

DRAFT -
Pending Board Approval

The logo consists of a red square centered within a larger, light pink square. Inside the red square, the letters "Si" are written in a white, bold, italicized sans-serif font.

Bringing equity to STEAM education by igniting educators and learners to reach their full potential.

Executive Summary

DRAFT -
Pending Board Approval

Vision

*Silicon Box is a 501(c)(3) non-profit that creates **innovation opportunities** for **underrepresented and underserved groups** through the intersection of business, science, technology, engineering, art and math. Through our mobile and physical maker spaces, communities of educators and learners can flourish in a collaborative environment to **create new skills, lasting mentors, and career opportunities.***

Mission

DRAFT -
Pending Board Approval

Broaden participation of underrepresented groups (women, underrepresented minorities, low-income, rural, first-generation, homeless, and disabled) in STEAM fields.

Maintain year-round programs for students aimed at increasing new skills, lasting mentors, and career opportunities.

Establish and maintain STEAM partnerships within the state and across the nation to offer high quality STEAM programs based on researched best practices.

Provide mentoring programs for youth in the early stages of their STEAM exploration.

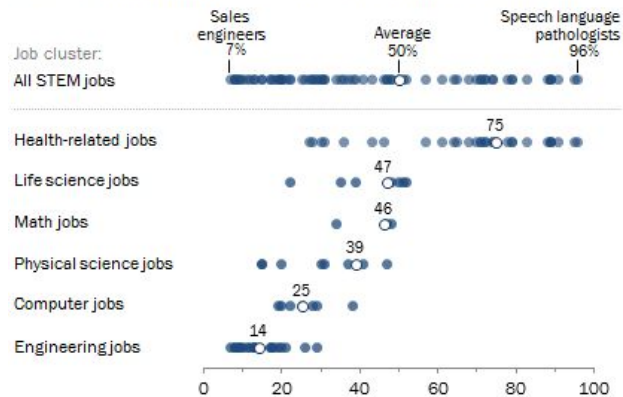
DRAFT -
Pending Board Approval

FACTS

Women are Underrepresented in Engineering, Computer & Physical Science

Representation of women in STEM jobs varies widely

Share of employed adults in each occupational group who are women (%)



Note: Based on employed adults ages 25 and older. Each circle represents a single occupation (e.g., mechanical engineer, registered nurse). Engineering includes architects. STEM stands for science, technology, engineering and math.

Source: Pew Research Center analysis of 2014-2016 American Community Survey (IPUMS).

"Women and Men in STEM Often at Odds Over Workplace Equity"

PEW RESEARCH CENTER

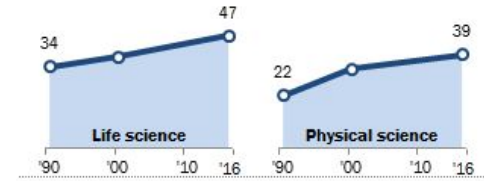
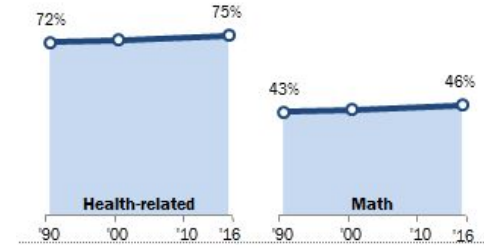
“Women remain underrepresented in engineering (14%), computer (25%) and physical science (39%) occupations.”

Women's representation in computer jobs has declined since 1990

“... the share of women has actually *decreased* in one of the highest-paying and fastest-growing STEM clusters – computer occupations. In 1990, 32% of workers in computer occupations were women; today women's share has dropped to 25%.”

Women's representation in computer jobs has declined since 1990

Share of employed adults in each occupational group who are women (%)



Note: Based on employed adults ages 25 and older. Engineering includes architects.

Source: Pew Research Center analysis of 1990 and 2000 decennial censuses and 2014-2016 American Community Survey (IPUMS).
"Women and Men in STEM Often at Odds Over Workplace Equity"

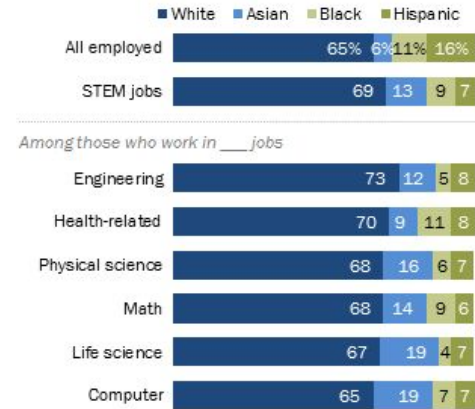
PEW RESEARCH CENTER

Blacks and Hispanics only account for 16% of STEM workforce

Blacks and Hispanics made up around ...
27% of the overall U.S. workforce as of
2016, but together they accounted for only
16% of those employed in a STEM
occupation.

Blacks and Hispanics underrepresented across most STEM job clusters

% of employed adults in each occupational group who
are ...



Note: Based on employed adults ages 25 and older. Whites, blacks and Asians include only non-Hispanics. Hispanics are of any race. Other and mixed race non-Hispanics are not shown. Engineering includes architects. STEM stands for science, technology, engineering and math.

Source: Pew Research Center analysis of 2014-2016 American Community Survey (IPUMS).

"Women and Men in STEM Often at Odds Over Workplace Equity"

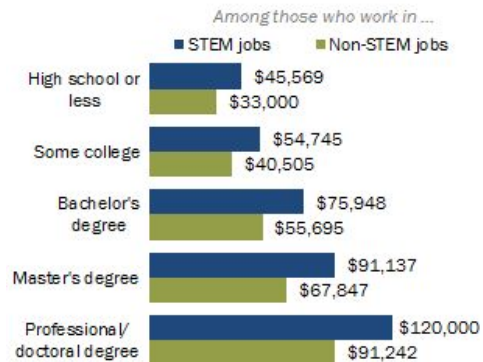
PEW RESEARCH CENTER

STEM Workers Make More

DRAFT -
Pending Board Approval

STEM workers tend to earn more than similarly educated non-STEM workers

Median annual earnings of full-time, year-round workers ages 25 and older with positive earnings



Note: Figures based on 2016 dollars. Some college includes those with an associate degree and those who attended college but did not obtain a degree. Professional degree includes those with an M.D., DDS, DVM, LL.B. or J.D. Doctoral degree includes those with a Ph.D. or Ed.D. STEM stands for science, technology, engineering and math.

Source: Pew Research Center analysis of 2014-2016 American Community Survey (IPUMS).

"Women and Men in STEM Often at Odds Over Workplace Equity"

PEW RESEARCH CENTER

“Among those with some college education, the typical full-time, year-round STEM worker earns \$54,745 while a similarly educated non-STEM worker earns \$40,505, or 26% less.”

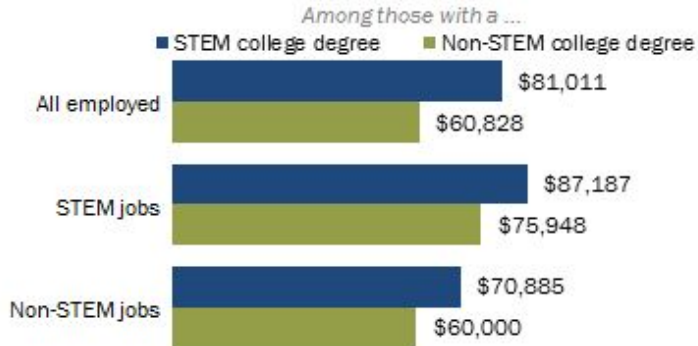
STEM Workers Make More

DRAFT -
Pending Board Approval

“Among college-educated workers employed full-time year-round, the median earnings for those who have a STEM college major are \$81,011, compared with \$60,828 for other college majors.”

STEM college majors tend to earn more than non-STEM college majors

Median annual earnings of full-time, year-round workers age 25 and older with at least a bachelor's degree



Note: Based on adults ages 25 and older employed full-time year-round with positive earnings who have completed a bachelor's degree. College degree refers to the major field of study of the bachelor's degree. STEM stands for science, technology, engineering and math.

Source: Pew Research Center analysis of 2014-2016 American Community Survey (IPUMS). "Women and Men in STEM Often at Odds Over Workplace Equity"

PEW RESEARCH CENTER

DRAFT -
Pending Board Approval

Solutions

Skills

DRAFT -
Pending Board Approval

We want to ignite the creativity and excitement for STEAM by bringing hands on STEAM activities and resources to communities.

Our activities are inclusive and culturally aligned with a low barrier of entry.

We aim to nurture and grow our communities with programs from K-12 and beyond.



Image From <https://www.ibm.com/thought-leadership/shecanstem/>

Mentors

DRAFT -
Pending Board Approval

Both mentors for educators and learners are needed.

Matching mentors that culturally identify with the learner will be our goal as this can create the needed role model to break down barriers.

Strong industry involvement will create new relationships for educators and mentors alike.



Image from <https://portlandleadership.org/career-mentoring>

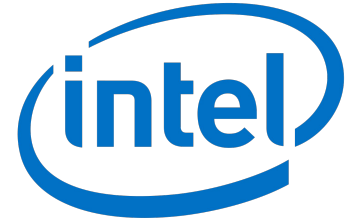
Career Opportunities

We will partner with industry to provide career opportunities for all that participate in our programs.

Help learners prepare for the workforce through resume building, interview training, and networking.

Focus will be on gaining hands on experience via internships and coops.

DRAFT -
Pending Board Approval



DRAFT -
Pending Board Approval

Programs

Programs

Long term programming with partnerships at K-12 and home school programs

Teacher professional development

Capstone project with international travel

Community Outreach

DRAFT -
Pending Board Approval



DRAFT -
Pending Board Approval

K-12 Programming

Maker Fest | One Day Event | \$1699

DRAFT -
Pending Board Approval

Serves up to 125 students (15-25 students per hour).

Fest style setup with 4-6 hands on activities which are grade specific

Meet engineers, artist, and scientist from your community

Get exposure to latest prototype equipment: CNC, 3D printing & Laser cutting

Online training with Q&A for educators with resources to continue lessons in the classroom



Image From: <http://hhsmakerfaire.weebly.com/>

DRAFT -
Pending Board Approval

Make & Take | One Day Event | \$799

Serves 20 students per hour

Students work on a project that they build themselves in under 1 hours and are able to take home.

Full supervision from trained staff on equipment safety is provided

Online training with Q&A for educators with resources to continue lessons in the classroom



Image from:

https://svvnews.com/news/local/education/solvang-school-district-earns-national-recognition-for-stem-career-program/article_5e95f6bc-9b26-53e4-a506-40b6574aeec1.html

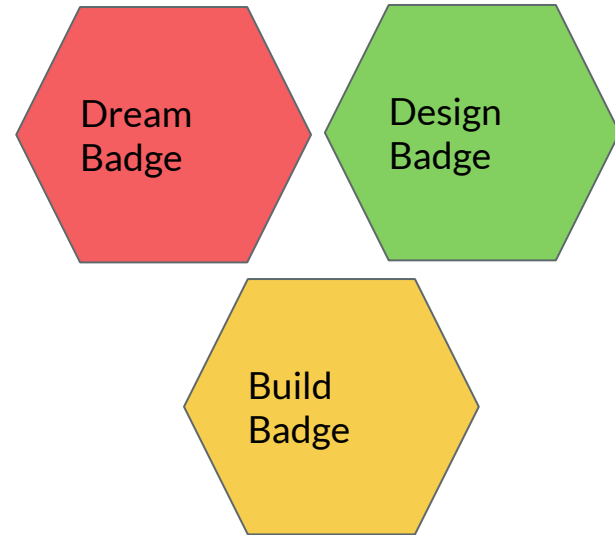
Dream, Design, Build | 3 Day Event | \$2499

Using design thinking students will create a product that they dream of over a 3 day period

Students work in groups for third grade and above, K-2 work with a staff mentor to build their idea

Multiple skills are learned and tracked with badges

Online training with Q&A for educators with resources to continue lessons in the classroom



DRAFT -
Pending Board Approval

Teacher Professional Development

Teacher Professional Development & Support

As part of our program we provide online and onsite training for the programs we provide

We link educators with a network of industry resources to help continue building relationships

We provide kits for teachers that are aligned to Next Generation Science Standards at each grade level

DRAFT -
Pending Board Approval

Capstone Project with International Travel

Capstone Project

DRAFT -
Pending Board Approval

Student 18+ or with a parent will be able to participate in a trip to Shenzhen China

Project to build a mobile device by sourcing, bartering, and purchasing the parts they need

Trip will include tours of electronics parts superstore, manufacturing facilities and garment factories.



Image from: <http://edpixelart.com/shenzhen/>

DRAFT -
Pending Board Approval

Community Outreach

Community Outreach

DRAFT -
Pending Board Approval

We will support activities at various community events such as Farmer's Markets, Churches, & Faires.

We will partner with libraries and mobile book mobiles to travel to rural areas that are under-served

We will partner with organization such as the Boys and Girls club

DRAFT -
Pending Board Approval

Measuring Impact

Examples of Metrics

DRAFT -
Pending Board Approval

- Student Metrics:

- Number of students participated
- Increase UR group percentage engagement
- Number of repeat student year to year (retention)
- Increase number of students interested in STEAM. Measure baseline excitement level before introduction to program and then measure excitement after.

- Teacher Metrics:

- Number of teacher participated
- Number of repeat teachers year to year (retention)
- Measure level of confidence with teaching STEAM related topics before and after
- Net promoter score

DRAFT -
Pending Board Approval

Financials

People are our greatest resource

By providing benefits with above market compensation we will be able to provide the highest quality program to achieve our success.

**F19 Total Budget
\$4,319,600**

DRAFT -
Pending Board Approval

Volunteers 50 x \$0	FY19 People Budget \$2MM
Teaching Staff 36 x \$35K	
Scheduling Manager x 4 \$30K	
Curriculum Manager \$50K	
Executive Director \$60K	
Health Insurance \$100K	
Office & Storage \$48K	FY19 Business Expenses \$93.6
Travel and Meals \$36K	
Umbrella Insurance \$3.6K	
Supplies \$3.6K	
12 Mobile Units \$600K	FY19 Non-recurring expenses \$720K
Tools & Supplies \$120K	

Impact and Income Assumptions

DRAFT -
Pending Board Approval

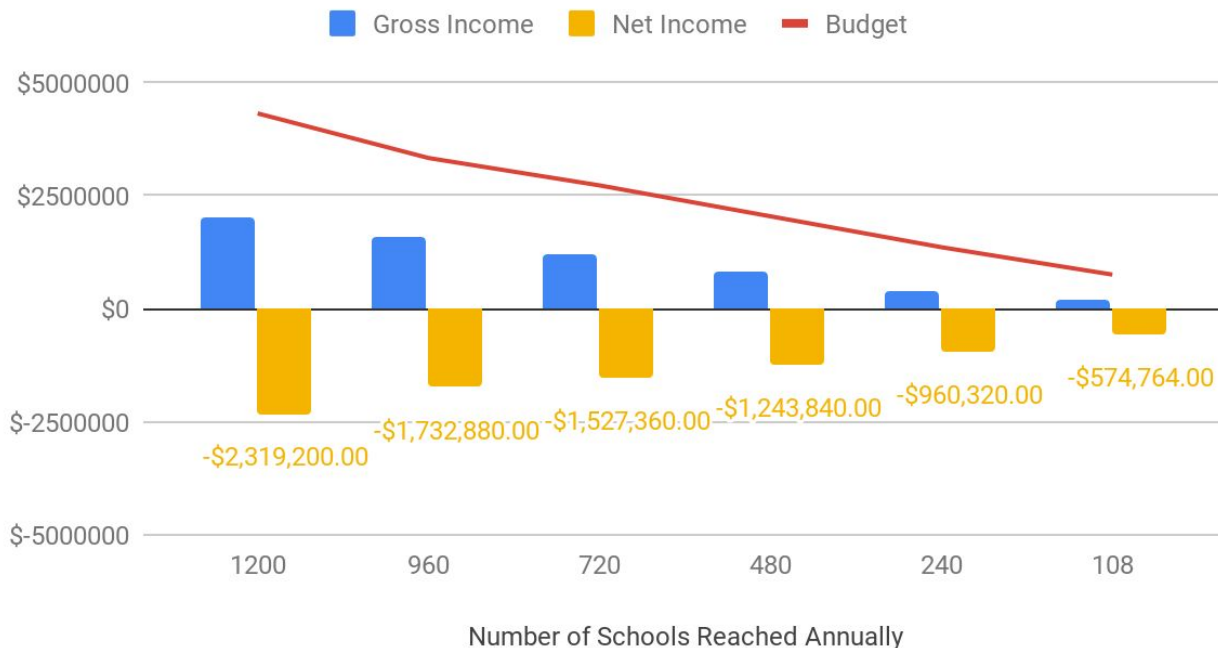
There are ~ 1200 K-12
Schools in Oregon with
~587,000.

The average cost of an
event is \$1666.

If we reached 20% (240
schools, ~120K
Students) of all schools
in Oregon we would
need \$960,000 in
donations.

IMPACT: 120,000
students with STEAM
experience

Annual Income Assumptions

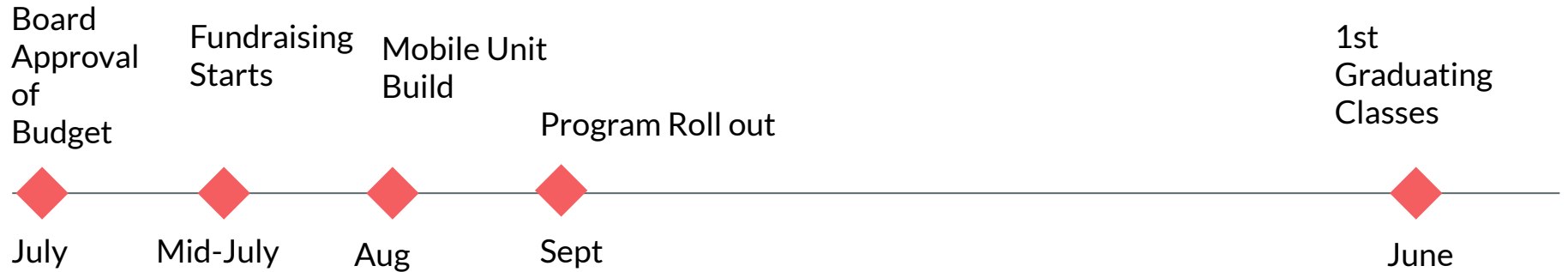


DRAFT -
Pending Board Approval

Timeline

2019 Milestones

DRAFT -
Pending Board Approval



DRAFT -
Pending Board Approval

Integrity, Trust & Voice

Boards

DRAFT -
Pending Board Approval

In addition to our board of director we will support an **Advisory Board** with industry resources to help support our effort and make programs that help our communities.

We will also support a **Learner's Board** that will have representation from students in order to continuously improve our programs.

Board of Directors

President - Neel Banerjee : Graduated from University of Michigan with an Bachelor degree in electrical engineer. He has with more than a decade of experience in product development. His career has spanned the entire customer and product development lifecycle, working for companies like Columbia Sportswear, Hewlett-Packard and Urban Airship. He loves spending time with family, biking, skiing, and working on Diesel engines. (No corporate affiliation)

Vice President - Jeff brings over 15 years of business development including opening a satellite office for a re-insurance company, opening a retail store, founding a non-profit, starting a cidery, and expanding revenue streams for existing businesses. Jeff has instructed many with skills development and vocational rehabilitation. Jeff also has experience working with tractors, MGs, and wine making equipment as he enjoys working with his hands. He spends his free time with his son, writing poetry, flyfishing, canoeing, and hiking. (No corporate affiliation)

Secretary - Holli Ogle: Holli Ogle is an engineer, entrepreneur, and OSU MBA program alumnus. She has an impressive resume which includes tech companies, eleven patents, international work experience, and real estate ventures. (No corporate affiliation)

References

[1]

<https://www.pewsocialtrends.org/2018/01/09/blacks-in-stem-jobs-are-especially-concerned-about-diversity-and-discrimination-in-the-workplace/>

[2] <https://www.pewresearch.org/fact-tank/2018/01/09/7-facts-about-the-stem-workforce/>

[3] <https://www.edweek.org/ew/section/multimedia/data-us-graduation-rates-by-state-and.html>

In 2017 Oregon was 3rd worst in HS Graduation

DRAFT -
Pending Board Approval

Bottom 13 National High School Graduation Rates 2016-2017

