STEM2
THE POWER OF DISCOVERY

Readiness *and* Needs Assessment

A project of the California AfterSchool Network and the California STEM Learning Network made possible with the generous support of the S.D. Bechtel, Jr. Foundation, the Noyce Foundation, and the Samueli Foundation.

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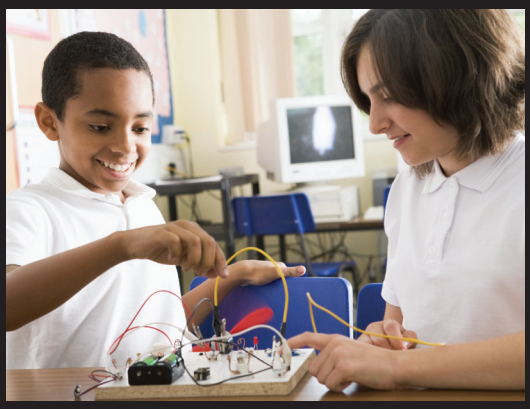

Readiness and Needs Assessment

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For additional information and resources, please visit: **www.powerofdiscovery.org**

Version one
Released January 2013

Readiness and Needs Assessment

Collaboration and partnerships between out-of-school time (OST) programs, the core instructional day, business & industry, and higher education represent the power to exponentially increase quality STEM learning opportunities for California's youth. This is the foundation of **The Power of Discovery: STEM²**, a partnership effort between the California AfterSchool Network and the California STEM Learning Network made possible with generous support from the S.D. Bechtel, Jr. Foundation, the Noyce Foundation, and the Samueli Foundation.

The purpose of this Readiness and Needs Assessment is to (1) collect data on existing STEM learning opportunities and assets, (2) identify the needs of your OST program and key stakeholders, and (3) to identify potential elements of, and supports needed in the creation and implementation of a STEM program plan.

The Power of Discovery: STEM² initiative seeks to:

- Increase the quality and depth of regional and statewide partnerships in support of OST STEM learning opportunities.
- Increase frequency, intensity, duration, and quality of STEM learning opportunities for youth in OST programs.
- Increase staff competence, confidence, and motivation to facilitate STEM learning opportunities.
- Increase student interest, engagement, and knowledge of STEM processes and concepts.

By completing this assessment, you and your organization are beginning your commitment to helping young people engage in STEM learning. Together you, the California AfterSchool Network and the California STEM Learning Network are working locally and statewide to help California OST programs reach their true potential, and increase program quality through the lens of STEM.

Throughout this process you will collaborate with your local education agencies (LEAs), Community-based organizations (CBOs), and other essential stakeholders connected to your organization. You will use the information provided by completing this assessment to create a comprehensive, annual STEM implementation plan using the **STEM Program Planning Tool.**

There has never been a better time for STEM learning, and OST programs are perfectly positioned to offer youth engaging STEM learning opportunities. Thank you for taking the first step in this statewide effort to positively impact the lives of young people throughout California through the Power of Discovery: STEM².

In order to assess your programs needs and capacities, use the **Readiness and Needs Assessment** document to self assess with input from various stakeholders. Input from stakeholders should also be utilized as part of the planning process. The steps below describe the process of the Readiness and Needs Assessment and the Program Plan. In order to utilize this tool properly, it is recommended to:

Plan your process

- Create a list of professionally diverse stakeholders to participate in the process
- OST Program: (District and community based organization) leaders, students and staff, teachers, prinicpals, partners and stakeholders

Assess with input from key stakeholders

- Complete a self-assessment **utilizing the Readiness and Needs Assessment Tool**
- Ensure your assessment is informed by a variety of professional perspectives

Create a comprehnesive STEM program plan

- Create a comprehensive program plan, **utilizing the STEM Program Planning Tool** to advance high-quality STEM learning opportunities for youth and increase staff capacity.
- Ensure your plan includes regular opportunities for reflection and planning for improvement.
- Ensure that your plan considers which key individuals and partners will be essential in advancing and sustaining the program plan in future years.

Implement and continually assess and improve quality

- Implement program plan and consistently assess and plan for improvement.
- Assess quality at the point of service.
- Provide ongoing professional development, coaching, and support to staff
- Review, revise and adapt your STEM program plan on a regular and ongoing basis.

Program Assessment

During this section, you will be assessing the current state of your STEM programming. This section is an internal self-assessment to be completed with input from select stakeholders within your program (Program Director, Site Coordinators, etc.)

1. District/Agency _____

2. Number of Sites: Elementary _____ Middle School _____ High School _____

3. Funding Source: ☐ ASES / 21st Century ☐ Self-Funded ☐ Other_____

4. Number of students served by the out-of-school time program (OST) _____

5. Estimated number of students participating in STEM programs? Please indicate the approximate number by grade level.

   K-2 _____ 3-5 _____ 6-8 _____ 9-12 _____

   Please provide the contact information of the select team contributing information to this Readiness and Needs Assessment. Teams are comprised of leaders representing both the Community Based Organization out-of-school time program and the Local Education Agency (LEA) together they are referred to as an after school provider.

6. Internal assessment team:
   (Note: Internal assessment focuses on out-of-school time (OST) providers defined as a partnership between Community Based Organizations (CBO) and Local Education Agencies (LEA). There is a second part of this assessment that includes external partners). Examples of internal stakeholders include:
   - District / County Office Leadership: *District Administrators, Director of Curriculum and Instruction, Math/Science/STEM Coordinator and Academic Liaisons, etc.*
   - Program Leadership: *Program Directors, Site Coordinators, Informal Educators*

Name	Title/Organization	Address	Phone Number	E-mail Address

7. What types of materials and/or resources do you use to implement STEM in the following subject areas? Describe all that that apply and include the name of the resource used.

Resource and/or Materials	Kit-based hands-on activities	Research based curriculum	Resources supplied by partners	Activities pulled from the Internet	Other, please describe (or none)
Science					
Technology					
Engineering					
Math					
Integrated across multiple disciplines					

8a. How many of your out-of-school time program sites have students participating in STEM learning activities at least once per month?

Number of sites_____ out of total number of sites _____

8b. Please indicate approximately how many minutes your students are engaging in STEM learning opportunities in your OST program by grade level each month.

Grades	K-2		3-5		6-8		9-12	
	# of Students	# of Minutes	# of Students	# of Minutes	# of Students	# of Minutes	# of Students	# of Minutes
Science								
Technology								
Engineering								
Math								
Integrated across multiple disciplines								

9. Please identify how students are selected to participate in the STEM-related activities offered at your site(s).
   - ☐ Students choose to participate in STEM-related activities.
   - ☐ All students rotate through STEM-related activities.
   - ☐ By grade level
   - ☐ Other: _____

Professional Development

10. What are some of the key elements of your professional development plan as it pertains to STEM teaching and learning?

11. What, if any, budget considerations is dedicated for professional development?

12. What types of staff receive professional development?
   - ☐ Program Directors
   - ☐ Site Coordinators
   - ☐ Informal Educators
   - ☐ Other _____

13. Indicate the type(s) of professional development provided to staff. Mark all that apply.
   - ☐ Coaching
   - ☐ Modeling
   - ☐ Observations
   - ☐ Structured Lesson Study
   - ☐ Site/Local Trainings
   - ☐ Professional Learning Communities/ Communities of Practice
   - ☐ Regional Trainings
   - ☐ Workshops
   - ☐ Conferences
   - ☐ Other _____

14. Currently, Site Coordinators participate in:
   - ☐ 30 or more hours of STEM professional development per year
   - ☐ 20-29 hours of STEM professional development per year
   - ☐ 10-19 hours of STEM professional development per year
   - ☐ 5-9 hours of STEM professional development per year
   - ☐ 4 or less hours of STEM professional development per year

15. Currently, informal educators (program staff) participate in:
   - ☐ 30 or more hours of STEM professional development per year
   - ☐ 20-29 hours of STEM professional development per year
   - ☐ 10-19 hours of STEM professional development per year
   - ☐ 5-9 hours of STEM professional development per year
   - ☐ 1-4 hours of STEM professional development per year
   - ☐ None

16. Does the current professional development plan incorporate online learning?
- ☐ Yes
- ☐ No

16a. If yes, how frequently are staff engaged in online professional development?
- ☐ Weekly
- ☐ Monthly
- ☐ Annually

16b. Describe the quality and content of the online professional development? Is it interactive? Does it allow staff to get feedback/ support from their peers or administrative staff?

17. Indicate how often you plan to commit to professional development to support STEM implementation.
- ☐ Weekly
- ☐ Monthly
- ☐ Quarterly
- ☐ Annually
- ☐ On an as needed basis
- ☐ Never

18. What types of assessment and reflection opportunities are available for staff? Check all that apply.
- ☐ Coaching: if so, describe and indicate which staff:_____
- ☐ Mentoring: if so, describe and indicate which staff:_____
- ☐ Peer Learning: if so, describe and indicate which staff: _____
- ☐ Program Observation and Coaching: if so, which staff and how often:_____
- ☐ Individual or staff evaluation: if so, which staff and how often: _____
- ☐ Program evaluations: if so, which staff and how often: _____
- ☐ Other:
- ☐ None

19. What type of technical assistance (TA) support is available for staff? Please indicate which staff receive the TA support.
- ☐ Training _____
- ☐ Mentoring _____
- ☐ Coaching _____
- ☐ Consulting _____
- ☐ Broker of Resources _____
- ☐ Other:
- ☐ None

Implementation of STEM Learning Opportunities

20. Do you currently have a budget to implement STEM learning opportunities?
    - ☐ Yes
    - ☐ No

    20a. If yes, how much funding (resources) are designated to STEM Programming?

    _____

21. Do you currently have personnel focused on STEM?
    - ☐ Yes If yes, how many _____
    - ☐ No

22. Do you currently have a plan to implement STEM?
    - ☐ Yes Describe: _____
    - ☐ No

23. How much time is scheduled for STEM implementers to network, share practices, and learn with peers (i.e. a community of practice) to reflect on and improve practice?
    - ☐ Weekly
    - ☐ Monthly
    - ☐ Quarterly
    - ☐ Annually
    - ☐ On an as needed basis
    - ☐ Never

24. How much time do you plan to commit to STEM activities (in minutes per week)?
    - ☐ 0-30
    - ☐ 31-60 minutes
    - ☐ 61-120 minutes
    - ☐ 121-180 minutes
    - ☐ 181-240 minutes
    - ☐ 241+ minutes

25. What type of staff do you intend to have as your STEM facilitators?
    - ☐ High school students
    - ☐ Informal Educators (OST program staff)
    - ☐ College students
    - ☐ Instructional day teachers: If so, major of expertise: _____
    - ☐ Instructional day teachers who specialize in science, technology, engineering or math
    - ☐ Museum staff
    - ☐ Volunteers
    - ☐ Other:

Learning in Afterschool & Summer Project – learninginafterschool.org

The Learning in Afterschool and Summer Project defines quality learning in after school and summer programs. In its position statement the project states that after school and summer programs are important places of learning that are:

- Active
- Collaborative
- Meaningful
- Supports Mastery
- Expands Horizons

The Power of Discovery: STEM² Visioning Team Describes Quality STEM in OST as:

- Student-centered activities designed to engage and nurture student interest and curiosity
- Project and inquiry-based learning
- Activities that complement the academic curriculum and incorporate the practices of the Common Core Standards and Next Generation Science Standards
- Offering integrated/ diversified subject matter
- Offering equitable access to all students (i.e., students of all socioeconomic statuses, genders, ethnicities, linguistic abilities, and exceptional needs)

1. What are your goals to increase quality STEM learning in the OST program?

2. Describe your goal regarding increased staff confidence, interest, and knowledge of materials, resources and quality strategies to implement STEM learning opportunities. Please list potential strategies to meet those goals.

3. Describe your goal related to increased meaningful student engagement, interest in additional STEM learning opportunities and careers and increased student knowledge and application of STEM content and processes.

Core Instructional Day: Support and Collaboration

During this section, you will be assessing the state of your current STEM programming as it relates to the support and collaboration with the core instructional day. This section is to be completed with input from select local education agency (LEA) stakeholders (Principal, School Liaison, District Liaison etc.) that are connected to your program, but may not be integral to program operations.

Support and Collaboration

26. Which statement best describes how the OST program supports and collaborates with the District / LEA with respect to STEM learning opportunities?

- ☐ The District / LEA and the OST program do not connect (i.e. There is no connection between LEA leaders / staff and OST program leaders / staff).
- ☐ The District / LEA has a minimal connection with the OST program (i.e. There are informal and infrequent connections between LEA leaders / staff, and OST leaders/ staff).
- ☐ There is consistent communication between LEA leaders / staff and OST leaders / staff (i.e. communicate fairly regularly).
- ☐ Projects are integrated at the district level between the core instructional day and the OST program (i.e. LEA leaders/ staff and OST leaders / staff communicate formally and frequently. The OST program is integral in the support of core instructional day learning).

27. Which statement best describes how your program supports and collaborates with the core instructional day with respect to STEM learning opportunities?

- ☐ The core instructional day and the OST program do not connect (i.e. There is no connection between Principals, Teachers, other school staff and the OST program staff).
- ☐ The core instructional day staff has a minimal connection with the after school program (i.e. There are informal and infrequent connections between Principals, Teachers, other school staff, and OST program staff).
- ☐ There is consistent communication between the core instructional day staff and the OST program staff (i.e. Principals, Teachers, and OST program staff communicate fairly regularly).
- ☐ Projects are integrated throughout the time students are on school grounds and beyond (i.e. Principals, Teachers, and OST program staff communicate formally and frequently. The OST program is integral in the support of core instructional day learning).

28. What facilities does your program share with the instructional day? Check all that apply.

- ☐ Classrooms
- ☐ Computers
- ☐ Internet Access
- ☐ Library
- ☐ Science Lab
- ☐ Outdoor Setting
- ☐ Cafeteria
- ☐ Storage
- ☐ None of the above

29. Does the OST program (in general, across your sites) have access to computers, and/or computer labs?

- ☐ In most cases yes
- ☐ In most cases no

If yes, how would you describe the ratio of computers to students (in general, across sites) based on the OST attendance capacity at the site(s)?

- ☐ 1 computer to 1 student? _____
- ☐ 1 computer to 10 students? _____
- ☐ 1 computer to 20 students? _____
- ☐ 1 computer to 30 students? _____
- ☐ 1 computer to 40 students? _____
- ☐ 1 computer to 50+ students? _____
- ☐ No computers

Resources/ Approaches to STEM Teaching and Learning

30. Please describe your overall approach to incorporating STEM related content into daily learning activities. That is, in the activities where Science, Technology, Engineering, and/or Math appear, which of the following best describes how these disciplines are integrated?

- ☐ We use separate curricula that is focused on the discipline (i.e., Science, Technology, Engineering, Math)
- ☐ We integrate an element of the discipline into something we are already doing.
- ☐ We do not incorporate STEM related content into daily learning activities.

31. Which stakeholders do you consult when making decisions regarding after school curricula selection and purchase? Check all that apply.

- ☐ School District Administrators (District Decision)
- ☐ Principal (School Decision)
- ☐ Credentialed Academic Liaisons (Site Decision)
- ☐ Community Based Organization
- ☐ Site Coordinators
- ☐ Informal Educators (OST program staff)
- ☐ Decisions are made collaboratively, by whom _____
- ☐ Other, please describe_____

32. Decisions regarding after school curricula are made based on data and identified student need (i.e. API, AYP, STAR, CELDT, Teacher and student surveys)

- ☐ Yes If so, what data is utilized:
- ☐ No

33. Describe the alignment of the out-of-school time program curricula with the instructional day. Check all that apply.
- ☐ After school leaders coordinate with the District Director of Curriculum and Instruction
- ☐ After school is included in site level professional learning communities
- ☐ After school is included in district professional learning communities
- ☐ After school curricula is aligned with the pacing guide and/or grade level content standards
- ☐ After school curricula is aligned and supported with the practices of Common Core
- ☐ After school curricula is aligned and supported with the practices of Next Generation Science Standards
- ☐ Other, please describe

34. Does the after school curricula identified above incorporate the following instructional strategies? Check all that apply.
- ☐ Project-based learning
- ☐ Inquiry-driven instruction
- ☐ Student-centered learning
- ☐ Hands-on learning
- ☐ Integrated Studies
- ☐ Service learning
- ☐ Other, please describe

Professional Development

35. Does your current professional development plan provide support for the following instructional strategies? Mark all that apply.
- ☐ Project-based learning
- ☐ Inquiry-driven instruction
- ☐ Student-centered learning
- ☐ Integrated studies
- ☐ Service learning

36. What current resources/ professional development opportunities are being provided by your district

37. Is STEM the content of any professional development?
- ☐ Yes Describe:
- ☐ No

38. If yes, has that professional development included connections to the following? Check all that apply.
    - ☐ Support of practices with Common Core State Standards
    - ☐ Support of practices with Next Generation Science Standards
    - ☐ Inquiry based teaching approaches
    - ☐ None

Implementation of STEM Learning Opportunities

39. What challenges does your district face in relationship to implementing STEM activities? Check all that apply.
    - ☐ Limited time for STEM
    - ☐ Emphasis on ELA and math
    - ☐ Limited funds to purchase supplies
    - ☐ Lack of facilities
    - ☐ Limited student interest
    - ☐ Limited Professional Development Opportunities
    - ☐ Limited access to computers or tablets
    - ☐ Limited access to internet
    - ☐ Other Explain:

Learning in Afterschool & Summer Project –learninginafterschool.org	**The Power of Discovery: STEM² Visioning Team Describes Quality STEM in OST as:**
The Learning in Afterschool and Summer Project defines quality learning in after school and summer programs. In its position statement the project states that after school and summer programs are important places of learning that are: • Active • Collaborative • Meaningful • Supports Mastery • Expands Horizons	• Student-centered activities designed to engage and nurture student interest and curiosity • Project and inquiry-based learning • Activities that complement the academic curriculum and incorporate the practices of the Common Core Standards and Next Generation Science Standards • Offering integrated/ diversified subject matter • Offering equitable access to all students (i.e., students of all socioeconomic statuses, genders, ethnicities, linguistic abilities, and exceptional needs))

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3. Describe your goal related to increased meaningful student engagement, interest in additional STEM learning opportunities and careers and increased student knowledge and application of STEM content and processes.

Partnership Assessment

During this section, you will be assessing the current state of your STEM programming as it relates to your partnerships. This section is to be completed with input from all current partners.

A partnership is an ongoing relationship between your program and other organizations that share common visions and goals in order to find mutual benefit and strengthen the offerings that your students receive.

40. Do you have established STEM partnerships with any of the following to strengthen STEM offerings? Check all that apply.
    - ☐ Institutions of Higher Education (colleges and universities)
    - ☐ Informal Learning Institutions (science centers, aquaria, zoos, etc.)
    - ☐ County Offices of Education
    - ☐ Federal Funding Agencies (NSF, NASA, etc.)
    - ☐ Community-Based Organizations
    - ☐ Local Business Organizations (Business Roundtables, etc.)
    - ☐ Community Service Organizations (Kiwanis, Rotary, etc.)
    - ☐ Local Individual Businesses
    - ☐ Foundations (including educational foundations)
    - ☐ Local Government Agencies
    - ☐ Other Explain:
    - ☐ None of the above

41. Do partners provide any of the following opportunities for exposing children to career options in STEM-related fields? Check all that apply.
    - ☐ Mentorship Regarding STEM
    - ☐ STEM Internships
    - ☐ STEM Apprenticeships
    - ☐ STEM Career Awareness
    - ☐ Exposure to College Degrees in STEM (i.e. chemical engineering)
    - ☐ Exposure to Professionals in STEM Careers

42. Are there defined roles and responsibilities for STEM partners? If so, what are they?
    - ☐ Yes Explain:
    - ☐ No

43. Does your out-of-school time program utilize volunteers? If so, how are they utilized?
    - ☐ Yes Explain:
    - ☐ No

44. Does your out-of-school time program have a system for training and orienting volunteers?

☐ Yes If so, describe:

☐ No

45. Partnership Information

Partner Organization	Contact Person (phone, email)	How often are you in contact with this organization through the course of a year? (1-5, 6-10, 11-20, etc.)	How long has your program provided/ received support to/ from this organization? (1-6 mos., 6-12 mos., 12+ mos., don't know, etc.)	What type of support is provided? (Implementing activities to students, training/ coaching staff, providing supplies, information/ advice/ referrals, etc.)	How much influence has this contact had on your STEM offerings? (None, a little, some, a lot)	How much does this partner provide materials/ support for non-science offerings? (None, a little, some, a lot)	What are the goals/incentives partners have in working with the OST program?
1.							
2.							
3.							
4.							
5.							
6.							

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3. Describe your goal related to increased meaningful student engagement, interest in additional STEM learning opportunities and careers and increased student knowledge and application of STEM content and processes.

Glossary

Available in more detail at http://www.cde.ca.gov/pd/ca/sc/stemintrod.asp

- **STEM education** is a sequence of courses or program of study that prepares students, including underrepresented groups:
  - For successful employment, post-secondary education, or both that require different and more technically sophisticated skills including the application of mathematics and science skills and concepts, and
  - To be competent, capable citizens in our technology-dependent, democratic society.
- **Science** is the study of the natural world, including the laws of nature associated with physics, chemistry, and biology and the treatment or application of facts, principles, concepts, or conventions associated with these disciplines.
- **Technology** comprises the entire system of people and organizations, knowledge, processes, and devices that go into creating and operating technological artifacts, as well as the artifacts themselves.
- **Engineering** is a body of knowledge about the design and creation of products and a process for solving problems. Engineering utilizes concepts in science and mathematics and technological tools.
- **Mathematics** is the study of patterns and relationships among quantities, numbers, and shapes. Mathematics includes theoretical mathematics and applied mathematics.

Other terms

- **Informal Educator:** Someone who works directly with students in an out-of-school time setting, (such as before/ after school programs, summer programs, etc.) in an informal environment.
- **Academic Liaison:** A credentialed staff from the school or local education agency (LEA) who ensures collaboration, alignment, and partnership between the out-of-school time (OST) program and the core instructional day.

Acknowledgements

We would like to thank the following individuals who have volunteered their time and insight in the revision of the Readiness and Needs Assessment document. Their dedication provided field voices to support out-of-school time programs throughout California.

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Your continued hard work and support will truly help out-of-school time program students and staff throughout California to reach their full potential.

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