# Webinar Logistics

- All participants should have their phones muted during the webinar.
- Webinar will start and end on time.
- During the webinar, If participants have a question during the webinar, they may type it at any time into the "chat" or "question" box. .
- After the presentation, the facilitators will set aside time in the agenda to answer questions sent by "chat" or "question" box.
- Webinars are recorded so that they can be posted to the website for later viewing by anyone who wasn't able to participate.

# Agenda

Computer Science National Movement

The Need for CS in Rhode Island

The Work Already Underway

CS Opportunities

Next Steps
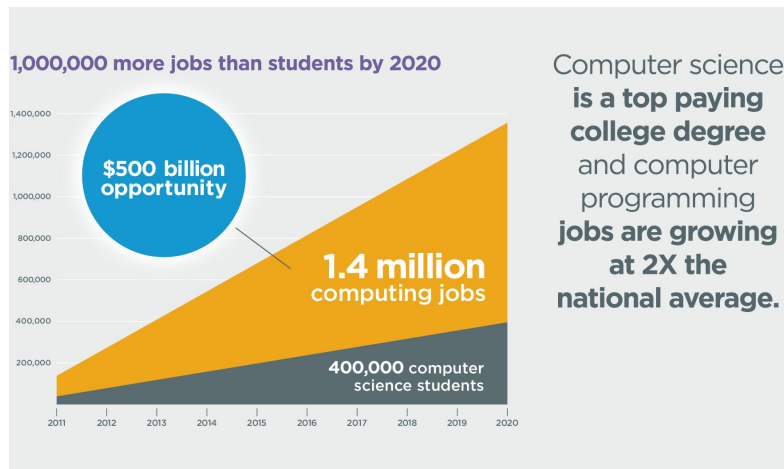
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Ujl296xS

Presentation available at:
https://goo.gl/h006eL

# The Need Across the Nation

600,000
High-paying Tech Jobs

JOB

across the US
were UNFILLED last year.

51% of all STEM Jobs are projected to be in Computer Science Related Fields

1,000,000 more jobs than students by 2020

$500 billion opportunity

1.4 million computing jobs

400,000 computer science students

Computer science **is a top paying college degree** and computer programming **jobs are growing at 2X the national average.**

WiFi Password:
Ujl296xS

# CS in Rhode Island

- Organically established partnerships with industry and community partners

- 186 schools are already offering options for CS

- As a state, we will build on these efforts to:

  - Dramatically increase the diversity of students participating in CS learning opportunities in Rhode Island, with particular focus on attracting girls and historically underserved students.

  - Provide early exposure to CS fundamental concepts and on - ramps into CS coursework for elementary, middle, and high school students

  - Expand the reach of CS programming to be available for every student in all of Rhode Island's schools

# Goals and Actions:
# Increase Access to CS Courses & Opportunities by

- Access to Computer Science available in ALL schools across RI in 2017
- Provide many on-ramps for students and educators
- Partner with organizations to provide affordable solutions and supports
- Ensure sustainability by providing professional development and support

# In one short year...

- CS4RI launched in March 2016

- Series of in person and online webinars

- More than 375 teachers participated in summer professional development

- CS4RI focus at the annual Innovation Powered by Technology Conference in Sept. 2016

- 108 elementary, 26 middle schools, and 55 high schools offered CS opportunities to their students

- CS4RI Advisory Council

- Community of Practice Meetings

- More than 1600 students participated in the CS4RI Summit in Dec. 2016

- Expanding opportunities with existing partners and adding new partners
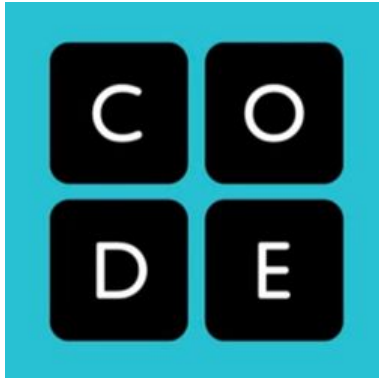
# CS Options for Middle Schools
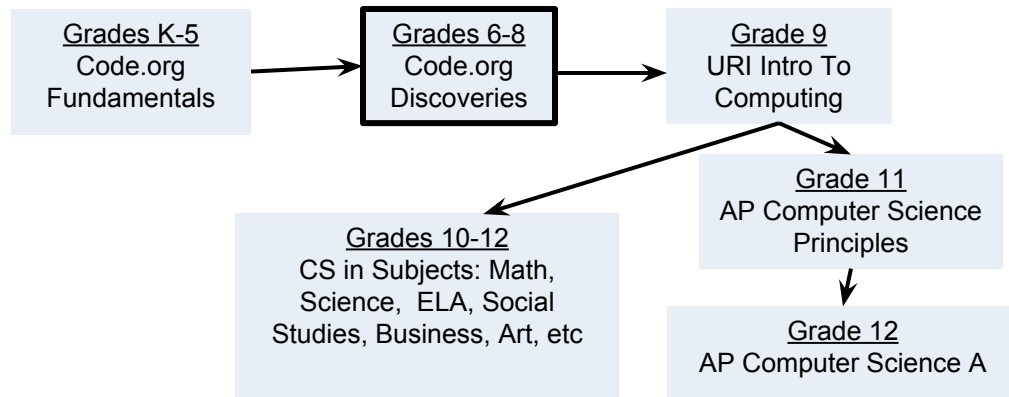
# Code.Org/URI

Grades 6 - 8

Dr. Victor Fay-Wolfe - vfaywolfe@uri.edu

| Programs | CS Discoveries |
|---|---|
| Format | 6 Modules<br>Can be a full year course, 2 semesters, or modularized |
| Teacher Profile | No prior CS experience required |
| Cost to School | PD/Curriculum Costs Waived<br>$10/student for sensor device. |
| Required Tech Access | 1:1 for all students in the classroom |

# *Computer Science Discoveries* Course

- New middle school course designed by code.org, supported by URI.
- Rolling out nationally in 2017-18
- A CS course for every student, designed with equity in mind
- Middle school component in URI's recommended *K-12 CS Pathway* based on Computer Science Teacher's Association K-12 CS Standards

| | | |
|---|---|---|
| Grades K-5<br>Code.org<br>Fundamentals | → | **Grades 6-8**<br>**Code.org**<br>**Discoveries** | → | Grade 9<br>URI Intro To<br>Computing |

Grades 10-12<br>CS in Subjects: Math, Science, ELA, Social Studies, Business, Art, etc

Grade 11<br>AP Computer Science Principles

Grade 12<br>AP Computer Science A

| | |
|---|---|
| **Target Grades:** | 6-8 |
| **Where in curriculum?** | 6 Modules. Can be a full year course, 2 semesters, or modularized |
| **Teacher Profile:** | No prior CS experience required |
| **PD Plan:** | Summer : 2 @ 2-day in-person, AY: 2 @ 1-day in-person , some online.    On-going support |
| **PD Cost:** | None. State covered  2017-18 |
| **Cost To School:** | $10/student for  sensor device . Course materials and required software are free. |
| **Required Computers:** | 1-to-1 devices: computers or chromebooks in classroom |

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Contact: k12@cs.uri.edu
Web:  k12.cs.uri.edu

# *CS Discoveries*  6 Modules

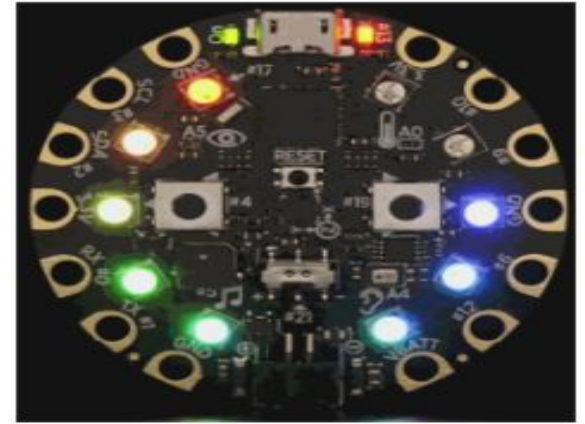| | | |
|---|---|---|
| Problem Solving: Computers, and Logic | The Internet: Web Development | Programming:  Interactive Games & Animations |
| Problem Solving: The Design Process | The Internet: Data And Society | Programming:  The Internet of Things |

# *CS Discoveries*   Curriculum and Tools

Daily lesson plans come with detailed instructions, activity guides, and assessments

Students explore programming concepts through the development of animations and games in Game Lab

A : JUMP                    JUMP : L

Students create prototypes of internet-connected physical computing devices using Adafruit's Circuit Playground board and App Lab

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Contact: k12@cs.uri.edu
Web:  k12.cs.uri.edu

# More Information (curriculum, PD dates, signup):
## k12.cs.uri.edu/csd.php

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Supporting Computer Science in Rhode Island's Schools

### Curriculum/Courses/Training

- Home
- AP Computer Science Principles Course
- Introduction to Computing Course
- NGSS Science Modules with Computing
- 4-Year High School CS Curriculum
- **Middle School CS Discoveries Course**
- Elementary School Computing
- URI Computer Science Teaching Certifications
- High School Cyber Security Course
- CSC101: Computing Concepts Course
- Info on CS in College for your Students

## Middle School CS Discoveries Course

Computer Science Discoveries is a full-year introductory computer science survey course (can be implemented as two standalone semesters or as modules), developed by code.org, targeted at middle school. The course takes a wide lens on computer science by covering topics such as programming, physical computing, HTML/CSS, and data. Students are empowered to create authentic artifacts and engage with CS as a medium for creativity, communication, problem solving, and fun.

URI is supporting the implementation of code.org's Computer Science Discoveries course for middle school as part of Rhode Island's CS4RI initiative. With code.org's support, we are providing professional development based on code.org's teacher training materials, and on-going support of trained teachers. This course will be piloted in Rhode Island during the 2017/18 school year.

**Computer Science Matters**

Code.org offers their curriculum for free and URI is providing free teacher professional development training for middle schools to implement this course.

CS Discoveries Course Materials

CS Discoveries Professional Development Training

# Project Lead The Way

Grades 6 - 8

Mary Laturnau - mlaturnau@pltw.org
www.pltw.org
@PLTWorg
877-335-PLTW (7589)
schoolsupport@pltw.org

| Programs | Intro to CS |
|---|---|
| Format | 2 9 - week units integrated into PLTW Gateway curriculum |
| Teacher Profile | No prior CS experience required |
| Cost to School | $750/school for curriculum and PD program costs for one teacher<br><br>$950 for additional teacher PD |
| Required Tech Access | Computer, android tablet access for all students |

# *A computer science experience with a specific grade band in mind.*

**PLTW Launch (K-5)**
8 modules
80 hours of content integrated across grades K-5

Access to + 160 extra hours of high-quality STEM experiences

**PLTW Gateway (6-8)**
3 units integrated across grades 6-8 – each unit is 45 minutes/45 days of instruction

Access to 7 additional units of high-quality multidisciplinary middle school experiences

**PLTW Computer Science (9-12)**
4 year-long courses

Access to 2 additional career pathways, a broad selection of courses and students opportunities

# Project Lead The Way Middle School Offerings

**PLTW Gateway (6-8)**

- Activity-, Project-, Problem-based approach
- Focuses on the positive impact of the application of computer science to other disciplines
- Student-driven experiences



| PLTW Gateway (6-8) | | |
|---|---|---|
| 6-7 | 7-8 | 8 |
| - Computer Science for Innovators and Makers | - App Creators | - Automation and Robotics |

# Project Lead the Way on-ramps

**WHAT:** Three Phases Professional Development
- Readiness Training (4 - 6 hours)
- Core Training
  - PLTW Launch: 3 days
  - PLTW Gateway: 5 days / unit
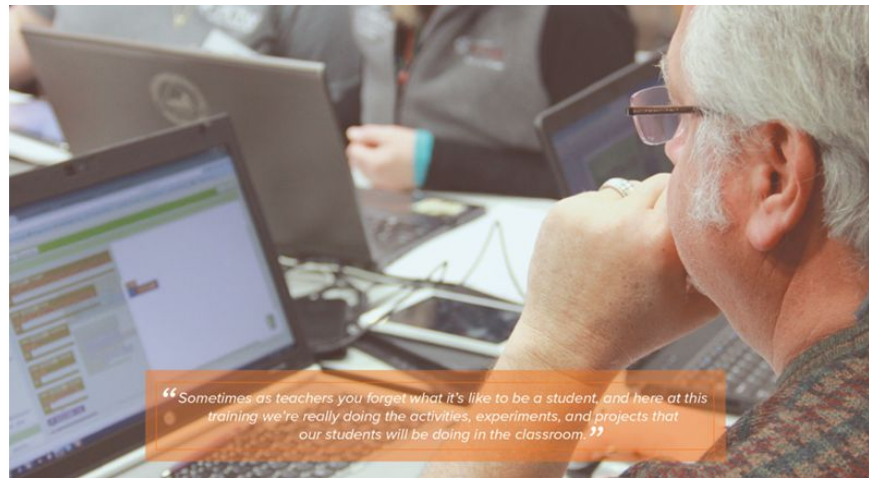- Ongoing Training

**WHERE:** RI, WPI or Affiliate Colleges
**WHEN: July – TBA Soon**
**BRING:** Laptop, Devices, Enthusiasm!
**REGISTER:**
https://www.pltw.org/our-programs/professional-development

**QUESTIONS:** mlaturnau@pltw.org



*"Sometimes as teachers you forget what it's like to be a student, and here at this training we're really doing the activities, experiments, and projects that our students will be doing in the classroom."*
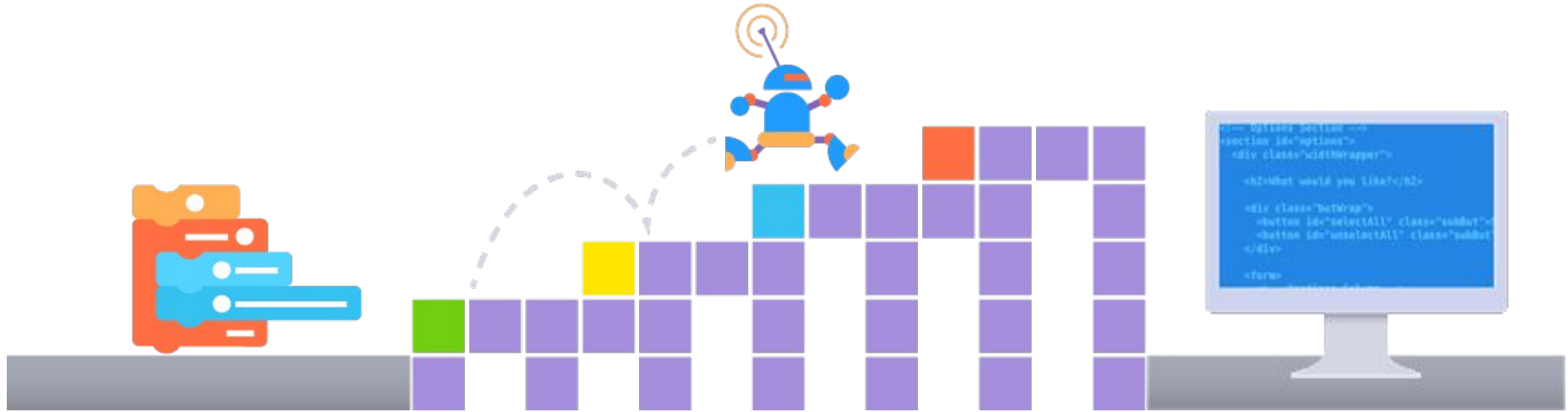
NEW

# GameSalad

Grades 6 - 8

Joanne Patnode-Roe - joanne@gamesalad.com

Danielle Burnett - danielle@gamesalad.com

**edu.gamesalad.com**

| Programs | CS Through Game Creation |
|---|---|
| Format | 8 modular units<br>9-week, 1 semester, or full year course |
| Teacher Profile | No prior CS experience required |
| Cost to School | $27/student for licenses and curriculum<br><br>PD costs waived for one teacher<br><br>$950 for additional teacher PD |
| Required Tech Access | Computer access for all students |

# Bridging the Gap in Computer Science Education



**Grades K-4**

Basic Introduction
& Block-Based
Programming

**GameSalad®**
for Education

Robust computer
science development
without syntax

**Grades 11-12**

Advanced Coding
Languages & AP
Computer Science

# GameSalad Empowers Student Creators



## Student Enthusiasm

Students are highly motivated to learn CS content as they create **professional-grade mobile games** (without the frustrations of coding syntax)

## Team-Oriented Approach

Comprehensive, project-based curriculum builds **21st-century skills** like collaboration, innovation, critical thinking and project management

## Learning Through Failure

Students are encouraged to take risks, iterate on ideas, practice perseverance and **develop a growth mindset**

# GameSalad Offerings

Software License

Comprehensive Curriculum
- Detailed student guide
- Video walkthrough
- Educator lesson plan / schedule
- Project checklist
- Project evaluation rubric
- Assessment & answer key
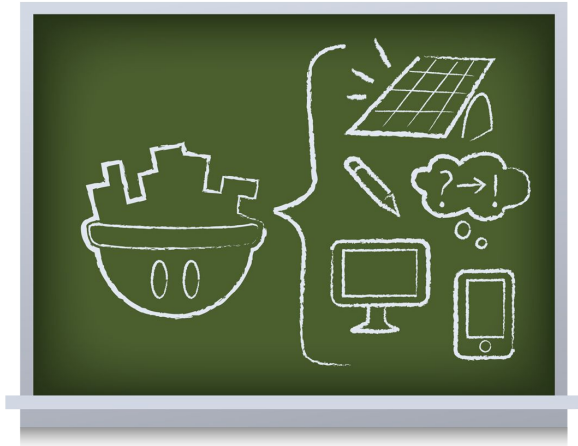- Example final game projects
- All art and sound assets

Teacher Dashboard

Free Viewer App
Webinars & Live Training
Asset Packs for Educators
Technical Support

# GameSalad on-ramps

**WHAT:** Online or In-Person PD + "Train the Trainer" Option

- ★ **Online:**
    - ○ 2-Hour Webinar
    - ○ Ongoing Support & Training
- ★ **In-Person:**
    - ○ 4-Hour Onsite Training
    - ○ Ongoing Support & Training
- ★ **Train the Trainer:**
    - ○ 2-Day Onsite Training
    - ○ Ongoing Support & Training

**WHERE:** RI Partner Campuses

**WHEN: July 2017 - TBA Soon!**

**BRING:** Laptop

**REGISTER:** tinyurl.com/GS4RI

**QUESTIONS:** joanne@gamesalad.com

# Bootstrap

Grades 8 - 10



Shriram Krishnamurthi - sk@cs.brown.edu

| Programs | Bootstrap 1 / Bootstrap 2 |
|---|---|
| Format | 20 hour module in existing algebra course<br><br>1 semester course |
| Teacher Profile | No prior CS experience required for Bootstrap 1 experience, or discuss with staff |
| Cost to School | PD/Curriculum costs waived for one teacher<br><br>$1000 for additional teacher PD, but free options available |
| Required Tech Access | Occasional student access |

# Bootstrap: Putting Algebra First



Abstract Thinking

Gateway to STEM & Beyond

Income and Equity

Standardized Testing

BOOTSTRAP
www.bootstrapworld.org

# Bootstrap: Language Matters

*What if you want to help students in algebra?*

Most programming languages are anti-math:

- Numbers that aren't numbers $\longrightarrow$

$$1/3 = 0$$

- Variables that aren't variables

- Functions that aren't functions

$$x = 10$$
$$x = x+2$$

*But not all languages work this way….*

# Bootstrap Offerings

- **Bootstrap 1**
  Intro to CS
  (good math intervention!)

- **Bootstrap 2**
  Advanced CS Concepts

**What makes us unique?**
- Algebraic programming language
- Structured approach to problem solving
- Build an authentic video game...out of pure math
- Computing for every student (not just every school)
- Focus on equity (solving the access and opt-in problems)
- Real data, real results (www.bootstrapworld.org/impact)

www.bootstrapworld.org

# Bootstrap on-ramps

**WHAT:**      Bootstrap Teacher Professional Development

**WHERE:**     Brown University, Computer Science Department
115 Waterman Street, 3rd Floor Atrium
Providence, RI 02912

**WHEN:**      Monday, June 26 - Wednesday, June 28, 2017
9:00 AM - 4:00 PM

**BRING:**      Laptop

**REGISTER:**   HERE ➜ https://goo.gl/904h9J

**QUESTIONS:** schanzer@bootstrapworld.org



www.bootstrapworld.org

Next Steps

# Your Next Steps

- Consider which CS partner opportunities would be effective for your school or district

- Connect with CS providers to begin the process of on-boarding your school

- Complete the Expanding CS Opportunities survey, to let us know about your unique needs --> https://goo.gl/AtPEMR