of education, with an emphasis on improving engagement and school climate.

Outcomes to be studied reflect the logic model: students will develop academic skills through conducting research; they will become more engaged in their school community, they will have a sense of an improved school climate, and they will increase their sense of self-efficacy. They will become more motivated to complete college preparatory coursework and/or Career Technical Education (CTE) coursework. Outcome domains include academic performance, student engagement, student self-efficacy, and preparation for the labor market. Outcomes to be modeled during the year in which students participate in the program are as follows.

1) ACADEMIC DOMAIN: Academic outcomes will be measured by academic (letter) grades,

test scores in grade 11 on the Smarter Balanced test of math and English Language Arts, and the number of college preparatory courses passed. (This last outcome relates to the "a-g" courses needed for eligibility to attend University of California or California State University schools.)

2) STUDENT ENGAGEMENT: As direct measures of student engagement, we will study citizenship grades (which teachers file for each class along with academic grades) to gauge student's engagement with the coursework and classroom demeanor, and also attendance rate.

The following three domains will be examined by using student survey responses.

3) SCHOOL CLIMATE: Students' perceptions of school climate will be obtained from administration of a student survey that will include questions taken from the California Healthy Kids Survey (CHKS). Past work by the evaluation team (Polichar et al., 2021) has shown that principal components of school climate can be extracted from the larger survey, constituting valid scales of certain aspects of school climate. Our student survey will include three components: general feelings about school, supportive adults at school, and self-efficacy at school. We treat the last of these as a separate domain, in line with the project team's identification of Goal 3, Outcome 3: for students to feel that their voices are being heard.

The "General Feelings about School" items ask students how much they agree or disagree with the statements: "I feel close to people at this school," "I am happy to be at this school," "I feel like I am a part of this school," "The teachers at this school treat students fairly," and "I feel safe at my school." The supportive adults items ask students if there is a teacher or other adult at school whom they feel "really cares about me," "notices when I'm not there," "listens to me when I have something to say," "tells me when I do a good job," "wants me to do my best," and "believes that I will be a success." Based on prior analysis of CHKS data from the SDUSD, the evaluation team has found Cronbach's Alpha values of 0.83 and 0.90 for the General Feelings

and Supportive Adults measures (Polichar et al., 2021).

4) STUDENT SELF-EFFICACY: Student self-efficacy will be measured by three survey items from the CHKS that comprise the "Sense of Efficacy at School" domain. These items ask how much students agree or disagree with the statements: "At my school, I do interesting activities," "At my school, I help decide things like class activities or rules," and "At my school, I do things that make a difference." Polichar et al. (2021) report that Cronbach's Alpha is 0.77 for this item.

5) STUDENT JOB PREPARATION: We will measure preparation for the labor market by measures of the number of CTE courses taken and passed during the given year.

Statistical Model. For each outcome Y_{its} for student i in year t in the randomization block of teacher s, of which students randomly receive treatment (T) or are in the control group (C), we will use linear regression to estimate the impact of treatment ($TREAT_{ij} = 1$), while controlling for student demographic and characteristics $X_{i,t-1}$ measured at baseline (year t-1, before the treatment is offered), along with dummy variables for the teacher group consisting of the 40 students, half of whom were randomized into treatment. We represent the latter by a set of dummy variables G_s:

$$Y_{its} = \alpha_s G_s + \beta TREAT_{its} + X_{i,t-1}\Gamma + \epsilon_{its}$$

The Greek letters indicate coefficients to be estimated with the exception of ϵ_{its}, which is an error term. This error term will allow for clustering at the school level, which allows for arbitrary correlations between all students at a given school, as well as within a teacher group within the school. This represents a generalization of the nested random error approach commonly used in Hierarchical Linear Models. Given that standard errors can be too small when the number of clusters are below 40 or 50, and we are clustering over 24 teachers, we will use the wild bootstrap approach to obtain accurate standard errors (Cameron, Gelbach, & Miller, 2008).

The key coefficient is β. We will perform a two-sided test that this equals zero to test for equal outcomes between treatment and control groups. We will include in the baseline controls indicators for gender, race/ethnicity, and parental education, along with measures of academic and behavioral outcomes in baseline year t-1, including Grade Point Average, average citizenship grades, and most recent test scores in math and English Language Arts, expressed as Z-scores relative to the California average and standard deviation of test scores. We will also include dummy variables indicating the grade in which each baseline measure was estimated.

Statistical Power. The power analysis assumes that a total of 12 high schools participate, with two teachers per school, and that randomization is used to divide 40 students per teacher into a treatment and control group of 20 students for each teacher. Other assumptions include power is set to 0.8, α=0.05, the proportion of variance in Level 1 (student) outcomes explained by student covariates is 0.1, the proportion of between-block variance in treatment effect that is explained by Level 2 (teacher) covariates is 0.01, the proportion of between-block variance in treatment effects explained by Level 3 (school) covariates is 0.05. Regarding treatment effect heterogeneity, we assume that the variance in treatment effect across Level 3 and Level 2 units, standardized by the outcome variation at the given level, is 0.1 in both cases. Intracluster correlation coefficients (ICCs) at Level 3 and Level 2 are assumed to be 0.1. [1]

The Minimum Detectable Effect Size (MDES) is 0.217, indicating that we can detect quite modest effects, thanks to the randomization at the student level. Regarding attrition, many outcomes such as grades, courses taken, attendance, and citizenship grades are gathered automatically for all district high school enrollees, so we expect to have data for at least 95% of

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[1] We lack data on ICC for outcomes such as enrollment, course grades, and attendance. Following the What Works Clearinghouse advice for non-test-score outcomes, we conservatively assume an ICC of 0.1 for non-test-score outcomes when the ICC is not known. (WWC, 2020, p. 20)

students. For other outcomes, the attrition rate could be higher. Most importantly, California's accountability system provides tests in math and English Language Arts in grade 11, but not other high school grades. The YPAR team aims to enroll mostly grade 11 students, but there will likely be students in grades 10 and 12 as well. If half of the students have the grade 11 test, the MDES rises to 0.285.

Similarly, a student survey that will provide student views of school climate and student self-efficacy will likely have less than complete availability. We expect to have well over half of the students taking the survey, however. As described in the Evaluation Team's budget, we have budgeted for $▓▓ gift cards for all 480 students in the treatment and control groups. We will take additional steps to maximize survey response rates. For example, the project team will include parental consent forms for the one-time student survey during the recruitment process. Further, if we receive a response rate below 80%, we will, with permission of UCSD Institutional Review Board, offer bonus incentives for students who do not originally fill out the survey in spring of their YPAR year. The total incentive per student could approach $▓▓▓▓ towards the latter stages of the survey process.

In addition to attrition's effect of lowering the precision of estimates, another concern about attrition is that it can be selective. Differential attrition between the treatment and control groups could lead to bias impact estimates, even in an RCT. If we find differential attrition, we will calculate the lower and upper bounds of treatment effects using the approach of Lee (2009).

ii) Qualitative Study of Teacher Capacity. We will survey all 24 participating teachers at the start of the program and again at the end of the year using a modified version of the Teacher's Sense of Self-Efficacy (TSSE) Scale (Tschannen & Woolfolk, 2001). This instrument asks teachers to assess their capability concerning instructional strategies, student engagement,

and classroom management. We will add questions specific to the YPAR program to this survey framework. (For example, the TSSE Scale asks, "How much can you do to get students to believe they can do well in school work?" An additional question directed instead at the specific goals of the YPAR program might be, "How much can you do to get students to believe they can do meaningful research?) Asking about overall self-efficacy and specifically self-efficacy regarding the YPAR program will allow us to control for overall teacher self-efficacy and to test whether teachers have a different sense of self-efficacy with implementing YPAR than for their general teaching. By administering this survey twice, we can measure changes in self-efficacy in managing the YPAR activities during the year of professional development.

We will also perform semi-structured interviews with teachers at the end of their year of participation, allowing us to delve into the experiences of those teachers for whom the YPAR program facilitated meaningful change in their perspective and practice. The interviews will allow for candid feedback about the quality and applicability of the training teachers received. Some interview questions will be driven by the teacher survey data, focusing on aspects of teacher capacity and self-efficacy that are most relevant to the teachers themselves.

Ultimately, the qualitative data will inform our understanding of the teachers' sense of their ability to engage and support students of racial and income diverse backgrounds and to help them develop critical thinking skills in general and research skills in particular.

(2) Evaluation methods will provide performance feedback and progress toward outcome data

Although the evaluation will require both cohorts to obtain full statistical power, the evaluation team recognizes the value of estimating performance feedback to the implementation team. Findings from the first cohort of teachers, including analysis of student outcomes and analysis of teacher surveys and interviews, will be shared with the implementation team before

the second cohort of schools enters in Year 3. Results of the teacher pre-survey in the fall will also be shared with teachers at a LISTEN LAB quarterly meeting. The quarterly meetings will also be designed for information to flow in the opposite direction: the evaluation team at the early quarterly meetings may learn about teacher needs and challenges that can become the focus of the year-end teacher interviews and perhaps add-on questions for end-of-year teacher surveys.

With the performance feedback goal in mind, the spring student survey will include many questions about the treatment group's level of participation in YPAR and what students found to be program strengths and weaknesses. This information from the first cohort could help refine the program for the second cohort of students/schools.

(3) Evaluation plan clearly articulates key project components, mediators, and outcomes as well as measurable threshold for acceptable implementation

We will test whether the causal impact is moderated by student characteristics, including gender, race/ethnicity, and parental education. We hypothesize that gains from better engaging students in their education may have the greatest benefits on traditionally marginalized groups such as racial minorities and those with less highly educated parents.

We will perform a limited number of mediator analyses, testing whether individual teacher's level of teaching experience, level of participation in YPAR professional development opportunities, and end-of-year self-efficacy in implementing YPAR mediates student outcomes.

Above we defined the key project components and outcomes. Many of the outcomes will be measured as part of the RCT. Other components of the project will be measured at treatment schools, not as part of the RCT, but to measure fidelity of implementation. First, we will observe selected professional development (PD) sessions. The Design Team will gather information on teacher participation in PD activities. We tentatively identify an acceptable degree of fidelity of implementation as teachers, on average, participating in at least 50% of PD activities.

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