



Request for Proposals 2021-2022

Scaling Success to Expand Impact in STEM

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I. Funding Opportunity

The California Education Learning Lab (“Learning Lab”) is a grantmaking organization that was established by [Assembly Bill 1809 \(Chapter 33, Statutes of 2018\)](#) to improve learning outcomes and close [equity gaps](#) in public higher education. Grants are awarded through a competitive process to California’s public colleges and universities for projects that incorporate the [science of learning](#) and [adaptive learning technology](#) into curriculum and





pedagogy for courses in science, technology, engineering, and mathematics (STEM) and other disciplines. Learning Lab's unique focus is to promote a positive feedback loop between learning theory/research and educational practice, enabled by technology-rich environments, which can then be shared and scaled for the benefit of students.

Through this RFP, Learning Lab intends to award 5-7 grants of \$500,000 to \$700,000 each over two years. Eligible applicants include intersegmental faculty teams from the California Community Colleges, California State Universities, and University of California campuses that previously received Learning Lab grants that launched by July 1, 2020, and are expected to close by summer of 2022.

Background

From 2018 to 2020, Learning Lab awarded 30 grants ranging from \$100,000 to \$1.3 million for a total of \$18.5 million. Across these projects, intersegmental faculty teams represented all nine undergraduate UC campuses, 19 of 23 CSU campuses, and 33 of 116 community colleges. Combined, these projects have engaged hundreds of faculty in improving teaching and learning, and have the potential to impact tens of thousands of students.

The grants were awarded through five distinct Requests for Proposals (RFPs):

- [2018-19 RFP: Improving Equity, Accessibility, and Outcomes for STEM Gateway Courses](#)
 - Awarded: [6 Innovation grants](#) and [3 Proof-of-Concept grants](#)
 - Grants: \$500,000 - \$1.3 million
 - Duration: 3 years
- [2019-20 RFP Awardees: Using Research and Technology to Transform Undergraduate STEM Education](#)
 - Innovation RFP
 - Awarded: [5 grants*](#)
 - Grants: \$1 million
 - Duration: 3 years
 - Seed RFP
 - Awarded: [6 grants](#)
 - Grants: \$100,000
 - Duration: 1-2 years
 - Professional Development RFP
 - Awarded: [5 grants](#)
 - Grants: \$200,000
 - Duration: 2 years





- [2020 RFP: Enabling Institutional Change in Undergraduate STEM Education](#)
 - Awarded: [5 grants](#)
 - Grants: \$500,000 - \$650,000
 - Duration: 2 years

**Grant projects not eligible to apply for "Scaling Success" funding. See Eligibility section below.*

To build upon the momentum of project accomplishments and the leadership of faculty teams, Learning Lab is releasing this RFP to provide funding to **scale successful projects to expand positive impacts on STEM in public higher education.**

Funding Priorities

Learning Lab Scaling Success grants will provide funding to select projects to support the design and implementation of scaling activities. Funding will be awarded through a competitive process that includes submission of a Statement of Intent and Proposal. (Please consult the Timeline for submission due dates.)

The overall goal of the Scaling Success RFP is to advance the most successful projects, in order to expand the positive impact and benefit for all students pursuing or interested in pursuing STEM education and careers.

Key Elements

Learning Lab believes the following to be key elements in scaling success and expanding positive impact and benefit for students. Awarded projects will be expected to:

- Scale adoption of the project regionally or statewide (within or across disciplines);
- Increase access to newly developed or redesigned teaching and learning strategies/tools/resources/technology platforms that have proven effective at improving learning outcomes and closing equity gaps;
- Support and strengthen team capacity to successfully expand evidence-based success;
- Produce/gather stronger evidence of the impact of these strategies at scale;
- Continue to contribute to the science of human learning statewide and nationally; and
- Encourage and facilitate the leveraging of other public and private resources to support effective teaching and learning at scale.

Learning Lab staff anticipates that eligible applicants will have collected and analyzed preliminary data to demonstrate their project's impact by spring 2022. Incorporation of data gathered to date will be included in proposal requirements.





Eligibility

Only Learning Lab grantees in the cohorts noted above are eligible to apply for Scaling Success grants. The pool of eligible applicants is comprised of 25 of the 30 projects awarded between 2018-2020. (Project teams that received Innovation Grants in 2019-20 will conclude in July 2023 and are not eligible to apply for funding through this RFP; Learning Lab intends to provide opportunities for scaling funding in the future.)

Existing grantees may band together to create a Scaling Success project application that integrates successful components of individual projects. If you are interested in identifying potential partnerships for your Scaling Success project proposal, explore Learning Lab funded projects by discipline and topic [here](#). You can also find a directory of PI contact information on the Learning Lab [Grantee Portal page](#).

Additionally, scaling projects must:

- Be comprised of **an intersegmental team** (combination of California Community Colleges, CSU, UC; minimum requirement includes 2 of the 3 segments).
- Include at minimum either the principal investigator or a co-principal investigator of the original project, as either the PI or co-PI of the expanded project, or as an advisor to the expanded project.
- **Satisfy the initial project criteria:**
 - Focus on improving learning outcomes and closing racial and gender equity gaps in STEM (projects may choose to scale beyond STEM at this stage)
 - Incorporate the science of human learning
 - Incorporate aspects of adaptive learning, broadly defined
 - Improve online or hybrid course environments, broadly defined
- **Demonstrate support and endorsement from host and partner institution leadership:** Projects require the endorsement of the host institution's president, chancellor, vice chancellor/vice president of instruction, or provost or equivalent through an institutional cover letter. Partnering institutions must also provide endorsement by either signing the host institution's cover letter or by submitting their own letter(s).





Timeline

Application Stage	Date
Release of Request for Proposals	Tuesday, November 16, 2021
Submit Questions to Learning Lab: Google Doc or info@calearninglab.org	Tuesday, December 21, 2021, 5:00 p.m.
Virtual Q&A Session on RFP	Tuesday, January 11, 2022, 2:00 p.m.
Applicant Office Hours <i>Learning Lab intends to offer office hours to interested applicant teams. Information about how to sign up for a 15-minute session will be available on the RFP page of our website.</i>	January 31 –February 4, 2022
Statement of Intent via Online Portal	Friday, February 11, 2022, 5:00 p.m.
Final Questions to Learning Lab	Tuesday, March 15, 2022, 5:00 p.m.
Final Q&A Update	Friday, March 18, 2022, 5:00 p.m.
Proposal Deadline via Online Portal	Friday, April 1, 2022, 5:00 p.m.
Review Period	April 7-April 28, 2022
Selection Committee Meeting	Est: Week of May 2-6, 2022
Notification of Award	Est: Friday, May 20, 2022, 5:00 p.m.
Deadline to execute Grant Agreement Projects and activities commence	No later than Friday, July 1, 2022

Note: All times provided are Pacific Time (PT).





II. Application Requirements

Learning Lab intends to award up to 5-7 grants between \$500,000 to \$700,000 to support scale-up activities over two years. Grants will be awarded through a competitive application process. Applicants will be required to submit:

- Statement of Intent by Friday, February 11, 2022, 5:00 p.m.
- Proposal by Friday, April 1, 2022, 5:00 p.m.

Applicants are required to submit all materials required through an online portal. Applicants may use this [Word document](#) to prepare responses offline before entering them into the portal for the Statement of Intent and Proposal. This document, if uploaded to a shared drive, may help applicants facilitate collaborative development of the submission.

Statement of Intent

Applicants must file a Statement of Intent that identifies the anticipated host and partnering institutions and provides the names of PIs/co-PIs as well as brief project summary (see below). The Statement of Intent must be submitted through [Learning Lab's Application Portal](#). **The deadline to file a Statement of Intent is 5:00 p.m. PT on Friday, February 11, 2022.**

Project Summary Information:

- **Project Title:** Teams must develop a short title for their proposed project. This title should be used in all related documents of the proposal.
- **Project Abstract:** Please provide a short project abstract (150-200 words).
- **Estimated Project Impact & Budget:** Please indicate the number of students and/or faculty that will be directly impacted by project activities during the project period, as well as an estimated budget for the scale-up activities.

Proposal

Submit all required materials through Learning Lab's Application Portal by **5:00 p.m. PT on Friday, April 1, 2022.** All of the following elements (except for the optional Letters of Interest) will be **required**:

1. Institutional Cover Letter(s)
2. Project Narrative
3. Endnotes/Footnotes
4. Team Member CVs
5. Detailed Budget and Justification
6. Letters of Interest (optional) indicating an institution's willingness to be part of the scaling effort





Through the Application Portal, applicants will be required to upload two documents. The first upload will be a single PDF document that will include items 1-4 and, if relevant, item 6 above. The second upload will include item 5, the budget/justification, as an Excel document.

1. Institutional Cover Letter(s) – (2 page maximum per letter)

Each host and partner [institution](#) must respond to the following bullets in a cover letter on institutional letterhead:

- **Institutional alignment and readiness:** Describe why the institution is applying for the grant, how it aligns with its overarching goals or related priority initiatives, and, if funded, any commitment the institution will make to sustaining changes that are found to positively impact students.
- **Principal investigators:** Identify the individuals who will serve as PI(s) and co-PI(s). Please address each person's capacity to execute this project.
- **Required signatures:** The institutional cover letter must be signed by:
 - PI/Co-PI responsible for administering the project;
 - dean or department chair; and
 - the institution's president, chancellor, vice chancellor/vice president of instruction, provost, or equivalent.

2. Project Narrative (8-10 pages)

The project narrative should be 8-10 pages long. Please use no smaller than Arial 11 font and no less than 0.5" margins. (Only PDFs will be accepted.) Applicants **must** retain the section headings underlined below; however, within each section, applicants may respond to the prompts with flexibility to allow for a natural writing flow. We strongly recommend that applicants be as concise and specific as possible in their responses to the prompts. We also encourage project teams to consider including a [logic model](#) in explaining the project. The project narrative should answer the following questions (see Scoring Rubric's Guidance for Applicants):

Evidence of Effectiveness

- Why should your project be scaled? What evidence demonstrates its effectiveness?
- What impact has the project had on student outcomes? Please disaggregate student data by demographic, if possible. What data has been collected to date to support this? Please be specific about the measures and data collected over what periods of time.





- How have students responded (qualitatively) to your project, if applicable? Please describe your team's success working with underrepresented students in particular through the current grant. Please consider including direct student responses.
- What has been faculty response to or support of the project?
- What has been the institutional response and/or how do your institution(s) intend to support scaling?

Vision and Plan for Scaling

- Explain what will be scaled and how it will be scaled (e.g., expanded to new institutions, departments, disciplines).
- What level of interest or readiness have other institutions/departments/disciplines shown in scaling the project? (Please provide letters of interest and/or commitment in your application packet.)
- Does your project involve significant changes in faculty behavior/mindset/practice? If so, what is your theory of change and do you think your project can influence how faculty, either within the disciplines covered by your project or faculty more broadly, approach teaching and student learning? If so, please elaborate.
- Is your project's vision and plan for scaling informed by change theory¹ (e.g. communities of practice, diffusion of innovations, four frames, systems theory)? If so, please elaborate.
- What particular lessons learned from the current project would you apply to the scaling plan?
- What specific challenges do you foresee in this project's execution and how would you manage them?
- What cost-effectiveness or cost-efficiencies can you point to compared to the initial project's implementation at demonstration campuses?

Implementation Plan

- Outline specific goals for scaling and related scaling activities.

¹ Reinholz, D.L., White, I. & Andrews, T. Change theory in STEM higher education: a systematic review. *IJ STEM Ed* 8, 37 (2021). <https://doi.org/10.1186/s40594-021-00291-2>





- Describe the project team and their specific roles in the project, and how and why it differs (if any) from the original project team.
- Outline your team’s implementation plan.
 - Include a timeline and discussion of expected milestones and deliverables.
 - Specify which PIs/Co-PIs/institutions are participating in each phase of the scaling activities.
- Describe your team’s assessment plan that will be used to evaluate the effectiveness and cost-effectiveness of the innovation at scale.
 - Outline the type of data your project team intends to collect as well as planned assessment methods.
 - If possible, please provide information according to the following table:

Project Goal or Objective	Anticipated Outcomes	Assessed By (include method and metric)

Sustainability

- Describe how the proposed scale-up activities will have lasting impact on participating campuses and beyond.
- Describe how your team plans to disseminate results.

Budget Summary

- Provide a 1-2 paragraph budget narrative summarizing the project budget categories and high-level descriptions of how funds will be used. More budget information will be requested through a budget template (Excel spreadsheet).

Qualifications of the Team

- Provide brief descriptions of key members of the project team highlighting their relevant skills or capabilities.
- If external contractors are being used, describe the expertise they bring to the project.

3. Endnotes/Footnotes (no page limit)

Please list all relevant citations, providing Internet links to articles where available.

4. Team Member CVs

Please include CVs of all PIs, co-PIs, and other Key Personnel.





5. Detailed Budget and Justification (template upload)

Please upload a budget on the application portal using the [template](#) provided. Please consult Learning Lab's [Budget FAQs](#).

6. Letters of Interest (optional; 1 page per letter)

Please provide any letters of interest indicating an institution's willingness to be part of the scaling effort, in addition to the PI and co-PI institutions.

III. Selection Process and Scoring Rubric

Per statute, Learning Lab will convene an expert Selection Committee to review and evaluate proposals in the stages described above.

The Selection Committee will make final recommendations for award to the Director of the Governor's Office of Planning and Research (OPR) for approval. Awards and final award amounts are contingent on successful negotiation of a grant agreement between the Learning Lab staff, the Foundation for California Community Colleges (administrator of the grant), and the awarded project team and host institution.

Please note: Selection Committee members and the Director of OPR may take into consideration geographic, disciplinary, and institutional diversity in order to balance the diversity of awards.

Scoring Rubric

Proposals will be scored using a point system. Maximum scores for each category are listed below with a total maximum score of 30 for proposals. Based on the application prompts for each category, please judge the strengths of the response to assign points and provide brief justification for the points assigned.





Category	Maximum Points + Brief Justification
<p>1. Key Elements:</p> <p><u>Application Prompts:</u> Learning Lab believes the following to be key elements in scaling success and expanding positive impact and benefit for students. Awarded projects will be expected to:</p> <ul style="list-style-type: none"> • Scale adoption of the project regionally or statewide (within or across disciplines); • Increase access to newly developed or redesigned teaching and learning strategies/tools/resources/technology platforms that have proven effective at improving learning outcomes and closing equity gaps; • Support and strengthen team capacity to successfully expand evidence-based success; • Produce/gather stronger evidence of the impact of these strategies at scale; • Continue to contribute to the science of human learning statewide and nationally; and • Encourage and facilitate the leveraging of other public and private resources to support effective teaching and learning at scale. <p><u>Guidance for Applicants:</u> Does your proposal touch on all of the key elements above? Are the discussions of these key elements logically connected to one another in a cohesive way?</p>	<p>5</p>
<p>2. Evidence of Effectiveness</p> <p><u>Application Prompts:</u></p> <ul style="list-style-type: none"> • Why should your project be scaled? What evidence demonstrates its effectiveness? • What impact has the project had on student outcomes? Please disaggregate student data by demographic, if possible. What data has been collected to date to support this? Please be specific about the measures and data collected over what 	<p>4</p>





<p>periods of time.</p> <ul style="list-style-type: none"> • How have students responded (qualitatively) to your project, if applicable? Please describe your team’s success working with underrepresented students in particular through the current grant. Please consider including direct student responses. • What has been faculty response to or support of the project? • What has been the institutional response and/or how do your institution(s) intend to support scaling? <p><u>Guidance for Applicants:</u> Does your proposal provide evidence of positive impacts and outcomes on the constituencies above?</p> <p>Does the proposal provide a rationale for how the proposed project can lead to more positive impacts and outcomes?</p>	
<p>3. Vision and Plan for Scaling</p> <ul style="list-style-type: none"> • Explain what will be scaled and how it will be scaled (e.g., expanded to new institutions, departments, disciplines). • What level of interest or readiness have other institutions/departments/disciplines shown in scaling the project? (Please provide letters of interest and/or commitment in your application packet.) • Does your project involve significant changes in faculty behavior/mindset/practice? If so, what is your theory of change and do you think your project can influence how faculty, either within the disciplines covered by your project or faculty more broadly, approach teaching and student learning? If so, please elaborate. • Is your project’s vision and plan for scaling informed by change theory (e.g. communities of practice, diffusion of innovations, four frames, systems theory, etc.)? If so, please elaborate. • What particular lessons learned from the current project would you apply to the scaling plan? • What specific challenges do you foresee in this project’s 	<p>4</p>





execution and how would you manage them?

- What cost-effectiveness or cost-efficiencies can you point to compared to the initial project’s implementation at demonstration campuses?

Guidance for Applicants:
 Does your proposal have a strong vision for how scaling will occur? Is it sufficiently ambitious and also practical? Does your proposal demonstrate consideration of barriers to scaling, including faculty mindset, and how these will be overcome? Does your proposal make use of past lessons learned?

Can you identify cost-efficiencies in scaling compared to the initial project? Is there real interest in scaling your project from other institutions?

4. Implementation Plan

- Outline specific goals for scaling and related scaling activities.
- Describe the project team members and their specific roles in the project, and how and why it differs (if any) from the original project team.
- Outline your team’s implementation plan.
 - Include a timeline and discussion of expected milestones and deliverables.
 - Specify which PIs/Co-PIs/institutions are participating in each phase of the scaling activities.
- Describe your team’s assessment plan that will be used to evaluate the effectiveness and cost-effectiveness of the innovation at scale.
 - Outline the type of data your project team intends to collect as well as planned assessment methods.
 - If possible, please provide information according to the following table:

Project Goal or Objective	Anticipated Outcomes	Assessed By (include method and metric)

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<p><u>Guidance for Applicants:</u> Does your implementation plan seem well-thought out, realistic, and achievable? (Are there reasonable planning, implementation, and evaluation phases? Are roles defined? Are milestones identified?) Do you have a well-thought-out plan for data collection and assessment?</p>	
<p>5. Sustainability</p> <ul style="list-style-type: none"> • Describe how the proposed scale-up activities will have lasting impact on participating campuses and beyond. • Describe how your team plans to disseminate results. <p><u>Guidance for Applicants:</u> Does the proposal provide a rationale for how the project can have a lasting impact at the institution?</p>	3
<p>6. Budget:</p> <p><u>Application Prompts:</u> Provide a 1-2 paragraph budget narrative summarizing the project budget categories and high-level descriptions of how funds will be used. More budget information will be requested through a budget template (Excel spreadsheet).</p> <p><u>Detailed Budget and Justification (template upload)</u> Please upload a budget on the application portal using the template provided. Please consult Learning Lab’s Budget FAQs.</p> <p><u>Guidance for Applicants:</u> Does the budget align with and advance the project plan? Is there a clear rationale for expenditures, and have you accounted for all major expenses?</p>	3
<p>7. Qualifications and Strength of Team:</p> <p><u>Application Prompts:</u></p> <ul style="list-style-type: none"> • Provide brief descriptions of key members of the project team highlighting their relevant skills or 	4





<p>capabilities.</p> <ul style="list-style-type: none"> • If external contractors are being used, describe the expertise they bring to the project. • Please include CVs of all PIs, co-PIs, and other Key Personnel in the single PDF document on the Application Portal. <p><u>Guidance for Applicants:</u> Do the members of the project team have the requisite experience and time to commit to implement the project? If external contractors or partners are being used, is it clear what expertise they bring?</p>	
<p>8. Letters of Interest (1 page per letter) Please provide any letters of interest indicating an institution’s willingness to be part of the scaling effort, in addition to the PI and co-PI institutions.</p> <p><u>Guidance for Applicants:</u> Do the letters express strong commitments to participating in the scaling and adequate knowledge of what it will take to participate in the project, with people/resources identified?</p>	2
<p>Total Possible Points</p>	30
<p>Overall Comment (suggested 100 word response):</p>	





IV. Post Award Agreements & Deliverables

Applicants whose proposals are selected and approved for award will be asked to enter into an agreement with the Foundation for California Community Colleges, which is under contract with the Governor's Office of Planning and Research to administer the Learning Lab grant program. Learning Lab personnel will administer the agreement, which will address project implementation, including the following:

All post -award expectations will be specified in award agreements.

- **Indirect Costs:** Up to 8 percent in indirect costs are allowed; for the University of California, GAEL, UCRP, and TIF must be included in the 8 percent of indirect costs. Combined direct and indirect costs cannot exceed the award amount. Learning Lab calculates the 8 percent IDC rate based on total combined direct costs for all partner institutions and does not permit layering of IDC in excess of 8 percent of total direct costs.
- **Budget Rules & Flexibility:** Grant agreements will have some budget flexibility; however, prior approval will be required for budget changes between approved budget categories above negotiated thresholds, and for certain activities such as travel and hosted convenings. Please note: Learning Lab funds may be used to pay undergraduate and graduate students (stipends or hourly rates) and related student fees; however, Learning Lab funds may NOT be used to cover undergraduate or graduate student tuition, housing, or summer bridge attendance.
- **Open Educational Resources:** Institutions must agree to terms and conditions that require course and course series and technology/platforms enabled with Learning Lab funds to be available as open educational resources, as defined through the grant agreement.
- **Start Date:** Initiate work within 30 days of signing the agreement. Grant agreements must be signed no later than 30 days after award notification.
- **Reporting and Deliverables:**
 - **Communication Materials:** In the first quarter of project, submit an updated ADA-compliant TED Talk style video, and any updates to the project graphic, tag line, description, and team member photos for posting on the Learning Lab web site.





- **Progress Reports:** Submit written and verbal progress reports at agreed-upon intervals, including tracking of milestones and expenditures.
- **Learning Lab Convenings:** Participating teams will be invited to at least two intersegmental grantee convenings and to participate in digital communities, e.g., a grantee Slack channel, over the course of the maximum project period (two years). Please reserve \$4,000 in your project travel budget for up to two members of your project team to attend in-person Learning Lab hosted convenings.
- **Technical Assistance and Collaboration:** Participate in conference calls and convening activities, and seek technical assistance from the Learning Lab Advisors or Learning Lab staff.
- **Data Collection:** By the end of the grant period, awarded projects should collect data relevant to the project. Examples may include changes in faculty mindset and practices, and/or including the adoption of more inclusive and effective teaching practices. Awarded projects should track impacts and outcomes, particularly for women, Black/African American, Latinx, Pacific Islander, and/or Native American students, to the extent possible.
- **Use of Data:** Investigators and demonstration teams are expected to share data and research findings consistent with academic standards.
- **Protection of Privacy and Personal Information:** Investigators and demonstration project teams are expected to follow state and federal law to protect privacy and personal information.





V. Terms and Definitions

Achievement, Opportunity, and Equity Gaps: Achievement gap refers to “Any significant and persistent disparity in academic performance or educational attainment between different groups of students” ([The Glossary of Education Reform](#)) while opportunity gap refers to “The ways in which race, ethnicity, socioeconomic status, English proficiency, community wealth, familial situations, or other factors contribute to or perpetuate lower educational aspirations, achievement, and attainment for certain groups of students” ([The Glossary of Education Reform](#)).

Equity Gap refers to racial and gender disparities in educational access and attainment for historically underrepresented and underserved student populations that are the product of persistent social and institutional barriers to educational opportunities and educational success (Lumina Foundation and USC Center for Urban Education). From the perspective of the Learning Lab, we can understand equity gaps, in part, as the achievement gaps that opportunity gaps created. Our preferred term is to use equity gap, rather than achievement gap, in order to keep the focus on the multiple barriers to educational success, rather than on student performance alone.

Adaptive Learning Technology: Adaptive learning is defined by statute to mean “a technology- mediated environment in which the learner’s experience is adapted to learner behavior and responses.” In order to have the potential for large-scale impact, Learning Lab understands adaptive learning technologies in the broad sense of deploying technology to better understand learner experience/learner gaps and assets, and to modify learning environments, pedagogical approaches and/or available resources to produce better learning outcomes across the broad range of students.

Asset-based Language: Asset-based language focuses on student strengths rather than their deficits. For example, instead than focusing on students’ lack of preparation from previous educational experiences, an asset-based framework would acknowledge the ambition and persistence demonstrated by students from under-resourced community who enroll in the course. When working from an asset-based perspective, proposal authors should consider the practices and assumptions that downplay the abilities, talents, and interests of students and instructors.²

² Renkly, Shannon and Bertolini, Katherine (2018) "Shifting the Paradigm from Deficit Oriented Schools to Asset Based Models: Why Leaders Need to Promote an Asset Orientation in our Schools," Empowering Research for Educators: Vol. 2 : Iss. 1 , Article 4. <https://openprairie.sdstate.edu/ere/vol2/iss1/4>





Change Theory: Change theories represent generalized knowledge about how change works. How change theories may inform project proposals can vary depending on the focus of the theory, which can include identifying, describing, and relating parts of a system; outcomes, preconditions, and rationales; activities required to achieve a particular outcome; and implicit knowledge about the context and how change works.³

Host Institution: The project's host institution is the college or university that will act as grantee and fiscal intermediary for purposes of grant administration. The host institution will enter into a grant agreement with the Governor's Office of Planning and Research for receipt and management of grant funds and will distribute funds to the partner institutions based on sub-award agreements. The designation of an institution as "host" is for grant administration purposes only.

Indirect Cost (IDC) Calculation: Learning Lab calculates the 8 percent IDC rate based on combined project direct costs and does not permit layering of IDC in excess of 8 percent of total direct costs. Combined direct and indirect costs cannot exceed the award amount. Consequently, for a project awarded a \$1 million grant, total combined IDC for all partner institutions cannot exceed \$74,074 (i.e., 8 percent of total direct costs of \$925,926, with combined indirect and direct costs totaling \$1 million). Partner institutions may, however, divide their respective shares of IDC, as long as they conform to the Learning Lab's overall limit on IDC (i.e., no more than 8 percent of total direct costs). For instance, the host institution may apply 8 percent IDC to a portion of a sub-award, but the sub-awardee cannot then apply IDC to that same portion of the sub-award, since that would lead to total IDC in excess of 8 percent of total project direct costs.

Online/Hybrid Learning Environments: Learning Lab also takes a broad view of what qualifies as an online or hybrid course. Online courses allow students to interact, either synchronously or asynchronously, with the course material/lecture/lab work, and other participants and/or instructors/TAs in a technology-mediated, remote environment. Hybrid courses or blended courses are those that use both "online" and in-person interactions as part of the formal course environment or requirements. Hybrid courses allow some component of the course to be available or accessible in an online environment. For the purposes of this RFP, a course does not have to be officially designated by the institution or department as "hybrid" to be eligible for Learning Lab grant funding, so long as it conforms to the definition above.

³ Reinholz, D.L., Andrews, T.C. Change theory and theory of change: what's the difference anyway?. *IJ STEM Ed* 7, 2 (2020). <https://doi.org/10.1186/s40594-020-0202-3>





Science of Human Learning: Learning science, or the science of human learning, is the study of how human learning takes place. Interdisciplinary in nature, drawing from fields such as cognitive science, neuroscience, computer science, education, psychology, sociology, design studies and more,⁴ the science of learning strives to understand how people learn, how to support learning, how to facilitate and enhance learning, discipline-based learning, and the role of technology in enhancing learning and collaboration⁷. The science of learning addresses how people process, gather, and interpret information; how they develop knowledge, skills, and expertise; and the extent to which social and physical context and design environments influence learning⁵. Scaffolding, inquiry or problem-based learning, collaborative learning, game and simulation-based learning, and metacognition are all examples of how teaching methods and approaches to curriculum can be influenced by what we understand about learning. Additionally, strategies linked to social psychology and multicultural education emphasize the importance of attending to students' identity and culture when addressing achievement gaps—we view such achievement gaps as invitations to apply the science of learning in new or improved ways.

One of the goals of the science of learning is to create a positive feedback/continuous improvement loop between theories of learning and practice, which would result in improved student learning and advance the field of learning science⁶. For the purposes of Learning Lab, as public higher education strives to educate more students with diverse backgrounds in a rapidly changing world, leveraging, increasing and applying our knowledge of human learning is a challenge we must embrace.

Underrepresented Students: By underrepresented, we mean historically underrepresented in STEM higher education, including Black/African Americans, Latinx, Native American, some Asian American subgroups, Pacific Islanders, and women.

⁴ Sawyer, R.K. (2006). *The Cambridge Handbook of the Learning Sciences*. Cambridge, U.K.: Cambridge University Press.

⁵ Sommerhoff, D., Szameitat, A., Vogel, F., Chernikova, O., Loderer, K. & Fischer, F. (2018). What Do We Teach When We Teach the Learning Sciences? A Document Analysis of 75 Graduate Programs. *Journal of the Learning Sciences*, 27:2, 319-351. <https://doi.org/10.1080/10508406.2018.1440353>.

⁶ Ibid.

