Build and Grow A Sustainable High School Computer Science Program with TEALS
Parents, Students, & Educators want CS...

- **84%** parents say CS is at least as important as classes like math, science, history, & English.
- **60%** administrators & teachers agree CS should be required when available.

Data: Google/Gallup 2016
... but, access is not universal!

Source: College Board, 2016 AP Scores
More than pure CS

Informed Citizens
Healthy democracy in the digital age needs digitally literate electorate and leaders.
Artificial Intelligence
Surveillance
Privacy
Big Data
Digital Security
Digital Currency

Computational thinking
Aspects of computational thinking will permeate everything these students will do in the future, regardless of career.
All STEM/STEAM Fields
Healthcare
Arts & Music
Manufacturing
Retail
Legal
Athletics
Education
Computer Science Education in Tech Hubs

1,945 total for AP CS out of 87,050 total AP tests (2.2%).

Students from 52 WA State high schools out of ~750

Underrepresented Minorities:

- **Black**: 39 (1.9%)
- **Hispanic**: 102 (5.2%)
- **Female**: 583 (30%)

Courtesy code.org, Sources: College Board
Computer Science Education in Tech Hubs

10,244 total for AP CS out of 743,280 total AP tests (1.4%).

242 AP CS high schools in CA out of 2,649 public and private high schools

Underrepresented Minorities:

Black: 146 (1.4%)
Hispanic: 1,487 (14.5%)
Female: 2,770 (27%)
What about my home state?

<table>
<thead>
<tr>
<th>AZ high schools</th>
<th>AL high schools</th>
<th>MA high schools</th>
<th>NY high schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total AP tests: 6,735</td>
<td>Total AP tests: 50,959</td>
<td>Total AP tests: 113,869</td>
<td>Total AP tests: 278,524</td>
</tr>
<tr>
<td>AP CS: 438 (6.5%)</td>
<td>AP CS: 303 (5.9%)</td>
<td>AP CS: 2,279 (2.0%)</td>
<td>AP CS: 3,761 (1.3%)</td>
</tr>
<tr>
<td>Female: 99 (22.6%)</td>
<td>Female: 61 (20%)</td>
<td>Female: 470 (21%)</td>
<td>Female: 924 (25%)</td>
</tr>
<tr>
<td>Black: 4 (0.9%)</td>
<td>Black: 11 (3.6%)</td>
<td>Black: 78 (3.4%)</td>
<td>Black: 196 (5.2%)</td>
</tr>
<tr>
<td>Hispanic: 62 (14%)</td>
<td>Hispanic: 20 (6.6%)</td>
<td>Hispanic: 157 (6.8%)</td>
<td>Hispanic: 399 (10.6%)</td>
</tr>
</tbody>
</table>

Courtesy code.org, Sources: College Board
Built by educators and engineers

Help high schools build and grow rigorous, sustainable computer science programs

Partner trained industry volunteers in the classroom alongside teachers

Started in 2009 with one school, 12 students, and one volunteer (our founder!)

Supported by Microsoft Philanthropies

2016 program reach: 225 schools in 25 states, 9000 students, and 700+ volunteers
Where do we teach?

225 high schools from 25 States + DC

Wide range of school and student populations.
Who do we teach?

High Schools
Urban, Suburban, Rural.
High performing, high needs, and everything in between.

Diversity
30% Female students
32% Underrepresented Minorities

Aspirations
93% See themselves as College Bound
70% This is their First CS Class

Extracurricular
55% Play a school sport
34% Volunteer
24% Academic groups
20% Music
# TEALS Models of Support

<table>
<thead>
<tr>
<th></th>
<th>Co-Teach</th>
<th>Lab Support</th>
<th>Classroom Enrichment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Classroom</strong></td>
<td>Classroom teacher is new to CS; volunteers provide most of the classroom instruction while teacher is learning the material</td>
<td>Classroom teacher is able to independently teach a CS course</td>
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</tr>
<tr>
<td><strong>Teaching</strong></td>
<td>Teaching and lab support: volunteers assist with grading, teach class</td>
<td>Wants additional support – grading, lower student-teacher ratio, industry connection</td>
<td>Wants to be a part of TEALS community (curriculum support, monthly meetups, online community, industry mentor)</td>
</tr>
<tr>
<td><strong>Lab Support</strong></td>
<td>2-4 volunteer TAs, 4-5x per week</td>
<td>1-2 volunteer TAs, 2-5x per week</td>
<td>Range from assisting with lab/assignments/grading to career talks or demos, as needed by classroom teacher</td>
</tr>
<tr>
<td><strong>Stipend</strong></td>
<td>$5,000 stipend split between volunteers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Introduction to Computer Science

UC Berkeley CS 10 course adapted for HS
1 Semester course (run Fall and Spring)
Survey course akin to Conceptual Physics
Block programming language
All grade levels
UC A-G approval
Textbook: Blown to Bits
AP Computer Science A

UW CSE 142/143 course. Collegiate level
Year long course with AP exam in May
AP level course akin to Calc BC
Industry standard Java programming language
So/Jr/Sr with Algebra II completion
Summer reading recommended
Textbook: Building Java Programs
AP Computer Science Principles

New course for 2016-2017
Complements (does not replace) AP CS A
Broad coverage of computing principles, issues, and creative solutions

TEALS supports partner organizations’ curricula and classroom teacher must attend professional development offered by a partner organization prior to working with TEALS.

TEALS is able to provide Lab Support or Classroom Enrichment support only.
Remote Teaching Classes

For schools without a local tech community
Ideal for rural schools with small classes
High bandwidth teleconferencing
Summer PD required for classroom teacher
Equipment requirements outlined in detail in TEALS Implementation Guide
Our Volunteers
Recruiting and retaining volunteers

- School community (parents, alumni, board, PTA, foundation)
- Local partners (companies, chamber, econ dev offices)
- Civic leaders (mayors, state legislators, civic orgs)
- National partners (ACM, IEEE, Higher Ed, code.org, etc)

Build a **lasting relationship** with your volunteers.
# Volunteer Training

## Student Engagement

- Questioning Techniques
- Giving Encouragement
- Tracking Student Progress

## Instruction

- Whiteboarding
- Socratic Method
- Lab Management

## Teacher Prep

- Lesson Planning
- Co-Teaching Approaches
- Grading
School Responsibilities

Scheduling – 1st Period Computer Science
Send volunteer-recruiting letter to Board, parents, teachers, community
Identify a Classroom Teacher
Provide class materials and equipment
Background checks, network access, parking, ID Cards

Classroom observations
Budget & pay volunteer stipend or reimbursements
Back-to-school meeting in August
Embrace and support volunteers
Facilitate and encourage course handoff
Grow CS program
Next Steps:
Read the Implementation Guide
Apply online (Due February)
Connect with TEALS Regional Manager
Outreach to local tech organizations & companies to encourage volunteering
Share TEALS information with school and local community