2022-2023 ANNUAL REPORT to the Legislature
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To the Members of the Legislature,

I am pleased to present you with the 2022-23 Annual Report for the California Education Learning Lab (Learning Lab). This report covers Learning Lab’s fifth year of operation, between Fall 2022 through Fall 2023.

During this time, Learning Lab expanded its reach: our project portfolio grew by 34 percent (from 61 to 82 funded projects), and we increased our funding commitment to almost $43 million. Our grant community now consists of 103 distinct institutions, including 58 of 116 California Community Colleges (CCCs), all 23 California State University (CSU) campuses, all 9 University of California (UC) undergraduate campuses, and central offices in all 3 segments (UC Office of the President, CSU Chancellor’s Office, and Academic Senate for the California Community Colleges). Learning Lab’s continued intentional efforts to reach CCCs through our grantmaking proved successful with 13 new CCCs leading and supporting newly funded projects.

The 2022-23 year marked some important milestones:

- Learning Lab launched the Data Science Grand Challenge, a competitive funding opportunity designed to position California as the national leader in data science undergraduate education.

- Learning Lab offered its first-ever professional development course series for grantees – on how to be a change leader in higher education.

As we reflect upon the past year and glimpse the future, we see that the current environment is a time of great change, filled with daunting challenges but also hopeful opportunities. Between the lingering impacts of COVID-19 and the acceleration of generative AI, now more than ever, attention to the teaching and learning enterprise is needed to support student success. To attend to these challenges, several new initiatives are on our horizon: an upcoming grant cycle focused on artificial intelligence; a plan to engage faculty and instructors across California public higher education; and hosting a second INSPIRE Convening: Reimagining the Future of Teaching and Learning.

As always, we are immensely grateful for the support of the Legislature, the Newsom Administration, and the Governor’s Office of Planning and Research for their support in continuing this work.

Sincerely,

Lark M. Park
Director
California Education Learning Lab
Learning Lab Overview

Our History

In 2018, Assembly Bill 1809 established the Learning Lab in order to improve learning outcomes and close equity gaps across California’s public higher education segments, particularly in the Science, Technology, Engineering, and Math (STEM) disciplines.

Housed in the Governor’s Office of Planning and Research (OPR) and administered in partnership with the Foundation for California Community Colleges (FCCC), Learning Lab funds innovative, intersegmental, faculty-led projects that leverage technology tools and the science of human learning to foster student success in online and hybrid1 learning environments.

Learning Lab’s team operates in consultation with an advisory board, OPR Leadership, and is supported by the FCCC’s administrative structure.

As Learning Lab enters its sixth year of operation, the program continues to grow its portfolio of funded projects and expand its faculty community, while creating new resources and learning opportunities for faculty and leveraging synergies across its networks to bolster individual and collective capacity for transformative change.

Partnership with the Foundation for California Community Colleges

In August 2020, OPR entered into a partnership agreement with the FCCC, a 501(c)(3) nonprofit entity that serves as the official foundation supporting the California Community Colleges Board of Governors, Chancellor’s Office, and the entire California Community College system.

The multi-year partnership agreement allows Learning Lab to utilize FCCC’s infrastructure, networks and expertise to support administration of the program, expand its reach, collaborate more closely with other higher education entities, and to grow and provide enriched supports to its grantee community.

Footnotes

1 Learning Lab takes a broad view of what qualifies as an online or hybrid course. Online courses allow students to interact, either synchronously or asynchronously, with course materials/other students/lecturers in a technology-mediated, remote environment. Hybrid courses use both online and in-person formats, with some component of the course accessible in an online environment.
Our Mission and Approach

Learning Lab’s mission to improve learning outcomes and close equity gaps to increase student success in California’s public higher education segments. The program is grounded in the premise that all students are capable learners with potential for success, and is aligned with Governor Newsom’s compacts with the University of California, California State University, and California Community Colleges. Learning Lab’s alignment with state goals includes:

1. Improving student success and advancing equity by funding faculty-led innovation in teaching and learning.
2. Increasing the affordability of higher education through the creation of open educational resources (OER).
3. Increasing intersegmental collaboration to benefit students through our grant requirements and programming.
4. Supporting workforce preparedness by focusing on high-demand career pipelines in STEM and other disciplines.

Learning Lab’s unique value is to be a testing ground for faculty innovation, foster faculty collaboration across the three segments of public higher education, generate free and low-cost resources from its funded projects, and bridge educational research and practice for the benefit of all students.

Learning Lab works across the following five areas to create a virtuous cycle in public higher education that promotes a positive feedback loop between educational research and practice:

- **Innovation**
  - Award grants to faculty to test and enhance innovative approaches to teaching and learning.

- **Theory and Research**
  - Contribute to the science of human learning through funded projects and disseminate findings to faculty and other stakeholders.

- **Community**
  - Foster collaboration across public higher education segments and build a learning network among faculty.

- **Educational Practice**
  - Collect and promote data-driven teaching and learning practices (e.g., inclusive, culturally relevant pedagogy)

- **Educational Policy**
  - Leverage findings or evidence from Learning Lab projects to influence California educational policy.
Each year, Learning Lab assembles a unique group of individuals with expertise in higher education, philanthropy, and/or workforce to guide the program. In 2022-23, Learning Lab’s Advisory Board consisted of the following higher education leaders:

**LANDE AJOSE**
Managing Director &
Chief of Staff, Waverley
Street Foundation

**CHRISTOPHER CABALDON**
Commissioner, Western
Interstate Commission on
Higher Education and
Partner, Capitol Impact

**MICHAEL DENNIN**
Vice Provost for Teaching &
Learning & Dean, Division of
Undergraduate Education,
UC Irvine

**SANDRA FRIED**
Vice President,
Success Center,
Foundation for California
Community Colleges

**JEFF GOLD**
Associate Vice Chancellor,
California State University
Chancellor’s Office

**LAURA HOPE**
Interim President /
Superintendent,
College of the Desert

**ELOY ORTIZ OAKLEY**
President & CEO,
College Futures
Foundation

**CANDACE THILLE**
Associate Professor
and Faculty Director
for Workforce and
Adult Learning,
Stanford University
2022-2023 Achievements

- Launched a competitive funding opportunity inspired by the National Academies of Sciences, Engineering, and Medicine’s Data Science for Undergraduates report, and informed by interviews with key stakeholders and extensive research on data science initiatives in California.
- Awarded an additional $8,895,000 to 20 project teams through a total of three competitive funding opportunities.
- Expanded reach to 16 new California community college entities (including three district entities), and 2 new California State Universities for a total reach of 103 unique institutions – an increase of 21% over the previous year.
- Formalized the $4 million award ($1 million/year over four years) included in the 2022 Budget Act to UC Davis to fund the expansion of a free, online, adaptive learning homework system (ADAPT).
- More than doubled the cumulative number of faculty that our funded projects aim to engage from 2,400 to 5,900.
- Increased the number of students that our funded projects aim to engage since Learning Lab’s inception to 87,000, a 78% increase over figures reported by project teams at this time last year.
- Grew direct grantee community from 310 to more than 480 faculty and key personnel leading Learning Lab projects.
- Developed a unique professional development program on change leadership and an onboarding program for grantees.

480+
FACULTY AND KEY PERSONNEL LEADING FUNDED PROJECTS

$42.7 MILLION IN COMMITTED FUNDING
82 FUNDED PROJECTS
103 FUNDED HIGHER EDUCATION INSTITUTIONS
Seeding Strategies (II)

In 2022, in response to the broad need for redesigning courses and pathways to calculus, Seeding Strategies (II) to Close the Calculus Equity Gap was released as a second round of funding, expanding the reach of the initial Seeding Strategies (I) funding opportunity from 2021-22. This second round of funding mirrors the first in that it is designed as a department-level funding opportunity to encourage the implementation of select promising curricular and pedagogical strategies (detailed below) to close equity gaps based on research highlighted in the report commissioned by Learning Lab, “Charting a New Course: Investigating Barriers on the Calculus Pathway to STEM”.

This opportunity was open to first-time applicants from the CCCs, CSUs, and UCs as well as those who began an application in response to Seeding Strategies (II) or submitted an application and did not receive an award. Seeding Strategies (II) offered grants of up to $100,000 per project team for up to two years. As with Seeding Strategies (I), Seeding Strategies (II) aimed to attract applicants from CCCs.

1. Course coordination within a department.
2. Redesign placement practices and/or course(s) in the prerequisite pathway or streamline the pathway.
3. Redesign calculus for disciplines such as life sciences or computer science.
4. Re-sequence course content.
5. Integrate active learning and enhance the learning environment.
6. Institutionalize professional development and/or community of practice.
Seeding Strategies (II) Awards

Six grants were awarded to five CCCs and one UC, all located in the greater Southern California region, with a total of $525,000 in committed funding. Together, these projects aim to engage more than 60 instructors and impact more than 2,500 students over the two-year grant period. Nearly all of the Seeding Strategies (II) projects are implementing multiple promising curricular and pedagogical strategies, with half of the projects implementing active learning strategies or professional development/community of practice activities.

<table>
<thead>
<tr>
<th>REGION</th>
<th>PROJECT TITLE</th>
<th>HOST INSTITUTION</th>
<th>PROJECT STRATEGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>INLAND EMPIRE</td>
<td>A New Approach to Calculus for Future Physicists and Engineers</td>
<td>UC Riverside</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Development of Responsive, Contextualized Pre-Calculus Teaching and Learning Lessons</td>
<td>Riverside City College</td>
<td>✓</td>
</tr>
<tr>
<td>LOS ANGELES</td>
<td>Equity-Minded Redesign of the Calculus Pipeline</td>
<td>Citrus College</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Closing Calculus Equity Gaps in Early Courses through Promising Strategies</td>
<td>Santa Clarita Community College District</td>
<td>✓ ✓</td>
</tr>
<tr>
<td></td>
<td>Active Learning Strategies (ALS) Workshop for STEM Math Faculty²</td>
<td>El Camino College</td>
<td>✓</td>
</tr>
<tr>
<td>ORANGE COUNTY</td>
<td>Closing Equity Gaps in Calculus with OER and Support</td>
<td>Santa Ana College</td>
<td>✓</td>
</tr>
</tbody>
</table>

Footnotes

² This project received $25,000 as an initial award with the opportunity for additional funding, up to $100,000 combined, at a later date.
Data Science Grand Challenge

Learning Lab released the Data Science Grand Challenge grant opportunity in fall 2022 to incentivize California’s public higher education institutions to embrace data science as an opportunity to develop new pathways and offerings that will modernize majors, attract historically underrepresented students into STEM, and deepen both civic and interdisciplinary learning.

Recommendations from the National Academies of Sciences, Engineering, and Medicine’s (NASEM) Data Science for Undergraduates (DS4U) report informed the foundations of this Grand Challenge, providing both rationale and guideposts relative to the following grant opportunities:

- **Pathways Development**: ~$1.3 million, Duration over 3-4 years, Up to 3 awards
- **Faculty Development**: ~$200K to ~$350K, Duration over 2-3 years, Up to 5 awards
- **Interdisciplinary Collaboration**: ~$100k to ~$200K, Duration over 2-3 years, Up to 9 awards
- **Grand Challenge Cohort Coordinator**: Up to $500k, Up to 5 years, 1 award

Through this RFP, Learning Lab aimed to promote the buildout of a data science educational infrastructure that will further educate and engage faculty, support intersegmental collaboration, and create both clarity and plenty in the options students can pursue for their interest and future careers, with California as a leader in data science undergraduate education.

Learning Lab awarded 12 project grants and a cohort coordinator grant to facilitate grantee collaboration, with a total of $8,070,000 in committed funding.

In 2016, NASEM convened a committee to “set forth a vision for the emerging discipline of data science at the undergraduate level.” NASEM’s DS4U report emphasizes the “educational challenge” that exists with the need to prepare graduates for a broad array of careers. Underlining the importance of data science in the modern world, the report states: “The ability to measure, understand, and react to large quantities of complex data can shape scientific discovery, social interaction, political interactions and institutions, economic practice, public health, and many other areas.”
Selection Committee Members

For this grant opportunity, Learning Lab recruited a seven-member selection committee that brought decades of pedagogical and curricular experience from teaching within all three California public higher education segments. Their collective professional backgrounds included developing and implementing innovative programming and teaching strategies that promote student equity and broadly represented multiple disciplines within STEM fields and industries such as data science, geography, biology, physiology, computer science, mathematics, statistics, and learning science.

KATHY KUBO
Mathematics Instructor, College of the Canyons
Professor Kubo’s expertise includes redesigned statistics pathways; faculty training programs; transforming remediation; statistics education and courseware; and best practices in pedagogy for teaching introductory statistics.

KATHRYN LEONARD, PH.D.
Associate Dean for Curricular Affairs and Professor Computer Science, Occidental College
Dr. Leonard’s expertise encompasses curriculum management; undergraduate research; and best practices in pedagogy. Dr. Leonard also has an extensive background in increasing representation in the computational sciences, particularly for minoritized genders.

RACHEL LEVY, PH.D.
Executive Director, Data Science Academy, North Carolina State University
Dr. Levy is an international leader in data science education. Dr. Levy’s experiences include research in applied mathematics, education, and professional development; teaching as an interdisciplinary educator; and education policy.

KELLY MACK, PH.D
Vice President for Undergraduate STEM Education and Executive Director of Project Kaleidoscope, American Association of Colleges and Universities
Dr. Mack is a leader in STEM education reform, working to improve the quality of and inclusion in STEM through faculty professional development. Dr. Mack taught as a Professor of Biology for nearly two decades and has an extensive background in cancer research.
**Atsushi Nara, Ph.D.**  
Associate Professor, Department of Geography, Associate Director, Center for Human Dynamics in the Mobile Age, Faculty Member, Big Data Analytics  
Dr. Nara’s expertise lies in data collection, data integration, database management, sensor technologies, and software development for research. Dr. Nara has supported the development of important initiatives such as a school-to-college curriculum pathway in geocomputation education and a data center and health science knowledge repository.

**BOB PELAYO, PH.D**  
Associate Professor of Teaching, UC Irvine  
Dr. Pelayo’s expertise lies in novel curriculum development, and he has led several grants focused on pedagogical and curricular interventions. Dr. Pelayo led the development of the new AP Precalculus course and exam and founded the Data Science program at his previous institution, the University of Hawai`i at Hilo.

**CANDACE THILLE, PH.D**  
Associate Professor, Stanford University  
Dr. Thille’s expertise and longstanding career resides in applying the results from learning science research to the design and evaluation of technology mediated learning environments, and in using those environments to conduct research at the intersection of human and machine learning. Dr. Thille was previously Amazon’s director of learning science and the founding director of the Open Learning Initiative at Carnegie Mellon University and at Stanford University.

**Awards**

Nearly 70 unique institutions from the three public higher education segments were part of 43 project teams that applied for the grant opportunity, and ultimately 34 unique institutions were included as part of the 13 awarded projects.

Collectively, the 13 awarded projects hope to include almost 800 faculty and reach more than 55,000 students over the next five years.
### Pathways Development Grants

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>HOST INSTITUTION</th>
<th>PARTNER INSTITUTION</th>
<th>AWARD AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIPE-LINE</td>
<td>CSU Fullerton</td>
<td>UC Irvine, Riverside City College, &amp; Rio Hondo College</td>
<td>$1.275M</td>
</tr>
<tr>
<td>INCLUDE</td>
<td>CSU East Bay</td>
<td>Chabot College, Skyline College, &amp; Laney College</td>
<td>$1.13M</td>
</tr>
<tr>
<td>GLADS-PATH</td>
<td>UC Riverside</td>
<td>CSU San Bernardino, Cal Poly Pomona, Riverside CCD, Riverside City College, Moreno Valley College, Norco College, Chaffey College, &amp; Pasadena City College</td>
<td>$1.275M</td>
</tr>
<tr>
<td>Southern California Data Science Consortium</td>
<td>UC Santa Barbara</td>
<td>CSU Channel Islands, CSU Long Beach, Cal Poly Pomona, San Diego State, Long Beach City College, LA City College, &amp; San Diego Mesa College</td>
<td>$1.3M</td>
</tr>
<tr>
<td>Building Inclusive and Collaborative Foundations in Data Science</td>
<td>UC Berkeley</td>
<td>UC Merced, City College of San Francisco, Laney College, &amp; Berkeley City College</td>
<td>$450K</td>
</tr>
</tbody>
</table>

### Faculty Development Grants

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>HOST INSTITUTION</th>
<th>PARTNER INSTITUTION</th>
<th>AWARD AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhancing Data Science Teaching Capacity</td>
<td>El Camino College</td>
<td>UC Berkeley</td>
<td>$350K</td>
</tr>
<tr>
<td>Community of Networking Faculty Investigating Data Ethics</td>
<td>Cal Maritime Academy</td>
<td>Solano Community College</td>
<td>$260K</td>
</tr>
<tr>
<td>Building Data Science Communities for Improving Student Success</td>
<td>UC Santa Cruz</td>
<td>CSU Monterey Bay</td>
<td>$345K</td>
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</table>

### Interdisciplinary Collaboration Grants

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>HOST INSTITUTION</th>
<th>PARTNER INSTITUTION</th>
<th>AWARD AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Curiosity to Career Readiness: Embedding Data Science in Sociology</td>
<td>CSU San Marcos</td>
<td>--</td>
<td>$200K</td>
</tr>
<tr>
<td>Engaging Students through Relevant, Accessible Data Science Applications</td>
<td>Cal Poly Humboldt</td>
<td>--</td>
<td>$200K</td>
</tr>
<tr>
<td>Building and Bridging Data Science in Solano County</td>
<td>Cal Maritime Academy</td>
<td>--</td>
<td>$185K</td>
</tr>
<tr>
<td>Collaborative Design of Introductory Data Science Course Modules</td>
<td>UC Merced</td>
<td>UC Berkeley &amp; Laney College</td>
<td>$200K</td>
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### Cohort Coordinator Grant

<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>HOST INSTITUTION</th>
<th>PARTNER INSTITUTION</th>
<th>AWARD AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohort Coordinator for Data Science Education</td>
<td>UC Berkeley</td>
<td>--</td>
<td>$900K</td>
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</tbody>
</table>
In spring 2023, a follow-on grant opportunity was offered to grantees that had received a prototype award as part of the Grand Challenge: Overcoming the Calculus Barrier to STEM Success that was launched in 2021. Through the original opportunity, four applicants that did not receive a full grant award were offered a prototype award of $100,000 each to implement a demonstration of their original project proposal, which included a new, innovative way to teach calculus, or reimagine the role of calculus in STEM majors where calculus is a prerequisite.

All four projects concluded in 2023, and Learning Lab invited each team to apply for follow-on funding to support the design and implementation of scaling activities, building upon accomplishments of their prototype projects. Two proposals were received and based on expert review, one proposal was approved for a $300,000 award over two years. The project, Growing Grading for Growth in STEM, a partnership between CSU Monterey Bay and Hartnell College, will expand the use of Standards Based Grading (SBG) from Calculus I to other STEM courses (including courses up and down the Calculus pathway) and grow the number of faculty using SBG at both institutions and across the region. In addition, the project will scale up and improve data collection, using lessons learned to improve the assessment of SBG in Calculus I and other courses.
Learning Lab, through competitive funding opportunities\(^3\), has awarded grants in three broad categories: 1. Larger dollar amounts for 3-4 year projects geared toward more robust innovation and addressing "grand challenges" that require several approaches in a single project, 2. Moderate dollar amounts for 2-3 years for projects to foster faculty professional development, interdisciplinary collaboration, or support focused institutional change efforts, and 3. Smaller dollar amounts for 1-2 years to seed innovative ideas and support proof-of-concept projects. One exception to these broader categories has been the Cohort Facilitator and Coordinator grants, which support single teams charged with fostering collaboration among the Grand Challenge project cohorts.

<table>
<thead>
<tr>
<th>GRANT AWARD AMOUNT</th>
<th>DURATION</th>
<th># of AWARDS</th>
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<tbody>
<tr>
<td>2018-19</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Innovation</strong></td>
<td></td>
<td></td>
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<tr>
<td>Demonstration Project</td>
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<td></td>
</tr>
<tr>
<td>$1M-$1.3M</td>
<td>3 years</td>
<td>6 projects</td>
</tr>
<tr>
<td>$500K</td>
<td>3 years</td>
<td>3 projects</td>
</tr>
<tr>
<td>2019-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Innovation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Development</td>
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<td></td>
</tr>
<tr>
<td>$1M</td>
<td>3 years</td>
<td>5 projects</td>
</tr>
<tr>
<td>$200K</td>
<td>2 years</td>
<td>5 projects</td>
</tr>
<tr>
<td>$100K</td>
<td>2 years</td>
<td>6 projects</td>
</tr>
<tr>
<td>Institutions Change</td>
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<td></td>
</tr>
<tr>
<td>$500K-$650K</td>
<td>2-3 years</td>
<td>5 projects</td>
</tr>
<tr>
<td>2020-21</td>
<td></td>
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</tr>
<tr>
<td>Calculus Grand Challenge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$1.25M-$1.4M</td>
<td>3 years</td>
<td>4 projects</td>
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<tr>
<td>Calculus Grand Challenge Cohort Facilitator</td>
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<td>$500K</td>
<td>3 years</td>
<td>1 team</td>
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<tr>
<td>Calculus Grand Challenge Prototype</td>
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<tr>
<td>$100K</td>
<td>1 year</td>
<td>4 projects</td>
</tr>
<tr>
<td>2021-22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seeding Calculus Strategies (I)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$100K</td>
<td>2 years</td>
<td>15 projects</td>
</tr>
<tr>
<td>Scaling Success</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$200K-$700K</td>
<td>2 years</td>
<td>7 projects</td>
</tr>
<tr>
<td>2022-23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seeding Calculus Strategies (II)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$100K(^4)</td>
<td>2 years</td>
<td>6 projects</td>
</tr>
<tr>
<td>Data Science Grand Challenge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$185K - $1.3M</td>
<td>2-4 years</td>
<td>12 projects</td>
</tr>
<tr>
<td>Data Science Cohort Coordinator</td>
<td></td>
<td></td>
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<tr>
<td>$900K</td>
<td>5 years</td>
<td>1 team</td>
</tr>
<tr>
<td>Calculus Grand Challenge Prototype Scaling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$300K</td>
<td>2 years</td>
<td>1 project</td>
</tr>
</tbody>
</table>

### Footnotes

\(^1\) Not included in the following section is the ADAPT project, an award of $1M/year over four years to UC Davis to expand a free online homework system in development. This award was made under a separate agreement as part of Learning Lab’s legislatively authorized budget augmentation over four fiscal years. This section details awards made through Learning Lab’s competitive funding opportunities only.

\(^2\) One institution received $25,000 as an initial award with the opportunity for additional funding, up to $100,000 combined, at a later date.
In alignment with its mission to improve undergraduate education across all of California’s public higher education segments, Learning Lab strives to achieve disciplinary\(^5\), geographic, and institutional diversity among awarded projects.

### Disciplinary Distribution

Learning Lab’s focus on the buildout of a data science educational infrastructure through the *Data Science Grand Challenge* contributed to the pronounced increase (by 186\%) in the number of funded projects in the Computer & Data Science category. Also spurred by this funding opportunity was funding to Non-STEM disciplines such as business and sociology, as projects were invited to explore curricular collaboration between data science and application domains and/or across domains in the social sciences.

Across Learning Lab’s grant portfolio, there continues to be a concentration of projects in the Math & Statistics category given Learning Lab’s strategic focus on addressing the calculus equity gap primarily through the *Calculus Grand Challenge* and *Seeding Strategies (I & II)* funding opportunities.

(Note: Projects spanning more than one discipline\(^6\) are counted in each of the respective categories. Though math and statistics is inherent to data science, no Data Science Grand Challenge projects are included in the Math & Statistics category).

<table>
<thead>
<tr>
<th>Disciplinary Distribution of All Learning Lab Funded Projects</th>
<th>5 Projects Include Non-STEM Disciplines</th>
<th>8 Projects Include Chemistry</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 Projects Include Biology</td>
<td>9 Projects Include Physics &amp; Engineering</td>
<td>20 Projects Include Computer &amp; Data Science</td>
</tr>
<tr>
<td>38 Projects Include Math &amp; Statistics</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Footnotes**

5. Learning Lab’s focus was on STEM in the initial years, pursuant to statutory direction, but non-STEM disciplines were engaged with 2022-23 grantmaking and will continue to be moving forward.

6. For data collection purposes, Learning Lab has used the following STEM discipline categories: Physics & Engineering, Biology, Chemistry, Computer & Data Science, Math & Statistics, Non-STEM is a new category.
Most projects (72%) are those that impact just one discipline. The rest fall into three categories:

1. Multidisciplinary projects are those that test and deploy a project in more than one discipline.
2. Interdisciplinary projects are those in which faculty across multiple disciplines collaborate on a project intervention.
3. All STEM projects’ interventions impact faculty and/or students in any STEM discipline.

(Note: For the purposes of this graph, data science was counted as a single discipline, unless collaboration with a discipline outside of math or statistics was present.)

Segmental and Geographic Distribution

Segmental

With the award of 2022-23 grant funds, the number of Learning Lab institutional partners increased to 103 unique institutions. We’re proud to have reached 100% of CSUs in the past year and to expand the number of CCCs in our portfolio by 29%. CCCs made up 53% of institutions involved in projects funded in the last year - a direct reflection of Learning Lab’s efforts to encourage and support participation from CCCs.
Geographic

Learning Lab’s projects continue to be concentrated in historically populous areas such as the Bay Area and Los Angeles, as shown in the table below. Through the Data Science Grand Challenge, however, Learning Lab’s reach into the Inland Empire doubled from four institutions to eight.

Funding Distribution

Learning Lab awarded $8.9 million across our competitive funding opportunities in 2022-23, bringing its total committed, competitively awarded funding to date to $38.7 million.

Footnotes

\(^7\) See footnote 3 on page 13 for more information about the ADAPT project, not included in data produced for this section.
Project Dashboard

Learning Lab’s interactive Tableau dashboard provides a visual overview of Learning Lab grantee projects and funding allocations. Improved sorting features allow viewers to disaggregate allocations and projects by the geographical regions they serve, segmental and project team affiliations, and by grant years or cycles. The dashboard, accessible through the Learning Lab website, is updated regularly and is an active reflection of Learning Lab’s reach.

Learning Lab Project Dashboard

Funding by Segment

Awards across Learning Lab’s 2022-23 competitive funding opportunities were allocated fairly equitably: 31% to CCCs, 34% to CSUs, and 35% to UCs. Cumulatively, there was a similar balance among segments for grants awarded since 2018-19: 30% to CCCs, 33% to CSUs, and 34% to UCs. Learning Lab continues to make concerted efforts to encourage funding balance among segments.

Footnotes

9 See footnote 3 on page 13 for more information about the ADAPT project, not included in data produced for this section.
Cumulative Grant Allocation by Segment
2018-19 through 2022-23
($38.7M)

Cumulative Funding by Budget Category
2018-19 through 2022-23

Grant Allocation by Segment
2022-23 Fiscal Year
($8.9M)

Cumulative Grant Allocation by Segment
2018-19 through 2022-23
($38.7M)

Host Institutions by Segment
Cumulative 2018-19 through 2021-22 vs. 2022-23

Personnel 70%
Indirect Costs 7%
Consultants 7%
Other Direct Costs 12%
Travel 3%

CCC 31%
UC 35%
CSU 34%

CCC 30%
UC 34%
CSU 33%

0 5 10 15 20 25 30

CCC Hosts 7
CSU Hosts 16
UC Hosts 16

2022 2023
Project Evaluation Synthesis

All grant projects are required to provide final evaluations that capture key lessons learned, outcomes, and project impacts as evidenced by quantitative and qualitative data. Grantees utilize an evaluation reporting template developed by Learning Lab, modeled after a report format used by the National Science Foundation.

In 2022-23, Learning Lab received its first wave of final evaluations since the program’s inception for the 28 projects\(^\text{10}\) that had concluded. In alignment with statutory requirements of AB 1809 (2018) that allow for a combined reporting of funded project evaluations, in July of 2023 Learning Lab proceeded to analyze the impacts and other findings across all closed projects. An evaluation synthesis report has been completed and presents analysis of project evaluations organized by grant cohort, giving context within which projects were conducted and the types of interventions implemented by project teams. The report includes an overview of the breadth of project objectives and findings, interprets qualitative and quantitative measures of success, describes the impacts of COVID-19 and other common obstacles, and highlights successes and lessons learned. The report is available [here](#).

Project Spotlights

The 28 Learning Lab projects included in the evaluation synthesis report were implemented in the three-year period between FY 2019 and FY 2022. Most projects faced unprecedented challenges to project implementation, including data collection, due to interruptions related to COVID-19. Project teams confronted these difficulties with creativity and fortitude, pivoting to address unanticipated educational contexts. Overall, all grantee teams tested new approaches to teaching and learning, created Open Educational Resources (OER) (student- and/or faculty-facing), and gained valuable lessons from their efforts to improve student learning. What follows are outcomes and findings from a subset of closed projects included in the synthesis report, selected to represent the range of disciplines, grant types, higher education segments, and geographic scope of Learning Lab’s funded projects.

Footnotes

\(^{10}\) Note: one project included in the project evaluation synthesis, Mechanics of Inclusion and Inclusivity in Mechanics, completed and submitted a final evaluation, but was also granted an extension until August 2024. It is currently conducting additional demonstration and data collection activities and will produce an addendum.
Reorienting Formative and Summative Assessment Towards Mastery Learning for Learner Success, Student Equity, and Institutional Resilience

**PROJECT DESIGN**

This project developed and deployed paradigm-based question generators (PQGs). A PQG is a piece of computer code that captures the “essence” or paradigm underlying a specific problem type and can generate randomized question instances from it. These questions can be presented, and student answers collected, through a Web browser. Since the PQG “knows” the correct answer to each generated problem, it can give the student immediate feedback. This was used both to provide more homework practice problems and to generate different exam variants for each student or for giving students “second chance” make-up exams. PQGs were deployed in computer science courses to evaluate their effectiveness in promoting mastery learning compared to earlier offerings of those courses without PQGs. After implementation, courses instituted an “F’s for none” policy, and eventually an “A’s for all” policy, wherein if students took an assessment and received a grade they found unsatisfactory, they were allowed to continue to work and take re-assessments until they achieved the grade they aspired to. All PQGs developed were made available as OER. In addition to promoting mastery learning, this project aimed to facilitate cross-institutional sharing of pedagogical materials and help close equity gaps.

**CHALLENGE**

Formative assessment refers to in-process evaluations of student comprehension, learning needs, and academic progress, such as labs or homework assignments. Summative assessment refers to an instantaneous measurement of what a student has actually mastered, i.e., exams. In STEM higher education, both are usually conducted in a manner that thwarts mastery learning: feedback time for homework grading can be long depending on instructor availability, exams are complex to prepare and administer and therefore must be taken at a fixed time, giving students only “one shot” to demonstrate knowledge even though the exam may represent a significant portion of their final grade. In contrast, mastery learning allows for “constant learning over variable time”—some students may take longer than others to reach the same level of mastery, but they can eventually do so with increased practice and instructor support. A wide body of literature supports the effectiveness of mastery learning for student success. The challenge with implementing mastery learning is that developing more practice problems (formative assessment) and providing more opportunities for summative assessment require significant instructor effort, both to create the materials and give students feedback on their performance. As a result, many students who could have benefited from additional practice do not get the chance.

**EVIDENCE OF IMPACT**

The percentage of students who would have otherwise failed had they not been allowed to re-take assessments was higher for underrepresented minoritized (URM) students than for women, and higher for women than for majority-group students. Under the “A’s for all” policy, URM students and women benefitted at a higher rate than majority-group students: 45% of URM students (vs. 31% of non-URM) and 55% of women (vs. 52% of non-female identifying students) benefited from this policy. There were significant gains in student learning outcomes for underrepresented students, with every URM student group achieving a 3.0/B-average for the first time in the history of the class. There was an observed increase in enrolled Latinx students upon offering PQGs, averaging around 24% of the overall student body of the courses (compared to an average of around 9% before). An increase in the percentage of women enrolled in the course was also observed, going from 52% to 72%, its highest number in history. Additionally, four courses outside of the pilot were recruited to the program, expanding PQGs application to other STEM courses. All students who desired to pass the pilot course did so. This project is now being expanded under a Scaling Grant from Learning Lab.

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**Footnotes**

11 In this project, underrepresented groups were defined as women, Latinx, and African American students.
EVIDENCE OF IMPACT

The grantee team examined course drop, fail, and withdrawal (DFW) rates, GPA's, retention rates, and student access rates of developed materials. At SSU, there was a reduction of GPA differences between USM and NUSM students, and the USM DFW rates decreased by 13%. At DVC, there was an increase in retention rates and success rates (grade of A, B, C, or passing). Preliminary findings show that students using these materials in introductory chemistry have done relatively well in their immediately subsequent chemistry course.

Surveys were administered to participating students to gauge sentiment on the following factors: ability to bounce back from setbacks; diligent skepticism; intellectual courage; collaboration, making connections, and team pulse; final course reflection; sense of belonging; and what students believe is required to be successful in chemistry. Results showed increases in confidence, ability to understand difficult concepts, and intellectual courage. Self-assessment surveys were also distributed to faculty to gauge perspectives and mindsets before and after the professional development program, and results indicated increased understanding of achievement gaps in their classroom and systemic inequities that give rise to these gaps and faculty willingness to change their teaching pedagogy. A STEM Learning Community Coordinator position at COM was also given full funding, and it has been institutionalized and integrated into the student campus culture.

CHALLENGE

Evidence shows that underserved minority (USM)12 students leave science in greater numbers than non-USM (NUSM) students. To address the outflow, numerous programs are offered outside of the classroom to support disadvantaged students and narrow the achievement gap. These efforts do not get to the root of the problem: what happens inside the classroom for underserved and first-generation students. Traditional narratives around STEM culture suggest that what counts is innate talent, recalling copious information, and being quick and correct. The traditional design of STEM courses perpetuates these narrow views, which disproportionately impact students historically underserved in STEM. Existing cultural assumptions that act as barriers to student learning and to students’ sense of belonging in chemistry are as follows: 1) Chemistry is primarily a body of knowledge (to understand), and learning chemistry is primarily about memorizing this established knowledge. 2) There is one correct approach to learning chemistry or solving a chemical problem. If you do not get the correct answer, you did not follow the correct approach. 3) Learning chemistry requires being taught by an expert or learning from outside sources who have figured it out; a student’s job is to listen, memorize, and try to understand. 4) Some people have an innate “smartness” making them good at chemistry. Some people do not have this innate smartness, and those people can never succeed in chemistry. 5) Faculty today were educated in a primarily lecture-based format, leading to the assumption that if they learned well that way, so can today’s students.

PROJECT DESIGN

The project was built around three aims: engaging students; developing chemistry content for change; and helping faculty support STEM learning. The project team established a student-facing STEM Learning Community. It developed a collection of content modules with data tasks grounded in data analysis and critical thinking, integrating group-worthy practice-centered tasks and units centered around non-traditional, non-linear questions that could be explored both experimentally and by application of models, thus inviting a variety of experiments and/or models to answer. Finally, it created a series of faculty workshops to demonstrate how to bring about shifts in student mindset, enhance a sense of belonging in STEM, and improve student learning outcomes in authentic scientific practice, emphasizing raising awareness of the role of implicit bias affecting student outcomes and exploring the role that “smartness” plays in making vulnerable students feel excluded from the process of learning. In addition, activities were designed to provide guidance for faculty to implement more equitable instructional practices.

HOST
College of Marin (COM)

Partners
Diablo Valley College (DVC)
UC Berkeley (UCB)
Sonoma State (SSU)

Award
$1,299,903

Duration
2019-2022

EVIDENCE OF IMPACT

The grantee team examined course drop, fail, and withdrawal (DFW) rates, GPA’s, retention rates, and student access rates of developed materials. At SSU, there was a reduction of GPA differences between USM and NUSM students, and the USM DFW rates decreased by 13%. At DVC, there was an increase in retention rates and success rates (grade of A, B, C, or passing). Preliminary findings show that students using these materials in introductory chemistry have done relatively well in their immediately subsequent chemistry course. Surveys were administered to participating students to gauge sentiment on the following factors: ability to bounce back from setbacks; diligent skepticism; intellectual courage; collaboration, making connections, and team pulse; final course reflection; sense of belonging; and what students believe is required to be successful in chemistry. Results showed increases in confidence, ability to understand difficult concepts, and intellectual courage. Self-assessment surveys were also distributed to faculty to gauge perspectives and mindsets before and after the professional development program, and results indicated increased understanding of achievement gaps in their classroom and systemic inequities that give rise to these gaps and faculty willingness to change their teaching pedagogy. A STEM Learning Community Coordinator position at COM was also given full funding, and it has been institutionalized and integrated into the student campus culture.

Footnotes
12 In this project, underserved minority students (USM) were defined as those who identify as Black, Latinx, or Native American. Non-underserved minority students (NUSM) consists of all other students.
Increasing Student Flow and Success Along Intersegmental STEM Program Pathways

**HOST**
Bakersfield College (BC)

**PARTNERS**
UC Merced (UCM)
Merced College (MC)

**AWARD**
$500,000

**DURATION**
2020-2022

**CHALLENGE**
Too few California community college students transfer into STEM programs at the University of California. The transfer process and coursework requirements are confusing to students. Accumulating too many units has historically been a widespread problem among community college transfer students, particularly those pursuing STEM programs of study. Course catalogs contain all of the necessary information for students to successfully navigate a program pathway, in theory. In reality, the lists of possible options as well as prerequisites and antirequisites\(^1\) can be very intimidating and difficult, particularly for first-generation students. Additionally, even though some course selections may be technically correct, they may be poor choices for a variety of practical reasons that most students would have little insight into. Simple missteps in sequencing often add additional semesters or even years to a student’s time to completion resulting in wasted time, unnecessary unit accumulation, and increased risk for changing majors or simply dropping out. Additionally, research has shown that when students are able to perceive a clear pathway to and through college, including transfer, degree completion, and future employment, they experience increased program retention, completion, and long-term success.

**PROJECT DESIGN**
This project had two major areas of work: 1) cultural and 2) technical. The cultural work centered on bringing together professors from UCM, BC, and MC to work collaboratively and align course maps of lower-division, community college coursework with upper-division, university coursework. This resulted in continued buildout of an online tool previously developed by BC called the Program Pathways Mapper (PPM), which provides program maps that clearly mark out viable, well-considered sets and sequences of courses that have been developed and approved by discipline faculty in consultation with advisors and counselors. It also developed an online course, The UC STEM Transfer Experience, in the Canvas LMS, co-taught by university and community college professors in order to help science students who are transferring from community college connect their knowledge and learning to the standards and approaches that they will encounter at the university level and providing contextualized knowledge specific to the STEM discipline pathway that the student is on.

**EVIDENCE OF IMPACT**
The project team tracked numbers of transfer students and Google Analytics on usage of the PPM site. Data showed a large and, so far, durable jump in community college transfer students to UCM and continued growth of numbers in access of the PPM site. There was also a high degree of external engagement, including connecting with Central Valley Higher Education Consortium (CVHEC), which resulted in CVHEC becoming a regional champion of the PPM in the Central Valley and $25 million in new funding from the 2022-2023 state budget to support the scaling of intersegmental program pathway mapping across the segments.

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Footnotes
\(^1\) In contrast to a prerequisite, which must be completed before a course is taken, an antirequisite for a course cannot be completed before the course is taken (source: UC Santa Cruz).
Closing Equity and Access Gaps in Discrete Mathematics

**HOST**
San José State

**PARTNERS**
San Francisco State, College of Alameda, Evergreen Valley College, Foothill College, Hartnell College, Mission College, West Valley College

**AWARD**
$100,000

**DURATION**
2020-2022

### CHALLENGE
Discrete mathematics is a critical course for students seeking bachelor’s degrees in mathematics, computer science, and software engineering. It has a long history of inequitable outcomes, barring access to advanced studies for groups marginalized in U.S. society’s majority culture. Discrete mathematics is different from most prerequisite courses that precede it in two ways. First, success in discrete mathematics depends on students synthesizing and applying what they have learned across years and across courses (e.g., combinatorics, algebra, geometry, calculus). Second, course success requires new perspectives on proof and validation of argument (e.g., inductive versus deductive arguments and when to apply each). Students entering discrete mathematics have experience in classes where computation and algorithmic problem solving are emphasized and most students have internalized the idea that the authority to determine what is right or wrong in mathematics lies with their textbook, their instructor, or software. For many students, discrete mathematics is a first exposure to formal logical reasoning and a first opportunity to prove mathematical theorems and falsify or validate a purported proof. Such work can be particularly challenging for students who do not already have a scaffold for risk-taking (e.g., a sense of belonging in a mathematics classroom or fluency with the specific mathematical discourse used).

### EVIDENCE OF IMPACT
This project was successful in forming a productive working group and CSU-CC partnership to test reforms in discrete math instruction. The grantee team conducted a feasibility study on the tested interventions, looking at usability in context and how that might contribute to sustaining the program and implementing at other sites, gathering data through surveys (of team members, instructors, students, classroom visitors), observations (of team dynamics and online classes), and document analysis and review (of team reflections, student-facing materials, instructor roadmaps, and student artifacts generated during lessons) to gauge the following four feasibility factors: technical, organizational, support, and usability. Data was converted to a numeric score, with a threshold of 2.4 out of 3 indicating feasibility. The technical, support, and usability factors were below threshold; however, this was expected for the most part. The rating for the support factor was unsurprising because this was a small seed project and the majority of efforts were focused on planning and materials development, not support. Similarly, full technical feasibility was not expected at this stage, as this project was in the pilot phase (and technical feasibility is expected to be achieved during a scaling phase). Organizational feasibility was above this threshold, and as organizational and system change was a priority for the project, this was an encouraging result. The project team also drafted a streamlined C-ID that will be proposed in upcoming state-level C-ID revision discussions, a positive outcome for the project’s focus on system change. Student surveys gathered data on sense of belonging (student perceptions of the overall experience of working on math with others in small groups/breakout rooms), access (student perception of the pace of the lesson), and satisfaction with the course. This survey data indicated a high degree of satisfaction with the piloted activities. Given the project’s accomplishments with the initial seed funds and broad impact potential, this project is now being expanded under a Scaling Grant from Learning Lab.

### PROJECT DESIGN
The project focused on organizational and system change, aiming to transform the teaching of discrete math courses to center on group-worthy tasks and team-based adaptive learning and to build a productive intersegmental working group to design and test innovative instructional materials implementing these strategies. Research has pointed to the value of these strategies as equity-serving methods that increase student sense of belonging and course success across demographic groups. The project consisted of the following phases: Development - discussion, research, literature review, and codification of innovative, effective teaching strategies along with accompanying instructor guides, covering strategies such as technology-supported adaptation through pre-class knowledge checks, active learning and professional development in those methods, ideas from the proven Reading Apprenticeship model, in which instructors explicitly engage students in grappling with reading and making sense of a text, online videos covering basic learning objectives, reframing office hours, and forming student accountability groups; Pilot - instructors tested interventions/new teaching approaches and materials as determined in the Development phase, with data gathering through surveys, classroom visits, and other measures; and Assessment - the project team analyzed gathered data to evaluate and compare current and innovative practices through surveys, classroom visits, and other assessment instruments. In the course of the project, the grant team also established the need to reform the statewide course descriptors, or C-IDs, for discrete mathematics courses to allow more room for pedagogical innovations. The project subsequently made working on system change via C-ID policy reform a priority.
Change Leadership Series

During the year, Learning Lab launched its first professional development effort for grantees: the Change Leadership Series was intended to support grantees in the area of transformational change. Four professionals with expert knowledge of change leadership or data analytics facilitated sessions as part of the six-part workshop series, focused on increasing knowledge and skills to lead change efforts at grantees’ respective institutions.

Forty-five unique participants, faculty members from existing project teams across grantee cohorts, attended the workshop sessions. Based on a survey administered after all six sessions were complete, most respondents agreed or strongly agreed that they would recommend the series to colleagues. All respondents agreed or strongly agreed with statements that they learned something new and/or acquired helpful tools/strategies to apply to their professional role.

Descriptions on specific sessions are on the next page. Feedback on the series as a whole included the following:

“I’m sad the sessions are already over! I wish there are more opportunities to exchange ideas and share our progress with other participants. It was really interesting to see what other colleges are doing.

This was unlike other PD activities I’ve been to because of the focus on leadership and how to cultivate change. It was useful in that it has helped prepare me for challenges I face in leadership roles on my campus.

I think this was way more effective than the typical PD that I’ve grown saturated on. This series was framed around an idea that I had not previously thought about much - models for how to bring about real change at a larger scale than just individual faculty, as well as emotional intelligence applications to professional relationships. It was just a lot of stuff that I didn’t know I didn’t know! So, this was all great. Thank you so much!”
# Change Leadership Series Sessions

## LEARNING LAB

**CHANGE LEADERSHIP SERIES**

The California Education Learning Lab invites grantees to participate in a learning series, led by expert scholars and practitioners, designed to help faculty shape and drive positive change within the context of their Learning Lab-funded project and beyond.

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<th>Date</th>
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| **SEPTEMBER 9, 2022** | **LEADING CHANGE IN HIGHER EDUCATION**  
Improving learning outcomes and closing equity gaps in higher education requires changing practices, changing policies, and changing minds. This session will examine change within the unique higher education ecosystem to understand potential opportunities and barriers to achieving project goals. |
| **SEPTEMBER 23, 2022** | **STEM INSTRUCTIONAL REFORM: WHAT DOES THE EVIDENCE SAY?**  
There are plenty of examples of faculty attempting to reform STEM undergraduate teaching and learning, so what have we learned from those efforts? This session will take a scholarly approach to learning from prior faculty change efforts. |
| **OCTOBER 14, 2022**  | **BUILDING SKILLS: FACULTY AS CHANGE AGENTS**  
Leverage the positionality and unleash the power of faculty to create more vibrant and equitable environments that will lead to better outcomes for students. |
| **NOVEMBER 4, 2022**  | **LEVERAGING RELATIONAL POWER**  
Creating meaningful change involves more than just knowing about processes, power structures, and strategic planning—it also involves knowing about people. People bring different experiences, knowledge, personalities, preferences, and more to the table, and knowing how your own identity impacts collective change efforts, and knowing how to facilitate difficult conversations are both critically important to advancing change initiatives. |
| **FEBRUARY 2023**     | **UTILIZING AND OPTIMIZING DATA**  
An important aspect to creating a critical mass of supporters for any change effort is establishing the case for why the change should be undertaken in the first place. Using data to shape and drive change can serve an important role in removing barriers to buy-in. |
| **MARCH 10, 2023**    | **STRATEGIC COMMUNICATIONS**  
This session will focus on strategic communications (including issue framing) and tools to help leaders better understand how to build and maintain communication and engagement practices that undergird cultures that generate, sustain, and expand momentum around academic reform efforts. |

* Two follow-up sessions are anticipated for late 2023 and early 2024.
Learning Lab 101

Grantee success = faculty and student success

With grantmaking as a primary mechanism for incentivizing teaching and learning innovation, supporting grantee success is a core area of focus for Learning Lab. To this end a new effort was developed and initiated, *Learning Lab 101*, designed to be a user-friendly onboarding program for new grantees. The goal was to create a cohesive curriculum and onboarding experience that promotes a sense of community and belonging among grantees and educates grantees about their commitments to deliverables and expectations.

After five years of grantmaking, Learning Lab is aware of the many and varied institutional barriers that project teams can face, for institutions that have dedicated research offices and those without. By enhancing the Learning Lab grantee experience and providing easily accessible resources that support project implementation, including the administrative requirements, the hope is that grantees can remain focused on project execution while connecting with likeminded colleagues as part of the Learning Lab community.

*Learning Lab 101* consists of seven learning modules, from a *Learning Lab 101* video to modules that contain self-serve resources with practical advice and guidance. Module topics include project evaluation, the ins and outs of reporting, developing digitally accessible materials, and publishing developed assets as OER. All module resources are housed in a dedicated space on Learning Lab’s [website](#) for easy access.
EXPANDING OUR REACH

In efforts to amplify the impact of Learning Lab’s work, Learning Lab staff presented at and attended educational conferences, as well as engaged new audiences through various activities. By expanding our connection with entities aligned with Learning Lab’s mission – whether within segments, philanthropic, industry-driven, or otherwise – Learning Lab is able to better identify synergies and act upon strategic opportunities.

Digital Education and Related Conferences

Learning Lab delivered a presentation to Stanford Digital Education, a committee of faculty and staff tasked with developing a digital education strategy at Stanford University, to showcase the goals and reach of several Learning Lab-funded projects seeking to improve teaching and learning in online and hybrid learning formats. Learning Lab also presented an introduction to Learning Lab grantmaking and faculty learning programming to intersegmental constituents at the Cal OER 2023 virtual conference, an annual event dedicated to OER efforts and impact across the state, especially within the CCC, CSU and UC systems; this event had approximately 450 registered attendees comprised of faculty, instructional designers, librarians, and administrators.

Workforce and Education Partners

Learning Lab engaged in new conversations with intersegmental and system workforce, industry, and education partners, around shared topics of interest:

- Explored partnership opportunities with the California Engineering Liaison Council (CAELC), a collaboration of 4- and 2-year institutions of higher education that shares best practices and coordinates efforts to improve learning in engineering education toward a skilled and diverse workforce.

- Explored partnership opportunities with the California Alliance for Data Science Education (CADSE), an intersegmental entity created to improve access to, diversify, and support data science education in higher education.

- Conferred with the California Acceleration Project, a faculty-led network supporting community colleges to transform English and Math programs, and the RP Group, a nonprofit, nonpartisan team that supports the CCC system to promote student equity, success, completion and employment to share Learning Lab-funded projects that are working to close Calculus equity gaps that may inform best practices in alignment with implementation of AB 705 (2017) and AB 1705 (2022).

- Conferred with Jobs for the Future and CCCCO to share early thoughts and strategies for leveraging AI in higher education for the benefit of faculty, staff and students, and within the higher education workforce sector.
In fall of 2022, the release of ChatGPT, an artificial intelligence (AI) chatbot, quickly led to widespread concerns and fears of its misuse in education. Since then, AI has been evolving at the fastest rate of change in technology experienced in the history of higher education. The risks to student experience, learning and development, as well as the opportunities to employ AI for equity in our classrooms and educational systems are top of mind for many educators.

To better understand the challenges and opportunities around AI for teaching and learning, industry and employment, and the broader success of students, faculty, and administrators, Learning Lab launched its first survey calling for ideas in AI-driven, innovative capacity building for teaching and learning. Our goal is to first identify public higher education faculty and administrators most interested in pursuing AI tools and understand areas of significant interest and, secondly, to build strong proofs of concept equipped for scale and areas for productive research.

The survey was shared with the Learning Lab community and beyond. Responses will shape Learning Lab’s development of one or multiple funding opportunities around artificial intelligence.

For more information, visit our AI Call for Ideas webpage.

Microgrants

Learning Lab has created a new Microgrant Program to provide modest investments to expand or deepen the impact of projects funded by Learning Lab, and to generate new ideas for teaching and learning innovation among grantees, alumni, and those new to Learning Lab.

To date, Learning Lab has awarded a wide range of grants from Seed to Institutional Change grants. While some projects concluded with tested evidence of positive impacts for faculty and students and secured funding to further scale, others concluded with promising results but limited datasets. With a modest amount of funding, the latter would be able to expand their user base to gather more data as proof points for broader scaling and adoption.
As a result, Learning Lab created the Microgrant Program to meet critical, time-sensitive needs of previously funded projects with scaling potential. Additionally, this program will incentivize and kickstart new ideas, whether from current and former grantees or project teams not previously funded by Learning Lab, and complement our annual grantmaking in support of teaching and learning innovation.

Key features of the program include a streamlined application and reporting process, fast turnaround for decisions, and limited timeframe for use of funds – between 12 to 18 months. Microgrants are anticipated to range generally from $15,000 to $50,000 and are required to align with Learning Lab’s mission to improve learning and close student equity gaps. With a compelling case for the need and evidence of potential impact, Learning Lab may consider applications for microgrants above $50,000. Applications will be considered by invitation only.

**Grantee and Alumni Microgrants**  
Will expand or deepen project reach OR bridge/amplify proven success, when a small investment can have a significant result. These microgrants are for projects currently or previously funded by Learning Lab.

**New Ideas Microgrants**  
Will spur new ideas/projects, whether initiated by project teams new to Learning Lab or those in our existing grantee community.

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**Curated Resource Library/LLAD**

In accordance with Learning Lab’s authorizing statute and vision for making widely accessible the assets created by Learning Lab grantees, efforts are underway to create a single repository where California faculty and beyond can search for and adopt materials produced by Learning Lab projects. Our first step is to create an asset database prototype, which will be piloted using resources developed by the Calculus Grand Challenge cohort. Learning Lab is partnering with LibreTexts, a 501(c)(3) nonprofit OER entity connected with UC Davis, to curate and house a selection of high-quality, calculus-related educational resources.

Over the next 12 to 18 months, a collaboration comprised of the Learning Lab, LibreTexts, and the Calculus Grand Challenge Cohort Coordinator team will build out the **Learning Lab Asset Database (LLAD)** to prove diverse use-cases for faculty, instructors, and potentially students. The scope of work encompasses the development of a database structure that will facilitate the tagging and classification of discrete curricular assets, easy searchability of materials, with adherence to the principles of OER, and tailored to our primary audience – California faculty and instructors. The LLAD project aims to test the viability of having LibreTexts host assets on its platform with improved accessibility and a user-friendly interface for seamless navigation.
A significant majority of Learning Lab’s funded projects involve educational research with intention and design needing approval from Institutional Review Boards (IRBs). Feedback from check-ins with project teams over the years has indicated that navigating the IRB process, especially for multi-institutional projects, can be a time-consuming and confusing process, oftentimes delaying project execution and many times frustrating efforts to evaluate the project data and results. While faculty have freedom to deploy whatever curriculum and pedagogy they choose under academic freedom, activities such as collecting data, studying impacts, or releasing results of those data or impacts do not enjoy equivalent freedoms. To better understand and provide useful guidance to grantees about the IRB approval process, Learning Lab commissioned an IRB research brief from SRI International, an independent nonprofit research institute, which will include identification of issues that create barriers for Learning Lab-funded grant projects. The project includes a literature and data review with synthesis of governmental documents and scholarly research, and interviews with Learning Lab grantees and experts in IRB offices. The research brief will provide a narrative framework for understanding vexing issues in the IRB landscape across the three California public higher education segments and propose recommendations to address significant barriers to understanding and obtaining IRB approval across multi-institutional projects and for collecting important datasets. A more streamlined path to IRB approval and better access to educational research data are necessary if the State of California is to realize its return on investment in teaching and learning in public higher education.

As the result of an open call for bids to secure an independent, third-party evaluator, three applications were received and reviewers recommended WestEd, a California-based, nationally recognized leader in research, evaluation, and technical assistance, to provide evaluation services for the Learning Lab program.

WestEd is responsible for assessing the alignment of overall programmatic goals, impact, and progress, which encompasses evaluation guidance and consultation with grantees. Program evaluation goals include gaining insights to inform the program’s continuous improvement cycle and strategic decision-making with appropriate indicators, or measures of success. WestEd will conduct program documentation review, interviews, surveys, and focus groups to collect data, and will support Learning Lab to analyze this data and produce a program evaluation report. Additionally, WestEd will advise on a framework for final project evaluations, provide educational webinars and technical assistance for grantees, and will conduct direct project evaluations for two to four grantees. To advise on improvements to Learning Lab’s framework for final project evaluation, WestEd will conduct analysis via surveys, focus groups, and review of existing faculty and student data, and incorporate feedback and findings as appropriate.
Learning Lab now has a cadre of faculty alumni, a first since the program’s inception. In the coming year, Learning Lab will develop an engagement plan informed by alumni feedback with strategies for ongoing partnership and community building. Ideas include hosting alumni to showcase their continued work at webinars, meetings, and events to further the scaling and adoption of developed interventions; offering workshops for sustainability; and/or engaging alumni as mentors for existing grantees. Taking a long-term approach to community building, Learning Lab aims to nurture alumni and grantee engagement and leverage opportunities to collaborate where there is alignment with our mission. Supporting faculty learning and facilitating new and existing connections are core priorities. Since summer 2023 when several projects closed, alumni have stayed connected by mentoring other PIs around converting digital assets to OER, helping to test new grantee reporting tools, and agreeing to be interviewed as part of the AI Call for Ideas to share their thoughts, hopes, and concerns about artificial intelligence in higher education.

Professional Learning Retreat

Learning Lab intends to host a Professional Learning Retreat in early 2024 to include members of Learning Lab’s Professional Learning Steering Committee, current and former Learning Lab Advisory Board members, Learning Lab staff, and higher education leaders across the segments and outside California. Attendees will provide feedback on a plan to develop a novel statewide, intersegmental structure to support California faculty, instructors, and others in the teaching and learning enterprise.

Elements for consideration will include identifying the people, platform, programming, governance and budget related to this new entity, as well as strategies that the organization will adopt, how it can be sustainable, and how educational research will be integrated. This new entity will help support Learning Lab’s mission to improve learning outcomes and close equity gaps across California public higher education, by creating and supporting faculty and instructor professional learning across the segments and across teaching lifespans with a goal of continually engaging higher education teaching professionals in the most effective pedagogical practices amidst a changing landscape.

Alumni Network

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Learning Lab plans to host a second INSPIRE Convening: Reimagining the Future of Teaching and Learning in October 2024. In a time of unprecedented change to higher education, the event will create the space for attendees with diverse perspectives to collectively navigate challenges and creatively envision a human-centered future of teaching and learning that more equitably serves underrepresented students.

Learning Lab will build upon the success of our inaugural 2022 event that attracted 200 attendees representing a broad collection of stakeholders including faculty and administrative leadership across the segments; nonprofit organizations; philanthropic entities; and State of California leadership. The 2022 convening was commended for providing unique opportunities for practitioners to connect with policymakers and for facilitating networking and collaboration among intersegmental attendees. As we look ahead to the 2024 convening, Learning Lab will prioritize and enhance these opportunities for connection.

For more details, visit our INSPIRE 2024 webpage.

As we look ahead to 2023-24, Learning Lab is immensely grateful for the partnership of the state, UC, CSU, and CCC administrative leadership, as well as the countless faculty engaged in projects that reimagine how teaching and learning takes place. While Learning Lab’s role in this universe is limited, we are committed to maximizing our influence as a program through partnership, convening, and collaboration, as well as direct funding of projects and initiatives that are designed to make a difference in supporting equitable and enduring change.
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