NV STEM Advisory Council

Nevada STEM Coalition
Computer Science K12 Education Task Force

Briefing

Mark Newburn
February 22th 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