

ATTACHMENT A

This is a “living document” to quickly inform people of the *Better Practices* Sub-Committee.

Overview:

The City of Cambridge determined it wanted to focus its efforts on becoming a STEAM-driven city. The City invited STEAM representatives to put together working groups to help accomplish this goal. These working groups/Sub-Committees include Better Practices, Youths, Portal, Internships, Outreach.

The Better Practices Sub-Committee is a collection of various people involved with STEAM in the Cambridge Community. We are working towards researching and sharing “better practices” of the STEAM learning environments both within and outside of Cambridge. We have identified several objectives for this group to accomplish, and have laid out several steps to achieve them.

Goals and Objectives:

- a. Create and send out a detailed survey asking for a description of program details and better practices. From this survey we will create a searchable database for others to view.
- b. Compile report utilizing survey responses identifying trends among Cambridge STEAM programs.
- c. Compile report about other cities’ Better Practices or STEAM overarching programs.
- d. Host a discussion during the Agenda For Children symposium about “better practices” related to STEAM.

What We’ve Accomplished:

- a. Established clear committee members and met on a regular basis.
- b. Created a Survey for STEAM Better Practices
- c. Outlined our goals.
- d. Created a working definition of “Better Practices”

Learning “Better Practices”

- Learner Centered - Focusing programs so that learners are at the center, and learners’ interests are the driving force of curriculum and activities
- Non school activities Aligns with School Curriculum to help bring more value and coherence added to the programs and the experience of our learners
- Universal Design (organization, facilities, program design, curriculum & instruction) helps to ensure access for all learners
- Learning environments foster a cycle of inquiry and making - i.e. Design, Build, Test, Try Again, Share
- Afford learners the skills (i.e. perseverance, critical thinking, risk taking, creativity, etc.) and experiences to access STEAM related career and postsecondary opportunities

Organizational “Better Practices”

- Inclusiveness (outreach) - Organizations are *actively* striving to engage all learners, particularly those who are underserved
 - Participate in a community of practice among providers, educators, facilitators
 - Structure programs to have relatable volunteers and mentors
 - Refer other program alternatives when unable to meet the needs of potential learners
- e. Finished preliminary research on other cities

Research Findings for Other Cities

To better understand what kind of STEAM collaboration and portal we would like to create, we conducted some research of comparable programs in other cities. Here are eight programs and organizations whose collaboration and portals we suggest Cambridge should look towards to emulate.

Boston STEM Network

Boston's version of a STEM network. Includes a link to the [Boston Navigator](#), which is Boston's version of a portal. Boston STEM Network allows third parties to submit events for review to add to the calendar, allows industry partners to fill out a form to apply to become active in the community, and has a running sidebar of job postings.

Thank you for your interest in the Boston STEM Network. Participation from industry partners is integral in our work to align STEM education efforts with workforce needs in Boston. Your feedback will help us cultivate partnerships between Network members and further understand how we can work together to support Boston students from school to career.

Are you currently a member of the Boston STEM Network?

Would you consider supporting STEM educators? (check all that apply)

- I will identify and send a speaker to a classroom
- I will sponsor a field trip to my place of work
- I will contribute materials to support STEM initiatives in Boston schools or programs
- I will recruit volunteers to participate in regional STEM events
- I will facilitate externships for educators
- I will provide input on curriculum
- Other (please explain)

Would you consider supporting students in their pursuit of STEM subjects and careers? (check all that apply)

- I will host a student for a day to shadow me at work
- I will host a student for a semester or summer internship

Recent Posts

Job Posting: Project Manager of the Boston SCILS (Skilled Careers in Learning) Initiative

For students! YouthCities 2014 L3 Challenge

Job Posting: MGH College Readiness

Executive Director Posting- Science Girls

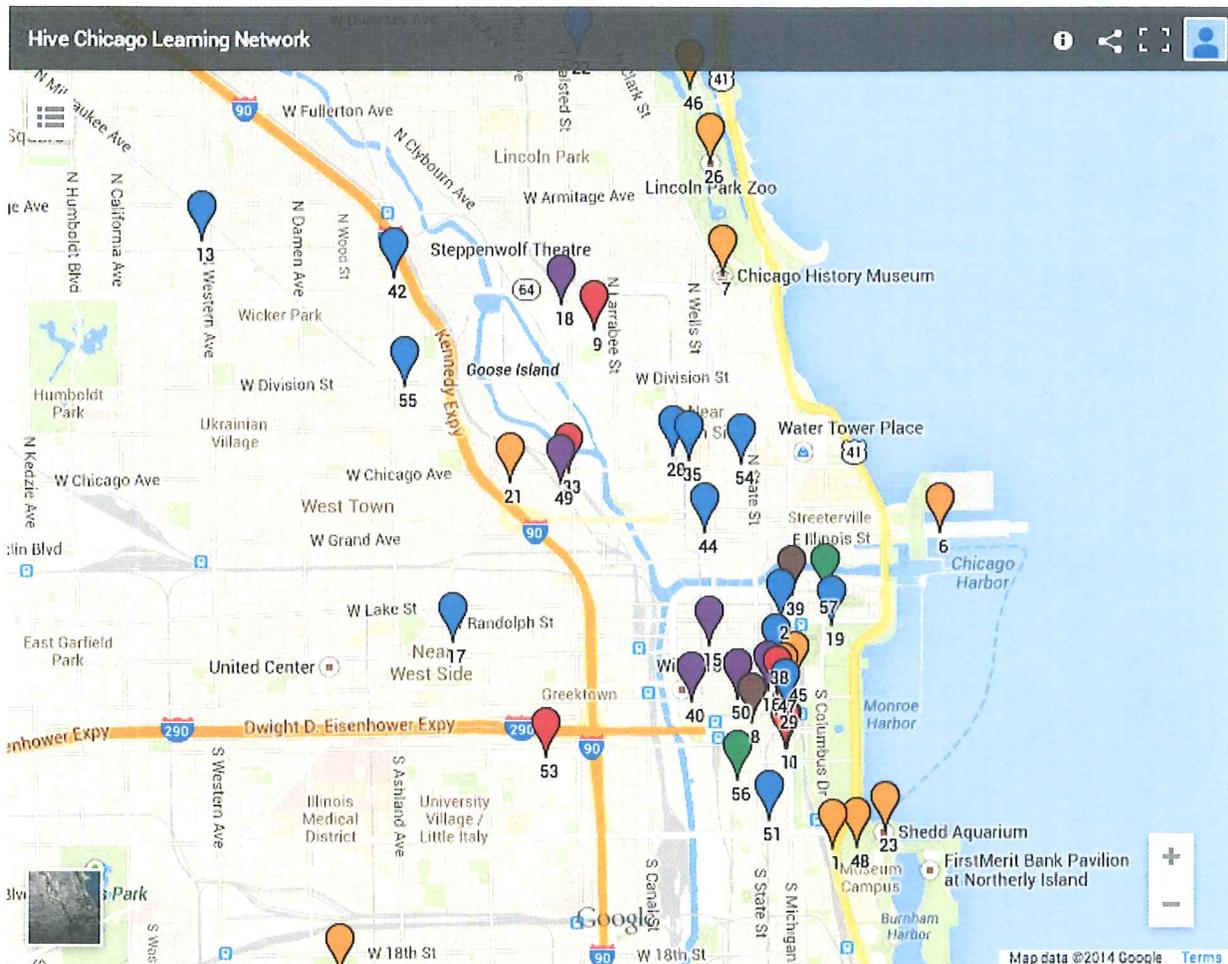
Massachusetts Clean Energy Center Internship Program

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4 ⊙ First Day of School for Boston Public School students (Grades 1-12)	5	6
7	8 ⊙ First Day of School for all Boston Public School Kindergarten students	9 ⊙ Registration for MA STEM Summit opens! at 08:00 AM	10	11 ⊙ MassTLC's 7th Annual Technology Leadership Awards *paid event at 05:30 PM	12	13
14	15 ⊙ Governor's STEM Advisory Council Meeting at 03:00 PM	16	17 ⊙ Boston STEM Network Quarterly Meeting at 03:00 PM	18	19	20
21	22 ⊙ BioPharm America	23 ⊙ BioPharm America	24 ⊙ BioPharm America	25	26	27 ⊙ BPS City-wide

Chicago Hive

The Chicago Hive is a network that connects member organizations across Chicago. Programs are learning-based and target public middle- and high-school students. Chicago Hive works specifically to expose children to the following areas of interest: advocacy and social justice; college and career readiness; critical thinking and collaboration; digital/web literacy; media production; games, systems and design thinking; STEAM; youth development and leadership.

The website features a blog, facebook page, twitter feed, resource list, portfolio of Hive events, list of partner organizations, and shared “Moonshot Groups” (collaborative calls to action in a connected learning environment).



Chicago's City of Learning

CCOL works with the Chicago Public Schools to create accounts for every student. Non-CPS students can create accounts on the website. Account holders earn badges by participating in educational activities on the website and in the Chicago area. Earning badges unlocks rewards such as tickets to special events or being entered in prize lotteries.

The database is searchable by location and topic, or by date.

CCOL is working with Chicago Hive, but they are separate programs.

I'm interested in:

Select topics you want to explore

- Coding + Games**
- Community Action
- Designing + Making
- Exploring earth & science
- Media
- Numbers
- Performance
- Sports + Wellness
- Storytelling
- Work + Career
- Zoology

In these communities

- Downtown
- North Side
- Northwest Side
- South Side
- West Side
- Southwest Side

or

I want to learn:

- With others in-person On my own Both

Start exploring



Badges

When participants learn a new skill or participate in a program, they will earn digital badges. Youth collect their badges in a secure online "Electronic Portfolio" and if they would like to, with parent/guardian consent, can share them with family and friends, teachers and potential employers.



Leveling Up

Each time a badge is earned, youth will receive suggestions for other programs and activities they may be interested in. They will be invited to "level up" and broaden or deepen their new knowledge and skills. We call these Learning Pathways.

GirlStart (Austin, TX)

GirlStart is a network of STEM afterschool programs for K-12 girls in central Texas. They offer all kinds of programming - from one-time events to weekly Saturday morning activities to a monthlong DeSTEMber festival and even a camp. The website has a calendar, blog, donation and volunteer opportunities.

1  DeSTEMber Welcome Materials for the week!	2 <i>Splash Zone</i>	3  Infinite Scuba Hangout Game in a Bag	4 Dallas Zoo Hangout Solar Homes	5  Chariot Engineering	6 <i>Solar Sweets</i>	7 Keeping Warm DeSTEMber Fest @ Bullock
8  National Brownie Day Materials for the week!	9 <i>Bungee Jump Physics</i>	10 Women in Engineering Hangout	11 	12 San Diego Zoo Hangout	13 FURGIES AND REACTION	14 Last Tower Standing
15 <i>Lights Out</i> Materials for the week!	16 Around the Sun Thinkery Hangout	17  Wonderopolis Hangout	18 <i>Rockin' Roller Coasters</i>	19 The Franklin Institute Spinning Arm	20 <i>Crazy Catapults</i> Texas State Aquarium	21  National Flashlight Day

Saturday, January 18, 2014 - Registration closed

Stellar Structures: 3rd-5th

9:00am-1:00pm

The North Star has always been a directional key in cultures' constellations and stories. Discover the night sky according to Native American and ancient Egyptian mythology and engineer structures specific to each society.

Saturday, January 18, 2014 - Registration closed

Kickin' It: 6th-8th

9:00am-1:00pm

How far can you kick a ping pong ball? The challenge is you can't use your foot! Construct a motorized spinning arm to sail a ping pong ball across the room and then design a game using your new invention.

Saturday, February 15, 2014 - Registration closed

Feathered Friends

1st-2nd with parents

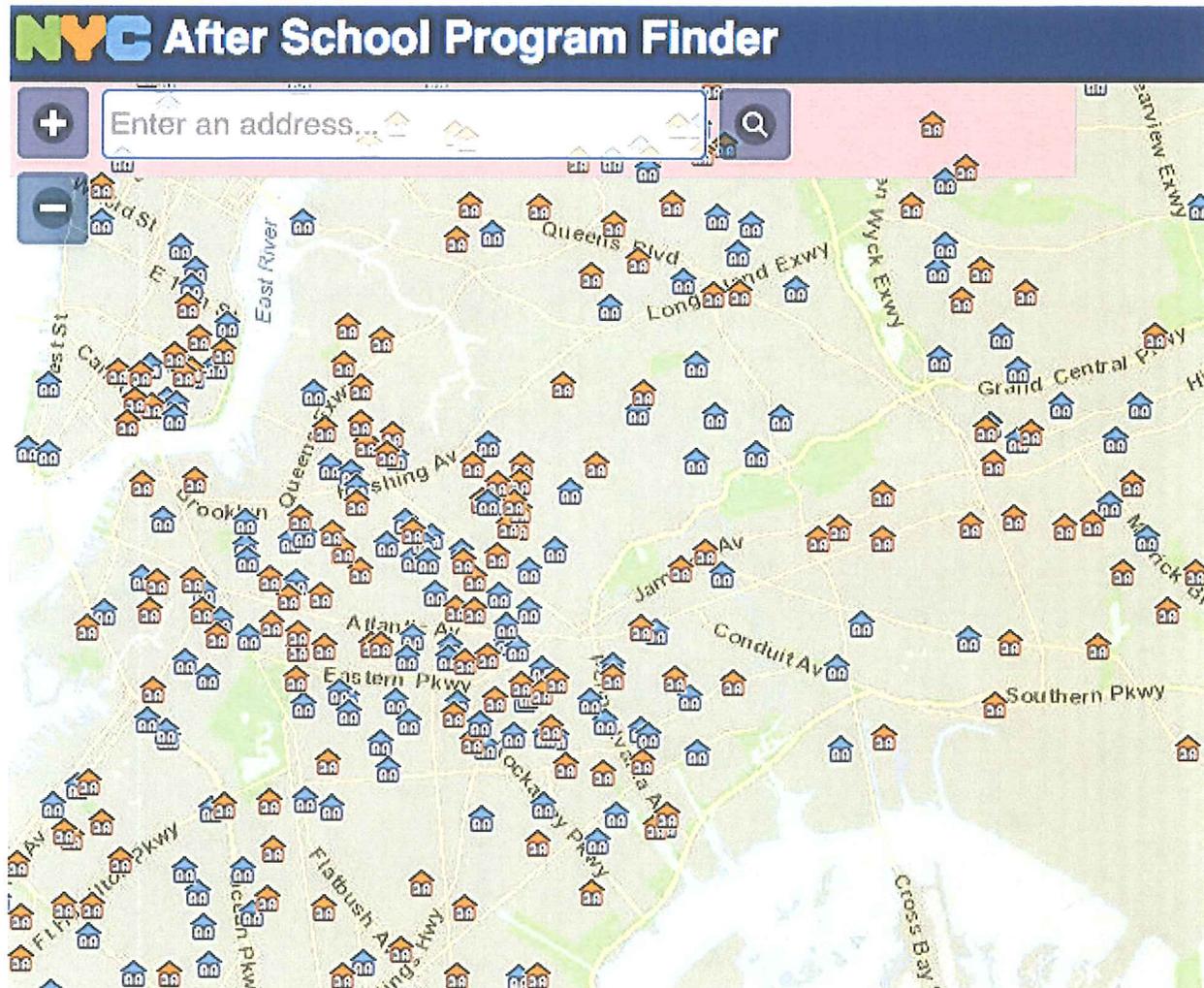
9:30am-noon

Join us as we uncover the secret world of birds! From bird beaks to feathers discover the differences that makes each species unique and design a bird feeder to take home.



Compass NYC (New York, NY)

Compass NYC is a comprehensive collection of 800 afterschool programming opportunities throughout New York City for K-12 students. Compass NYC does not specifically focus on STEM/STEAM programming, but it does make note that one of its goals is to integrate literacy and STEM learning. Programming is split into three models (Elementary, Middle, and High School) and is provided to students at no cost. They also have [this programming map](#) (K-8) that makes it easy and efficient to search for locations that host programs close to where you live.



STEM Education Coalition (Washington, D.C.)

The STEM Education Coalition lobbies for reform in STEM education, especially to encourage women, veterans, underrepresented minorities, and rural populations to excel in STEM fields. The group is bipartisan and aims to work with policymakers at every level.

The website is incredibly quantified, from their Annual Reports to their One-Pagers to their Core Policy Recommendations. The Core Policies and General Principles page is worth looking at. The Coalition maintains an active Twitter feed.

- [➡ One-Pager: The STEM Education Coalition's Goals and Members](#)
- [➡ One-Pager: STEM Education, Good Jobs, and U.S. Competitiveness](#)
- [➡ STEM Ed Coalition Core Policy Principles](#)
- [➡ A Message to Prospective Members](#)
- [➡ 2013 Annual Report](#)
- [➡ 2012 Annual Report](#)
- [➡ 2011 Annual Report](#)

Core Policy Recommendations

The Coalition supports:

- Inclusion of student performance in science alongside math and reading as a required element of K-12 educational accountability systems.
- Comprehensive efforts to expand the capacity and diversity of the STEM workforce pipeline, including targeted initiatives to promote the inclusion of underrepresented minorities, women, and other high-need populations in STEM fields.
- State-based efforts to implement Common Core Math and Next Generation Science Standards and other high-quality college- and career-ready standards in STEM fields.
- Robust dedicated support for effective in-depth professional development STEM educators, including informal educators.

Washington STEM

The Washington state STEM website is a web portal rather than a program in and of itself. The portal is not student- or child-focused, but for adults. The website posts STEM events and grants that are available in Washington. They run a Facebook group and have a newsletter that disseminates information about STEM happenings.

Most interestingly, Washington STEM traces grant money and has a list of grants that can be applied for. They post articles about the benefits of STEM to the economy, and ways to bolster STEM in local communities.

The screenshot shows the Washington STEM website interface. At the top, there is a navigation bar with "Home > Get Involved > Events > Upcoming Events" and social media sharing options for LinkedIn (Share 0), Facebook (Like 0), and Twitter (Tweet 0). The main content area features several cards:

- UPCOMING EVENTS**: A header for the event section.
- OCTOBER 6, 2014**: A date indicator for the featured event.
- COMPUTER SCIENCE ROUNDTABLE**: A card with a graphic of a smartphone and binary code. Text: "Join your fellow regional leaders at the Computer Science Roundtable to discuss promising solutions and build momentum for federal and state policy changes." Includes a "LEARN MORE" button.
- COMMON CORE + NEXT GENERATION SCIENCE STANDARDS**: A card with a graphic of a rocket and a person. Text: "Resources for parents, educators, and community members targeting the Common Core State Standards and Next Generation Science Standards. Learn more about the rigorous standards that will help students be career and college ready." Includes a "DIG DEEPER" button.
- SPREAD THE WORD**: A card with a graphic of five stylized human figures. Text: "Tips and tools for STEM advocates to spread the word and pass along the power of STEM." Includes a "DIG DEEPER" button.
- SIGN UP FOR OUR E-NEWSLETTER**: A blue box with a text input field "Enter your e-mail" and a "SUBMIT" button.
- THANK YOU FRIENDS OF STEM**: A red banner.
- JOB + ECONOMY**: A blue banner.
- WHY STEM? WHY NOW?**: A yellow box with the text "The facts speak for themselves." and a "SEE INFOGRAPHIC" button.

At the bottom, there is a map of Washington state with colored dots representing investment types: Entrepreneur (red), Portfolio (blue), and Current STEM Network (yellow). Below the map is a legend and a link: "CHECK OUT OUR GRANT INDEX TO SEE STEM IN ACTION".

YouSTEM (San Francisco, CA)

YouSTEM is a searchable database of STEM opportunities for K-12 students in the Bay area. If students are interested in a program that has already taken place for the year, they can sign up to receive a notification as soon as registration opens up for the year.

The database is searchable by program type, subject, region, season, age, and cost.

ALL SUBJECTS
 BIO
 CHEM
 PHYSICS
 MATH
 ENGINEERING
 COMP SCI

Showing 1-10 of 53 programs.
1 2 3 4 > >>

▶ FILTER RESULTS:

Program Type:

Any

Intern / Lab Volunteer

Guided Labs

Lecture / Seminar

Subject:

select **all none**

Biology

Chemistry

Physics

Math

Engineering

Computer Science

Local Region:

All localities ⌵

Season:

Any time ⌵

Grades:

Any grade ⌵

Is it free?

Doesn't Matter ⌵

UPDATE >

π Bay Area Science Festival

LEARN MORE >

Guided Labs, Lecture / Seminar. Grades 6-8;
Biology, Chemistry, Physics, Computer Science, Engineering, Math.
\$0 stipend; Program is **year-round**; No application necessary (check back for next year's date)

Our mission is to celebrate the Bay Area's scientific wonders, resources, and opportunities by exploring the role of science, engineering, and technology locally & in the world. (Text adapted or taken from website.)

π Teens Exploring and Achieving in Math and Science (TEAMS) Interns

LEARN MORE >

Intern / Lab Volunteer. Grades 9-12;
Biology, Chemistry, Physics, Computer Science, Engineering, Math.
\$0 stipend; Program dates **Check official program website**; Applications due **Check official program website**

The TEAMS Internship Program is designed to provide young people ages 15-18 with work experience and the opportunity to explore their interest in science, engineering, technology, and math careers. Interns receive stipends for their work. (Text is...

Champions of Science

LEARN MORE >

Guided Labs, Lecture / Seminar. Grades 6-8;
Biology, Chemistry, Physics.
\$0 stipend; Program dates **Check official program website**; Applications due **Check official program website**

The Champions of Science afterschool science program is for middle school students interested in science, technology,

Next Steps

- a. Analyze Survey results and share with group.
- b. Introduce STEAM presenters to Symposium organizers
- c. Create a more in-depth report on research

ATTACHMENT B

RECOMMENDATIONS FROM THE INTERNSHIPS & APPRENTICESHIPS STEAM SUB-GROUP

- 1) **TWO LEVELS: ON-THE-GROUND LEVEL AND LONG-TERM VISION LEVEL**

The Cambridge citywide STEAM Initiative should be conceived of as having two levels: 1) An *On-the-Ground level* of ongoing local programming for internships and other Real World Learning opportunities for Cambridge learners of all ages and circumstances; and 2) A long term *Great STEAM City Vision level*. At the vision level, Cambridge would connect STEAM with issues of citizen literacy, civic engagement, workforce development, evolving 21st century skills, and economic relevance in this new technical age. Cambridge would also seek partnerships with other high technology cities nationally and globally to share information on how to develop “SMART CITIES” and STEM/STEAM programs. *The STEAM initiative should have two advisory groups, one to focus on short-term program issues and the other to focus on a long-term vision and national and global partnerships.*

- 2) **INTERNSHIPS (Academic year and summer).** Begin with an emphasis on high school students and then expand to focus on adults and seniors and to middle and elementary school students.
 - a) **Conceptualize: Identify ideal, desired types of internships needed for different types of learners.** There should be internships across a range of subjects and settings and appropriate for learners with different interests, levels of STEAM knowledge, ability, and motivation. Consider expectations for behavior and learning outcomes and “deliverables” for student interns and host organizations. When students are placed in internships, it should be made clear what the main goals of the internship are *for the student* and how much support is required from the host and sending organization. *It is important that internships not be designed only for students who are highly motivated, already interested in STEAM topics, or high achievers in school.*

 - b) **Identify existing programs and organize information in a portal:** Identify existing city and community programs currently placing learners in internships (“*sending*” organizations) and organizations currently offering internships to students (“*host*” organizations). Categorize sending organizations in terms of the types of learners they serve and the supports they offer. Categorize host organizations in terms of the topic, intern requirements, supports provided, and supports required from the sending organization. Organize all information in a web-based portal to facilitate student-internship matches. *Identify gaps in the current available internships.*

 - c) **Use design research to design new internships and improve existing internships.** New internships should be created by a *design research team* that includes students, educators, researchers, and staff from sending and host organizations. Design research is a process by which multidisciplinary teams of practitioners and researchers collaborate to design, test, and refine prototype internships in order to create models of high-quality internships. These models can also be used to revise and improve existing internships and

can be shared with other STEM/STEAM cities. Use the MYSEP and other already-funded programs as design research sites where internships can be studied and new models developed.

- 3) **CONNECTING WITH CAMBRIDGE SCHOOLS:** Cambridge schools include public, charter, independent, and denominational schools. It is very important that STEAM internships be connected to students' academic curriculum in terms of *what* STEAM-related topics they learn about and *how* they learn STEAM topics. It should not be underestimated, however, how challenging it can be for different agencies to collaborate. *Collaborations require mutual commitment, expertise, and staff time*, whether that is available because responsibilities are reallocated or because new positions are created. *Interagency collaborations are hard work, they require staffing, but they are very valuable for students.*
- a) **Community Charter School of Cambridge (CCSC).** *CCSC already requires all 12th grade students to complete an off-campus Senior Internship of at least 100 hours. Students also must present at the Senior Internship Exhibition Night and earn a passing grade for their presentation. CCSC can serve as a valuable resource to Cambridge's STEAM initiative.*
- b) **Current CRLS staffing and capacity.** *Currently there is no central internship office at CRLS that connects and supports students in internships, nor is there enough staff time to support a comprehensive program. For this reason, CLRS students miss out on many opportunities. Only an estimated 20 CRLS students per year enroll in internship programs. RSTA has its own coop program, and CRLS does have an Enhanced Senior Year program coordinated by CRLS teacher Kathleen FitzGerald. Science teachers Barbara Dorritee and Paul McGuinness have also sought to connect students with internships. Though CRLS's eight guidance counselors could link their students with internships that complemented their coursework, that is currently not an explicit part of their role or training. CRLS educators might benefit from more opportunities to learn about Out of School youth learning.*
- c) **CRLS's 2013 NEASC Review.** *Link city-wide internship efforts with CRLS's NEASC-related improvement plan, which includes an emphasis on 21st century learning and equal opportunity to learn for all students. CRLS principal Damon Smith and assistant principal Bobby Tynes are both interested in Real World Learning and career-awareness pedagogy.*
- d) **Create a four-year *internship curriculum* for high school students to complement the academic curriculum.** *Create specific milestones, competencies, or requirements for each year of high school. Link these with 21st century skills. Students who start developing career skills and interests early in high school will graduate with career-related skills, more confidence, and clearer goals for their future.*
- e) **Research how CPS already integrates career awareness into the K-12 curriculum.** *Use DESE's K-12 Career Development framework/continuum. (Attached)*
- f) **Research the CPS STEM and arts curricula, including how they aligned with the Common Core Standards and the Next Generation Science Standards.** *Find out what Real World Learning experiences, independent studies, and internships are currently integrated into the K-12 STEM and*

arts curricula. In discussing expanding RWL opportunities with CPS educators, be mindful of how Common Core and NGSS may determine what CPS can and cannot incorporate into their curricula.

ADDITIONAL RECOMMENDATIONS

- 1) **DEFINING STEAM and STEAM vs. STEM:** The definition of STEAM and its component disciplines should not be rigid and confining. *Science, technology, engineering, the arts, and mathematics* are all terms with broad meanings. In terms of STEAM vs. STEM, though, how do the arts fit in? Given the high remuneration for STEM jobs and the low remuneration for some jobs in the arts, the STEAM group should define what STEAM means in the context of college and career exposure and skills. Does it just mean *STEM plus the arts*? *The fusion of art with one or more of the STEM disciplines*? *The arts approached through a science and technology lens*? *STEM activities pursued through a creative arts lens*? *Using the arts to draw students into STEM*? The arts and sciences both emphasize close observation, interdisciplinary thinking, and making creative leaps from known to desired outcomes. *Clarifying the acronym—STEAM—and developing a model in which the arts, humanities, and civic consciousness are incorporated to expand the concept of STEM would be a major Cambridge contribution to the field of education and workforce development.*
- 2) **DOCUMENT OUTREACH AND AFFIRMATIVE ACTION:** In order to ensure access to STEAM opportunities for Cambridge learners from marginalized groups and those underrepresented in STEAM, *the STEAM coordinator should document and record specific actions and strategies that will be taken to affirmatively recruit and support learners from these groups.* These students may have unique STEAM experiences and knowledge that differ from that of students from mainstream, overrepresented groups and that can be used in recruitment efforts.
- 3) **FUNDRAISING:** Consider funding in two waves: 1) Short-term funding for prototypes and immediate initiative (including via existing programs such as MYSEP), and 2) Long-term sustainability funding through industry and academic support. Identify special grants programs, e.g. NSF, DOE, DOL, or the White House (i.e., My Brother's Keeper). Investigate state-sponsored innovation programs. Large foundations (Gates, etc.) could be targeted for long-term big vision projects.

STEAM COORDINATOR JOB DESCRIPTION

Ideal Candidate

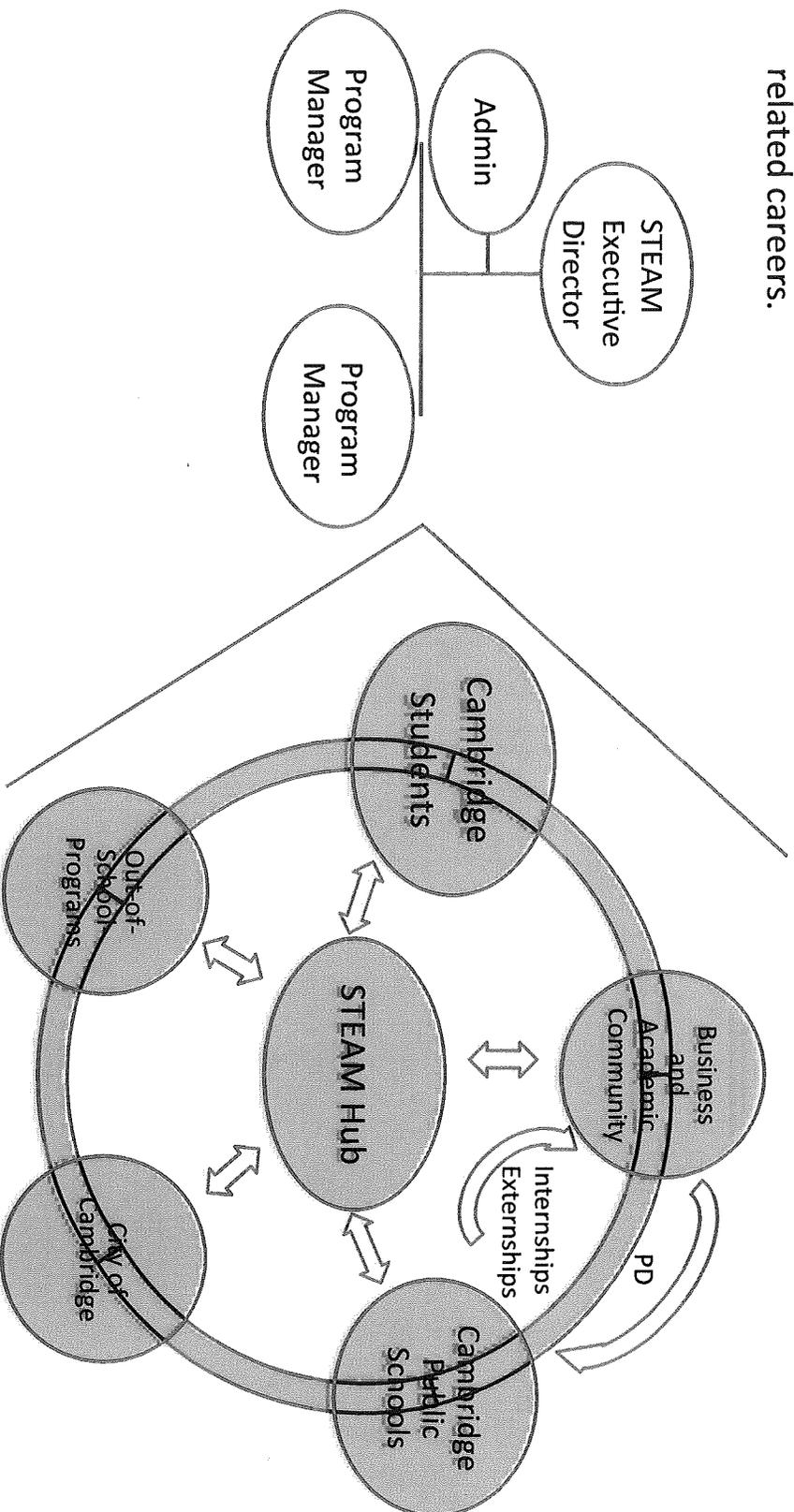
- Proven track record for results, collaboration, leadership
- Advanced degree in STEM field
- Experience in corporate context; understanding culture, expectations, environment
- Experience in diverse educational environment with sound pedagogical approach
- Strong professional network
- Ability to successfully engage all stakeholders students, school, business/academic communities, city, families
- Practical, flexible, and logical approach based on solid grasp of complexity of challenges

Job Description

- Engage all stakeholders: students, schools (guidance counselors, teachers, deans, principal), district leaders, business and academic community, and City) to leverage resources and expertise to create STEAM opportunities for all Cambridge students
- Broaden scope and breadth of STEAM opportunities to ensure that students engage in appropriate, engaging, well-supervised environments with clear and well-communicated objectives, deliverables, milestones of achievement, assessments, and evaluation
- Develop progressive, engaging K-12 STEAM curriculum with in-school and out-of-school components and links to current, real-world challenges
- Expand school professional development (PD) programs around STEAM careers, corporate culture, etiquette, etc. for teachers and guidance counselors
- Develop training programs to prepare and train students for professional environment with clear and consistent expectations for behavior
- Ensure high levels of engagement by tailoring training and placement opportunities to fit student interest and experience
- Evaluate programs to ensure that students are meeting benchmarks before moving to next level
- Devise systems for (1) communicating with students and families about opportunities and (2) allowing students to navigate opportunities and match individual interest to appropriate STEAM programs and internships
- Manage public relations, marketing, outreach and engagement with all Cambridge families
- Secure funding by business and academic community to ensure long-term success and sustainability of initiative

Proposed STEAM Hub in Cambridge

To create and facilitate STEAM opportunities for all Cambridge students to explore potential careers, to develop and enhance skills, and gain real world experience through a reciprocating network of schools, community leaders, business and academic communities, and the city for the purpose of preparing and training students for STEAM-related careers.



FUNCTION OF STEAM HUB

- Broaden scope, access, and reliability of student STEAM opportunities to ensure that all students engage in appropriate, engaging, meaningful, and well-supervised environments with clear and well-communicated objectives, deliverables, milestones of achievement, assessments, and evaluation
- Develop a progressive, engaging K-12 STEAM curriculum with in-school and out-of-school components and direct links to current, real world challenges
- Devise user-friendly and reliable system for students and families to access information about opportunities

ELIMINATE BARRIERS, CREATE EQUITY, DEEPEN EXPERIENCE, URGENCY, ENCOURAGEMENT, PREPARATION, SELF-GUIDED, COLLEGE, DEVELOPMENTAL, TRAINING, CURRICULUM, WORKFORCE, SUCCESS, GROWTH, EFFICACY, CAREER, SELF-SUFFICIENCY, ECONOMIC, EMPOWERMENT

STEAM EXPERIENCES, ACTIVITIES, OPPORTUNITIES

LEARNERS

children
young people
young adults
adults

THE LEARNER

interests
experience
agency
identity
skills
motivation
knowledge
confidence
maturity
imagination
resources
circumstances
relationships
goals

STEAM FIELDS

anatomy, art,
archeology, architecture,
astronomy, biology,
botany, chemistry,
computer science,
conservation, design,
digital art, dance, data
analysis, drawing,
ecology, engineering,
environmental science,
filmmaking, forestry,
genetics, geology,
health sciences,
horticulture, life
sciences, maker science,
mathematics,
metallurgy,
microbiology, music,
neuroscience, painting,
photography, robotics,
physics, sculpture,
statistics, theater

STEAM SETTINGS

arts organization, city
agencies, companies,
contests, ecology centers,
nonprofits, games,
festivals, hospitals, labs,
libraries, maker spaces,
observatories, OST,
the outdoors, museums,
schools, theaters, virtual
spaces, universities,
youth centers

∞ STEAM Internship Student Profile ∞

Name _____

Age/DOB _____

Grade _____

School _____

School/OST Contact Person: _____

Address _____

Phone(h) _____

Phone (c) _____

Email: _____

Home Contact Person: _____

Student Situation and Goals/Purpose of Internship: _____

Interests: _____

Relevant OST or In-School Experiences: _____

Academic Skill Level: (at, below, above, extremely above, or severely below grade level)

Reading/Writing: _____

Math _____

Speaking/Listening: _____

Social/Interaction Skills: _____

Level of Support Needed: _____

Internship Possibilities: _____

Supervisor and Support Persons: _____

Comments/Notes: _____

STUDENTS

∞ STEAM OPPORTUNITIES ∞

	Science/Medicine	High Tech/Web	Engineering	Arts-Related	Quantitative
<p>Intensive Need</p> <p>At high risk of choosing a harmful path. Needs an immediate, comprehensive intervention immersion experience with high levels of support. Needs comprehensive follow-up.</p>	<p>Animal care assistant at ASPCA.</p>		<p>Engineering project with Cambridge Community Center and Public Works</p>		
<p>Moderate Need</p> <p>Struggling academically or personally. Needs structured and reliable support with follow-up.</p>	<p>Assistant for summer 3rd-5th grade science program</p>			<p>Beyond the 4th Wall or Underground Railroad theater tech Internship</p>	<p>Handwriting in red indicates examples of internships that could match different types of students/students in different</p>
<p>Blends In/Invisible</p> <p>The average student that is rarely noticed. Needs an opportunity to be noticed and challenged in an exciting environment. Needs</p>	<p>Cambridge City Hospital Internship</p>			<p>MFA Restoration Internship</p>	

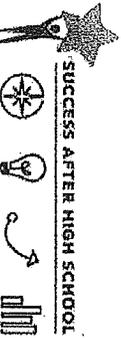
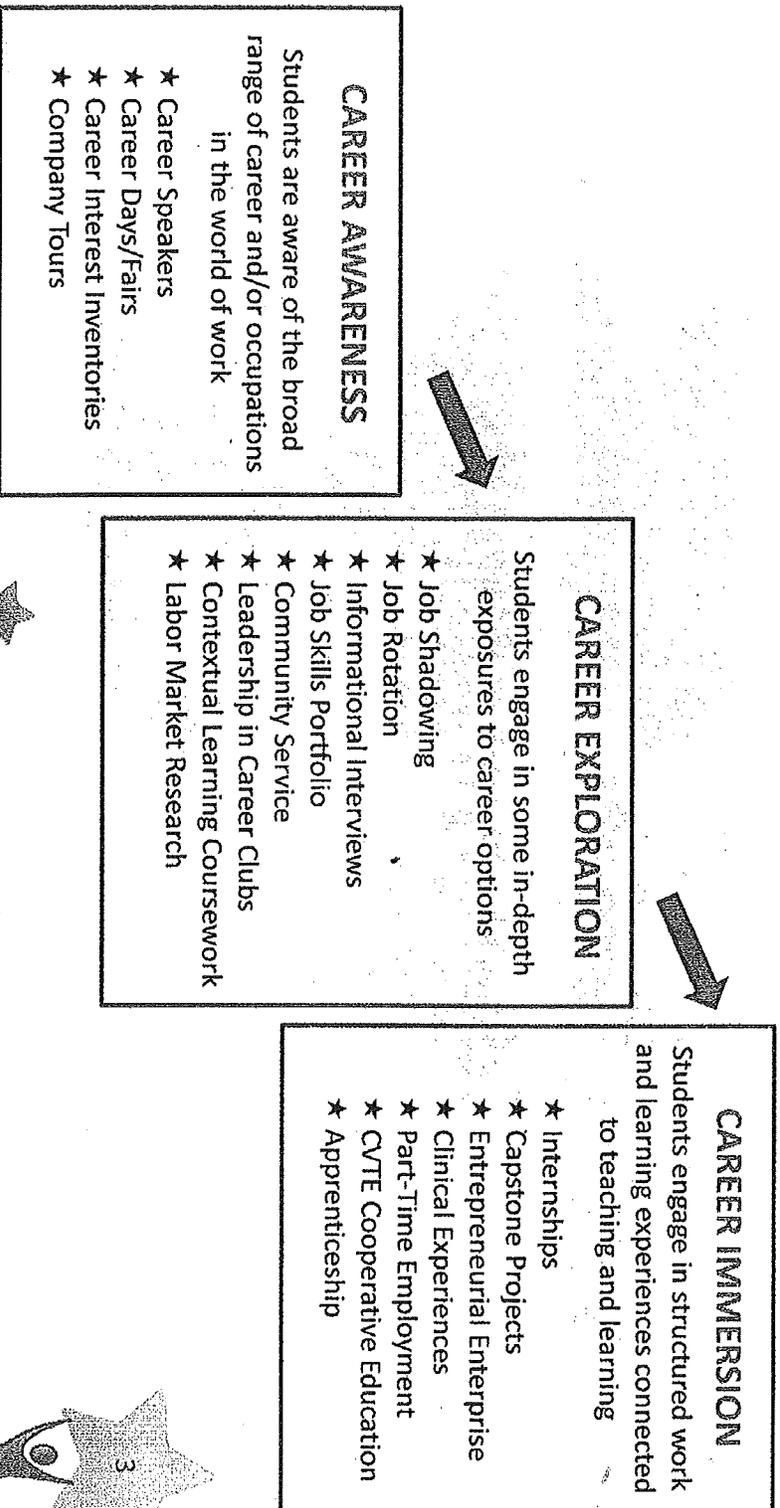
But do these types of categories and descriptors label and objectify students?

Handwriting in red indicates examples of internships that could match different types of students/students in different

attentive mentor, check-ins, and follow-up.					
<p align="center">Enthusiast</p> <p>Engaged, enthusiastic student. Independent, mature, self-motivated. Solid academic skills. Requires check-ins and follow-up.</p>	<p align="center">Saturday internship at Harvard Peabody Museum</p>	<p align="center">Social media design project for Museum of Science.</p>			
<p align="center">Advanced in STEAM</p> <p>A student with high level academic skills and strong interest in a STEAM-related topic. Needs an advanced opportunity to do high-level work. Requires check-ins and challenging follow-up.</p>	<p align="center">Ecology internship with Harvard ecologist</p>				<p align="center">Data analyst for genome project.</p>

Career Development Spectrum

The process through which an individual comes to understand his or her place in the world of work



SUCCESS AFTER HIGH SCHOOL

Massachusetts Department of Elementary & Secondary Education

CAMBRIDGE STEAM INTERNSHIP DESIGN RESEARCH

CONCEPTUALIZE

Identify **ideal types** and categories of internships required to **meet the needs** of Cambridge learners.

INVENTORY "sending"

organizations and programs that currently place and support students and other learners in internships.

INVENTORY "host" organizations that currently offer internships. (Universities, companies, museums, etc.)

Identify **types of learners** these host and sending programs serve, and the **types of internship activities** and **topics** the host organizations offer.

GAPS & WEAKNESSES

Identify **gaps** and **weaknesses** in existing network of sending and host internship programs.

DESIGN RESEARCH

Use **design research** to **create and test new prototype internship models**. Use MYSEP and other funded programs as pilot sites.

Scale-up successful prototype internships and **share** ideas with other STEAM & STEM cities.

Create new internships and **refine existing internships** based on design research models.

ATTACHMENT C

**CHART FROM THE INTERNSHIPS
&
APPRENTICESHIPS STEAM SUB-GROUP**

ATTACHMENT D

NOTES FROM THE MESSAGING & OUTREACH STEAM SUB-GROUP

MISSION STATEMENT

Our mission is to make Cambridge a world-class STEAM city. We plan to build an infrastructure for the Cambridge STEAM Community to increase active participants in STEAM activities, create opportunities for underserved kids & adults of all ages with an end goal to have a competitive workforce for an innovation economy.

Putting resources into the STEAM initiative will contribute to the future of highly creative and inquisitive young people. STEAM jobs appeal to a wide range of people and yield high pay-- everyone should have access to this. We want underserved communities to find something they are passionate about. To get there, we need to provide a high quality education, positive reinforcement and encouragement. This will contribute to an environment in which students are more excited about expanding their knowledge.

WHAT IS STEAM?

A set of goals and categories that work together emphasizing interdisciplinary learning. In particular, students engage in hands on and project-based work in these areas in order to

improve educational and economic outcomes, enhance quality of life, inspire a sense of agency, and grow appreciation for the arts and sciences.

STEAM Opportunities offer a unique exchange of ideas, models and explorations between the aesthetic and technical worlds and can produce high quality, engaging learning experiences, such as internships, for people of all ages that broaden their horizons and help them to build their efficacy as learners.

STEAM experiences open pathways for young people to participate in meaningful learning experiences that adds to the quality of lives and communities. Training, cultural sensitivity, and familiarity with program goals can make the difference between good and great outcomes. The nature of a given training is tied to a number of variables, including: the students being addressed, the learning goals at play, the environment in which learning is taking place, the subject matter, and the learning format, amongst others.

Why is this work important? (Goals?)

To raise awareness of STEAM learning and the opportunities available to students knowledgeable in STEAM fields.

To ensure broad participation of Cambridge middle school youth in quality out-of-school-time

experiences that fosters both their present and future learning and life success.

To create a better economy in which people can afford housing, ensuring that locals are involved in the local innovative industries in the city. Cambridge is home to a number of high performing corporations and top universities. Cambridge's schoolchildren have divergent educational and economic outcomes—where socioeconomic status still correlates highly with academic performance. Our goal is to close the gap between job availability for high-income and low-income students.

ATTACHMENT E

Entity	Description	Internship/Job/Coop/ Academic Program	Time Frame	Target Audience
Breakthrough/ Boston	Breakthrough is an academic enrichment program that creates paths to college for middle and high school students in Cambridge Public Schools. The Summer Work and Learning component of Breakthrough centers on Leadership Academy Interns, Palante Interns and Junior Teachers - three opportunities for high school students to gain academic-preparatory and job-readiness skills within the program	Job	July - August (6 weeks)	Leadership Academy: 9th graders; Palante: 10-12 graders and Junior Teachers: high school students
Cambridge Urban Forestry Program	Job Title: Assistant to Volunteer Coordinator Internship. The internship position will support our full-time Volunteer and Outreach Coordinator and will play a critical role in scheduling and creating volunteer events, researching prospective projects, soliciting in-kind donations, and working at volunteer events on the Charles River. The occasional Saturday morning volunteer event is required. Having a bicycle is a plus. Please submit a resume and cover letter.	Information pending		
Charles River Conservancy	Job Title: Assistant to Volunteer Coordinator Internship. The internship position will support our full-time Volunteer and Outreach Coordinator and will play a critical role in scheduling and creating volunteer events, researching prospective projects, soliciting in-kind donations, and working at volunteer events on the Charles River. The occasional Saturday morning volunteer event is required. Having a bicycle is a plus. Please submit a resume and cover letter.	Internship		College Students
Charles River Conservancy	Development and Communications internship - description not yet developed	Internship		? College Students

Contact

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Draper Laboratory	The Summer program provides an opportunity for high school students to work with mentor scientists and administrators in the execution of a research project while obtaining professional experience and support of academic preparation for a career in engineering or related science	Internship	June - August (6-8 weeks)	High School Students, must be age 16 by start of program
Earthwatch	Earthwatch expeditions provide individuals with opportunities to participate in hands-on scientific research all over the world. We also partner with schools, businesses, governments, and other philanthropic organizations to enable a broad range of people to learn and change the world through our experiential model.	Jobs (? Adults)		
Harvard Union of Clerical and Tech Workers	Various responsibilities. Stds work 2-3 days/week and attend a weekly job readiness/career exploration seminar	Internship	October - May	High School Students, Jrs & Seniors
Harvard-Smithsonian Center for Astrophysics	The SAO Scholars Program is a Summer Research Experience for High School Students with the academic background and professional ambition to pursue an astrophysics research project with an SAO/Harvard scientist. This program is a unique collaborative between SAO and the Cambridge Summer Youth Employment Program.	Internship	July - August (6 weeks)	High School Students (10th, 11th 12th graders)
Museum of Science	Interns work throughout the Museum on a wide variety of projects and tasks including everything from science education to behind-the-scenes work. An internship at the Museum of Science is an excellent way to gain a hands-on, work-learn experience in a specific area of interest or field of study. Our internship program offers internships for one of three trimesters: fall, spring, and summer. Also, the Museum participates in SWL a component of MSYEP	Internship		

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sent an email to
dlefcourt@cambridgema.go
v about internship
opportunities

George Hinds (OWD) &
Joanna Gelband (Harvard).
Paid by Harvard

Sarah Block/ Nimesh Patel

MIT	MIT has three summer programs that high school juniors can consider: 1) Minority Introduction to Engineering and Science; 2) Research Science Institute; 3) The Women's Technology Program	Academic Program	June - August	HS Juniors
New England Aquarium	Internships offer experience in areas ranging from veterinary services and animal husbandry to communications and program and exhibit development	Internship		College Students; recent college grads; career changers
New England Aquarium/MSYEP	The Summer Teen Internship Program is a great opportunity for teens to challenge themselves and learn useful skills while having fun and meeting new friends. The Aquarium offers paid and volunteer summer internships for Boston, Cambridge and suburban youth for one week of training and six weeks of work in July and August.	Job	June 30 - August 18	HS Stds (age 14-18)
Woods Hole Oceanographic Institute		WHOI does not conduct a formal internship program but supports limited number of college students and advanced high school students in their laboratories on a year-round basis		
CHA Workforce	Five year long program providing adolescents with after-school life skills classes, "try-out" mentored employment and academic supports. The employment opportunities are in a wide range of businesses and institutions. The wages for school year placements are partially subsidized by the CHA.	College Prep	July- August (6 weeks)	High School Seniors

CHA/This Way Ahead	<p>This Way Program provides interactive courses and internships to high school and college bound public housing residents, through GAP Inc.'s 'This Way Ahead' Program. Working with key GAP and Old Navy staff, the 'This Way Ahead' program helps CHA meet its mission as well as provide innovative resident services. After youth successfully complete 8-week career readiness program, they are placed at the GAP, Old Navy or with other private sector</p>	Internship	8 week Career Readiness Program (April-May)	Age 15-21 year olds
City Links	<p>City Links program introduces immigrant high school students to exciting potential career paths, empowers them to pursue higher education and inspires them to become leaders in the community. Students from CRLS benefit from an array of services including: internships at Cambridge organizations; targeted one-on-one academic tutoring; one-on-one guidance from volunteer mentors, broad exposure to secondary options, weekly seminars covering leadership development, government structure and civic engagement. Youth in the City Links Summer Work and Learning component gain hands-ons work-readiness skills in supervised municipal and non-profit agency internships</p>	Job	July-August	High School Students
Cambridge Challenge	<p>The Cambridge Challenge is an initiative of the Cambridge Chamber of Commerce Community Outreach Committee that is aimed at strengthening the quality of life for the Cambridge community by bringing together businesses and youth together as partners. Activities include short-term and long-term opportunities for businesses to get involved in the Cambridge Challenge. Also, private sector businesses are encouraged to hire youth age 16 - 18 during the summer.</p>		School Year and Summer	High School Students

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<p>CIC Entrepreneurship Intern Program</p>	<p>Cambridge Innovation Ctr partners with Cambridge Challenge to expose youth to state of the art companies and technical services. Programming includes: So you want to be an Entrepreneur; Meet and Greet and Paid Summer Internship</p>	<p>Jobs</p>	<p>Summer and Year Round</p>	<p>Middle and High School</p>
<p>CRLS/Enhanced Senior Year</p>	<p>The CRLS Senior Internship Program offers meaningful work and learning experiences aligned with students' academic interests and achievements, and provides opportunities for 21st century career exploration. The program comprises two components: an off-site placement and a classroom seminar.</p>	<p>Internship</p>	<p>Spring Semester</p>	<p>High School Seniors</p>
<p>CRLS/RSTA Coop</p>	<p>RSTA prepares students for post-secondary education and careers in some of the fastest growing professions including: Automotive Technology; Biotechnology; Carpentry; Culinary Arts and Hospitality, Early Education and Care; Engineering; Creative Design; Health Assisting; Information Technology; Media Technology; Technical Arts Exploratory (9th graders only); RSTA BE IT Exploratory Program (9th graders only); Embedded Physical Education; Business Education; Computer Technology</p>	<p>Coop</p>	<p>School Year</p>	<p>High School Students</p>

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