NV STEM Advisory Council

Nevada STEM Coalition
Computer Science K12 Education Task Force

Briefing

Mark Newburn
February 22\textsuperscript{th} 2016
January 12th, 2016 - President Obama in his State of the Union address challenged the nation to provide a Computer Science education to all students

January 30th, 2016 - President Obama Announces $4 Billion “Computer Science For All” Initiative
Computer Science Job Challenge

- 50% of STEM jobs are expected to be computer related by 2020
- By 2020, projected one million CS jobs will be unfilled!
- Only 2% of STEM college graduates are in CS
- Embarrassing lack of diversity
  - In 1980’s women 38% of CS graduates now just 12%
  - Very low minority representation
- Represents a key economic sector and skill in Nevada’s economic diversification plan.
  - Brookings recommendation
    - Incorporate CS into the P-12 Curriculum
- 67% of Software Jobs are outside of the High-Tech industries
Computer Science

- 21st Century method of solving problems that is separate from science, engineering, or mathematics
  - Abstraction, Automation, and Analysis
  - Computational Thinking is “Big Problem” Solving
- Coding not Computer Application Literacy
  - It is not Keyboarding, HTML, PowerPoint, or Photoshop
  - Technology Innovators vs Technology Consumers
  - Can be part of a larger technology strategy
- No longer simply a CTE subject but is now a core academic subject
- In the 21st Century, all kids need to learn to think computationally
K12 Computer Science (National)

- National efforts to expand Computer Science in K12
  - AR, CA, MA, TX, NC major expansion of CS
  - S.F. And Chicago will require CS of all students
    - UK, Finland, Estonia, & China already do
- New CS courses and curricula
  - Designed to increase diversity
    - ECS, AP CSP, Joy of Computing
  - Integrating CS with MS Math and Science
    - Project GUTS and Project Bootstrap
  - K5 (plugged and unplugged)
- Initial K12 CS Pathways have started to appear
  - Content/Subjects/Languages
K12 Computer Science
What Next?

- Follow the model from other states and NV STEM
  - i.e. ECEP, TACSE, ACCESS, MassCAN
- Establish Advocacy Organization(s) or Group(s)
- Establish Initial Task Force
  - <= You are here
- Hold Stakeholder Summit
- Develop Statewide CS Goals
- Develop Statewide CS Action Plan
  - May phase in over a number of years
- Integrate CS Plan with State Technology Plan
- Integrate CS Plan with State STEM Plan
Computer Science K12 Task Force Members

- NV Legislature
- Nevada State Board of Education
- UNLV (White House Change Champion)
- UNR
- NV Department of Education
- CCSD
- Nevada Ready 21
- OSIT
- Southern Nevada RPDP
- Community
K12 Computer Science
Short Term Milestones

• NV STEM Coalition STEM Summit II
  – Separate Computer Science breakout session
• State Board of Education
  – High School Graduation Requirements Subcommittee
• 2017 Nevada State Legislature
  – Interim Education Committee
• State Strategic STEM Plan
• White House “Computer Science of All” Initiative
  – May become main focus
Where do we want to be?

- Rigorous CS Classes for Core Subject Graduation
  - Approved by State Board
- All High Schools offer AP CS (A or CSP)
- Increased number of students
  - taking AP CS
  - earning CS CTE Certificate
- Required for Graduation
- Full P20 CS Pathways
  - Separate track or integrated with other subjects
- All students required to take some Computer Science
  - K5, Middle School, and High School
  - Every school offers some Computer Science
White House
Computer Science for All Initiative

• $4 billion available over three years
• For states to increase access to CS in P-12 classrooms.
• States submit five-year “Computer Science for All” plans
• Every state with well-designed strategy would receive funds.
• $100 million in competitive grants for leading districts to execute ambitious CS expansion efforts for all students
  - Traditionally underrepresented students