Building Integrated Logic Models for Educational Equity, Student Pathways, and Institutional Change

Catherine R. Cooper
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Feedback welcome at ccooper@ucsc.edu and www.bridgingworlds.ucsc.edu
With gratitude to the UCSC Educational Partnership Center, UCSC Hispanic-Serving Institutions, and Bridging Multiple Worlds Alliance teams and to the students and families in all of our partnerships.
Overview

• Educational equity and the academic pipeline problem
• Roots and remedies: Capital, alienation, or challenge?
• What is a Logic Model (LM)? Sketching your own LM
• What are Integrated Logic Models (ILMs)? How are they useful?
• A collaboration building ILMs by integrating:
  1. Social science theories of change
  2. Research-based activities and outcomes across programs
  3. Outcomes with student-level longitudinal data
• UCSC: A Hispanic-Serving Institution building its ILM
• Towards a common language
• Sketching your own ILM
• An invitation
Educational Equity and the Academic Pipeline Problem:
A Longitudinal Data Dashboard for One Region
Cal-PASS Plus - www.calpassplus.org
Converging Views of Roots and Remedies

Social capital: Cultural reproduction across generations, “the rich stay rich and the poor stay poor” (Bourdieu, 1986)

• Community Cultural Wealth (Yosso, 2005)

Alienation or belonging? Marginalization and oppositional identities (Fordham & Ogbu, 1986)

• Sense of belonging (Tajfel & Turner, 1986; Hurtado et al., 2012)

Challenge and resiliency: Navigating identities across challenges and resources with cultural brokers and “proving gatekeepers wrong” (Cooper, 2011; Azmitia et al., 2018)

Integrating capital, alienation, and challenge (Cooper et al., 2018)
### Sample Logic Model for One Program
Halimah, 2011; Kekahio et al., 2014

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Implementation of Theory of Change</th>
<th>Outcomes</th>
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<tbody>
<tr>
<td><strong>Needs/Challenges</strong></td>
<td><strong>Activities</strong></td>
<td><strong>Short-term</strong></td>
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<tr>
<td>Families</td>
<td>Academic Advising</td>
<td>Grades 6-9</td>
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<tr>
<td>High % low-income, limited</td>
<td># Students advised # with</td>
<td>Basic college and</td>
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<td>English, low educational</td>
<td>Individualized College and</td>
<td>financial aid and</td>
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<td>attainment</td>
<td>Career Plans</td>
<td>knowledge; Develop and</td>
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<tr>
<td>Schools</td>
<td># attended each activity</td>
<td>update IAPs</td>
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<td>Low-performing</td>
<td><strong>Family Engagement</strong></td>
<td>Grade 11</td>
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<td>Students</td>
<td>Professional Development</td>
<td>Take SAT/ACT; college and</td>
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<tr>
<td>Low college prep, enroll,</td>
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<td>financial aid</td>
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<tr>
<td>graduation</td>
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<td>Grade 12</td>
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<td></td>
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<td>Complete college-prep, AP,</td>
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<td>and honors classes; college</td>
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<td></td>
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<td>and financial aid</td>
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<td>applications</td>
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**Outputs**

- **Intermediate-term and Impact**
  - Increased equity in:
    - College enrollment
    - Transfer from community college to 4-year universities
    - Graduation
### Sketching Your Own Logic Model for One Program

**Mission:**

**Community/communities served:**

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</thead>
<tbody>
<tr>
<td>Needs/Challenges</td>
<td>Resources</td>
<td>Activities</td>
</tr>
</tbody>
</table>

**Needs/Challenges**

**Resources**

**Activities**

**Outputs**

**Short-term**

**Intermediate term**

**Long-term**
Integrated Logic Models (ILMs): What are they? How are they useful?

What are they?

• ILMs integrate multiple programs in one logic model—in mission, theories of change, inputs, activities, outputs, outcomes, and impacts
• Collaborations in one institution or across P-20 academic pipeline

How are they useful?

• **Integrating scientific theories of change** unifies fragmented and fragile work; advances equity research, practices, and policies
• **Integrating research-based activities and outcomes** unifies strategic planning, grant proposals, implementation, onboarding staff, evaluation, feedback loops, compliance, and long-term sustainability
• **Integrating longitudinal databases** unifies case management and Individualized Academic Plans for students, families, programs, partners, and stakeholders while increasing collective impact
A Collaboration of P-20 Alliances: 
Building ILMs for Educational Equity 
from Preschool through Graduate School to Careers

P/K → Elementary → MS → HS → Community and 4-year Colleges → Grad/Prof School → Careers

- Santa Cruz County College Commitment (S4C)
- University of California Office of the President (UCOP) 
  4th grade → to and through college
- UC Santa Cruz Educational Partnership Center
  6th grade → to and through college to careers
- Cabrillo Advancement Program (CAP) at Cabrillo College
  6th grade → to and though community/4-yr colleges to careers
- University of Colorado - Colorado Springs
  7th grade → STEM to and through college to careers
- UC Santa Cruz Hispanic-Serving Institutions
  to college → community college transfer → graduation
- Santa Cruz County Adult Education Block Grant
  Adult Ed → Community college → Career Tech Ed (CTE) to careers
Strategy 1: Integrating Social Science Theories of Change to Increase Educational Equity

• **Seven College-Going Conditions** *(Oakes, 2003)* - how equity and access to college preparation and success require: 1) safe and adequate school facilities; 2) college-going school cultures; 3) academic rigor; 4) qualified teachers; 5) intensive academic and social supports; 6) students developing multicultural college and career identities; and 7) family-neighborhood-school connections.

• **Multicontextual Model for Diverse Learning Environments** *(Hurtado & Alvarado, 2015)* – how social-historical, policy, institutional, and community contexts, including staff and faculty identities, define campus diversity climates; curricular and co-curricular learning environments shape student retention and achievement and sense of belonging, which can strengthen social equity and democratic and economic outcomes.

• **Bridging Multiple Worlds** *(Cooper, 2011)* - how culturally diverse youth navigate challenges and resources across family, peer, school, and community worlds along college and career pathways: 1) demographics of youth moving through school; 2) college/career/cultural identity pathways; 3) math and language pathways; 4) challenges/gatekeepers and resources/brokers across cultural worlds; and 5) P-20 cultural research partnerships that boost resources youth draw across worlds.
### A Common Framework for P-20 Research, Policy, and Practice in the 10-campus University of California System

(Cooper, 2011; Cooper, Mehan, & Halimah, 2007; Oakes, 2003)

<table>
<thead>
<tr>
<th>7 Conditions for Equity and Diversity in College Access (Oakes, 2003)</th>
<th>PreK</th>
<th>Elementary</th>
<th>Middle</th>
<th>HS</th>
<th>Community College &amp; University</th>
<th>Graduate &amp; Prof. schools</th>
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<tbody>
<tr>
<td>Safe and Adequate School Facilities</td>
<td>1</td>
<td>1</td>
<td>3</td>
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<td>1</td>
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<td>College-Going School Culture</td>
<td>3</td>
<td>4</td>
<td>8</td>
<td>9</td>
<td>6</td>
<td>3</td>
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<tr>
<td>Rigorous Academic Curriculum</td>
<td>3</td>
<td>5</td>
<td>9</td>
<td>8</td>
<td>4</td>
<td>2</td>
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<tr>
<td>Qualified Teachers</td>
<td>3</td>
<td>7</td>
<td>9</td>
<td>8</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Intensive Academic and Social Supports</td>
<td>1</td>
<td>3</td>
<td>9</td>
<td>8</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Opportunities for Multi-Cultural College-Going Identity</td>
<td>1</td>
<td>4</td>
<td>9</td>
<td>8</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Family-Neighborhood-School Connections</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>9</td>
<td>5</td>
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</table>

Number of UC campuses (of 10) reporting activity
Figure 3. Multicontextual Model for Diverse Learning Environments (Hurtado, et al., 2012)
Building Multiple Worlds Theory
(Cooper, 2011, Cooper et al., 2018)

The Academic Pipeline
1. Demographics of families navigating through the academic pipeline from childhood to careers

- Preschool and Kindergarten
- Primary School
- Middle School
- Secondary School
- College/Careers/Family

2. Youth developing aspirations and identities
3. Math and language academic pathways

4. Evolving constellations of resources and challenges across cultural worlds

5. Cultural Research Partnerships and Alliances from Preschool through College (P-20)
Adapting Theories and Practice to Local Realities (Gagne et al., 2018)

Bridging Multiple Worlds Theory

Demographics of refugee families
Youth aspirations and identities of refugees
Academic pathways available to refugees
Resources and challenges for refugees across worlds

Partnerships and alliances to support refugees from preschool through to post-secondary

Figure 1. Bridging Multiple Worlds - Syrian Refugee Children and Youth in Ontario (Adapted from Cooper, 2014)
## Strategy 2: Integrating Activities and Outcomes across Programs
### UCSC Educational Partnership Center: EAOP, MESA, GEAR UP, and Cal-SOAP

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Implementation</th>
<th>Outcomes and Impact</th>
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</thead>
<tbody>
<tr>
<td><strong>Needs</strong></td>
<td><strong>Resources</strong></td>
<td><strong>Activities</strong></td>
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<tr>
<td>Families</td>
<td>Families</td>
<td>Students</td>
</tr>
<tr>
<td></td>
<td>Aspirations for child’s education</td>
<td>Students</td>
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<tr>
<td></td>
<td>High % low income limited</td>
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<td></td>
<td>English educational attainment, college knowledge</td>
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<td></td>
<td>Schools Low performing; support for college enrollment, completion</td>
<td>Partners</td>
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<td></td>
<td></td>
<td>Families</td>
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<td></td>
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<td>Teachers</td>
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<td>Data analysis</td>
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</tbody>
</table>
3. Integrating Outcomes with Student-Level Longitudinal Data
Cabrillo Advancement Program (CAP) at Cabrillo College

Elementary->Middle School->HS->Community College & 4-yr College->Career

Alg 1 >College-prep > College > Community College > College Completion > Careers
courses enrollment degrees, CTE & transfer & degrees

Cal-PASS Plus – www.calpassplus.org - statewide longitudinal database of individual students’ K-12-through-college records

CAP, UC Santa Cruz, & Cal-PASS Plus merging student-level data:
- Demographics
- Program participation (Outputs)- Who came? Who was missing?
- Math & language pathways: MS>HS>college>transfer>degrees
- Alumni narratives: More than one path through college to careers
# UC Santa Cruz: A Hispanic-Serving Institution

[https://studentsuccess.ucsc.edu/hsi](https://studentsuccess.ucsc.edu/hsi)

<table>
<thead>
<tr>
<th>Activities</th>
<th>UCSC MAPA</th>
<th>SJCC-UCSC</th>
<th>HSI STEM - SEMILLA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Math</strong></td>
<td>Collaborative Math 2 – College Algebra</td>
<td></td>
<td>STEM Learning Center, LSS, ACE, College Math 3 Seminars</td>
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<tr>
<td><strong>Writing</strong></td>
<td>WORD Regional Institutes (SF, Oakland, Los Angeles)</td>
<td>Research Writing Course at SJCC</td>
<td>Writing support for internship applications</td>
</tr>
<tr>
<td><strong>Sense of Belonging</strong></td>
<td>Regional Family Conferences El Centro Internships Student Focus Groups Campus Forums</td>
<td>SJCC Student UCSC Campus Visits , Family Day</td>
<td>STEM Scholars Collaborative: ACE, MEP, STEM Diversity, LSS, EOP</td>
</tr>
<tr>
<td><strong>Advising</strong></td>
<td>Math 2 and Writing Advising, CFL/iMAP, Multicultural Competence Adviser Training</td>
<td>Transfer/Retention Counselor, Graduate Student Mentoring, Financial Literacy</td>
<td>Holistic STEM Counselors STEM Academy Career Development</td>
</tr>
<tr>
<td><strong>Transfer and Dual Enrollment</strong></td>
<td>-</td>
<td>Research Opportunities Articulation - SJCC Dual Enrollment - LALS</td>
<td>STEM Transfer Academies Articulation Review</td>
</tr>
<tr>
<td><strong>Prof Dev and Equity Analysis</strong></td>
<td>Writing and Math faculty PD</td>
<td>Faculty PD - UCSC &amp; SJCC Counselor PD - SJCC</td>
<td>STEM faculty and TA PD</td>
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<tr>
<td>Inputs/Resources and Challenges</td>
<td>Activities</td>
<td>Outputs</td>
<td>Short- and Intermediate-Term Outcomes for Latino, Low-Income, &amp; All Students</td>
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<td>--------------------------------</td>
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<td>--------------------------------------------------------------------------</td>
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<tr>
<td>U.S. Dept. of Ed, UC system, UCSC equity policy investments, practice, research, and analysis</td>
<td>Math, Writing, and STEM Pathways - College Math Redesign, College Writing Regional Institutes, ACE, Modified Supplemental Instruction, Support in gateway courses: General Chemistry, Cellular Molecular Biology, Engineering Academy, Math and Science Academy</td>
<td># students attending, frequency</td>
<td>Pass rates: Math, Writing, English Language Writing Requirement (ELWR), gateway courses to majors, upper-division</td>
</tr>
<tr>
<td>Latino and low-income students with college, career, cultural aspirations increasingly represent CA demographics</td>
<td>Sense of Belonging - Family Regional Conferences, SJCC-UCSC Family Day, El Centro Internships, Public forums, Focus groups, STEM student-led workshops</td>
<td>#, demographics of families and students attending who came and who was missing?</td>
<td>Persistence: 1st to 2nd year UCSC GPA and STEM at/above 3.0; SJCC, 2.8 # declaring STEM major</td>
</tr>
<tr>
<td>Engaged faculty, staff, administrators, students, and families</td>
<td>Advising: Early Alert, Improving My Academic Progress (iMAP), Crossing Finish Line (CFL), holistic advising, STEM Career Course</td>
<td># contacts: Early Alert, iMAP, CFL, other advising</td>
<td>Sense of Belonging: UCUES, focus groups</td>
</tr>
<tr>
<td>Community college partners</td>
<td>Transfer and Research Pathways: Connecting undergrads to research opportunities, Research Institute, STEM Transfer Scholars Program</td>
<td># in students in Research Institute # in faculty &amp; grad student mentoring # in Transfer Programs</td>
<td>Transfers: # applying from partner community colleges Research skills: poster presentations, contributing/collaborating on research</td>
</tr>
<tr>
<td>Undergrad research opportunities</td>
<td>Professional Development: Math &amp; Writing faculty, TAs, tutors, advisors</td>
<td># faculty attending # TAs earning certificates # students using faculty TA office hours</td>
<td>Transfers from partner community colleges, including STEM 3-yr graduation rate</td>
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<tr>
<td>Research team</td>
<td>Collaborative Inquiry, Equity Analysis, Integrated Logic Model</td>
<td></td>
<td>Institutional Equity, e.g., Math department investing</td>
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<tr>
<td>Information systems</td>
<td>Challenges</td>
<td></td>
<td>SJCC-UCSC cross-enrollment</td>
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</tbody>
</table>
Equity Data Analysis: Cross-Sectional Data on White/Caucasian and Latinx Students’ Grades in College Algebra

- Math 2 stretch + twice weekly sections
- No mandatory + optional sessions.
- Weekly sections + tutoring
- Intervention years
- Mandatory sections + tutoring for extra credit
Tracing Longitudinal Data with the Ribbon Tool
College Algebra Grades Fall 2010 → Graduation by Winter 2016

https://ribbon.ucdavis.edu
Towards a Shared Language across Theories, Activities, and Longitudinal Outcomes

- College-Going, Transfer, and Completion Partnerships (P-20)
- Rigorous Curriculum
- Academic and Social Support
- Multicultural College and Career Identity Pathways
- Sense of Campus and Career Belonging
- Family Partnerships
- Financial Aid
- Transfer and Dual Enrollment
- Professional Development
- Collaborative Research, Evaluation, and Equity Analysis

**Outcomes**: Increase rates & close equity gaps: enrollment, transfer-level math & English, grades, persistence, STEM majors, transfer, 6-year graduation, Graduate & professional schools
## Sketching Your Individual and Integrated Logic Models

<table>
<thead>
<tr>
<th>Needs</th>
<th>Resources</th>
<th>Activities</th>
<th>Outputs</th>
<th>Short-term</th>
<th>Long-term</th>
<th>Impact</th>
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<td>College-going, Transfer, &amp; Completion Partnerships (P-20)</td>
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<td>Rigorous Curriculum Academic and Social Support</td>
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<td>Multicultural College &amp; Career Identities</td>
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<td>Sense of Belonging Family Partnerships Financial Aid</td>
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<td>Transfer and Dual Enrollment Professional Development</td>
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<td>Research, Eval., Equity Analyses</td>
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An Invitation: Bridging Multiple Worlds Alliance
www.bridgingworlds.ucsc.edu

• Growing network of state, national, and international partners

• How immigrant, URM, and low-income youth build college and career pathways without losing ties to their families and cultural communities

• Advancing research, practice, and policy in collaboration with partners and youth themselves

• Bridging Multiple Worlds Tools (Cooper, 2011) and on website
• Roundtable on Integrated Logic Models and Databases
• Animating Pathways to College and Careers
• Cal-PASS Plus Regional Learning Collaboratives
References


References


