Project Pathways: Creating the Pathways to Improve Student Mental Health and Well-Being

Submitted to:

U.S. Department of Education
Office of Elementary and Secondary Education

Education Innovation and Research

August 1, 2023

WestEd
WestEd.org

TABLE OF CONTENTS

A. Significance

A1. Project Overview

WestEd, in partnership with Placer County Office of Education (PCOE), [redacted], and the University of California at San Francisco (UCSF), propose an **Early-Phase project under Absolute Priorities 1 and 4 to improve student mental health and well-being in schools**. We will develop and rigorously evaluate an innovative model (*Pathways*) for (a) using data to increase equitable, accurate, and early identification of students with internalizing mental health (MH) concerns, including depression, anxiety, and social withdrawal; (b) use that data to inform how well universal schoolwide mental health promotion, specifically social–emotional learning (SEL) practices, are working; and (c) ensure students with internalizing MH concerns, particularly students from racially and ethnically diverse backgrounds, receive the mental health interventions they desperately need. *Pathways* will build on the successes of multi-tiered systems of support (MTSS), including schoolwide positive behavioral interventions and supports (PBIS) and the Interconnected Systems Framework (ISF; Weist et al., 2022), for supporting school mental health. There is a pressing need to improve how MH screening data, particularly for students with internalizing MH challenges, informs universal prevention efforts and improves access to targeted MH intervention. Through *Pathways*, we will create a scalable, ***freely available*** digital program of best practices in equitable data-based decision-making (DBDM), improving universal prevention of MH concerns and connecting students with internalizing support needs to evidence-based, culturally responsive intervention to ensure that all students, regardless of race, ethnicity, or disability, experience positive MH, improved academic achievement, and success in school.

Absolute Priority 1. Our logic model demonstrates how *Pathways* will address critical gaps in school-based MH, DBDM, and service delivery. These gaps include how to conduct

schoolwide MH screening, how to use that data to improve universal SEL prevention practices, how to accurately identify students with internalizing MH concerns, particularly for racially and ethnically diverse students whose internalizing concerns are too often overlooked (Landim et al., 2021), and connect those students to evidence-based interventions. What makes *Pathways* unique and needed is that while there are commercially available screening systems, there is currently no scalable program that helps schools develop equitable and efficient mental health referral pathway processes without overburdening staff and resources.

Absolute Priority 4. There is a clear and consistent positive association between students' MH and well-being and their academic success (Hammer et al., 2018). *Pathways* will ensure that universal SEL programming is working and that when students experience social and emotional challenges, particularly internalizing MH concerns, they have access to the MH supports they need to improve their well-being and increase academic success. There are many universal SEL programs in the education market. A review by Jones and colleagues (2017) at the Harvard EASEL Lab identified 33 universal SEL programs with at least some empirical support. We contend that there is no need for more SEL programs. Instead, schools need help (a) evaluating their current SEL programs, (b) identifying students not responding to these universal SEL programs, especially diverse students with internalizing MH concerns, and (c) ensuring that targeted interventions are connected and delivered to student needs. Research consistently demonstrates that students with internalizing MH concerns are far less likely to be identified for school-based services than students with externalizing challenges, such as conduct problems and aggression (Splett et al., 2019). Data also suggest that students from diverse backgrounds rarely are identified for internalizing MH concerns even when concerns exist (Hicks et al., 2021).

A2. Severity of the Problem

Young people are not doing well. Before the pandemic, data suggest that one in six U.S. children and adolescents aged 6–17 experienced a psychological disorder each year and that most conditions began before the age of 14. Yet ***only half*** of those children and adolescents with MH conditions received any kind of treatment (Whitney & Peterson, 2019). Sadly, things have gotten worse. Living through a global pandemic, and transitioning back to in-person education, many more children and adolescents are experiencing fear, grief, anxiety, and depression, all significant internalizing MH concerns (Elharake et al., 2022; Samji et al., 2022).

The pandemic compounded and amplified long-standing inequities in U.S. educational systems. During the pandemic, many families had disparate access to personal protective equipment, educational technologies, health and mental health care, and work-from-home employment (Ahmed et al., 2020; Smith et al., 2020; Wang & Tang, 2020; Webb Hooper et al., 2020). As a result, the post-pandemic world has brought economic disaster in particular for families that are poor, have immigrant or undocumented status, or are Black, Latinx, or Native American, (Laurencin & McClinton, 2020; Wang & Tang, 2020; Webb Hooper et al., 2020). Systemic racism and racist violence have perpetuated higher levels of anxiety, depression, trauma, and fear beyond the pandemic. Schools are the first line of defense for systematically addressing the MH emergency that children and their families are experiencing, whether from lingering pandemic effects or racial injustice (Naff et al., 2022). Unfortunately, despite the unprecedented investments in addressing this MH crisis, most schools are unprepared to systematically deal with these challenges. Many well-intentioned school-based MH initiatives are lacking the systems and processes to support referral pathways that lead to effective and responsive MH services (Eklund et al., 2020). Without these pathways, the challenge is twofold:

(1) there is unlikely to be a match between MH services and the strengths and needs of students, and (2) opportunities for early identification and interventions are likely to be missed.

There are serious long-term consequences for children and adolescents if they do not receive adequate treatment when MH needs arise. These consequences include an increased risk of drug and alcohol use as a way of self-medicating underlying issues; higher rates of dropping out of school and unemployment; and an increased risk of suicidal ideation and suicide (Crandall et al., 2019). Sadly, only 50% of those students experiencing MH needs receive services and most of those services are outside of school. Perhaps most concerning is that, on average, there are 11 years between the onset of MH symptoms and when services begin (National Alliance on Mental Illness, 2022). Research has identified many common barriers to students and families accessing MH services, including difficulty securing appointments at times that are not during working hours, access to transportation, not knowing where to go, services located too far away, and inability to afford insurance or high out-of-pocket costs (Swick & Powers, 2018).

Comprehensive MH systems actively eliminate systemic barriers to positive MH and increase health equity by ensuring that all students and staff have access to a full continuum of culturally responsive interventions, starting with a safe, supportive, and affirming school climate (Malone et al., 2021). Furthermore, evidence-based interventions are delivered within an integrated, multi-tiered framework that leverages resources within the school and the community to provide early, evidence-based interventions to reduce MH symptoms and prevent long-term consequences (Office of the Surgeon General, 2021; U.S. Department of Education, 2021).

Integrating MH services and alignment of SEL initiatives into comprehensive school-based MH systems is one challenge. Other challenges include accurate identification and ensuring that students in need can access effective MH intervention successfully. Thus, schools

must have equitable, efficient, and proactive approaches for using data to identify students with internalizing MH needs and align the identified needs with effective interventions. A recent *EdWeek* article describing a new study about the links between academic achievement and SEL noted, "The study's findings are in line with previous research that shows SEL has a positive impact on students' academic achievement, but there's still a gap in understanding how those pieces of data should be integrated and used when creating intervention plans for students." (Langreo, 2023). *Pathways* will ***solve this problem*** and build the capacity for schools to leverage SEL to (1) create conditions in which students thrive socially, emotionally, and academically and (2) identify and match students to effective MH supports and services.

A3. Promising New Strategy

We will develop *Pathways*, a scalable, freely available digital program to improve universal SEL, DBDM, and the identification and intervention delivery for students with internalizing MH concerns in collaboration with middle schools, as this is a critical developmental period and research suggests that adolescents with untreated internalizing MH concerns have significantly worse long-term outcomes into adulthood than those who had their internalizing MH concerns directly addressed (Chang & Kuhlman, 2022). *Pathways* will be a digital program with (a) a series of professional learning resources for developing effective and equitable referral pathways, including videos and interactive web content, (b) a secure data integration platform for DBDM using a school's unique data that creates visualizations and reports, (c) resources to help schools identify or improve universal screening for MH, and (d) a repository of evidence-based universal and targeted SEL and MH programs. We will explore the integration of artificial intelligence (AI) tools to support each component during development (e.g., machine learning models to connect need to intervention). We will also center equity and

culturally responsive practices across all key components of *Pathways*, thus combining cutting-edge technologies with best practices for diverse learners with internalizing MH concerns.

Throughout this proposal, "MH" refers to both student strengths, resources, and indicators of well-being (promotive factors) and psychological problems and barriers (risk factors). Research supports the notion that MH is more than just the absence of psychological problems and is distinct from subjective well-being among youth (Suldo & Shaffer, 2008); thus, MH assessment and intervention must account for subjective well-being as well as psychological problems. In fact, the combination of high subjective well-being and low psychological problems (i.e., Complete MH) is associated with the best student outcomes (Antaramian et al., 2010; Suldo & Shaffer, 2008). *Pathways* will use a complete MH approach to universal MH screening (Kim et al., 2014; Romer et al., 2020) and linking students to effective interventions, often within an MTSS (Doll et al., 2021; Kincaid & Romer, 2021). The *Pathways* approach is a shift away from the traditional deficit-based, and often biased, approaches to the identification of student MH support needs and how data inform school-based MH service delivery (Lazarus et al., 2021).

Pathways will build upon the following implementation frameworks and practices:

Social–Emotional Learning	Multi-Tiered Systems of Support	Data-Based Decision-Making	Culturally Responsive Practices
SEL is the process through which all young people and adults acquire and apply the knowledge, skills, and attitudes to develop healthy identities; manage emotions and achieve personal and collective goals; feel and show empathy for others; establish and maintain	MTSS is an implementation framework designed to promote effective academic, behavioral, and MH support for all students using prevention and intervention across a continuum of needs (Horner & Sugai, 2015). MTSS typically includes three tiers: universal prevention	Data-based decision-making is a system of procedures schools can use to identify why a student or group of students is struggling. Through very specific procedures, educators use data to identify the source of student needs, address those needs,	CRP is a framework for making learning more relevant and effective by leveraging the strengths that racially and ethnically diverse students bring to the classroom. CRP includes reflecting on one's cultural lens; recognizing and redressing bias; drawing on students'

Social–Emotional Learning	Multi-Tiered Systems of Support	Data-Based Decision-Making	Culturally Responsive Practices
supportive relationships; and make responsible and caring decisions (CASEL, 2022).	(Tier 1), targeted intervention (Tier 2), and individualized intensive support (Tier 3).	and then determine whether their efforts are working (Brown & Adato, 2020).	cultures to shape curriculum and instruction; and collaborating with families and communities.

These implementation frameworks and practices will guide our design and implementation efforts. At its core, *Pathways* is designed to help schools facilitate transformational change towards improved SEL systems and ensure students with internalizing MH concerns (particularly racially and ethnically diverse students) are identified and receive the evidence-based interventions they need. Schools and districts do not need more SEL programs. What schools do need is a program that can help improve their SEL programs, DBDM, and identification and intervention systems. *Pathways* will be a free resource that doesn't demand educators buy new programs or attend multiple-day trainings. Instead, *Pathways* will be on-demand, always available, and integrated into existing professional learning and decision-making systems to build the capacity to help students in need.

B. Quality of the Project Design

B1. Conceptual Framework

Pathways is built upon a strong evidence-based foundation and leverages existing initiatives and implementation efforts to ensure success. The logic model in Appendix G describes each of the key components of *Pathways* and how each of these components impacts schools, educators, and students. *Pathways* will include a comprehensive library of universal SEL, MH screening, DBDM, and MH interventions, as well as referral pathway resources focused on teams centering equity as they develop their referral pathways. A single repository of these resources with easy searching and access to materials does not currently exist. *Pathways* will include a series of professional development resources, including how-to videos,

presentations, step-by-step guides, checklists, and interactive web content for aligning needs to culturally responsive resources. *Pathways* will include a digital platform for uploading universal MH screening and other data into a database that will graph data, identify universal SEL support needs, highlight students by MH concern, connect specific scores to recommendations for interventions, and create reports for record keeping. We will integrate AI-based capacity into the platform to help with identifying evidence-based recommendations. All recommendations will link to training videos and how-to guides and resources in the repository. We hypothesize that *Pathways* will directly impact schools' systems for supporting the implementation of universal MH screening, DBDM using MH data and indicators, and linking students to interventions that equitably address internalizing MH concerns. This will increase the accurate identification of students with internalizing MH concerns and ensure students receive interventions. Further, tapping into universal MH screening data will inform and monitor improvements to universal SEL implementation within the *Pathways* processes. These improvements will lead to lower internalizing behaviors experienced by students receiving targeted interventions, more positive perceptions of school climate, improved achievement across subgroups of students, and a decreased likelihood of suspensions and increased attendance.

B2. Project Goals, Objectives, and Outcomes

Pathways will be a free digital program to build a school's capacity for evaluating universal SEL; early, accurate, and equitable identification of students with internalizing MH concerns; and ensuring students in need receive interventions aligned to their strengths and needs. Table 1 below summarizes the *Pathways* objectives, activities, and outcome measures that support the following project goals: (1) co-design *Pathways* with educators, students, and families; (2) enhance data-based decision-making processes; (3) improve the efficiency,

accuracy, and equity of identification of students with internalizing MH concerns using the *Pathways* digital platform; (4) build capacity to implement culturally responsive, evidence-based targeted interventions for students with internalizing MH concerns; and (5) improve MH and well-being of all students including those students identified with internalizing MH concerns. We will develop *Pathways*, a ***free*** digital program, using a co-design process with educators and rigorously evaluating *Pathways* to meet What Works Clearinghouse Evidence Standards.

Table 1. Objectives, Activities, and Outcome Measure

Objective 1. Develop beta version of *Pathways*	
Activities	**Output and Outcome Measure(s)**
1.1 Collect existing literature and resources focused on universal SEL, MH screening, DBDM, and targeted interventions of students with internalizing MH concerns	Repository of resources tagged for search engine and integration into *Pathways* program # of resources tagged by type (e.g., review of approaches, intervention descriptions, training materials)
1.2 Develop *Pathways*- beta version	*Pathways* digital program (web-based) # of pages # of linked resources
1.3 Develop Pathways Inventory- beta version, a fidelity tool	Complete beta-version
1.4 Develop *Pathways* training and coaching materials-beta versions	# of training documents # of presentations
1.5 Review of all *Pathways* beta version materials by advisory board	# of survey responses Meeting minutes
1.6 Revise *Pathways* beta version materials based on advisory board feedback	*Pathways*, beta version *Pathways Inventory*, beta version *Pathways* training and coaching materials, beta version
Objective 2. Co-design and pilot *Pathways* implementation and training materials	
Activities	**Output and outcome Measure(s)**
2.1 Train educators at co-design partner schools to use *Pathway* beta-version	# of trainees and roles Training fidelity survey tool Pathways Inventory
2.2 Conduct co-design sessions with educators, students, and families	# of co-design sessions with each group
2.3 Conduct focus groups with educators, youth, and families about *Pathways* components	Qualitative data
2.4 Administer surveys and gather outcome and implementation data from	Quantitative data Tiered Fidelity Inventory (TFI)

co-design partner schools	Interconnected Systems Framework-Implementation Inventory (ISF-II) Usage Rating Profile (URP)
2.5 Conduct cognitive interviews on *Pathways* and Pathways Inventory with educators	Qualitative data
Objective 3. Refine *Pathways* implementation and training materials	
Activities	**Output and Outcome Measure(s)**
3.1 Refine *Pathways* based on co-design process	# of revised resources # of revised implementation tools
3.2 Refine Pathways Inventory based on cognitive interviews and surveys	Pathways Inventory, version 1.0
3.3 Refine coaching materials based on co-design process	# of revised training documents # of revised presentations
3.4 Review of all *Pathways* materials by advisory board	# of survey responses Meeting minutes
3.5 Revise *Pathways* materials based on advisory board's feedback	*Pathways*, version 1.0 Pathways Inventory, version 1.0 *Pathways* training and coaching materials, version 1.0
Objective 4: Evaluate *Pathways* implementation	
Activities	**Output and Outcome Measure(s)**
4.1 Train implementation teams and educators	# of trainings and attendees Training fidelity survey tool
4.2 Facilitate monthly meetings and ongoing support for educators using *Pathways*	# of trainees and roles Training fidelity survey tool Meeting minutes
4.3 Gather outcome data by subgroups	Behavior Intervention Monitoring Assessment System (BIMAS) California Healthy Kids Survey—Core and Mental Health Supports Modules School records: demographics, achievement, discipline referrals, suspensions, attendance
4.4 Gather implementation fidelity data	Pathways Inventory, TFI # of trained educators # of team meetings
4.5 Conduct RCT and analyze results	# of schools, educators, students by condition # of analyses # of tables and figures
4.6 Evaluate social validity of *Pathways*	Usage Rating Profile, qualitative data
4.7 Conduct focus groups with educators, youth, and families	Qualitative data
4.8 Develop and submit evaluation report	# of evaluation reports submitted

Objective 5. Dissemination and scaling of *Pathways*	
Activity	**Output and Outcome Measure(s)**
5.1 Create *Pathways* website freely available to all interested users	# of web pages # of tools/protocols # of training and coaching resources # of materials available
5.2 Do free webinars for practitioners, policymakers, and researchers	# of presentations
5.3 Disseminate findings via professional literature base and conferences	# of peer-reviewed and open-source publications # of conference presentations
Objective 6. Project management for successful completion of project activities	
Activity	**Output and Outcome Measure(s)**
6.1 Monitor project activities and timeline	# of activities completed on time
6.2 Ongoing continuous improvement in project management and operations	Project tracking via Smartsheet Meeting minutes
6.3 Oversee budget and matching funds	# of activities completed within budget

B3. Proposed Project Design to Meet the Needs of the Target Population

WestEd, in collaboration with PCOE and [redacted], will use an intensive co-design process with three middle schools in Placer County, CA, to develop *Pathways*. Co-designing involves educators, students, and families in the entire iterative design process, leveraging their expertise to make joint decisions and build *Pathways* together (Roschelle et al., 2006). Incorporating educators' perspectives into the co-design process will ensure that *Pathways* is acceptable and feasible for school implementation and aligned with the needs of schools and students to increase scalability. We will utilize the Stanford D. School Design Thinking Process (SDTP; see Appendix J) to guide our co-design efforts. The SDTP involves five actions: *empathize, define, ideate, prototype,* and *test.* WestEd will work alongside educators, students, and families in each of the three co-design middle schools, building positive relationships to understand the challenges staff are facing when addressing students' internalizing MH needs (*empathize*). *Pathways* teams comprised of project staff, educators, students, and families will be formed with specific roles, actionable tasks, and goals (*define*). These teams will think deeply

and collaboratively to develop *Pathways* procedures (*ideate*). WestEd will lead prototype development of *Pathways* procedures and technology solutions (e.g., decision-tree logic based on priori-determined indicators of risk and resilience) with the *Pathways* teams (*prototype*). Finally, we will systematically and iteratively test *Pathways* procedures to calibrate those procedures to meet the needs of students, families, and educators (*test*).

PCOE will lead the recruitment of 24 middle schools in Placer County and neighboring counties for the impact study. The schools will be recruited in three cohorts of eight middle schools. These middle schools will be included in a cluster-level RCT of *Pathways* efficacy (described in section E). Schools in the treatment condition will incorporate *Pathways* into their daily practice and implement all components with fidelity.

Table 2. Project Timeline

Project Timeline									
Year 1		Year 2		Year 3		Year 4		Year 5	
SP	Fall	SP	Fall	SP	Fall	SP	Fall	SP	Fall
D	Co-D	Co-D	C-1	C-1	C-2	C-2	C-3	C-3	A

Note. SP is Spring; D means develop materials, Co-D is co-design with the partner district, C is a cohort of 10 schools (5-treatment and 5-control), and A is analysis and dissemination.

PCOE serves 32 school districts, which includes 17 middle schools across Placer County, CA. PCOE will partner with adjacent county offices of education, including the Yuba County Office of Education, Nevada Office of Education, and Sacramento County Office of Education to recruit additional middle schools for cohorts 2 and 3 as needed. The middle schools in Placer County serve a total of 11,711 students. Approximately 56% of the students in these schools are White, 23% are Hispanic, 10% are Asian, and 2% are Black. The socioeconomic status of families is diverse across the schools; the percentage of students receiving free and reduced-price lunch ranges from 5% to 71% The locations of the schools are also diverse, with four located in rural settings, six in suburban settings, one in a town, and six in a city (see

Appendix J). Data on the number of students experiencing internalizing MH concerns are not clear as most schools do not publicly report MH screening data. However, data from the California Healthy Kids Survey (CHKS), a statewide school climate and MH survey, demonstrates a clear need for *Pathways*. Figure 1 in Appendix J presents the percentages of students in California who report feeling **chronic sadness or hopelessness** between 2013 and 2021. There was an **8% increase** in the percentage of students reporting chronic sadness or hopelessness after the pandemic began. These data are a call to action. *Pathways* will explicitly and emphatically address this issue and improve MH and well-being for middle school students in California and beyond.

C. Quality of Project Personnel

The *Pathways* project will be led by an exceptionally experienced, capable, diverse, and exciting team. This section describes all key staff (see Appendix B for resumes).

[redacted], *Pathways* Project Director, is a Senior Researcher in WestEd's Special Education Policy and Practice content area. His work is focused on advancing rigorous research and evaluation in learner variability and MH. His work is grounded in a MTSS framework, with a particular emphasis on PBIS. [redacted] has more than 100 peer-reviewed publications and has served as Principal Investigator (PI) or Co-PI for multiple federal grants.

[redacted], *Pathways* Co-Director, is a Senior Program Associate in WestEd's Resilient and Healthy Schools and Communities content area. Her expertise focuses on systems change within a multi-tiered framework and on social–emotional assessment and intervention across youth-serving systems. [redacted] is a licensed psychologist, a nationally certified school psychologist, and a board-certified behavior analyst.

[redacted], *Pathways* Content Consultant, is an Associate Professor in the School Psychology Program at the University of Florida. She is an international expert on school-

based prevention and intervention of MH problems, including universal SEB screening; MH service utilization trends; and implementation and fidelity monitoring of the ISF. She is Co–Principal Investigator/Investigator of three previous or ongoing RCTs of the ISF. [redacted] will work with the WestEd team to develop *Pathways* content.

[redacted] is the Executive Director of Prevention Supports and Services for the Placer County Office of Education. Within this role, he supports school districts and county offices of education in installing data-driven schoolwide systems and practices that aim to support the social–emotional, academic, and behavioral well-being of all students. Before joining the PCOE team, [redacted] worked as a special education teacher, behavior analyst, school psychologist, and PBIS trainer for one of the largest school districts in California. [redacted] will lead the PCOE team and coordinate with [redacted].

[redacted] will be supported by a diverse team of senior staff at WestEd, including [redacted] (see resumes in Appendix B). *Pathways* will also be supported by a diverse **advisory board** that will provide annual feedback and guidance on critical features of the protocols, training activities, and impact study. The advisory board will include the following content experts: [redacted]**,** Director of the Center on Social Behavior Supports at Old Dominion University and an implementer partner with the National Technical Assistance Center on PBIS; [redacted]**,** a faculty member of the Medical University of South Carolina and the PI of an ongoing RCT of the ISF enhanced with interventions to reduce racial/ethnic disparities in aggression and violence, funded by the National Institute of Mental Health and Health Disparities; and [redacted]**,** Chair of Special Education at the University of Oregon, Co-Director of the Center on PBIS, and lead of the center's Equity Workgroup. The advisory

board will also include two parents of students in Placer County, two educators participating in the co-design process, and state representation from the California Department of Education and the California Department of Health and Human Services.

D. Quality of the Management Plan

[redacted] will collaboratively lead the project team with the support of a project coordinator to successfully achieve all goals and objectives on time and within budget. Table 3 describes milestones, organizations responsible for each milestone, and a timeline.

Table 3. Key Milestones, Defined Responsibilities, and Timelines

Phase 1: Development and Co-Design		
Milestone	**Responsible**	**Timeline**
Develop a beta version of the *Pathways* digital program and *Pathways Inventory*; Gather feedback from the advisory board (AB)	WestEd, PCOE, [redacted] Advisory Board	Jan 2024–Aug 2024
Recruit three middle schools for co-design; Establish memorandums of understanding (MOUs); Complete Institutional Review Board processes	PCOE, WestEd, UCSF	Jan 2024–Aug 2024
Co-design and improve the *Pathways* digital program and *Pathways Inventory*	WestEd, PCOE, [redacted]	Sep 2024–May 2025
Collect data on implementation fidelity, acceptability, and feasibility to evaluate beta *Pathways*	UCSF, WestEd	Sep 2024–May 2025
Recruit eight schools for Cohorts 1–3; Establish MOUs; Complete IRBs; Write research protocols	PCOE, WestEd, UCSF	Oct 2024–Jun 2025 Oct 2025–Jun 2026 Oct 2026–Jun 2027
Complete co-design and refine *Pathways* and *Pathways Inventory*; Gather feedback from AB	WestEd, PCOE, [redacted] Advisory Board	Apr 2025–Jul 2025
Develop professional development and meeting schedules for RCT	WestEd, UCSF, PCOE	Jun 2025–Jul 2025
Phase 2: RCT Evaluation		
Milestone	**Responsible**	**Timeline**
Train Cohorts 1–3 on *Pathways*	WestEd, PCOE	Aug 2025 Aug 2026 Aug 2027
Collect pre- and post-outcome data	UCSF	Sep 2025/May 2026 Sep 2026/May 2027 Sep 2027/May 2028

Collect fidelity of implementation	UCSF	Sep/Dec/May 2025–26 Sep/Dec/May 2026–27 Sep/Dec/May 2027–28
Conduct interviews and focus groups	UCSF	Apr–May 2026 Apr–May 2027 Apr–May 2028
Analyze Impact Data	UCSF	Jul–Aug 2026 Jul–Aug 2027 Jul–Aug 2028
Phase 3: Dissemination		
Milestone	**Responsible**	**Timeline**
Provide free trainings and webinars on *Pathways* to control schools and other interested schools	WestEd, [redacted] PCOE	Jul 2026 Jul 2027 Jul 2028
Disseminate findings through diverse outlets focused on practitioners, policymakers, and researchers	WestEd, [redacted] PCOE, UCSF	Annually starting in Jul 2026

Throughout the project, WestEd, [redacted], and PCOE will meet weekly to review the co-design process, *Pathways* development, implementation, and barriers to success. WestEd and the UCSF evaluation team will meet monthly to review fidelity protocols, randomization, implementation, data collection, and barriers to success. WestEd, PCOE, UCSF, and [redacted] will meet annually with the advisory board to review progress, barriers, and accomplishments.

E. Quality of the Project Evaluation

UCSF will lead an independent evaluation of *Pathways*. [redacted] and [redacted], evaluation co-directors, are Senior Researchers at UCSF, where, for more than 20 years, they have led numerous multisite, multi-method evaluations of school and adolescent health initiatives. The evaluation will include studies of (1) the impact of *Pathways* on confirmatory outcomes using a design that meets What Works Clearinghouse (WWC) Standards Without Reservations (version 5.0), preregistered in the Registry of Efficacy and Effectiveness Studies (REES); (2) fidelity of implementation (FOI); (3) rapid-cycle feedback to inform the development and deployment of *Pathways* focused on FOI and factors that facilitate or impede program development, scaling, and potential replication; and (4) a cost analysis and

cost-effectiveness study using the ingredients method to support sustainability and understand how resources may be used to achieve maximum benefit.

E.1 Evaluation Questions

The evaluation will address questions concerning the implementation of key program components, and confirmatory and exploratory impacts on intermediate and final outcomes.

Table 4. Evaluation Questions and Data Sources

Evaluation Question	Data Sources
Are fidelity of implementation thresholds reached?	Educator surveys, program records, Pathways Inventory
What are the barriers and supports to successful implementation?	Educator and *Pathways* Development team surveys and interviews Usage Rating Profile (Briesch et al., 2013)
What is the achieved treatment-control contrast?	Educator surveys, Pathways Inventory and Universal SEL Inventory collected in both conditions, educator focus groups
Confirmatory Impact Question	
Is there a positive intent-to-treat impact of *Pathways*, relative to business-as-usual (BAU), on (a) Student internalizing behaviors (b) Positive identification and intervention receipt for students with internalizing MH concerns (c) School climate and student well-being (d) Student discipline (e) Student attendance (f) Student academic achievement (g) Teacher perceptions of student mental health support (h) School-level MTSS-behavior fidelity	School records, including GPA, attendance, and suspension Behavioral and Emotional Screening System (BESS; Kamphaus & Reynolds, 2007; $\alpha = 0.92$) Intervention Receipt Form (IRF) (Splett et al., 2018; α = TBD) California Healthy Kids Survey (CHKS) Core ($\alpha = .92$) and Mental Health Supports Modules (α = TBD) California Assessment of Student Progress and Performance (CAASPP; ELA $\alpha = .86$, Math $\alpha = .87$) School Staff Survey of Mental Health Support (α = TBD) Tiered Fidelity Inventory (TFI, Algozzine

Evaluation Question	Data Sources
	et al., 2014; test-retest reliability ICC = .99)
Exploratory Impact Questions	
Impacts on potential mediators Does *Pathways* FOI, universal SEL practices, educator's perception of student mental health support, or schoolwide MTSS fidelity mediate the impact of Pathways on student outcomes?	Pathways Inventory (to be developed) Universal SEL Inventory (to be developed) School Staff Survey of Mental Health Support Tiered Fidelity Inventory (TFI)
Moderating/differential impacts Is there a differential impact of Pathways on student outcomes by race/ethnicity, gender, disability status and specific disability, English Learner status, or free/reduced-price lunch status?	Student demographic data

E.2. Impact Evaluation That Meets WWC Standards Without Reservations

UCSF will evaluate the efficacy of *Pathways* using a cluster-level randomized controlled trial design with 24 middle schools across three consecutive years that will meet the What Works Clearinghouse (WWC) Evidence Standards Without Reservations (version 5.0).

E.2.a. Cluster-level RCT.

PCOE will recruit 24 middle schools in Placer County and adjacent counties. The first cohort of schools will be in Placer County. UCSF will collect school- and student-level demographic data from each school, including enrollment, percentage of students by race/ethnicity, free or reduced-price lunch, special education, California Assessment of Student Progress and Performance (CAASPP) data, and in- and out-of-school suspensions.

E.2.b. Randomization.

UCSF will randomly assign 12 of the 24 schools to receive *Pathways* and 12 to use BAU

SEL universal prevention, screening, and identification procedures. UCSF will use a block randomization procedure using the *block.random* function in the *psych* package (Revelle, 2021) in *R* (R Core Team, 2021) to ensure baseline school-level equivalence. Blocking variables may include locale (e.g., rural), student demographics, school achievement, and suspension rates. Randomization will occur during the summer of 2025, and schools will remain in their assigned condition for three consecutive years. To meet WWC standards for joiners in cluster-level RCTs, students enrolled in the school at randomization will be included in the analytic sample. Any students who join the school after randomization will not be included in the analytic sample. Attrition will be closely monitored and evaluated. Schools will receive $10,000 in financial support for participating in *Pathways* and free access to the universal MH screener. Student enrollment records will be tracked annually, and attrition calculations will be conducted using WWC thresholds to evaluate overall and differential attrition concerns. In the unlikely event that attrition levels exceed WWC acceptable standards, a quasi-experimental design (QED) analysis with student-level propensity score matching will be used to meet WWC Evidence Standards With Reservations.

E.2.c. Power.

We estimated the minimum detectable effect size (MDES) under 16 different scenarios using *PowerUpR* (Bulus et al., 201; see details in Appendix J). All scenarios were based on power = 0.80, alpha = 0.05. We explored two different level-2 intraclass correlation (ICC) scenarios (ICC = 0.15 and ICC = 0.10), two different level-1 proportions of variance explained at level-1 (0.50 and 0.75), two different school sample sizes (17 and 24) and two different student sample sizes (600 and 90). At the school level, we examined power assuming we only include middle schools in Placer County to compare with our planned sample size. At the student level,

we compared outcomes at the schoolwide level (the average number of students is 688 in Placer County, and we assumed 600 with non-response from ~15%) and outcomes for students identified with internalizing MH concerns (~15% of school sample). For schoolwide outcomes, the MDES ranged from 0.318 to 0.473. For outcomes of students with internalizing MH concerns, the MDES ranged from 0.322 to 0.482. Weist et al. (2022) found that students in schools with MH screening and identification professional development were more likely to receive targeted intervention than students in comparison schools, with an effect size of $d = 0.93$. They also found that students were significantly less likely to be suspended from school ($d = -0.61$). [redacted] (2023) examined data from the same RCT used in Weist et al. and found student-level differences of $d = 0.47$ for a measure of school climate. Therefore, our study is adequately powered for student-level effects for all students and target students.

E.2.d. Measures.

Using the *Pathways* logic model as a guide, UCSF will collect a series of student-, staff-, and school-level measures to evaluate impact.

Internalizing Behaviors. The decision-making process for determining the universal MH screener is typically made by each school and that is how *Pathways* will be structured after the impact study. However, to have the same measurement for all students in the impact study, all middle schools will use the BESS (Kamphaus & Reynolds, 2007) at the beginning and again at the end of the school year to ensure consistent screening and post-test outcome data on internalizing behaviors. We will use the student version to capture student self-report of internalizing MH concerns. The BESS is a 30-item, widely used screener for students in grades K-12 that assesses the following domains: Adaptive Skills, Externalizing Problems, Internalizing Problems, School Problems. Extensive evidence of reliability and validity has been collected.

Reliability coefficients (α) for the full score and each subdomain are all greater than .85.

Intervention receipt. UCSF will use the Intervention Receipt Form (IRF; Splett et al., 2018) to evaluate intervention receipt for all students, including those that meet internalizing MH screening criteria and need intervention. The IRF is a spreadsheet completed monthly by school-based intervention providers and documents the referral problem, the intervention provided, and the frequency/dose of the intervention. Data are collected at the individual student level. Educators in both treatment conditions will be trained on the IRF at the beginning of each school year and data will be monitored by UCSF to ensure data is collected.

School climate and well-being. Students in all study schools will complete the CHKS Core and Mental Health Supports Modules. The CHKS is a statewide survey of students' resiliency, protective factors, risk behaviors, and school climate developed by the California Department of Education (CDE) and WestEd. The core modules (α = 0.92 [Furlong et al., 2014]) are focused on five areas: (1) student connectedness, learning engagement/motivation, and attendance; (2) school climate, culture, and conditions; (3) school safety, including violence perpetration and victimization/bullying; (4) physical and mental well-being and SEL; and (5) student supports, including resilience-promoting developmental factors (caring relationships, high expectations, and meaningful participation). The UCSF team, in partnership with the CDE, developed an elementary and secondary Mental Health Supports custom module for the CHKS to collect data on students' MH needs, perceptions of stigma, and access and barriers to care.

Student records. UCSF will collect school records data for all students in all 24 middle schools. These data will include unique IDs to track individual student progress across project years. Data will include student demographics, as well as performance on school academic measures (e.g., GPA, CAASPP), discipline referrals, suspensions, and attendance.

School staff survey of mental health supports. UCSF and the CDE created a companion survey to the CHKS Mental Health Supports module, the School Staff Survey on Student Wellness, which is administered to school staff to assess their perceptions of students' MH needs and access support services to address these needs. The survey also asks staff about their own capacity to support students' MH needs and incorporates questions from the Professional Quality of Life questionnaire (Stamm, 2012) to assess staff compassion fatigue and burnout. All staff in all 24 middle schools will complete the survey.

School-level FOI. School teams will complete the Tiered Fidelity Inventory (TFI) (Algozzine et al., 2014), a 45-item self-report measure of FOI of MTSS implementation at each of Tiers 1, 2, and 3. Reliability overall and for each tier is acceptable, with overall $\alpha = 0.96$, and for Tiers 1–3, $\alpha = 0.87$, $\alpha = 0.96$, and $\alpha = 0.98$, respectively (McIntosh et al., 2017).

E.2.e. Impact analysis.

UCSF will use a series of two-level hierarchical linear models (HLMs), with students nested in schools, to estimate all student-level confirmatory impact questions. To align with the random assignment procedures, treatment effects will be estimated at the school level. Models will include both school- and student-level covariates to reduce residual error and increase power and precision. Student-level outcomes will include overall and subscales scores on the BIMAS (continuous), receipt of intervention (dichotomous), overall and subscale scores on the CHKS (continuous), academic achievement (continuous), attendance (count), ever experience a discipline referral or suspension (dichotomous), and number of discipline referrals and suspensions (count). HLMs will be based on the scaling of the dependent variable, including linear (continuous), logistic (dichotomous), and Poisson (count) models. A sequential modeling imputation approach (Grund et al., 2021), which uses Markov chain Monte Carlo (MCMC)

methods to estimate the parameters of the imputation models and sample imputations for the missing data from the conditional distributions of the variables (Gelman et al., 2014) will be used to address missing data. For the confirmatory impact analyses, we will follow WWC topic-area review protocols to report all necessary statistics, including obtaining sample sizes at each stage in executing the study design, determining baseline equivalence on demographics and pretests, and calculating covariate-adjusted standardized mean difference effect sizes. For exploratory analyses, UCSF will assess differential impacts on confirmatory outcomes for important student moderators (e.g., race/ethnicity, gender, disability status, English learner status, SES, age/grade) by including interaction terms in the HLM models. Mediation models will be estimated using a multilevel structural equation modeling (ML-SEM) framework. Analyses will be conducted using *lme4* (Bates et al., 2015), *Lavaan* (Rosseel, 2012), and other packages in *R*.

E.2.f Cost effectiveness

UCSF will conduct a cost analysis based on the Resource Cost Model (Levin & McEwan, 2002) to provide information about the cost of implementing *Pathways*, including associated professional development, and whether it is cost-effective relative to the BAU condition. Costs will be identified in both the *Pathways* and BAU conditions using the "ingredients method" (Levin et al., 2017). Analyses will identify the costs associated with each component of the program, distinguish start-up costs from ongoing costs, and convert total costs to per-student costs. We will then combine the cost information and effect size estimates to describe the impact of *Pathways* on a per-dollar basis following the most up-to-date recommendations for cost analyses (Hollands et al., 2021).

E.3. Performance Feedback and Periodic Assessment of Progress

UCSF will be an active partner with WestEd, PCOE, and [redacted] throughout the entire project. Clear and consistent feedback loops are intentionally integrated into the management plan (see above). A communication plan is designed to ensure that challenges and concerns are identified early and remediated immediately. During the intensive co-design process, UCSF will pilot test the outcome and fidelity measures with schools, educators, and students to examine acceptability and feasibility. UCSF will also conduct focus group interviews with the co-design team to examine perceptions of *Pathways* and identify strengths and barriers to inform the RCT and future scale-up. Findings will be shared with the project team and the advisory board.

E.4. Key Project Components, Mediators, and Measurable Thresholds

E.4.a. Fidelity of implementation (FOI) thresholds.

A significant focus of the co-design and RCT is the feasibility and acceptability of *Pathways*. We want to know if *Pathways* can be implemented in middle schools (feasibility), if educators find *Pathways* helpful to accomplishing their goals (acceptability), and if *Pathways* positively impact student outcomes. To measure feasibility, UCSF will collect a series of fidelity indicators of each project component, including a number of trainings, training fidelity, educator surveys, and a schoolwide measure (e.g., TFI). UCSF has set 90% thresholds of acceptable implementation for all trainings with school staff. This means that at least 90% of the trainings must be conducted, trainings must include 90% of the invited school staff, and trainers must conduct at least 90 percent of the training content. The TFI threshold is set at 70%t based on developer recommendations.

As noted in Table 1, we will develop the *Pathways Inventory*, a fidelity tool that describes each critical component of the *Pathways* process (e.g., universal screener in place,

data-based decision-making). The fidelity tool will be developed during the co-design process and will be collected three times each school year during the RCT. Fidelity will be defined as meeting at least 80% of the *Pathways Inventory* items.

Acceptability will be measured in two ways. First, focus group interviews will be conducted each spring, to understand how school and project staff are experiencing *Pathways*. The interviews will include questions about technology, procedures, and acceptability of materials. UCSF will also ask educators to complete the Usage Rating Profile (Briesch et al., 2013), an established measure of intervention social validity and acceptability.

E3.b. Moderators and mediators.

The logic model suggests that FOI and educators' perception of student MH supports will mediate the impact of *Pathways* on student outcomes. As noted above, we hypothesize that student characteristics will moderate student outcomes. We are particularly interested in the moderating effects of student race/ethnicity. We believe that *Pathways* can help ensure that all students in need of internalizing MH support receive that support. However, we will intentionally co-design *Pathways* with the needs of students from racially and ethnically diverse backgrounds in mind. Through *Pathways*, we believe students from racially and ethnically diverse backgrounds will finally get the school-based internalizing MH supports they need to be successful.