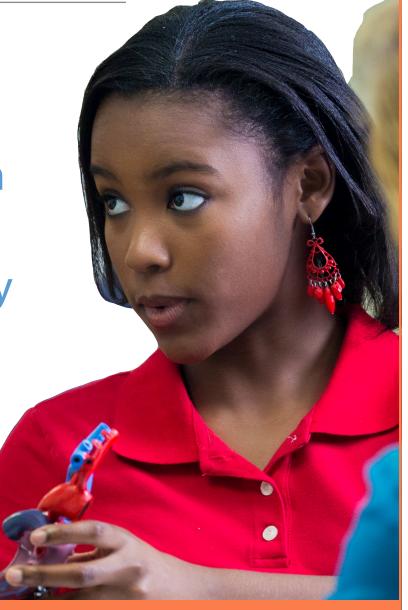**APRIL 26, 2018**

Report to the Field:

Equity Issues in College and Career Pathway Teaching and Learning Practices

COLLEGE AND CAREER PATHWAY RESEARCH SYMPOSIA SERIES

Equity Issues in College and Career Pathway Teaching and Learning Practices

April 26, 2018, WestEd headquarters, San Francisco, CA

Introduction

College and career pathways represent a significant national educational reform movement supported by federal, state, and philanthropic funding. High school pathways combine career and technical education with rigorous academics, work-based learning, and student supports to provide equitable access to postsecondary opportunities. Strong research evidence supports this specific combination of interventions as a means to interrupt the opportunity gap and address the underlying causes of disparate high school outcomes. *Equity Issues in College and Career Pathways Teaching and Learning Practices* was an opportunity to identify gaps in knowledge about equity issues related to teaching and learning in college and career pathways, and to begin research collaborations that could strengthen practice and inform policies to improve equitable outcomes for students in college and career pathways.

This symposium was the second of a series of four symposia focused on pathways research. The first was *The Secondary Student Experience*, held October 17, 2017, examining how to measure success in college and career pathways. Researchers looked at student outcomes from enrollment through engagement and achievement, concluding that an equity lens is critical to any success measure. This second symposium, *Equity Issues in College and Career Pathways Teaching and Learning Practices,* examined pathway instructional practices, the student supports, structures and cultural factors that facilitate successful, equitable implementation of those practices, and the implications for teacher preparation and professional development. The third symposium, *Capacity Building and Leadership for College and Career Pathways,* is planned for November 13, 2018, and will be followed in the spring of 2019 by a fourth and final symposium on *College and Career Pathway System Alignment*.

In addition to identifying key research findings and gaps, and prioritizing a research agenda that can affect equitable implementation of college and career pathways, these symposia are also intended to promote pathway researcher collaboration. Researcher virtual communities of practice are being encouraged to share definitions, leverage each other's data, and collaborate on specific research proposals to strengthen the pathways research evidence base. Such collaboration is also expected to stimulate interest among policy makers and funders as well as providing guidance to the field.

The College and Career Pathway Research Symposia series is a joint effort by multiple research-based organizations active in policy development led by UC Berkeley's College and Career Academy Support Network (CCASN). The Planning Committee includes: WestEd; SRI International; the California State University (CSU) Educator Preparation and Public School Programs division, and the CSU Collaborative for the Advancement of Linked Learning (CALL); Jobs for the Future; the Learning Policy Institute; ConnectEd; the Linked Learning Alliance, PACCCRAS (Promoting Authentic College, Career, and Civic Readiness Assessment Systems) Working Group; and MDRC. This work has been generously supported

by the James Irvine Foundation, the Spencer Foundation, and the Stuart Foundation. Funds are still being solicited to complete the series.

Structure and Goals for the Day

Forty-one (41) participants attended the day-long symposium, representing research and advocacy organizations, school districts, and institutions of higher learning (see Appendix 2). Work was organized around four strands:
  - **(1) Pathway structures and culture** (high expectations, social emotional learning, common planning time, interdisciplinary faculty collaboration, industry engagement, opportunities for leadership, student associations, master scheduling, alternative school settings);
  - **(2) Instructional practices** (project-based learning, interdisciplinary curriculum, student-centered learning, work-based learning, college and career readiness and performance-based assessment, senior year rigor, postsecondary alignment);
  - **(3) Student access and supports** (counseling, recruitment and enrollment practices, tutoring, afterschool or Saturday school, early warning, personalized relationships, special education and English language learners); and
  - **(4) Teacher preparation** (pre-service, in-service, professional development, technical assistance, externships).

The day began with plenary presentations by key participants, four scholars who each combined expertise in equity issues in education and one of the four strands: Dr. Marisa Saunders (pathway structures and culture), Dr. Ayele Dodoo (instructional practices), Dr. Frank Worrell, (student access and supports) and Dr. Thomas Philip (teacher preparation). Then in breakout sessions, attendees identified gaps in the research and prioritized them with the goal of ending the day with the following outcomes:
  - potential collaborative projects that can shine a light on causes and potential interventions to affect equitable participation and outcomes in pathway teaching and learning.
  - exploratory development of researcher communities of practice to continue collaboration
  - an annotated bibliography of literature reviewed for this symposium that, in combination with the bibliography from the first symposium, can be utilized in the third symposium to inform the research agenda for leadership and capacity building.

The symposium culminated in presentations of proposals for future collaboration from each strand.

Attendees had been assigned to strands based on their expertise and completed pre-work prior to the symposium: each attendee researched a subtopic in their strand and brought their research review findings to the symposium. This work was compiled by strand as a foundation for breakout session work mapping the knowledge base to identify knowledge gaps. The complete annotated bibliography is included as Appendix 1.

8:00 – 8:45	Registration & breakfast
8:45 – 9:00	Welcome from Hosts, Dr. Annie Johnston, CCASN's Coordinator of Public Programs and Svetlana Darche, WestEd Director of Career Education: Introduction to symposium & goals for the day
9:00 – 10:00	Plenary session outlining the state of the field, moderated by Dr. Tameka L. McGlawn, CCASN Executive Director • Pathway structures and culture • Instructional practices • Student access and supports • Teacher preparation
10:00 – 10:15	Discussion and instructions for morning session
10:15 – 10:30	Coffee and Networking break
10:30 – 12:00	Strand subgroup break-out session: review gaps in research and methodology, synthesize focal research topics, and develop rationales for priority work
12:00 – 1:30	Working Lunch
12:15 – 12:30	Welcome from Dr. Glen Harvey, CEO of WestEd
12:30 – 1:30	Strand subgroups report out
1:30 – 2:15	Reflection and Regrouping: Attendees participate in a gallery walk to provide feedback on patterns, overlaps, and opportunities across strands; then regroup for afternoon sessions
2:15 – 2:30	Coffee & Networking break
2:30 – 4:20	Focal working group sessions: Discuss current and potential research on focal issues, draft and post research concepts using template, establish collaborative expectations, timing and leadership
4:20 – 4:30	Afternoon break
4:30 – 5:30	Return to plenary discussion/feedback on proposals
5:30 – 7:00	Wine reception and dinner buffet: Gallery walk, feedback and networking

KEYNOTE SPEAKERS

DR. MARISA SAUNDERS is a Senior Researcher at UCLA's Graduate School of Education and Information Studies. Her primary areas of research focus on students' access to college and career preparation, secondary to postsecondary transitions, and the postsecondary trajectories of underrepresented youth. She is currently engaged in research that explores the relationship between teacher ownership of school improvement efforts and student outcomes and trajectories. She has authored a number of publications including *Linked Learning: A Guide to Making High School Work, Beyond Tracking: Multiple Pathways to College, Career, and Civic Participation* (co-edited with Jeannie Oakes, published by Harvard Education Press), and *Learning Time: In Pursuit of Educational Equity* (co-edited with Jorge Ruiz de Velasco and Jeannie Oakes, published by Harvard Education Press).

DR. AYELE DODOO serves as the Network Director for WestEd's Center for the Future of Teaching and Learning. Dr. Dodoo leads the Center's efforts to develop a network for technical assistance providers that support California State Standards implementation. Prior to joining WestEd, Dodoo served as the Director of Secondary Education in the Montebello Unified School District (MUSD), where she set the vision and implemented systems to transition and implement Common Core Standards in middle and high schools. Additionally, Dr. Dodoo was responsible for the inception, development and scaling of the Linked Learning approach district-wide, building a college and career pipeline from the Middle Schools. Most recently, she wrote a successful $6 million Career Pathways Trust grant to institutionalize work-based learning within the Linked Learning Pathways. Dr. Dodoo received a B.A. in history from Stanford University, an M.A. in Education from Teachers' College, Columbia University and an Ed.D. in Educational Leadership from University of California, Los Angeles.

DR. FRANK C. WORRELL received a BA and a Masters in Psychology at the University of Western Ontario and a Ph.D. in School and Educational Psychology at the University of California, Berkeley. Currently, he is a Professor in the Graduate School of Education at the University of California, Berkeley, where he serves as Director of the School Psychology program, Faculty Director of the Academic Talent Development Program, and Faculty Director of the California College Preparatory Academy. He also holds an affiliate appointment in the Social and Personality Area in the Department of Psychology, and a Visiting Professor Appointment in the School of Learning, Development, and Professional Practice in the Faculty of Education and Social Work at the University of Auckland, New Zealand. His areas of expertise include academic talent development/gifted education, at-risk youth, cultural identities, scale development and validation, teacher effectiveness, and the translation of psychological research findings into school-based practice. One of his most recent publications is an edited book with Rhona S. Weinstein (*Achieving College Dreams: How a University-Charter District Partnership Created an Early College High-School*).

DR. THOMAS PHILIP is an Associate Professor in the Graduate School of Education & Information Studies at UCLA, where he teaches in the Division of Urban Schooling and in Center X's Teacher Education Program. Professor Philip studies how teachers make sense of power and hierarchy in classrooms, schools, and society. He is interested in how teachers act on their sense of agency as they navigate and ultimately transform classrooms and institutions toward more equitable, just, and democratic practices and outcomes. His most recent scholarship explores the possibilities and tensions that emerge with the use of digital learning technologies in the classroom, particularly discourses about the promises of these tools with respect to the significance or dispensability of teacher pedagogy.

Professor Philip holds a B.S. in Electrical Engineering and Computer Science and a Ph.D. in Cognition and Development, both from the University of California at Berkeley. His work as an educator began as a science teacher at a public high school in South Los Angeles.

Highlights from Key Presentations

The key participants each provided an overview of a strand, reflecting on critical research related to equity issues in teaching and learning that could inform the prioritization of a research agenda.

Dr. Marisa Saunders identified the teacher as the center of the structural and cultural changes needed for equitable pathways development. Structures are important because they send a message about what is valued. For instance, block schedules typically used in pathway programs send a message that leaders value opportunities for students to engage in deeper learning experiences. Structures like professional learning opportunities can bring together CTE teachers, academic teachers, and after school providers to create a learning community. However, structures alone do not create a pathway. Dr. Saunders referenced Jeannie Oakes' remark that implementing change requires consideration of the technical, the political, and the normative. Without attention to the norms and beliefs that sustain disparities in student outcomes, structural changes alone can be thwarted by old systems of beliefs, expectations, and conflicts.

Structures should be viewed as capacity building elements that enable the creation of a pathway vision and that align with that vision. Many of the structures we identify with pathways—block schedules, collaborative learning time, small schools, small learning communities—help to establish important pathway norms. Similarly, a school's culture and norms can support the development and sustainability of new innovative structures that reinforce pathway goals.

Signaling pathways' values through structures and cultures can enable teachers to make changes in their own classrooms and to model for students the value of learning across disciplines and settings. Such a shift can result in a culture of learning, inquiry, collaboration, improvement, and high expectations. Dr. Saunders briefly described a school with this type of culture that has high graduation and college enrollment rates. This school also tries to understand students' engagement and agency in their learning, and how students are charting their own path to college and career success. At this school, teachers strongly believe that they can express their voice and have the agency to help shape the purpose of the school and improvement efforts. Most teachers also indicated that they took on responsibilities and had an influence outside of their classrooms and that they were leaders even if they did not take on formal leadership roles.

Teachers must be able to influence the development of the structures and culture that can best meet the mission of the pathway. This provides a greater sense of ownership of the pathway and its purpose. Given this, the imperative for Dr. Saunders is to ensure that all pathway students have access to teachers who 1) are empowered to provide high quality, enriching, and responsive learning experiences, and 2) who are empowered to create the cultures in their classrooms that they know will enable college and career success.

Dr. Ayele Dodoo stressed the importance of consistent definitions for pathway instructional practices, incorporating the voice of practitioners into these definitions so students, teachers, and leaders have equitable opportunities for learning. She demonstrated the difficulty of converging on common definitions through a brief audience activity: Attendees were to write down their definition of project-based learning and share it with their neighbors. In a share-out, no one could report having heard the exact same definition as their own.

Dr. Dodoo's own research also reflects this phenomenon. She is currently collecting survey information on implementing California standards across the state from teachers, district administrators, and county office staff. From her prior work building pathways at the school, district, and community levels, she expected that project-based learning would be raised as a valuable instructional practice for implementing Common Core standards. Although the initial 45 survey respondents were not asked about project-based learning, 25% of the time they raised it as a strategy. What respondents meant by project-based learning, however, was not always clear.

Instructional practices are not easy to define precisely. If symposium attendees could not converge on a single definition, she stated, how can we know whether students are getting a quality experience, whether teachers are engaging in top-flight practices, or whether leaders know what they need to know to build capacity and allow time to create structures? Common definitions are essential to the issue of equity: How can teachers ensure equitable experiences when they do not know what they are aiming for? Dr. Dodoo urged attendees to incorporate the voices of practitioners into the development of common definitions of all pathway instructional practices so that those practices could really serve students.

Dr. Frank Worrell discussed equity—the absence of disparities—in student supports.
Given achievement gaps and historic inequities, equity in the schooling context requires a focus on outcomes. To reduce and ultimately eliminate the achievement gap, educational opportunities must especially benefit underrepresented groups. With respect to student access and supports, equity requires building systemic prevention programs and supports into the entire school context so that programs and staff are responsive to students as potential problems are surfacing rather than after problems have arisen.

A psychologist by training, Dr. Worrell highlighted the importance of identity to student engagement in school. Whether students feel a sense of belonging at school has implications in their decision to participate or not, and to continue in that trajectory of participation and engagement. Identity issues affect different groups differently, from racial and ethnic groups, to foster youth, to gender variant individuals, to individuals with disabilities.

Dr. Worrell raised foundational questions to consider as we applied an equity lens to identify gaps in the research on student access and supports, including:
- Are academic supports available and are they used across all groups? Are they supportive rather than punitive? If kids who are pulled out for supports are seen as less smart, they are much less likely to use those supports.
- Does culturally relevant pedagogy work equally well for all groups? What is culturally relevant pedagogy for our growing group of transgender students?
- How do we develop metrics for an early warning system that will help us get ahead of an issue and avoid bigger problems later?
- What kinds of social-emotional support must be provided to help students succeed?
- Regarding pathway recruitment practices, are underrepresented students perceived to be interested and welcome in the pathway?
- How important is it that pathways provide role models from underrepresented groups who are visible to students, and can hook them in—intellectually, socially, and emotionally?

- Does the perceived time it takes to complete a pathway (i.e., medical technician vs. surgeon) limit student aspirations?

In his own work, Dr. Worrell has discovered that when students enjoy a task, they engage better and achieve more, and this needs to be kept in mind as pathways are developed. The American Dream is not within reach without strong supports, he reminded attendees, and the task is both to show students the pathway to college and career, and to help them get there.

Dr. Thomas Philip presented a comparison of three current teacher preparation schools of thought, and their stance on issues of equity: (1) the Relay Graduate School of Education, which came out of the charter school movement, particularly KIPP; (2) Core Practices, a powerful movement in university-based teacher education, with Teaching Works at the University of Michigan, UCLA, Stanford, and Boulder; and (3) teacher education programs that are community-based.

The Relay Graduate School of Education lists 62 techniques for teachers to use that will put students on the path to college. This codification minimizes the complex endeavor that is teaching, and tends to reduce and trivialize the important work of teachers as well as undervalues the creative and intellectual aspects of teaching. Teaching becomes a technical performance as opposed to a craft.

The Core Practices approach arose out of a dissatisfaction with the disjuncture between university-based teacher education, which focused on theory, knowledge, and beliefs about what teaching should ideally look like, and the very different realities teachers encountered in the classroom. This school of thought tries to identify a small set of Core Practices that are essential for novice teachers to master. Dr. Philip argued that this approach tends to ignore the impact of ethnicity and identity on effective teaching practices, and to flatten out differences among students (e.g., race, class, immigration status). He raised key questions: what practices are considered core, who defines them, and for whom?

Finally, community-based teacher education is an attempt to bridge university-based teacher education with communities, which are often not engaged in the schools. This is usually done around issues of social justice, but Dr. Philip was struck by the potential opportunity to re-envision teacher education through engaging business and employers as a means of helping students imagine their future selves. He noted that the social justice approach can be critiqued as being overly aspirational, and the college and career pathways approach can be critiqued as accepting the status quo around current race and class inequalities in our workforce organization. He urged attendees to think of how these two strands can inform each other and the potential synergy in combining the two approaches.

Dr. Philip then described UCLA's efforts to change teacher education. Pre-service teachers worked on community-based projects in small groups with young people and other adults from the community. Teacher education classes were held in schools, where pre-service teachers had the opportunity to engage in critical conversations with students. The results were a powerful example of three productive intersections for transforming teacher education: 1) changing the site of *where* teacher education happens, from universities to schools, 2) thinking about *who* is involved—no longer positing universities as solely responsible for teacher education, but also working collaboratively with community-based organizations around community issues, and 3) thinking about *when* teacher education happens, so that pre-service teachers can work with students and reflect onsite. At these intersections, teacher education can provide a space where pre-service teachers can think about themselves as learners, be open to innovation, and collaborate across school sites.

Prioritization of Research Questions Within Strands

After the key participants' overviews, attendees met in their strand groupings to discuss their pre-work and identify gaps in the research. They classified these gaps as (a) methodological gaps, i.e., places where the field needs to go deeper and expand on research that has been done, or (b) content gaps, i.e., where there is little data or the data has not been mined, especially with respect to equity issues. They then prioritized those research topics that would be strategic to pursue collaboratively, and developed a rationale for the prioritization. Strategic research was defined as research that can increase the capacity of key actors to strengthen practices, and/or inform policies essential to ameliorating disparities and improving equitable outcomes of college and career pathways.

As the group reconvened for lunch, WestEd CEO, Dr. Glen Harvey, welcomed attendees and provided her perspective on the long-standing but elusive goal of making education more equitable for underserved populations. She exhorted the community not to accept educational disparities with equanimity, but rather to continue to develop research that can advance equity in education policy and practice. CCASN Principal Investigator and symposium co-host Dr. Annie Johnston then introduced an online tool to promote continuing communication within and between the communities of practice to be formed in the afternoon session.

Each of the strand groupings presented their assessment of the highest priority research topics from the morning's break-out sessions. Participants then engaged in a Gallery Walk, reading and discussing the posters that had been created, and jotting down potential ideas or questions. A sample question from each of the four strands is included here:
- What connects/disconnects might there be between school, industry, and community/family cultures, and how might this matter? (Pathway Structures and Culture)
- How are instructional practices (e.g., project-based learning) connected to student support services to ensure that all students benefit equally from different teaching and learning capacities? (Instructional Practices)
- How can systems be redesigned to embed supportive practices rather than viewing supports as add-ons or extras? (Student Access and Supports)
- How do we prepare teachers with all of these capabilities and to practice them regularly without them feeling overwhelmed and burning out? (Teacher Preparation)

Finally, participants re-organized themselves, deciding which community of practice to join moving forward. In the afternoon break-out sessions, attendees met by strand, some with newcomers and others not, and developed plans for collaborative projects and proposals.

Final Outcomes and Collaborative Project Themes

Working together in their new groups, attendees developed collaborative work using a project template form (see Appendix 3). The protocols used in that session included discussion of attendees' interest in and commitment to developing a community of practice around the particular strand topic. It also included the following aspirational statement from the Planning Committee, presented to participants of both the first and second symposia:

We hope for a commitment from each of us here to work on opening up opportunities for each other, so that we can build on the work done today. We are asking for a commitment to join forces wherever possible to make what we plan here become a reality. We hope this symposium provides a foundation for working groups that will continue to meet to discuss logic models, share protocols, collaborate in the field, build upon each other's data sets, and expand upon each other's findings.

The day resulted in a set of high-priority, collaborative project ideas to promote policies and practices supporting equitable college and career pathways, and nascent communities of practice that will ideally continue to collaborate over those ideas. Each subgroup named a convener to schedule the next step, usually a conference call to further the ideas and discuss funding. The work and next steps of each strand subgroup is described below.

PATHWAY STRUCTURES AND CULTURE

The *Pathway Structures and Culture* group proposed examining the influence of industry on pathways by operationalizing the concept of levels of industry engagement, and then correlating those varying levels with student outcomes. They also proposed to examine industry's role in pathway and student selection and whether opportunities are equitably distributed and outcomes shared proportionally among groups, as well as the extent to which access to such opportunities helps to close gaps in diverse students' outcomes.

TITLE: The Influence of Industry Engagement on College and Career Pathways

PURPOSE:
- To collect information on industry engagement, which is not well understood.
- To examine the influence of industry engagement on college and career pathways and schools, by formalizing and operationalizing the concept of levels of industry engagement and trying to correlate those varying levels of industry engagement with student outcomes.
- To develop a model for best practices in industry engagement.

RESEARCH QUESTIONS:
- What role does industry play in which pathways are available in a given locale?
- Does industry have an influence on which students enroll in which pathways?
- Is industry involved in student recruitment processes (i.e., helping create recruitment materials, etc.)?
- Is industry involved in the student selection process?
- Are pathway opportunities equitably distributed and are the outcomes being shared proportionally among groups, or even helping to close opportunity/diversity gaps?
- What influence do advisory board members have on pathway structures and practices?
- To what extent do pathway teachers gain an understanding of a particular industry? And to what extent do teachers incorporate that understanding in preparing students to enter that industry? To what extent is teachers' understanding of the industry affected by that industry engagement through the advisory board? Do pathway teachers feel that that particular industry becomes a big part of their identity at their school?
- To what extent are industry and pathway staff goals aligned? What barriers exist to increasing alignment?
- Are there successful models to learn from?

IMPLICATIONS FOR POLICY & PRACTICE:
- To better understand the range of industry engagement
- To explore whether levels of industry engagement correlate with student outcomes
- To provide recommendations for positive experiences in industry-pathway partnerships

METHODOLOGY:
- Data collection: literature review, focus groups, observations, pathway documents, interviews, surveys
- Data analysis: Content analysis, correlational analysis, multi-method synthesis

CASE/SITE SELECTION CRITERIA:
- Districts in the Linked Learning Analytics database that grant permission for a data cut
- Pathways that span the range of industry sectors in those districts

KEY ACTIVITIES:
1. Review the literature to begin to describe the various roles of industry as they appear in the lit
2. Hold focus groups in which pathway staff discuss the role that industry has played so far and some advantages and disadvantages of industry engagement. What is missing? What more could they do? Are they doing too much in any area? Which?
3. Content analyses of pathway promotional/recruitment and other materials (e.g., advisory board meeting minutes) to discern types of industry engagement
4. If possible, observe interactions between industry and pathway (i.e., mock interviews, capstone judging, advisory board meetings, etc.)
5. Develop preliminary logic model of types of industry engagement and hypothesized student outcomes
6. Pilot soundness of concepts with a small number of interviews to refine/inform later interviews and surveys. Sample key questions will come from logic model, but also ask both advisory board members and pathway staff to explore alignment of goals:
   - What are your objectives in doing pathways?
   - What are the needs that pathways are trying to address?
   - To what extent do advisory boards influence practice? How does this vary by pathway theme?
7. Develop surveys for advisory board members and pathway staff
8. Approach Linked Learning with proposal for district permission to access de-identified data
9. In districts that grant permission we will:
   - Describe which students are in which pathways
   - Select pathways for study that represent the range of industry sectors

KEY PARTNERS:
A) From this symposium: Marisa C, Svetlana D, April E, Mayra L, Rachel R, Marisa S

B) From outside symposium: Districts with pathways that are in the Linked Learning Analytics database and grant permission for de-identified data cut for study.

Go to: Pathway Structures and Culture Annotated Bibliography

INSTRUCTIONAL PRACTICES

The *Instructional Practices* group proposed applying an equity lens to defining, exploring, and measuring high-quality college and career pathway instructional practices, not just to develop consistent definitions, but also to develop a framework of pathways instructional practices that support teacher growth, ensure equity across pathways, and monitor student progress.

TITLE: Defining, Exploring, and Measuring High-Quality Instructional Practices in College and Career Pathways

PURPOSE:
- Develop a unified framework for instructional practice
- Develop a proximal measure of expected student skills, competencies, and dispositions and classroom and school environments
- Identify high-quality instructional practices in college and career programs

IMPLICATIONS FOR POLICY & PRACTICE:
- Identify a set of high quality instructional practices to guide teachers and leaders
- Identify barriers and facilitators to implementing, scaling, and sustaining these practices
- Develop a set of measures to support teacher growth, ensure equity, and monitor progress

METHODOLOGY:
- Landscape analysis, qualitative data analysis, literature review, document review, secondary data analysis, assessment development and evaluation

CASE/SITE SELECTION CRITERIA:
- #1: to inform the framework. Visit a number of case study sites
  - Word of mouth selection criteria
  - Multi-state sample
- #2: to identify high-quality practices (by comparison). Visit top quartile of #1's case study sites based on outcomes that stem from a logic model in which equity is a primary outcome
  - Bottom half
  - Visits stratified by SES, urbanicity, intrastate

KEY PARTNERS:
A) From this symposium: Katherine B, Matthew G, Ilene K, William M, Jeno R

B) From outside symposium:
- Identify states that may be a good fit
- States where attendees reside/study
- Engage practitioners, funders?

PLAN FOR ONGOING COLLABORATION:
Relevant AERA SIGs, NCCTE

Go to: Instructional Practices Annotated Bibliography

STUDENT ACCESS AND SUPPORTS

The *Student Access and Supports* group proposed to develop a common definition of student supports given that many subpopulations of students require targeted supports (i.e., English language learners, special education students). They will review the literature to lay out the commonalities across supports, with the goal of determining which are appropriate for pathway student success. Supports for the adults in the system will also be explored.

TITLE: Developing a Common Definition for Student Supports (ELLs, special education, low-income students, etc.)

PURPOSE: So that schools that know their students and their goals can provide the appropriate supports for them, not as an afterthought but an informed decision. Supports need to be built in to what we do.

RESEARCH QUESTIONS:
- What supports do students in pathways need to be successful?
  - What does the research say?
  - What do educators say?
- What are the structural barriers?
  - What does the research say?
  - What do educators say?
- What skills and characteristics are necessary for effectively working with struggling students within pathways and how are these similar/different than in general education?

METHODOLOGY:
- What types of data collection and analytical methods do you plan to use?
- How is this project connected to other projects on the same overarching question?

KEY ACTIVITIES:
1. Review of literature: The literature is written in silos; we start there in each of those spaces and then extract upwards and lay out the commonalities, bridging the silos and coming to some generalizable concepts. Alternately, we could each look at the model for CCRS, the SRI report, and the Gardner center report, looking with our specific lens—what is missing for ELs; special education; counseling. Then we come back together with our findings.
2. Survey/qualitative data collection
3. Ultimately, implement the following activities: 1) identify who is actually in pathways; 2) look for patterns of performance and pathway completion; 3) identify what factors led to success and which are leading to poor outcomes; and 4) design appropriate interventions to alter those negative outcomes.

Go to: Student Access and Supports Annotated Bibliography

TEACHER PREPARATION

The *Teacher Preparation* subgroup proposed to document effective models integrating college and career pathway instructional practices into educator preparation programs. They proposed beginning with case studies at two colleges, then expanding to include more institutions. Their objective is to create modules for pre-service and in-service college and career readiness units. A second project outlined by the teacher preparation subgroup focused on increasing the diversity of the college and career pathway teacher workforce. Using design-based research developed through research practice partnerships, they propose to align teacher preparation pathways across K12, community college, and CSU education segments, and to identify key student supports for successful transitions into educator professions.

Project #1

TITLE: Aligning Systems to Diversify Teaching

PURPOSE: To improving the diversity of the pathway teaching workforce by facilitating diverse students' transitions and progress in education pathways, and by aligning recruitment and marketing efforts. Ultimately, to affect students' experience of education by recruiting and preparing a more diverse teacher workforce.

RESEARCH QUESTIONS:
- What are the facilitative supports for student transitions and success in the teaching profession?
- How can educator preparation programs prepare counselors to play a leading role in integrating career guidance and embedded student supports?

METHODOLOGY:
Design-based Research in Research-Practice Partnerships (RPP)
- Interviews/focus groups/real-time surveys using cell phone/text prompts

KEY ACTIVITIES:
- Mapping current pathway curriculum and course sequences
- Measure current student transition success
- Identify key leverage points through interviews/focus groups
- Engage faculty / counselors in short cycle interventions to impact transitions

KEY PARTNERS:
A) From this symposium: Annie J, Susan S, Thomas P
B) From outside symposium: The design-based research could be co-constructed through an RPP involving faculty and counselors: CSU Chancellor's Office, TPP CCCCO, K12 districts, and community-based organizations

Project #2

TITLE: Integrating/Documenting College and Career Readiness in Teacher/Educator Preparation Programs (Successes, Challenges, Lessons Learned)

IMPLICATIONS FOR POLICY & PRACTICE:
To begin the conversation, analyze models, inform future work, and advocate for better, community-informed, evidence-based practices

METHODOLOGY:
Case studies of Cal State Los Angeles and Cal State Long Beach and expand from there to other higher ed institutions.
- • Mapping current pathway curriculum and course sequences
- • Measure current student transition success, identify gaps

KEY ACTIVITIES:
1. Interview multiple stakeholders
2. Collect documents and assignments
3. Film our practice, fieldwork
4. Cross-site visits
5. Creating modules for college and career readiness practices for PD

KEY PARTNERS:
A) From this symposium: Betina H, Agustin C, Heather L,

Project Connector: Annie
Conference call in July with Betina H, Agustin C: research bibliography. Include what capacity needs to be built, as we are at the limits of our capacity, here is the capacity we need built.

Go to: Teacher Preparation Annotated Bibliography

Development of New Researcher Collaborations

Attendees took seriously the task of collaboratively developing the college and career pathways research agenda around equitable teaching and learning. Nevertheless, they were also challenged to build realistic collaborative research proposals around these key equity issues in a context of scarce and competitive research funding. Still, many collaborative connections are being made or solidified in the process of analyzing a research agenda for the equitable development of college and career pathways. For example, a representative from a national career pathways organization identified potential research advisory group members at the symposium, and several organizations involved in the symposia collaborated to develop an IES proposal to establish a national CTE research network over the course of the Spring.

The collaborative research communities of practice that were initiated at the first and second symposia continue to evolve based upon the interest and commitment of participants. They may merge or split as topics and themes become crystallized. An online project management resource, Basecamp, has been set up to facilitate communication, and will be developed to the extent that it is useful. Researchers who signed up to convene strands will also encourage ongoing discussions on key issues related to the strand topics. Groups from the first, third and fourth symposia will be invited to join that communication network to maintain connection and promote ongoing collaboration.

Symposium Participant Feedback

An online survey was used to gather feedback on the symposium. The response rate was 24%, so generalizability is limited. A majority of respondents indicated that the *process* used in the symposium was effective, and a slightly smaller majority reported that they were satisfied with the *outcomes* of the day. Given the low response rate, rather than percentages, some respondent comments are provided. In terms of process, respondents called the day "*really packed,*" with "*deep conversations*" and presentations that were "*quite interesting and offered different, and valuable, perspectives.*" One respondent wrote, "*having the working groups be able to collaborate for a significant amount of time was a good strategy.*"

In terms of symposium outcomes, respondents agreed that networking with colleagues and "*understanding where additional connections could be made to expand the work*" were the most important outcomes of the day. One respondent felt that the most important outcome was his/her ability to now "*recognize the concept of equity.*" Another respondent lamented "*the fact that there's no mechanism for getting proposals written (or funded).*"

Fully 100% of respondents said that they intended to continue their collaboration. Expectations for cross-collaboration also seemed to be high, as measured by the number of respondents who reported that they would sign up for more than one Basecamp project.

The coordinating and planning committees also debriefed on conference calls. One topic that emerged was that the attendees less involved in college and career pathways should be provided with more background information prior to the symposium to avoid spending time describing common pathway elements during the event.

Suggestions for Future Symposia

Most suggestions for future symposia were related to logistics (i.e., location, date), funding issues, or how to continue the work begun in both symposia. Regarding logistics, the locale was considered expensive and the date was too close to the end of the semester for some respondents. The length of the day was also cited as arduous. Respondents accepted these difficulties given the rewards of collegiality and "deep conversations" around important pathway research issues, but suggested providing a "take-out" dinner option for out-of-town travelers who had to depart early.

Half of the suggestions for future symposia were about funding opportunities for the research ideas generated at the symposium. Some respondents who attended both symposia felt "discouraged" this time by the chasm between researcher excitement over ideas and important avenues to investigate on the one hand, and the absence of any means to make the ideas a reality on the other. These respondents suggested that the next symposium include funders "*who might help us get some of this work started,*" perhaps by describing "*what types of proposals they are looking for,*" or, after all symposia have generated all their proposals, inviting funders to "*assess which of the ideas are highest-leverage and should be pursued.*"

Finally, one attendee suggested a way to continue the work of the first two symposia at the third one: "*having a space for 'repeaters' to check in at the November symposium, to discuss progress and have accountability to one another on next steps*."

Addressing the Feedback in Subsequent Symposia

Feedback from the first symposium influenced planners to increase attendees' pre-work for the second symposium so that they arrived further along in the identification of research topics. This allowed groups more time to develop and refine their collaboration work at the symposium, and resulted in an earlier finish to the meeting. Even so, attendees still felt the day was long, and that we may experience diminishing returns unless the format changes. Changes planned for future symposia include, in addition to shortening the day, using the annotated bibliography produced by Symposia One and Two to inform prework and activities during Symposium Three.

Regarding funders, discussions among the symposium organizers concluded that attempting to orchestrate events to solicit funding for any of the proposals or communities generated at the symposia is outside the scope of our mission. Nevertheless, we will continue to invite funders to attend the symposia, as their participation and perspectives have been invaluable.

Symposium Three will build off work done in the first two symposia, and will include some overlap of participants. Planning Committee members are making a concerted effort to identify researchers with expertise applying organizational change and leadership theory to school reform movements, and in particular to college and career pathways. Educational leadership and teacher education programs are high priority participants, especially where there is interest in understanding the transformational dynamics required to build systemic capacity to implement college and career pathways equitably. The annotated bibliography and identified priorities from symposia 1 and 2 will be used to focus research practice partnerships that can prepare educators at all levels to lead in implementing equitable college and career pathways.

Appendix 1: Annotated Bibliography

The following notes were submitted by attendees in advance of the symposium and compiled to help guide the discussions throughout the day. The entries are not intended to be complete summaries of the literature.

Pathway Structures and Culture

Alfeld, C., Hansen, D., Aragon, S. R., & Stone III, J. R. (2006). Inside the black box: Exploring the value added by career and technical student organizations to students' high school experience. *Career and Technical Education Research*, *31*(3), 121-156. **https://doi.org/10.5328/CTER31.3.121**

Key Relevant Findings: Membership in a career and technical student organization (CTSO) is associated with higher levels of many of the outcome variables of interest at the start of the year (fall survey), compared with a control group, which may account for why this group gains less than students in the other groups over the course of the academic year. Outcome variables included: **academic motivation, academic engagement, civic engagement, grades, career self-efficacy, employability skills** (just not college aspirations). The more a student participates, the better the results (except civic engagement). The effects can be uniquely attributed to participation in a CTSO. Participating in competitive events had significantly positive effects on academic engagement and career self-efficacy. Because they started out ahead, it seems that CTSO students are "good students" already.

Method: The design was a 4-group, cross-sectional, pre-test/post-test design for one academic Year, with the main group being CTE students in an active CTSO compared to other student groups without CTSO. They used HLM due to nested nature of data.
*The scales used included:
- **Academic motivation:** Motivated Strategies for Learning Questionnaire (MSLQ; University of Michigan);
- **Academic engagement:** High School Survey of Student Engagement (HSSSE; Indiana University);
- **Career self-efficacy**: Betz, Klein, and Taylor's (1996) scale assesses students' beliefs about their abilities to secure a job. Also: Michigan Study of Adolescent Life Transitions (MSALT, Eccles, Barber, & Jocefowicz, 1999);
- **Civic responsibility**: Civic Responsibility Survey for K-12 Students Engaged in Service-Learning developed at the University of California, Berkeley (Furco, Muller, & Ammon, 1998).

Additional Research Opportunities:
- The National Research Council (2004) found that many students who are at risk of disengaging from school lack peer groups with high expectations for success and strong ties to education. Could a study be designed to see if CTSOs help?
- There should be a retrospective study interviewing students who were in CTSOs, and not, who are now in the same college program or job. Did the CTSO experience help? How?
- Ideally, transcript data could inform a study more than student self-report.
- Interesting scales used*

Aragon, S. R., Alfeld, C., & Hansen, D. M. (2014). Benefits of career and technical student organizations' on female and racial minority students' psychosocial and achievement outcomes. *Career and Technical Education Research*, *38*(2), 105-124. DOI:10.5328/cter38.2.105

Key Relevant Findings: This study examines the interaction between race and gender status and classroom type (CTSO or not). CTSO experiences provide benefits above those offered through general education alone; girls tend to receive more of the benefits compared to boys. The study offers reason to believe that students of color benefit more from a CTE experience (*not necessarily a CTSO*) compared to White students, but the benefit is small.

Method: Cross-sectional, descriptive research design to describe the benefits of the CTSO experience at one point in time across students with varying experiences. Linear regression evaluated the contribution of gender and minority status to the bolded outcomes in the previously cited study.
    *The scales used included:
- **Academic motivation:** Motivated Strategies for Learning Questionnaire (MSLQ; University of Michigan);
- **Academic engagement:** High School Survey of Student Engagement (HSSSE; Indiana University);
- **Career self-efficacy:** Betz, Klein, and Taylor's (1996) scale assesses students' beliefs about their abilities to secure a job. Also: Michigan Study of Adolescent Life Transitions (MSALT, Eccles, Barber, & Jocefowicz, 1999);
- **Civic responsibility:** Civic Responsibility Survey for K-12 Students Engaged in Service-Learning developed at the University of California, Berkeley (Furco, Muller, & Ammon, 1998).

Additional Research Opportunities:
- An example of using data from a previous study to examine equitable outcomes. But a sample with higher percentage of minority students is needed to get more robust results.
- Findings suggest that CTSOs can maintain or increase academic engagement and motivation. Research is needed into how.
- Research into better understanding the profiles of who participates in CTSOs and why.
- A study of how and why CTSOs benefit girls and boys differently.

Chenoweth, K. (2017). *Schools that succeed: How educators marshal the power of systems for improvement*. **Cambridge, MA: Harvard Education Press.**

Key Relevant Findings: The author sought out schools where leaders have confronted the traditional ways that schools are organized and adopted new systems, all focused on improvement. Examples include use of the master schedule to advance equity, and systems change to advance equitable teaching and learning practices. The schools profiled enjoyed improved outcomes that in many cases exceeded statewide averages.

Method: Case Studies

Additional Research Opportunities:

Subtopic: College and Career Readiness (additional subtopic)

Easton, J. Q., Johnson, E., & Sartain, L (2017). *The predictive power of ninth-grade GPA*. **Chicago, IL: University of Chicago Consortium on School Research.**

Key Relevant Findings: Freshman-year GPA is predictive of future academic success and whether students are on or off track for graduation and college enrollment. Implications are provided for academic supports for college and career readiness.

Method: Regression analyses of Chicago Public Schools and National Student Clearinghouse data, controlling for demographic and prior achievement variables.

Additional Research Opportunities:

Subtopic: College and Career Readiness (additional subtopic)

Haxton, C., & O'Day, J. (2015). *Improving equity and access in Fresno: Lessons from a K12–higher education partnership.* **Washington, DC: American Institutes for Research.**

Key Relevant Findings: The Fresno Unified School District superintendent used a grading scandal as a platform to begin this partnership between the district and a University of California campus, with the goal of advancing college and career readiness, equity, and access for Fresno students. Results include: (1) an increased four-year cohort graduation rate from 69 percent in 2009–10 to 79 percent in 2013–14; (2) an increased percentage of college-preparatory CTE courses from 4 percent to 48 percent; and (3) an increase in seniors' a-g completion rates of college preparatory courses from 32 percent to 48 percent, giving them greater postsecondary choices.

Method: Case study documenting the process of improving access and equity.

Additional Research Opportunities:

Subtopic: College and Career Readiness (additional subtopic)

Lee, V. E., & Smith, J. B. (1995). Effects of high school restructuring and size on early gains in achievement and engagement. *Sociology of Education*, *68*, 241-270.

Lee, V. E., & Smith, J. B. (1997). High school size: Which works best and for whom? *Educational Evaluation and Policy Analysis*, *19*(3), 205-227.

Key Relevant Findings: Compared to larger high schools, students learn more in smaller high schools (i.e., fewer than 1,000 students), and that learning is more equitably distributed (by SES). Higher engagement was also consistently associated with smaller high schools.

Method: Secondary data analysis (NELS:88)

Additional Research Opportunities:
- What are pathways doing beyond being a smaller learning community to address equity?
- "Student supports" is one of the four Linked Learning pillars, but are there intentional structures to support equitable outcomes for students? If not, what else could account for the positive outcomes of LLDI? Is it personalization? Is it that pathways are interest-driven?

Subtopic: School Size (additional subtopic)

Warner, M., Caspary, K., Arshan, N., Stites, R., Padilla, C., Patel, D., McCracken, M., Harless, E., Park, C., Fahimuddin, L., & Adelman, N. (2016). Taking stock of the California Linked Learning District Initiative. Seventh-year evaluation report. Menlo Park, CA: SRI International.

Key Relevant Findings: Pathway-level structures (i.e., common planning time, release time for the pathway lead, and a WBL coordinator position) and district-level structures (i.e., professional development) enabled more integration between academic and CTE subjects.

Method: Longitudinal quasi-experimental

Additional Research Opportunities:

Subtopic: Common planning time, Faculty collaboration

Instructional Practices

Alfeld, C., Charner, I., Johnson, L., & Watts, E. (2013). *Work-based learning opportunities for high school students.* Louisville, KY: National Research Center for Career and Technical Education.

Key Relevant Findings: This report describes similarities and differences, as well as strengths and limitations, across three major WBL categories - internships/ co-operative education (co-op), youth apprenticeships, and school-based enterprises (SBE) - supplemented by vignettes, case studies, and descriptions of selected WBL sites. Assuming that federal policy will support states in improving WBL programs, recommendations based on the findings generated by this project are for state leaders to:

- Provide a clear, substantive purpose for and stated value of WBL, emphasizing the learning component in the work experience.
- Offer resources and information about components of high-quality WBL programs.
- Provide professional development for teachers and WBL coordinators to develop instructional strategies, including for cognitive transfer of problem-solving skills.
- Convene meetings with employer associations and labor unions to achieve buy-in for the creation of more meaningful WBL programs connected to school curriculum.
- Provide resources and guidelines for employer mentor selection, training, and continued engagement.
- Support teachers (with release time and professional development) to work closely with WBL coordinators and employer mentors to construct detailed student training plans (into which students can have input).

- Require the broadening of selection criteria and provisions for access so more students can participate in WBL.
- Demonstrate strategies for involving academic and CTE teachers in the WBL process so that WBL is connected to classroom learning.
- Provide better guidelines for accountability for student learning in WBL programs
- Fund WBL coordinators for each project with adequate support and resources.

Method: Review of literature and visitations to selected high schools

Additional Research Opportunities:
- The impact of WBL is referenced by two reports of the 2010 *Pathways to Prosperity* and the 2010 *Learning for Jobs*. Recent research on short- and long-term impact of WBL components is not addressed, nor are best practices or measures to reach quality WBL.

Subtopic: Work-Based Learning

Athanases, S. Z., Achinstein, B., Curry, M. W., & Ogawa, R. T. (2016). The promise and limitations of a college-going culture: Toward cultures of engaged learning for low-SES Latina/o youth. *Teachers College Record*, *118*(7).

Key Relevant Findings:
- Educators' "sympathy" in the classroom must be developed by understanding the challenges students face in school and society.
- Educators must redefine sympathy so it is relational and encompasses a belief in their responsibility to hold high expectations for their students.
- Educators must connect their sympathetic practices to the need to genuinely care about students in classrooms. As such, they must have a critical understanding of students' context for learning and must situate a caring relationship in the racialized context of students.
- Mentorship must be framed in the context of establishing caring relationships with students.
- Educators must combine the practice of caring with communicating high expectations for learning.
- Educators must challenge dominant definitions of rigor that emphasize high test scores. Instead, they must redefine rigor as peer mentoring and being centered on critical thinking as well as student empowerment.
- Schools must create the space and time for teachers to reflect on their beliefs about students, and whether their conscious and unconscious practices create rigid profiles that differentiate the intellectual capacities of students by race and other identity markers.

Method:
- Qualitative study
- Drew data from a larger phenomenological study examining the pedagogical practices of high school teachers in the one large urban school district in Southern California working to increase their college-going expectations of students of color.
- Semi structured interviews with 9 teachers who were identified as being social justice-oriented, possessed a critical awareness of their students' social and educational injustices, worked primarily with Latinx students and other students of color, taught for 3 or more years, and were known for having positive and caring relationships with their students and an impact on

students' college aspirations or college access, as perceived by either their school principal and/or counselor.
- Analysis of teacher journals and document collection

Additional Research Opportunities:
- Further research must also investigate the ways teachers can respond to students in appropriate ways to communicate the interrelated concepts of caring and high expectations for success.

Subtopic: Equitable Teaching and Learning Practices & Outcomes in College & Career Pathways

Bodilly, S., Ramsey, K., Stasz, C., & Eden, R. (1992). *Integrating academic and vocational education: Lessons from eight early innovators.* **Berkeley, CA: National Center for Research in Vocational Education. Retrieved from https://files.eric.ed.gov/fulltext/ED353407.pdf**

Key Relevant Findings:
- Identified three different approaches to integration: (1) enhanced academics (increasing academic content of vocational programs); (2) enhanced relevance (providing students with practical experience relevant to workplace and college); (2) enhanced engagement (reorganizing schools to facilitate changes in pedagogy and curriculum in order to increase student motivation and strengthen academic preparation). (p. vi-vii)
- All sites made efforts to integrate academic and career knowledge and skills; the enhanced academic sites made some curricular changes but did not substantially change pedagogy. The enhanced relevance sites implemented pedagogical strategies such as hands-on problem solving, collaborative work, and interdisciplinary projects, as well as internships, senior projects, and career planning. The enhanced engagement sites focused on organizational changes to free up teachers to reform curriculum and pedagogy, and instituted career planning. (p. vii)
- Barriers to implementation included "existing regulations, poor funding, lack of existing materials, and lack of support for teacher efforts." (p. 36)
- *Equity implication:* When well implemented, the changes in pedagogy "provided an option for students who had been poorly served by the existing academic curriculum in the comprehensive high schools" (p. 69). To be successful, needs to be seen as part of comprehensive school reform (p. 68).

Method: Multiple case study of 8 schools in 5 states. Analysis of integration efforts in context of background characteristics and policy environment

Additional Research Opportunities:
- Most research specifically focused on integration seems to have been done between the late 1980s and early 2000s. It seems as though there are opportunities for new case study research in career academies and perhaps other contexts in which structural supports that facilitate integration (e.g., cohort scheduling, common planning time for teachers) have been enacted. Also, there are opportunities to more explicitly focus on impacts on different demographic groups.
- This study intentionally did not focus on student outcomes, so there is an opportunity to "connect the dots" between curricular/instructional approaches and (measurable) effect on students; look at outcomes for different groups of students through an equity lens (which includes defining/clarifying groups who have been treated inequitably).

- Question: How much would one want to disaggregate the components of interventions (structural changes, curricular innovations, pedagogical approaches) or to take a "this complex of innovations offers our best shot" perspective?

Subtopic: Interdisciplinary/integrated) curriculum, PBL, since this approach often crosses "traditional" core disciplinary lines.

Bottoms, G., Young, M., & Han, L. (2009). *Ready for tomorrow: Six proven ideas to graduate and prepare more students for college and 21st-century careers*. **Atlanta, GA: Southern Regional Education Board. Retrieved from http://publications.sreb.org/2009/09V20_Ready_for_Tomorrow.pdf**

Key Relevant Findings:
- CTE concentrators who learn academics through authentic, applied methods better grasp abstract concepts, and can apply knowledge in new contexts.
- Struggling students benefit from receiving extra help
- Relative to all students completing the assessment, CTE concentrators were:
    - less likely to be from minorities
    - more likely to be male
    - males got less extra help the females
    - more likely to come from low-SES families
    - students from low-SES backgrounds were also less likely to receive such extra help
- CTE concentrators "were more likely to meet the reading and mathematics readiness goals on the HSTW Assessment if they frequently completed CT assignments requiring them to read and write, interpret technical books and manuals, use computer skills and apply mathematics."—13% more students met reading readiness goal; 8% more met math readiness goal." (p. 11)
- 44% of CTE concentrators in the sample reported taking academic courses with high levels of incorporation of workplace learning; Students experiencing high levels of integration scored higher on assessments (30% greater in reading and 20% in math (p. 18).

Method: Analysis of 2008 data from High Schools That Work (HSTW), Assessment of CT concentrators. 38 states participated in the 2008 HSTW Assessment; Total N= 61,044 HS seniors. The report focuses on the 57% of sample considered CTE concentrators (students who had completed a sequence of at least four CT credits).

Additional Research Opportunities:

Subtopic: Interdisciplinary/integrated) curriculum, PBL, since this approach often crosses "traditional" core disciplinary lines

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Conchas, G. Q., & Clark, P. A. (2002). Career academies and urban minority schooling: Forging optimism despite limited opportunity. *Journal of Education for Students Placed at Risk*, *7*(3), 287-311.

Key Relevant Findings: Academy structures benefited students and teachers of all races and economic backgrounds. The authors found differences between the two case study academies regarding:

- school culture (including intentional efforts by faculty to encourage "cohesion and tolerance across racial lines," p. 307)
- degree of integration of challenging academic and CTE courses

These differences led to:
- differences in recruitment strategies that focused on promoting greater diversity by race and academic abilities
- differences in students' sense of "social belonging and academic success" (p. 308)—the more intentionally diverse academy yielded greater sense of belonging and success

Method: Qualitative case study/comparisons of 80 minority high school students in two California career academies.

Additional Research Opportunities:
- I would like to see more case studies that look closely at various dimensions of the student learning experience in the context of school structures, culture, and demographics.
- Also, I would like to see mixed methods studies that tie to impacts on learning (beyond graduation rate and test scores).

Subtopic: Interdisciplinary/integrated curriculum, PBL, since this approach often crosses "traditional" core disciplinary lines

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Condliffe, B. (2017). *Project-based learning: A literature review* **(Working Paper). New York, NY: MDRC.**

Key Relevant Findings: Equity perspective: this review considers evidence of effectiveness of PBL for girls, low-achieving students, special education students, and English learners (ELs) (pp. 42-48). Their review of research suggests:
- mixed results for gender (pp. 42-43)—but based on very few studies.
- improved performance (though based on limited evidence in all cases) for:
  - both low and high achievers (pp. 43-44)
  - students with disabilities (pp. 45-46)
  - ELs (pp. 46-48).

Method: Literature review

Additional Research Opportunities:
- Paper concludes: "Researchers should develop clear hypotheses about how and why a specific PBL approach would benefit certain subgroups and then conduct reliable studies to test these hypotheses. It will be important to couple these impact studies with rich implementation studies that can uncover any specific challenges of implementing a PBL approach with specific student populations" (pp. 54-55)

Subtopic: Interdisciplinary/integrated) curriculum, PBL, since this approach often crosses "traditional" core disciplinary lines

Cooper, K. S. (2014). Eliciting engagement in the high school classroom: A mixed-methods examination of teaching practices. *American Educational Research Journal*, *51*(2), 363-402.

Key Relevant Findings: This study examines the extent to which 3 different types of teaching practices—connective instruction, academic rigor, and lively teaching—predict student engagement. Connective instruction, which hinges on teachers forming deep, trusting relationships with students, predicts engagement more than seven times as strongly as the other instructional approaches.

Method: Multi-level regression analysis and embedded case studies.

Additional Research Opportunities:
- This study identifies some important aspects of engaging teaching but was not done within a C&C pathway or school setting. The opportunity moving forward would be to see whether the relationship holds in C&C settings or whether this type of environment favors other instructional approaches.

Subtopic: Not specified

Gaertner, M. N., & McClarty, K. L. (2015). Performance, perseverance, and the full picture of college readiness. *Educational Measurement: Issues and Practice*, *34*(2), 20-33.

Key Relevant Findings:
- Academic achievement in middle school is the strongest predictor of college readiness, but motivation & behavior combined are more influential than achievement

Method: Principal components analysis and relative importance analysis to determine relative influence. Regression models to predict college readiness

Additional Research Opportunities:
- What are some interventions shown, via rigorous experimental designs, to improve nonacademic domains like motivation and behavior? Do these interventions result in improved academic performance?

Subtopic: College and Career Readiness and Performance-Based Assessment

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Geier, R., Blumenfeld, P. C., Marx, R. W., Krajcik, J. S., Fishman, B., Soloway, E., & Clay-Chambers, J. (2008). Standardized test outcomes for students engaged in inquiry-based science curricula in the context of urban reform. *Journal of Research in Science Teaching*, *45*(8), 922-939.

Key Relevant Findings: The researchers found that participating in project-based, 8-10 week science units was associated with higher scores on Michigan's standardized science assessments and a reduction in the male-female test score gap. Referencing data from student surveys, the researchers suggest that the enhanced performance of urban male students may have been driven by an increase in motivation and engagement stemming from the variation of experiences that the project-based curriculum offers (e.g., technology use, inquiry, peer collaboration, etc.). It is also important to note, however, that the researchers identify several potential sources of student and teacher selection bias that might have affected the magnitude of their results.

Method: Examined differences in pre- and post-test gains among students who participated in the project-based units and those who did not.

Additional Research Opportunities:
- While this and other studies show that project/problem-based learning results in gains on various types of assessments, little is known about the underlying mechanism for why this is so. The researchers speculate that it may be due to increased motivation and engagement. It's important to examine whether similar gains emerge from studies with experimental designs (which this study did not have) and to learn more about the underlying mechanisms.

Subtopic: Not specified

Kantrov, I. (2017). *Achieving educational equity and justice in career academies: Challenges and promising strategies.* **Education Development Center, Inc. Retrieved from http://www.ltd.edc.org/sites/ltd.edc.org/files/CareerAcademiesReport2017_0.pdf**

Key Relevant Findings: Points to combination of intentionally developed equitable academy culture and pedagogy that is student-centered, integrates academic and CTE, and includes continuum of work-based learning experiences as having greatest potential to serve students of all races and economic backgrounds. (p. 12)

Method: Literature review and interviews with twelve academy teachers, administrators, and community partners in seven communities.

Additional Research Opportunities:

Subtopic: Not specified

Logue, A. W., Watanabe-Rose, M., & Douglas, D. (2016). Should students assessed as needing remedial mathematics take college-level quantitative courses instead? A randomized controlled trial. *Educational Evaluation and Policy Analysis*, *38*(3), 578-598.

Key Relevant Findings: Placement policy reforms (putting students in credit-bearing rather than developmental courses) can significantly increase pass rates if co-requisite courses or supplemental workshops are provided.

Method: Randomized controlled trial

Additional Research Opportunities:
- This study focused on mathematics courses in CUNY community colleges; do the same effects generalize to non-math courses and/or four-year colleges?
- What are the key features of co-requisite coursework that would allow postsecondary institutions to deemphasize placement tests and limit enrollment in developmental education?

Subtopic: College and Career Readiness and Performance-Based Assessment

Mergendoller, J. R., Maxwell, N. L., & Bellisimo, Y. (2006). The effectiveness of problem-based instruction: A comparative study of instructional methods and student characteristics. *Interdisciplinary Journal of Problem-based Learning*, *1*(2), 5.

Key Relevant Findings: This study examined whether students who were taught macroeconomics using a problem-based pedagogical approach outperformed students who were taught the same content using a traditional, lecture-based approach. More specifically, the study entailed having five teachers in four high schools in California teach the same content but with different pedagogical approaches to 246 students. The researchers found that students who received the problem-based instruction demonstrated greater gains on a pre- and post-test of macroeconomics knowledge. The researchers also found preliminary evidence that students whose prior verbal ability was in the midrange or below benefited most from exposure to the problem-based classes.

Method: Difference in means on the pretest-posttest change on assessments of macroeconomics knowledge in classes where teachers used problem-based approaches vs. traditional approaches. Importantly, participating teachers had to identify which classes would receive the different pedagogical approaches before seeing their class lists.

Additional Research Opportunities:
- We need to better understand to what extent results from studies like this are driven by different curricular content or different pedagogical approaches. Because both factors varied in this study, it's hard to ascertain whether the curricular differences or the pedagogical differences (or both) are driving the student gains. *Generally speaking, we need better information about what it looks like/means to be an effective teacher in a project/problem-based classroom.*

Subtopic: Not specified

Nayar, N., Bracco, K. R., & Darche, S. (2009). Work-based learning in California: Opportunities and models for expansion. *Focus.* **Retrieved from https://folio.iupui.edu/bitstream/handle/10244/768/workbasedlearning.pdf?sequence=1**

Key Relevant Findings: Equity connections:
- Applied learning can help address students' diverse learning styles because applying learning enables youth to learn and master skills and competencies through problem-solving.
- Work-based learning (WBL) can add relevance to the curriculum by showing students how classroom learning is applied in the world and exposing students to diverse career options.
- Expanding the definition of work-based learning—including school-based learning opportunities as well as intentional learning at work sites—can help expand equitable access to its benefits. (pp. 15-16)
- Expanding access requires that both academic and technical teachers participate in work-based learning. (p. 18)
- Work-based learning "can also promote psychological and social development. (p. 7)
- Giving students opportunities to reflect—and to connect classroom experiences with what they learn in the workplace—facilitates knowledge transfer and "helps students see the workplace as a 'subject of inquiry, not just the location for learning.'" (p. 8)

- Connecting work-based learning to themes and to students' interests also supports deeper learning. (p. 16)

Method: Literature review and case studies (site visits to 13 California schools and programs, interviews with researchers and practitioners).

Additional Research Opportunities:
- Look more closely at ways in which WBL makes a difference for students (e.g., more fine-grained look at nature of connections made between real world and academic subjects; Also, what do students learn from WBL about what is *not* of interest to them?)
- Explore connections between WBL and decisions about postsecondary.
- Explore whether/how impact of WBL differs for different groups of students.
- Methodological challenge: How do you efficiently and effectively gather data on WBL experiences?

Subtopic: Interdisciplinary/integrated curriculum, PBL, since this approach often crosses "traditional" core disciplinary lines

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Rojas, L., & Liou, D. D. (2017). **Social justice teaching through the sympathetic touch of caring and high expectations for students of color.** *Journal of Teacher Education*, *68*(1), 28-40.

Key Relevant Findings:
- Educators' "sympathy" in the classroom must be developed by understanding the challenges students face in school and society.
- Educators must redefine sympathy so it is relational and encompasses a belief in their responsibility to hold high expectations for their students.
- Educators must connect their sympathetic practices to the need to genuinely care about students in classrooms. As such, they must have a critical understanding of students' context for learning and must situate a caring relationship in the racialized context of students.
- Mentorship must be framed in the context of establishing caring relationships with students
- Educators must combine the practice of caring with communicating high expectations for learning
- Educators must challenge dominant definitions of rigor that emphasize high test scores. Instead, they must redefine rigor as peer mentoring and being centered on critical thinking as well as student empowerment.
- Schools must create the space and time for teachers to reflect on their beliefs about students, and whether their conscious and unconscious practices create rigid profiles that differentiate the intellectual capacities of students by race and other identity markers.

Method:
- Qualitative study
- Drew data from a larger phenomenological study examining the pedagogical practices of high school teachers in the one large urban school district in Southern California working to increase their college-going expectations of students of color.
- Semi structured interviews with 9 teachers who were identified as being social justice-oriented, possessed a critical awareness of their students' social and educational injustices, worked primarily with Latinx students and other students of color, taught for 3 or more years, and were

known for having positive and caring relationships with their students and an impact on students' college aspirations or college access, as perceived by either their school principal and/or counselor.
- Analysis of teacher journals and document collection

Additional Research Opportunities:
- Further research that explores perceived kinship between students and teachers is needed as a means to document how to better support preservice teachers in fostering asset-based mind-sets and relationships in the classroom.
- Further research must also investigate the ways teachers can respond to students in appropriate ways to communicate the interrelated concepts of caring and high expectations for success.

Subtopic: Equitable Teaching and Learning Practices & Outcomes in College & Career Pathways

Stone III, J. R., Alfeld, C., & Pearson, D. (2008). Rigor and relevance: Enhancing high school students' math skills through career and technical education. *American Educational Research Journal*, *45*(3), 767-795.

Key Relevant Findings: Students in "math-in-CTE" classes outperformed control students on:
- mathematics section of TERRANOVA (high school achievement test)
- ACCUPLACER◦ Elementary Algebra text (college placement test)

No differences between groups on post-test measure of workplace (applied) math skills.

Method: RCT within 5 CTE occupational areas/schools. Yearlong instructional intervention in which:
- Treatment CTE teachers and math teacher-collaborators identified math concepts/skills inherent in CTE lessons and then developed new CTE lessons with explicit math instruction
- CTE teachers taught the lessons

Each student in the study (treatment and control) completed pre- and post-tests for one of the three measures (high school math achievement; college algebra placement, workplace applied math); pre-tests were used as covariates in post-test analysis HLM analysis.

Additional Research Opportunities:
- Can researchers replicate these results with larger sample, given that the number of students completing each measure was relatively small. There are Multiple issues related to replication:
  - Recruitment of a larger sample size for greater power, particularly for HLM design
  - Greater articulation of nature of math integrated into lessons (by occupational area)
- Potential need for standardization of professional development for CTE and math teachers
- How does pedagogy affect results? (e.g., compare integrated CTE and math [and integrated science and ELA] that uses a more student-centered pedagogy such as PBL with the more traditional pedagogy used in the Stone et al. studies).

Subtopic: Interdisciplinary/integrated) curriculum, PBL, since this approach often crosses "traditional" core disciplinary lines

Sun, J., & Spinney, S. (2017). *Transforming the American high school experience: NAF's cohort graduation rates from 2011–2015.* **Fairfax, VA: ICF.**

Key Relevant Findings: NAF academies implement an educational design to improve student outcomes of college and career readiness that includes work-based learning as a core component of the four-year program of study. This four-year longitudinal study including data for 613,002 students across 10 districts from 6 states, demonstrated higher rates for all NAF high school students, especially those at-risk of not graduating high school when compared to non-NAF students. The greatest difference of +10% was found for students who participated in four-year, full programs. Full program participation includes a four-year WBL experience.

Method: Longitudinal quasi-experimental design; 2 to 1 propensity matching

Additional Research Opportunities:
- Post-secondary effectiveness of WBL experience: career choice, job opportunities

Subtopic: Work-Based Learning

Welton, A. D., & Martinez, M. A. (2014). Coloring the college pathway: A more culturally responsive approach to college readiness and access for students of color in secondary schools. *The Urban Review*, *46*(2), 197-223.

Key Relevant Findings: Recommendations (based on findings):
- There is a need for more culturally responsive frameworks to consider ways in which students of color tenaciously resist structural challenges along the pathway to college.

The following recommendations are from the students who participated in both studies:
- Establish relationships built on trust and authentic caring: "school personnel need not only focus on academic rigor and college resources, but also on taking the time to develop trusting and authentic relationships with students of color" (p. 216).
- Integrate college-level work and resources into all courses: there needs to exist a collaborative effort to integrate college-level coursework and college resources in all classrooms, not just AP or dual enrollment courses.
- Encourage students to earn college credit in high school

The following recommendations are from the researchers:
- Provide increased college supports for new immigrant students and their families
- Ensure all school personnel recognize and validate that students of color possess college assets and potential
- Secondary schools must be conscious of ways in which dominant ideology ostracizes students of color from college readiness opportunities; at the same time, consider ways in which the cultural identities of students of color mitigate structural barriers to college access and readiness.
- Educators and researchers must engage in critical self-reflection to challenge racial and cultural biases.

Method:
- A review of research on college access and what necessitates a student as college ready, using a critical eye that examines the length to which this research fully represents the experiences and needs of students of color.
- Epistemological collaboration - Presents findings from 2 larger qualitative studies

Additional Research Opportunities:
- A need for continued scholarship that considers the cultural context of students of color and a need to implement models that represent the ways in which students of color use their cultural knowledge to ascertain college readiness skills.

Subtopic: Equitable Teaching and Learning Practices & Outcomes in College & Career Pathways

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Zwick, R. (2017). 8 fairness issues in the assessment of college and career readiness. In McClarty, K. L., Mattern, K. D., and Gaertner, M. N. (Eds.), *Preparing Students for College and Careers: Theory, Measurement, and Educational Practice*. **New York, NY: Routledge.**

Key Relevant Findings: Common college and career readiness indicators (e.g., placement tests) do not take students' course grades into account, potentially disadvantaging lower-income students. In addition, some readiness factors (e.g., demographics) increase predictive accuracy but may perpetuate disadvantage. "Not ready" diagnoses may depress expectations and disproportionately disadvantage underrepresented groups.

Method: Literature review

Additional Research Opportunities:
- How can readiness instruments be expanded to collect information about students' goals and about the information students require from postsecondary institutions? Research suggests that for some students, ineligibility for postsecondary study is the result of inadequate information about required high school coursework.
- For students who receive a "not ready" diagnosis, what postsecondary support programs show strong or moderate evidence of improving the likelihood of postsecondary persistence and completion?

Subtopic: College and Career Readiness and Performance-Based Assessment

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Student Access and Supports

Bloom, H., & Unterman, R. (2013). *Sustained progress: New findings about the effectiveness and operation of small public high schools of choice in New York City.* **New York, NY: MDRC. Retrieved from https://www.mdrc.org/publication/sustained-progress**

Key Relevant Findings:
- Small schools of choice (SSCs) in New York City continue to markedly increase high school graduation rates for large numbers of disadvantaged students of color, even as graduation rates are rising at the schools with which SSCs are compared.

- Principals and teachers at the 25 SSCs with the strongest evidence of effectiveness strongly believe that academic rigor and personal relationships with students contribute to the effectiveness of their schools. They also believe that these attributes derive from their schools' small organizational structures and from their committed, knowledgeable, hardworking, and adaptable teachers

Method: Natural lotteries (like random assignment); Interviews and focus groups in 25 of the most effective SSCs

Additional Research Opportunities:
- While this is not a study of career academies, it speaks to the effectiveness of personalized relationships inside smaller learning environments. Next step: Studying personalized relationships within career pathways.

Subtopic: Tutoring and personalized relationships

Cook, P. J., Dodge, K., Farkas, G., Fryer, R. G., Guryan, J., Ludwig, J., & Mayer, S. (2015). *Not too late: Improving academic outcomes for disadvantaged youth.* **Evanston, IL: Institute for Policy Research, Northwestern University. Retrieved from https://www.ipr.northwestern.edu/publications/docs/workingpapers/2015/IPR-WP-15-01.pdf**

Key Relevant Findings: School-based intervention that provides disadvantaged youth with intensive individualized academic instruction increased math achievement test scores by 0.19 to 0.31 standard deviations (SD), depending on how the researchers standardize, increased math grades by 0.50 SD, and reduced course failures in math by one-half in addition to reducing failures in non-math courses.

Method: Randomized controlled trial

Additional Research Opportunities:
- This is not a study of career pathways, but suggests that intensive tutoring can be effective for disadvantaged youth. Next step: testing this type of tutoring in a career pathway setting.

Subtopic: Tutoring and personalized relationships

Flores, S. M., Batalova, J., & Fix, M. (2012). *The educational trajectories of English-Learners in Texas.* **Washington, DC: Migration Policy Institute.**

Key Relevant Findings:
- Students who exited ELL programs within 3 years had much better high school and college enrollment outcomes than "long term ELLs"
- Among "ever ELL" students who graduated high school on time, Hispanic students were the least likely to go to college immediately after graduation.
- Taking advanced or dual-credit courses in high school correlates with higher rates of immediate college enrollment for all subgroups of students.

Method: Descriptive and regression analyses of a large longitudinal (P-16) data set of students who entered public schools as 1st graders in 1995

Additional Research Opportunities:
- Future research using this and/or other P-16 data sets could take a closer look at ELL, former ELL, and never-ELL enrollment in CTE pathways as well as advanced academic and dual credit courses, and examine postsecondary outcomes associated with these courses for each subgroup.

Subtopic: English Language Learners

Garcia, O., & Seltzer, K. (2015). The translanguaging current in language education. *Symposium.* **Sweden: Stockholm University.**

Key Relevant Findings: We need to understand "ELL" students as emergent bilinguals who are using language/s for a variety of purposes. Garcia talks about a translanguaging pedagogy that does not require a bilingual program or a bilingual teacher; it requires trust that bilingual students' existing linguistic repertoire is not a threat to learning the new language, but must be leveraged to appropriate and integrate new features into an expanded repertoire.

Method: Essay/conceptual; drawing upon ethnographic classroom observations

Additional Research Opportunities:
- Examining different approaches/pedagogical methods of using translanguaging across contexts
- Documenting teacher/student understandings of language-language awareness
- Translanguaging pedagogy's 3 strands
- More work to examine language ideologies (deficit/asset-based; cultural/racial ideologies)
- Ask a new question: Not how do we teach a second language, but how do we teach students to incorporate English into their full linguistic repertoire?

Subtopic: English language learners

Haber, M. G., Mazzotti, V. L., Mustain, A. L., Rowe, D. A., Bartholomew, A. L., Test, D. W., & Fowler, C. H. (2016). What works, when, for whom, and with whom: A meta-analytic review of predictors of postsecondary success for students with disabilities. *Review of Educational Research, 86*(1), 123-162.

Key Relevant Findings: The authors acknowledge that the in-school predictors of post-school outcomes for students with disabilities that are common in the literature need refinement; however, their analysis showed that "Vocational Education" indicators predicted employment outcomes and "Transition Programs" and "Interagency Collaboration" predicted postsecondary transition. Prediction by specific interventions like "Student Development" and "Program Structure" were weak, suggesting a possible need for a shift in emphasis in secondary programs.

Method: Meta-analysis (ANOVA, weighted regressions)

Additional Research Opportunities: Research including key demographic data, experimental studies with long-term follow-up

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Subtopic: Students with disabilities

Hanson, H., Bisht, B., & Greenberg Motamedi, J. (2016). *Advanced course enrollment and performance among English learner students in Washington state* **(REL 2017–187). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northwest. Retrieved from http://ies.ed.gov/ncee/edlabs**

Key Relevant Findings:
- ELL students take fewer advanced courses (honors, AP, IB, or dual credit) per school year than their never-ELL peers
- Most of this difference can be accounted for by differences in prior academic preparation
- Current, monitored, and former ELLs are 40-50 percent less likely to complete algebra 1 in middle school, compared to never-ELLs.
- After prior academic performance is taken into account, ELLs and never-ELLs have similar grades in advanced courses

Method: Descriptive statistics and regression analyses on data on all students enrolled in WA public high schools from 2009-10 to 2012-13.

Additional Research Opportunities:
- More research is needed to understand why high-achieving ELLs are still less likely to take advanced courses than their never-ELL peers. Further research could examine differences in placement, counseling, and scheduling practices for ELLs and non-ELLs.
- More research is needed to identify effective practices for preparing ELLs and former ELLs to take advanced content courses.

Subtopic: English Language Learners

Kemple, J. J., & Snipes, J. (2000). *Career academies: Impacts on students' engagement and performance in high school.* **New York, NY: MDRC. Retrieved from https://www.mdrc.org/sites/default/files/Career_Academies_Impacts_on_Students.pdf**

Key Relevant Findings: In sites where career academies produced particularly dramatic enhancements in the interpersonal support that students received from teachers and peers, the career academies reduced dropout rates and improved school engagement for both high-risk and medium-risk subgroups (about 75 percent of the students served). Academies that did not enhance these supports actually increased dropout rates and reduced school engagement for some students.

Method: Randomized Controlled Trial/Relational Analysis

Additional Research Opportunities:

- This study suggests there is a relationship between impacts and the ability to provide personalized supports. The next step would be to study programs within career academies that try to create these supports.

Subtopic: Tutoring and personalized relationships

Okhremtchouk, I. S., & Jimenez, R. M. (2013*). I live in a curled world…: Stories from immigrant students and their teacher. Counterpoints, 440**, 33-69. Retrieved from http://www.jstor.org/stable/42981969

Key Relevant Findings: Student narratives/voices deconstruct monolithic view of ELL youth; Culturally relevant pedagogies supported student language and identity development

Method: Ethnographic classroom observations; performance ethnography

Additional Research Opportunities:
- Documenting performance ethnographies with ELL teachers, students, etc.
- Examining various exemplars of pedagogies that are culturally/politically/socially relevant with ELL/immigrant youth (not static/essentializing; situated within socio-cultural experiences and practices)
- Aligning with A-G & beyond
- The role of poverty (not as deficit but contextual); the role of socio-emotional; experiences of migration
- Viewing student experiences not just as "needs" but also as assets and how do we incorporate this knowledge as asset-based pedagogies

Subtopic: English language learners

Price, D. V., & Tovar, E. (2014). Student engagement and institutional graduation rates: Identifying high-impact educational practices for community colleges. *Community College Journal of Research and Practice, 38(*9), 766-782.

Key Relevant Findings:
- Large numbers of students drop out at key transition points.
- Community college is largely the entry point for groups with significant external challenges to academic success (high levels of "headwinds").
- Student engagement benchmarks that strongly correlated to higher graduation rates included collaboration, interaction with faculty, and student support.

Method: "Using the 2007 administration of the Community College Survey of Student Engagement (CCSSE), this article explores the statistical relationships between student engagement, as measured by the CCSSE, and institutional graduation rates reported to the Integrated Postsecondary Education Data System (IPEDS). Both bivariate correlations and hierarchical multiple regression analyses yielded results that reinforce the salience of student engagement as an important predictor of college completion." (Abstract, p. 1)

Additional Research Opportunities:
- What is the relationship between students' knowledge of career pathways and postsecondary retention and degree attainment?
- Does participation in a career pathway in community college result in higher levels of engagement and ultimately result in an increase in degree attainment?

Subtopic: Early warning systems

Ruiz de Velasco, J., Newman, E., & Borsato, G. (2016). *A conceptual framework for integrated student supports within linked learning pathways: Equitable access by design.* **Stanford, CA: John W. Gardner Center for Youth and their Communities.**

Key Relevant Findings: Conceptual framework for implementing comprehensive student supports aimed at providing equitable access to career and college readiness through pathways. "Two kinds of integration appear, both in the relevant literature and from practitioner experience, to be associated with positive student learning outcomes. The first type of integration involves the extent to which student supports are conceived, designed, and implemented to promote effective student engagement with the other three Linked Learning pathway components: academic mastery, technical knowledge, and workplace learning. A second type of integration involves the alignment of student services offered within a curricular pathway with other school and district (or regional) strategies for achieving college and career readiness among all students." (p. 2)

Method: Literature review, site visits, observations

Additional Research Opportunities:
- Outcome research related to school counselor led interventions aligned with five domains of learning and support: academic learning, technical learning, workplace learning, college and career knowledge, and social and emotional learning.

Subtopic: School counseling

Saunders, M., Hamilton, E., Fanelli, S., Moya, J., & Cain, E. (2013). *Linked Learning: A guide to making high school work.* **Los Angeles, CA: UCLA's Institute for Democracy, Education, and Access. Retrieved from https://casn.berkeley.edu/wpcontent/uploads/resource_files/Linked_Learning--A_Guide_to_Making_High_School_Work.pdfKey**

Key Relevant Findings: A culture of care and support is a key element of the career pathway. Most of the study sites included an advisory that offered a personalized relationship and academic support.

Method: Case study - interviews and focus groups at academies.

Additional Research Opportunities:
- More rigorous study of advisories in the career pathway setting.

Subtopic: Tutoring and personalized relationships

Stevens, D. (2017). *Using the Screening Tool for At-Risk Students (STAR) protocol for identifying students at risk during the transition to high school.* **Paper presented at the meeting of the American Educational Research Association, San Antonio, TX.**

Key Relevant Findings:
- The STARS protocol is able to effectively identify students who will struggle during the transition to high school.
- The transition rubric provides specific actionable information that can be used to support students.
- Identified students benefit from additional support not just during the 9th grade year but throughout high school.

Method: Experimental/Quantitative/Qualitative

Additional Research Opportunities:
- What impact will early linking to career pathways have on the retention and success rates for students identified as "at-risk" during the transition from middle school to high school?
- Can the articulation of critical information (non-academic) between high school and college/career programs improve long-term outcomes for high-risk students?

Subtopic: Early warning systems

Wagner, M. M., Newman, L. A., & Javitz, H. S. (2016). The benefits of high school career and technical education (CTE) for youth with learning disabilities. *Journal of Learning Disabilities.* **49(6), 658-670.**

Key Relevant Findings: "Results show no benefits of CTE course taking overall, but demonstrate a significant positive effect for participating in a concentration of occupationally specific CTE in the first two post-high school years; effects are nonsignificant for later years." (Abstract)

Method: Secondary analysis of National Longitudinal Transition Study–2 (NLTS2) data of CTE course taking among youth with learning disabilities. Propensity score modeling was used to determine whether general or occupationally specific CTE course taking is related to higher odds of full-time employment after high school and whether results differ with the length of time youth were out of high school.

Additional Research Opportunities: Identifying which occupationally specific CTE courses assist students with learning disabilities to gain full-time competitive employment, extending the research to address different demographic data.

Subtopic: Students with disabilities

Warner, M., & Caspary, K. (2017). *Access & equity in Linked Learning: A report on pathway access and academic outcomes for traditionally underserved students.* **Menlo Park, CA: SRI International.**

Key Relevant Findings:
- ELLs were underrepresented in Linked Learning pathways in some districts and overrepresented in other districts
- ELL students in certified Linked Learning pathways earned more HS credits and completed more college prep requirements than similar peers in traditional HS programs.
- ELLs in certified pathways were less likely to enroll in postsecondary education, compared to similar peers in traditional high schools

Method: Program evaluation using matched comparison group analysis

Additional Research Opportunities:
- Case study research could examine differences in pathway recruitment, placement, and scheduling in different Linked Learning districts

Subtopic: English Language Learners

Weiss, M. J., Visher, M. G., Weissman, E., & Wathington, H. (2015). The impact of learning communities for students in developmental education: A synthesis of findings from randomized trials at six community colleges. *Educational Evaluation and Policy Analysis, 37***(4), 520-541.**

Key Relevant Findings: Increased risk of withdrawal from community college programs for students requiring remediation. Students in learning communities passed developmental courses at a higher rate.

Method: Large (n ≈ 7,000) independent randomized trial examining effectiveness of learning communities for students in developmental education at six community colleges throughout the United States

Additional Research Opportunities:
- Do learning communities built around common career pathway programs increase engagement and result in increased retention and attainment rates in community colleges?
- Can developmental courses centered around a pathway yield better academic outcomes?
- Does long-term learning community membership impact attainment rates?

Subtopic: Early warning systems

Worrell, F. C. (2014). Theories school psychologists should know: Culture and academic achievement. *Psychology in the Schools, 51,* **332–347. doi:10.1002/pits.21756**

Key Relevant Findings: There are limited numbers of studies on psychosocial variables related to the educational achievement of ethnic and racial minority students in school psychology, and a need to "test" the major theories explaining the achievement gap in classroom settings. Contains six recommendations for research on students at the lower end of the achievement gap.

Method: Position paper

Additional Research Opportunities:

Subtopic: N/A

Yeager, D. S., Romero, C.,…. Dweck, C. S. (2016). Using design thinking to improve psychological interventions: The case of growth mindset during the transition to high school. *Journal of Educational Psychology, 108,* **374–391.**

Key Relevant Findings: Showed that growth mindset interventions delivered via the internet and scaled-up to serve thousands of students resulted in increased achievement for lower achieving students.

Method: "Qualitative inquiry and rapid, iterative, randomized "A/B" experiments were conducted with ~3,000 participants to inform intervention revisions for this population. Next, 2 experimental evaluations showed that the revised growth mindset intervention was an improvement over previous versions in terms of short-term proxy outcomes (Study 1, N = 7,501), and it improved 9th grade core-course GPA and reduced D/F GPAs for lower achieving students when delivered via the Internet under routine conditions with ~95% of students at 10 schools (Study 2, N = 3,676)." (Abstract)

Additional Research Opportunities:
- Provides a template that can be used with other effective interventions facilitating student access.

Subtopic: N/A

Yeager, D. S., & Walton, G. M. (2011). Social psychological interventions in education: They're not magic. *Review of Educational Research, 81,* **267-301. doi:10.3102/0034654311405999**

Key Relevant Findings: Reviews several social-psychological interventions (e.g., affirmations; attributions to context, not self; alignment of academic and racial identity) found to decrease educational disparities and their theoretical underpinnings.

Method: Literature review

Additional Research Opportunities:
- These studies need to be replicated in different school contexts and with different outcomes to see if the findings are generalizable.

Teacher Preparation

Arthur, N., Collins, S., Marshall, C., & McMahon, M. (2013). Social justice competencies and career development practices. *Canadian Journal of Counselling and Psychotherapy, 47*(2), 136-154. Retrieved from http://cjc-rcc.ucalgary.ca/cjc/index.php/rcc/article/viewFile/2647/2489

Key Relevant Findings: This research indicates that in regard to professional development, career practitioners use and desire three kinds of social justice competencies: attitude competencies, knowledge competencies, and skill competencies. Career development practitioners identified how the career concerns of clients from nondominant cultural backgrounds were linked to social justice issues.

Method: Qualitative research. The critical incidents were analyzed according to the descriptions of competencies that career practitioners used in real-life scenarios with clients.

Additional Research Opportunities:
- It is critical for teachers to implement effective, equitable teaching and learning practices. Next step: As the research suggested, social justice depends on its circumstances. Curriculum reform and community capacity building are required.

Subtopic: Professional development

Bausmith, J. M., & Barry, C. (2011). Revisiting professional learning communities to increase college readiness: The importance of pedagogical content knowledge. *Educational Researcher*, *40*(4), 175-178.

Key Relevant Findings:
- PLCs are necessary, but not sufficient, for effective schools; Pedagogical content knowledge (PCK) must be the primary focus of PLCs.
- Strong PLCs challenge and critique existing assumptions about teaching and learning AND help members to learn new knowledge regarding content and pedagogy
- Consensus on features of effective professional development (PD; for improving teacher practice) include: a focus on content, active learning, coherence, duration, and collective participation
- New mounting evidence of features of effective PD (for improving student achievement) include: training over an extended period of time; focus on subject matter content and how students learn that content; opportunities to work collaboratively on student learning
- Recommend scaling up PD in which PCK is primary focus through online videos of common core-aligned lessons taught by expert teachers (through a rigorous peer-reviewed process); The videos could be accompanied with info on what the research says about how students learn particular content, thus building PCK. This is important because sometimes schools do not know what expert teaching looks like (i.e., they don't know what they don't know).

Method: Review of extensive literature on teacher expertise that focuses on how well teachers understand the content they teach and how students learn that content.

Additional Research Opportunities:

- Professional development models that focus on building teacher PCK;
- Pedagogical content knowledge that is specific to English learners and students with disabilities.

Subtopic: In-service

Bragg, D. D. (2007). Teacher pipelines: Career pathways extending from high school to community college to university. *Community College Review, 35*(1), 10-29.

Key Relevant Findings: Key components of effective teacher pathway partnerships appearing across all three community colleges in this study are:
- CC provides (a) counseling info, (b) cross-college joint outreach and marketing activities with the university, and (c) student supports in HS/CC;
- advisory for transition;
- CCs identify high school students;
- Teacher Cadet para-professional training so students can work in schools while completing degrees;

LESSONS:
- Multiple degree options
- Building on elementary school and early childhood education
- Shortages in math, science, special education
- Models for degree programs in those high need areas
- Share models w/other community colleges
- Links increased high school to community college matriculation

Method: Three case studies of community colleges implementing teacher preparation pathways: Anne Arundel Community College (AACC) in Maryland, Lorain County Community College (LCCC) in Ohio, and the Maricopa Community College District (MCCD) in Arizona; each implementing a sequence of articulated core courses between secondary-community college; and working in a partnership to coordinate activities, collect qualitative and quantitative data, use these data to improve programs, and engage in active communication.

Additional Research Opportunities:
Main challenges:
- Creating dual-credit opportunities and ensuring adequate academic preparation to avoid remediation.
- Following students through transitions into the teaching workforce is important to establishing the credibility of the career pathway programs.
- Inadequacy of data on program and student outcomes: not just how many enter teaching professions but sustain teaching commitment over time.
- While noted that highest need teaching areas contrast with demographics of present workforce, missing data and analysis of diversity issues – no data on demographics, relative success, role of specific supports for particular students

Subtopic: pre-service teacher preparation

Coulter, T., & Vandal, B. (2007). *Community colleges and teacher preparation: Roles, issues and opportunities* **[Issue paper]. Denver, CO: Education Commission of the States (NJ3).**

Key Relevant Findings: Community colleges can meet the needs of an increasingly diverse teaching industry and catalyze reform in teacher education. Community colleges can capitalize on their unique attributes as responsive institutions that serve a diverse population of students and industry needs to meet critical workforce demand in local and regional communities and positively impact the field of teacher education.

Method: Literature review for a teacher education leadership summit to develop proposals addressing how and to what extent content and pedagogical training have been integrated across community college-university teacher prep?

Additional Research Opportunities:
- What is the role of WBL in integrating content and pedagogical training across K12-CC-IHEs?
- *Partnerships with sustained commitment to curriculum alignment, and collaborative, cross-system program and course development.* What structures and institutional commitments are needed to accomplish this?
- *Data sharing agreements across all institutions involved in teacher prep* – what data to share and how to use it to support diverse students' access to teaching professions?

Subtopic: pre-service teacher preparation

Executive Summary: CSU Summit on Transformative Change in the Preparation of Teachers Proceedings, February 14, 2011. Available online at:
http://www.calstate.edu/teachered/summit/docs/CSU_Summit_Proceedings_032211-acc.pdf

Key Relevant Findings: Emphasis on rigor and quality; expanding efforts to address challenges of urban and rural schools and to serving at-risk students from low-income, high minority communities

Method: Presentations by Deans and leaders from across the field

Additional Research Opportunities:
- Partnerships only discussed with K12, no mention of CC. There was also no mention of diversifying the teacher workforce.

Subtopic: N/A

Darling-Hammond, L., Wilhoit, G., & Pittenger, L. (2014). Accountability for college and career readiness: Developing a new paradigm. *Education Policy Analysis Archives/Archivos Analíticos de Políticas Educativas***, 22.**

Key Relevant Findings:
- Professional capacity is one of three key elements of an accountability system
- Educator capacity requires high-quality preparation, induction, and professional development
- Recommendations include:

- Organize sustained, high-quality professional learning opportunities for networks of educators focused on developing practice through extended institutes, collective inquiry, and action research to solve complex problems of practice and coaching.
- Provide incentives for schools to establish flexible structures within the teaching day and year that provide time for teachers to participate in collegial planning and job-embedded professional learning opportunities
- Provide ongoing training for schools to develop professional learning communities that can analyze student learning and school progress in relation to practice and engage in ongoing improvement.

Method: Conceptual paper. Recommendations are based on practices already established in different states and on the views of policymakers and school experts.

Additional Research Opportunities:
- Practices that are proven to support struggling teachers and schools.
- Models of flexible school structures and schedules/calendars that facilitate more time during the school day and year for teacher professional learning and participation in collaborative learning teams.

Subtopic: In-service

Hafner, A., Joseph, R., & McCormick, J. (2010). College readiness for all: Assessing the impact of English professional development on teaching practice and student learning. *Journal of Urban Learning, Teaching, and Research*, *6*, 15-30.

Key Relevant Findings:
- Hafner et al. focus on the effects of in-service teacher training in the Expository Reading and Writing Course (ERWC) curriculum to support greater college readiness among students
- Findings indicate that ERWC improved student motivation, reading and writing skills, and teacher confidence and skills
- Findings suggest the benefits of a systematic K-16 partnership to empower urban high school literacy offerings and reduce college remediation rates
- There is a mismatch between traditional literature classes and the skills students need to support their reading of expository college texts.
- Teachers appreciated the strategies provided by ERWC training and it had an impact on their English teaching, particularly in relation to scaffolding and the explicit teaching of reading
- Teachers reported using at least a few modules and expressed having a clearer understanding of the preparation necessary for students to succeed beyond high school
- ERWC also helped teachers feel more effective in their use of class time, with students being more on task and practicing academic skills/ concept-based knowledge that can apply outside of the classroom
- ERWC participants reported improvements in specific skills like note-taking, synthesis and critical thinking
- Students felt more prepared and had higher test scores
- Overall, the results suggest that ERWC is effective in preparing students for college literacy, although limitations like low participation rate among teachers is an ongoing challenge

- Fewer PD sessions are being offered however, because of budgetary constraints, even when programs are shown to be effective in achieving the overall goals of CCR.
- The implications for literacy, equity and teacher professional development/ teacher preparation are that teachers need access to professional development opportunities that can help them prepare students for College & Career Readiness in order for more pathway students to be prepared for success. While ERWC focuses specifically on college preparedness, improving student literacy generally is an important foundational goal in CCR. It's also important to think about how similar professional development (or even embedded professional development) focused on career pathways could more specifically support teachers and students as they teach and learn in particular pathways.

Method: Surveys (Teacher/Student); Teacher Observations and Interviews; Quant/Qual data analysis; Sample included 5 schools in 3 urban districts implementing ERWC

Additional Research Opportunities:
- What are the effects for ERWC participants (students) who do not enter college, but go directly to career?
- What other types of K-16 partnerships and teacher professional development might support student success in College & Career Readiness? (e.g. internships; co-taught classes)
- How might training teachers in reading career-focused expository texts as part of already successful models like ERWC actually support more effective CCR preparation in secondary classrooms?

Subtopic: Pre-service & In-service Professional Development (Literacy)

Jenkins, S., & Agamba, J. J. (2013). The missing link in the CCSS initiative: Professional development for implementation. *Academy of Educational Leadership Journal*, *17*(2), 69-79.

Key Relevant Findings:
- Due to the significant shift in teaching and learning that college- and career-ready standards call for, teacher PD must also shift significantly for effective implementation. "What made you think you could transform teacher practice and student learning with traditional models of professional development?" (Hirsh, 2012, p. 1).
- Collaborative relationships between higher education and K12 educators needed – mechanism must be designed to facilitate this
- Six features identified in literature as crucial in teacher PD: focus on content taught and methods used, active learning, duration of training, collective participation, coherence, and alignment with standards and other initiatives.
- The PD must change teacher knowledge, attitudes and/or beliefs, which in turn change instructional practice.
- The combination of teacher change and instructional practice is the engine behind student achievement.

Method: Literature review and case study of one state's (Idaho's) professional development initiative for implementing CCSS.

Additional Research Opportunities:

- Correlations between teacher attitudes and beliefs (about their students and their own abilities) and instructional practice AND correlations between instructional practice and student achievement.
- Models of effective higher ed/K12 collaborations to support teacher professional learning (content and pedagogy).

Subtopic: In-service

Kirkland, D. (2011). Listening to echoes: Teaching young black men literacy and the distraction of ELA standards. *Language Arts*, *88*(5), 373-380.

Key Relevant Findings:

- Kirkland draws attention to the ways in which standards-driven instruction, including that of the Core Standards (including CCR), which can mask the voices of African American male students (and students of color), privileges dominant conventions of standard English over a more complete, culturally aware model for literacy instruction that honors students' backgrounds and funds of knowledge.
- Kirkland fears a "back to the basics" approach to literacy that ignores the uniqueness of literacy for students of color and the need for differentiated, socially relevant instructional approaches that meets students' specific needs. Instead, the current standards movement privileges a particular educational agenda that has traditionally excluded young Black men.
- It's important to consider Kirkland's perspective as we consider equity based issues related to literacy and learning in CCR pathways. Are the voices and experiences of students being marginalized and/or commodified in service of particular ends that don't recognize the socio-emotional, socio-cultural, and community-based developmental natures of literacy?
- When we emphasize literacies as part of CCR, do we lose the humanity of our stories? Are these "pathways" (CCR & socio-emotional, humanistic learning) mutually exclusive? What are the other literacies of the world that impact students that we may not see, validate, or respect?
- Kirkland asks whether we can write ELA standards that both honor the histories, important people, experiences of youth while fostering rigor and social readiness? Whether our standards can help heal those who are socially wounded while expanding youths' social horizons. He suggests that if we do not, we will reproduce a system in which Black men, at high rates, will be either unemployed, incarcerated, or killed.
- *While we, as a group of researchers, are interested in equity in relation to teaching, learning, and teacher education in CCR pathways, we cannot ignore students' lives outside of the classroom. We must prepare teachers to hear, honor, and acknowledge the literacies of their students in order to help students move towards greater possibilities in their futures.*

Method: Essay that draws on the experience of one boy who was part of a larger case study

Additional Research Opportunities:

- *How, as teacher educators, and those working with teachers, can we promote humanizing pedagogies while also preparing teachers to support students in CCR pathways?*
- *How can we support teachers in honoring the distinct literacies that students need to survive and thrive in a 21st century world?*

- Studies of youth of color in CCR pathways and the ways in which their knowledge, experiences and literacies are supported and fostered or taught over with CCR initiatives

Subtopic: Pre-service and in-service professional development (Literacy)

Lesley, M. K. (2014). Policy, pedagogy, and research: Three issues affecting content area literacy courses for secondary-level teacher candidates. *Literacy Research and Instruction*, *53*(1), 50-71.

Key Relevant Findings:
- Literacy (particularly specialized literacies, e.g., disciplinary and career literacies) is a critical part of teacher preparation to support College & Career Readiness for students
- Literature review reveals the necessity of clearer understandings of how to prepare teacher candidates to offer instruction in disciplinary literacies
- Literature also reveals the importance of educational networks to overcome dispositional barriers of teacher candidates
- Despite the centrality of literacy to College & Career readiness, there is little focus on content area and disciplinary literacy coursework within teacher education programs and there are gaps in knowledge in relation to effective practices in working with pre-service teachers on developing disciplinary literacy pedagogies
- Based on her analysis of the literature, Lesley provides a developmental spectrum of content area literacy theories that includes academic literacy, multiliteracies, and disciplinary literacies
- She notes the need for systemic dialogue between multiple stakeholders of teacher education programs to bring about greater consistency in the integration of literacy practices in preservice teacher education, as well as the need for longitudinal research, that is classroom based, and focuses on literacy implementation
- *These findings are relevant within a college and career readiness context through an equity lens because differences in teacher preparation related to literacy also impact students' college and career readiness. Given the foundational nature of multiple and specific literacies in College and Career Readiness, differing access of preservice candidates to effective teacher preparation that illuminates the importance of literacy in relation to CCR is an equity issue for teachers that carries on to their students. Preservice teachers' dispositions both towards their role in implementing literacy practices and CCR-focused curriculum (particularly career focused pathways) may impact the quality of instruction students receive in their CCR pathways.*

Method: Literature Review

Additional Research Opportunities:
- Connections between literacy and CCR in teacher preparation programs and in college/ career pathway settings
- Research in classrooms about the types of literacies involved in College & Career pathways; who is teaching these literacies (if being taught explicitly) and how these literacies are being taught
- Cohesiveness, depth, and nature of literacy instruction in and outside of CCR pathways (this is an important equity issue as literacy skills often require focused remediation in higher education settings and specific, sometimes distinct, literacies are required in career-focused workplace settings)

Subtopic: Pre-service and in-service professional development (Literacy)

Mimura, T. (2016). Vocational guidance, career guidance, and career education phases in Japan. *Bulletin of Graduate School of Teacher Education, Waseda University, 8*, 19-34. Retrieved from https://core.ac.uk/download/pdf/46896890.pdf

Key Relevant Findings: Surveying the historical growth of career guidance in Japan, there are three phases: vocational guidance phase, career guidance phase and career education phase. Each phase has its own characteristic feature affected by the paradigm shift in Japanese education. Equitable Teaching and Learning Practices and Outcomes in College & Career Pathways should be examined in consideration of the influence of the times.

Method: Historical and practical research. According to the research, these phases were influenced by those occurring in the United States. But the qualitative differences between the two countries' equality should be paid attention to.

Additional Research Opportunities:
- In 2002, the competencies as a framework of a learning program were developed in Japanese career education. The competency-based program was influenced by NOICC's National Career Development Guideline (1989).
- Next step: The concept of equity and social justice should be introduced in career education in Japan. So this symposium is a precious opportunity for me.

Subtopic: Professional Development

Steffy, B. E., Wolfe, M. P., Pasch, S. H., & Enz, B. J. (Eds.). (1999). *Life cycle of the career teacher.* **Thousand Oaks, CA: Corwin Press, Inc.**

Key Relevant Findings: It is known that a career in education involves continual growth for both students and teachers. As for professional development for equitable teaching and learning practices and outcome, this book indicates several suggestions. The model of reflection, renewal and growth promotes teachers to work collaboratively and to gain efficacy as a teacher. Through reflective practices, teachers' development follows 6 phases, namely: novice phase, apprentice phase, professional phase, exemplary phase, distinguished phase, and emeritus phase.

Method: Theoretical studies. Co-published and presents a model for delivery of a lifetime of pre-service and in-service training. At the early stage of teacher, there are several kinds of withdrawal hindering their developmental growth. But the causes of attrition were not discussed form the viewpoint of equity.

Additional Research Opportunities:
- The idea that teachers accomplish their own career development through college and career pathway teaching and learning are relevant to the concept of equity.
- Next step: The causes for attrition should be examined from the viewpoint of equity. So we will find the same phenomena as in students' career development.

Appendix 2: List of Participants and Their Affiliations

Name	Title	Affiliation
Keynote Speakers		
Ayele Dodoo	Network Director, Center for the Future of Teaching and Learning	WestEd
Thomas Philip	Professor, GSEIS	UCLA
Marisa Saunders	Senior Researcher	UCLA
Frank Worrell	Professor	UC Berkeley
Symposium Participants		
Katherine Blasik	Vice President, Research and Evaluation	NAF
Katherine Bradley-Black	Senior Program Associate	WestEd
Agustin Cervantes	Director, Student Services	Charter College of Education, Cal State LA
Alexia Everett	Senior Program Officer	Stuart Foundation
Sarah Feldman	Director of Practice	The Education Trust-West
Matthew Gaertner	Director of Research	WestEd
Lynn Goldsmith	Distinguished Scholar	Education Development Center
Jocelyn Hively	Director of Student Support Services	Standard School District
Sarah Hooker	Senior Program Manager	Jobs for the Future
Betina Hsieh	Assistant Professor	CSU Long Beach
Rosa Jimenez	Assistant Professor	University of San Francisco
Ilene Kantrov	Director, College and Workforce Success	Education Development Center
Mayra Lara	Senior Practice Associate	The Education Trust-West
Heather Lattimer	Professor of Education	University of San Diego
Caroline Lopez	Assistant Professor	CSU Long Beach
William Marinell	Director of Education Research	The One8 Foundation
Nan Maxwell	Senior Researcher	Mathematica Policy Research
Takao Mimura	Professor	Waseda University
Jacob Olsen	Assistant Professor	CSU Long Beach

Jennifer (Jeno) Rivera	Director, Associate Professor	Michigan State University
Rachel Ruffalo	Senior Practice Associate	The Education Trust-West
David Stevens	Teacher on Special Assignment	Berkeley Unified School District
Tirsa Tovar	Teacher	Mojave Unified School District
Mary Visher	Senior Associate	MDRC
Planning Committee Participants		
Marisa Castellano	Consultant	CCASN
Claire Chuter	Teacher	California Montessori Project
April Eldahaby	Director of Analytics	Linked Learning Alliance
Svetlana Darche	Director, Career Education, Health & Human Development Program	WestEd
Roneeta Guha	Senior Researcher	Learning Policy Institute
Annie Johnston	Coordinator of Public Programs and PI, CCASN	UC Berkeley
Tameka McGlawn	Executive Director, CCASN	UC Berkeley
Susan Sepanik	Research Associate	MDRC
David Stern	Professor Emeritus	Graduate School of Education, UC Berkeley
Laura Tobben	GSR, CCASN	UC Berkeley
Miya Warner	Principal Researcher	SRI Education

Appendix 3: Collaborative Project Template

PROPOSAL or PROJECT TITLE:

PURPOSE:

IMPLICATIONS FOR POLICY & PRACTICE:

METHODOLOGY:
- What types of data collection and analytical methods do you plan to use?

- How is this project connected to other projects on the same overarching question?

CASE/SITE SELECTION CRITERIA: If applicable, include specific site/context proposals

KEY ACTIVITIES:
1.
2.
3.
4.
5.

KEY PARTNERS:
A) From this symposium:

B) From outside symposium:

PLAN FOR ONGOING COLLABORATION:

Project Connector:

By collaborating in developing these ideas we intend to promote research in these high priority, high leverage areas, but we are also making a collaborative commitment to each other. Four organizations and five individuals may envision a project that interconnects with three different possible studies. One of those may be funded first for one organization. Another may be attacked with a doctoral study. We hope for a commitment from each of us here to work on opening up opportunities for each other, so that we can build on the work done today. We are asking for a commitment to join forces wherever possible to make what we plan here become a reality. We hope this symposium provides a foundation for working groups that will continue to meet to discuss logic models, share protocols, collaborate in the field, build upon each other's data sets, and expand upon each other's findings.

ABOUT

About the College and Career Pathway Research Symposia Series

CCASN, in coordination with other nationally renowned research-based organizations, is hosting a series of four symposia, each of which will convene experts on topics related to college and career pathways. We will map what we know, identify gaps in the research, and pinpoint key strategic foci for moving policy and practice forward. The four symposium topics are 1) the secondary student experience; 2) equity issues in teaching and learning, 3) capacity building and leadership; and 4) college and career pathway systems alignment.

The third symposium, which will address capacity building and leadership, is currently being planned for November, 2018.

The planning committee for the symposia series
includes representatives from the following
organizations: