



Brian Sandoval
Governor

STATE OF NEVADA

GOVERNOR'S OFFICE OF
SCIENCE, INNOVATION &
TECHNOLOGY

100 North Stewart Street, Suite 220
Carson City, Nevada 89701
775-687-0987 Fax: 775-687-0990



Brian L. Mitchell
Director

PUBLIC MEETING MINUTES

Name of Organization: Computer Science Subcommittee
Date and Time of Meeting: Wednesday, August 22, 2018 @ 9:00 am – 3:00 pm
Place of Meeting: Washoe County School District
North Training Room
380 Edison Way
Reno, Nevada 89502

If you are unable to attend the meeting
Please use the following numbers to join the Conference Call:
North: 775-687-0999 or
South: 702-486-5260
Access Code: 70987 push #

I. Call to Order / Roll Call

Chair Mark Newburn

The Computer Science Subcommittee was called to order by Chair Mark Newburn at 9:11 A.M. on Wednesday, August 22, 2018, at Washoe County School District, North Training Room, 380 Edison Way, Reno, NV 89502.

Members Present

- Cindi Chang
- Dave Brancamp
- Dr. Andreas Stefik
- Dr. Pavel Solin
- Frank Mathews
- Heather Crawford-Ferre (telephone)
- Jaci McCune
- Kimberly De Lemos
- Mark Newburn
- Melissa Scott

Members Absent

- Kindra Fox

Irene Waltz
Jonathan Reynolds
Kris Carroll
Rob Sidford

Guest(s) Present

Robert Maw, Computer Science Regional Trainer, Northwest Regional Professional Development Program (RPDP)

Staff Present

Debra Petrelli
Tracey Gaffney

Staff Absent

Brian Mitchell

A quorum was declared.

- II. Public Comment** (No action may be taken upon a matter raised under public comment period unless the matter itself has been specifically included on an agenda as an action item.)
Chair Mark Newburn

There was no public comment.

III. Welcoming Remarks and Announcements

Chair Mark Newburn

Chair Newburn welcomed everyone to Reno for a day-long meeting to include breakout groups to work on the subcommittee's guidance documents and strategic plan. He welcomed the Governor's Office of Science, Innovation and Technology's (OSIT) new STEM Program Manager, Tracey Gaffney, who will be working with teachers and administrators to implement best practices in STEM classroom instruction as well as with schools seeking to receive the Governor's STEM School designation. She also manages OSIT's grants and funding opportunities.

IV. Approval of the Minutes from the May 29, 2018 Meeting (For possible action)

Chair Mark Newburn

Chair Newburn asked if there are any changes or corrections to the May 29, 2018 Minutes as written. None were made. Dr. Stefik made a motion to approve the Minutes of May 29, 2018, as written. Ms. Scott seconded the motion. The motion passed unanimously.

V. Finalize Guidance Document for ½ Credit Graduation Requirement Course and Create Guidance Document Framework for "Computer Education and Technology Prior to 6th Grade" Elementary Instruction (For possible action)

Chair Mark Newburn, Cindi Chang

Ms. Chang informed the group the one-half credit graduation requirement course guidance document, which has been discussed in previous meetings, needs to be finalized. She commented the document has been distributed in Clark and Washoe Counties to teachers asking for their feedback, which was overall favorable. There was also discussion on moving keyboarding to the elementary level.

Ms. Chang said the second guidance document, a framework for “K-5 Computer Education and Technology” also needs to be addressed. She added that several people had reached out from elementary school levels asking what they need to do. Dr. Stefik asked whether more detail than what is in the standards is required. Ms. Chang pointed out under SB 200, Computer Education and Technology is the subject area with two prongs, which are the Computer Science Standards, and the Education Technology (Ed Tech) Standards. She commented when referring to Computer Education and Technology prior to 6th grade, it is about those two prongs. She added the Computer Science Standards clearly lay that out. The current 2010 Ed Tech Standards are grade-banded and are not as clear, but will be rewritten in October 2018, possibly to be more similar to the layout of the Computer Science Standards, and possibly being more conducive to K-5 teachers.

Chair Newburn asked what the subcommittee’s role would be in these guidance documents. Ms. Chang replied the Computer Science subcommittee will provide the working framework to the Ed Tech Standards writing team to provide guidance, which in turn that team will add input and complete the document. She added that the team rewriting the new Ed Tech Standards will ultimately complete the content of the guidance document. Ms. Scott asked whether the National Standards should be looked at for their framework, especially in major categories within the document. Ms. Chang replied that until the Ed Tech standards are rewritten or revised and completed by that team, the content in this framework or template is unknown.

The subcommittee broke off into two groups; group one will finalizing the guidance document for the one-half credit based on feedback received at the Computer Science Summit in June 2018, and group two will create a template of benchmarks that the “soon to be named” writing-team for the Ed Tech Standards revisions can work with and plug in content, based on what school districts should know for putting together their curriculums.

Dr. Stefik asked, with the Computer Science Standards being so complex, whether there will be any further training beyond this guidance document for teachers for Computer Education and Technology prior to 6th grade elementary instruction. Ms. Chang commented that extensive training in the elementary level is currently going on throughout the state, including Carson City and Washoe County. Ms. Scott commented the current training is computer science focused, not yet touching this piece, which will need to be built up once the Ed Tech Standards revisions are written. Ms. Chang added that because this guidance document for Computer Education Technology Prior to 6th Grade includes both Computer Science Standards and Ed Tech Standards, after the Ed Tech Standards writing team fills in this document with their content and benchmarks, she will then add the Computer Science Standards content and benchmarks as well. The complete guidance document will go to school districts delineating what should be covered.

The teams broke out into two discussion groups as follows:

1) Create Guidance Document Framework for “Computer Education and Technology Prior to 6th Grade” Elementary Instruction:

Melissa Scott
Heather Crawford-Ferre
Andreas Stefik
Jaci McCune
Tracey Gaffney (OSIT)

2) Guidance Document for ½ Credit Graduation Requirement Course:

Cindi Chang
Dave Brancamp
Mark Newburn
Kimberly De Lemos
Pavel Solin
Frank Mathews
Robert Maw (RPDP)

Review of Documents:

Guidance Document Framework for “Computer Education and Technology Prior to 6th Grade” Elementary Instruction:

Dr. Stefik reported on the groups final edits. He said they replaced all sections to match the parts to appropriate legislation. He pointed out specifically they called out different sections of SB 200 that are relevant to “prior to 6th grade.” He said some parts of SB 200 already had sections that included “prior to 6th grade,” especially the new section 3.1, which had specific statutes and regulations embedded. He said they added several explanatory paragraphs, which will need vetting on the new standards coming out and the relationships between the technology standards and the computer science standards. They did begin to embed the computer science standards into the document, leaving out the old technology standards, assuming there will be adjustments. He said they added computer science standards and writing context, which will need to be vetted as well. They did not include any frequently asked questions.

Guidance Document for ½ Credit Graduation Requirement Course:

Ms. Chang reported that the group had discussed licensing and training PD issues. She said a note will be added for school districts to use this document to inform teachers of specific goals. She said “Typing” and “Key-Boarding Requirements,” were removed, specifically so a teacher is not teaching only typing during the class. She pointed out this can be an entire ½ credit course or part of a year-long computer science course, as long as these standards are covered at the appropriate level.

Chair Newburn said another item discussed was about the middle school Discoveries course and pointed out the intent is to teach computer science at the appropriate levels, and when teaching high school standards and adding Ed Tech Standard requirements, a one-year course can be created that will satisfy this requirement but must hit all of these standards. There was further discussion on the year-long course that would include Discoveries and productivity tools and whether it is the school districts or at the State

Board of Education level who has the authority to decide what courses satisfy the requirement and whether there is a vetting process.

Chair Newburn said the regulation clearly calls out that computer science cannot be added to a different course of study. Ms. Scott pointed out that in traveling to schools throughout the state and talking to teachers about this course, a variety of courses are being used to satisfy this one-half credit course and the content was not always the intention. She said with the new regulations and SB 200 it is more prescribed and more specific.

There was discussion on the practicality of auditing school districts on whether they align with required courses to satisfy the requirement and the feasibility of actually visiting every school district in a vetting process.

Mr. Brancamp pointed out the state dictates the standards and the school districts dictate the curriculum. He said the question becomes whether the state can only request courses that satisfy the requirements and that it is ultimately the individual school districts decision on what those courses are and whether they align to the requirements. He said it may be the school districts interpretation of what courses match the requirements.

In further discussion, Ms. De Lemos pointed out there are currently specific courses in the Clark County School District associated with the Career Technical Education (CTE) Pathways. She said they have multiple courses which meet what was considered .5 credits towards "Use of Computers." She said the difference now is that standards are attached, and with standards attached the school district's job is to make sure those requirements are being met. The subcommittee agreed that it may take a couple of years to get everything in place and aligned between the state and all school districts to understand the purpose of SB 200 and additional graduation requirements for students to have computer science.

Chair Newburn said between the guidance document and the standards listed, intent is shown, which ultimately will help school districts understand what is intended for them to do in going forward. He agreed that time is required by school districts to retool their curriculum so to align with the standards and SB 200. Ms. Chang said she reaches out periodically to school districts and asks what types of support is needed. Ms. De Lemos pointed out it is important to get the word out to everyone, and send the same message to all school districts.

VI. Review and Discussion of Computer Science Subcommittee's Strategic Plan (For possible action)

Chair Mark Newburn

Ms. Chang commented that the draft strategic plan has been built off of the framework from Code.org, which was received at a policy meeting, and has been adjusted to fit Nevada. She suggested the subcommittee breakout into teams and each take a topic for a group discussion on goals, strategies, who is responsible, start end-time, etc., using SB 200 as the content base. The subcommittee broke into the following groups:

1. Data and Reporting: Melissa Scott
2. Diversity: Kimberly De Lemos, Tracey Gaffney
3. Teacher Pipeline: Pavil Solin, Andreas Stefik, Jaci McCune

4. Curriculum and Courses: Frank Mathews, Cindi Chang, Robert Maw
5. Outreach and Funding: Mark Newburn, Dave Brancamp

DATA AND REPORTING:

Ms. Scott discussed assessment and the suggestion that formative assessments be given to teachers as resources and ask for data back, especially for K-5. Dr. Stefik suggested adding a formative assessment onto a survey with very simple free-form questions, which would produce a base to go on when the standards are revised in five years. The group also discussed moving, “Overarching Action Plan Goals” to the head of the document and on a table representing the overarching action plan goals, which is basically an overview of the six main topics with links to each of their individual goals and strategies within the document.

Goal:

1. Measure the state of computer science and computer education and technology in Nevada across demographics and regions to inform the state’s goal.

Strategies:

- Identifying what data to collect and the methods to do so statewide, including the exploration of School Codes for the Exchange of Data (SCED) code usage to identify middle school and non-CTE courses to produce comparable data
- Collect and establish statewide baseline data, including number of courses, enrollment and demographics
- Collect data on standards efficiency through formative assessment methods, including:
 - Whether there are particular parts of the standards that worked well or not?
 - Whether grade levels for the standards need to be shifted around?
 - Whether there are particular areas the legislature should prioritize funding to best help students?
- Create and deliver a landscape survey after year one and again after year five of Senate Bill 200 (SB 200) implementation to all districts in the state to include survey data from all districts
- Produce a landscape report after year one and year five after implementation by creating a publicly available report that drives the state’s future strategic planning

DIVERSITY:

Ms. De Lemos discussed the goals of Diversity and how to ensure that all students have access to and are engaged in K-12 computer science. It was pointed out that computer science for all students requires that equity and diversity be at the forefront of any reform effort. When equity exists, there are appropriate supports based on individual students’ needs so that all have the opportunity to achieve similar levels of success. Equity is not just about whether classes are available, but also about how those classes are taught, how students are recruited, and how the classroom culture supports diverse learners and promotes retention.

Goals:

- 3.1 Identify states, districts, or institutions that are working to identify successful strategies for increasing diversity in K-12 computer science education

Strategies:

- Review national efforts towards equity and diversity strategies
- Identify diversity needs for Nevada schools

- Identify or develop models for diversity to put into action in Nevada, by including a list of equity and diversity models on the Nevada Department of Education (NDE) website and/or www.stemhub.nv.gov/csfornv
- 3.2 Increase enrolled female population in secondary computer science courses to 50% by 2022.
Strategies:
- Review national efforts towards increasing female enrollment in computer science
 - Create partnerships with other organizations trying to increase female engagement in computer science, by the completion of chart and a Strengths, Weaknesses, Opportunities, Threats (SWOT) Analysis
- 3.3 Ensure that the demographic composition of secondary computer science courses reflects the demographic composition of each school by 2022
Strategies:
- Identify the difference between statewide student demographics and current representation in computer science classes
 - Create district-by-district chart
 - Create a guide focused on recruiting underrepresented groups, including an accessibility checklist, and train administrators and counselors, by publishing a Guide with district-by-district demographic chart and trainings are developed and scheduled
- 3.4 Establish guidelines to ensure that all curriculum and course content is accessible to people with disabilities, including WCAG 2.1 AA compliance for websites, screen reader support, keyboard customizability, and other common accessibility considerations by 2022
Strategies:
- Work with UNLV on promoting accessible Code.org computer Science Principles course
 - Identify other curriculum used in Nevada and evaluate for accessibility, by posting a list of accessible curriculum on the Nevada Department of Education (NDE) website of approved instructional materials

TEACHER PIPELINE:

Ms. McCune reported on Teacher Pipeline, Professional Development (PD), and the purpose of providing professional development for teachers of other subjects is to leverage the existing pool of teachers and provide a short-term approach for increasing the number of computer science opportunities in schools.

Goals:

4A.1: Provide a professional development pipeline for all teachers in Nevada to learn the concepts and pedagogy of computer science at the elementary, middle, and high school levels

Strategies:

- Work with Regional Professional Development Programs (RPDP)'s, institutions of higher learning, or third parties that have an agreement with an institution of higher learning, to set up hubs for professional development in the state

- Provide professional development to support at least one teacher at every elementary, middle, and high school in the state
- Host local, regional or online professional development trainings across the state
- Establish an evidence-based quality control mechanism for reviewing professional development opportunities, by RPDP posting Computer Science Fundamentals Computer Science Discoveries, and Computer Science Principals training schedules on the RPDP site at <http://www.rpdp.net/> and STEMhub site at www.stemhub.nv.gov/csforNV, as well as participation data, including number of K-12 PD opportunities, and number of participants by school/district, higher education institutions showing computer science trainings on their calendars, and by a PD quality control rubric

4A.2: Provide a professional development for all teachers in Nevada to learn the Nevada computer Science Standards and how to apply them at the elementary, middle, and high school levels

Strategies for 4A.2:

- Develop an online training portal to instruction teachers on the K-12 Computer Science standards and their implementation, via an online training portal: <https://sites.google.com/rpdp/net/nv-computer-science-online/home>

4A.3; Provide ways to communicate these professional development opportunities: website, social media, memos, etc.

Strategies for 4A.3:

- Establish a publicly viewable website to inventory and communicate professional development opportunities, via Byte-Size Seminar Series of trainings, participation rates and recording on www.stemhub.nv.gov/csforNV site
- Host local, regional, or online professional development trainings across the state
- Host local, regional, or online professional development trainings across the state, using #csforNV (social media) and #nevadaReady

CURRICULUM AND COURSES:

Ms. Chang presented curriculum and courses, which is broken down into three categories; Standards, Curriculum and Graduation Requirements. The Standards allow curriculum to be created and selected, based on a coherent vision of computer science education that sets learning goals for all students, from kindergarten to high school graduation.

Standards:

Goals:

4A.1: Develop K-12 Computer Science Standards at each grade level/grade band.

Strategies:

- Get board approval of development timeline and composition of development committee. Secure budget for development committee meetings
- Assemble writing team and complete draft standards
- Set up public review period and receive feedback
- Revise standards based on public review and present to Board for adoption, then through complete regulatory process
- Evaluate incentives to continue to expand computer science
- Revise standards based on accelerated revision cycle

- Develop online teacher PD on unwrapping the standards (Nye County site)
- Develop CS Fundamentals for integration / core

Curriculum and Resources:

Goals:

4B.1: Recommend courses and curriculum aligned to the state standards - including diversity and disabilities

Strategies:

- Publish assortment of curriculum resources on the NDE computer science web page and/or STEMHub website

4B.2: Create resources to guide district implementation of the standards.

Strategies:

- Once standards are completed, publish curriculum alignment rubric for Local Education Agencies (LEA)s selecting curricula and update resources list with approved, suggested curriculum resources on the NDE computer science web page
- Develop fully accessible Computer Science Principles course in collaboration with Code.org

4B.3: Create resources for K-12 Computer Science standards to be integrated into other subjects in elementary

Strategies:

- Develop online CS Principles course available to all districts, especially rural areas
- Develop online Computer Science and Applications half-credit course

Graduation Requirements:

Goals:

1. Allow computer science to satisfy a high school graduation requirement and corresponding post-secondary admissions requirements

Strategies:

- Pass bill to allow computer science to count as a math or science credit
- Create FAQ about computer science counting as a math or science credit
- Work with higher education to allow computer science to satisfy an admissions requirement
- Revise half-credit graduation course to include computer science

OUTREACH AND FUNDING:

Chair Newburn discussed the effective implementation of the statewide computer science initiative, which requires proactive communication using a variety of methods at the state, district, and school level. Students, educators, administrators, community members, and industry leaders must have open channels of communication to ask questions and provide feedback.

Outreach

Goals:

1. Increase awareness of the current computer science work in the state, communicate the state plan, and receive feedback from a variety of stakeholders

Strategies:

- Get feedback on draft plan from stakeholders (teachers, district leaders, parents, researchers, etc.)
- Create computer science education portal/website/social media presence to keep stakeholders informed (NDE CS pages, STEMHub.nv.gov, #CSforNV)
- Publish state plan on state computer science web page. Include information such as the state's vision, key implementation milestones, standards, certification requirements, advocacy materials, curriculum resources, and a constantly updated FAQ

Funding

Goals:

1. Secure state-level funding dedicated to computer science professional development for existing teachers
2. Secure funding from federal programs and local industry

Strategies:

- Work with a legislative champion on the house or senate education committee to propose a bill to fund computer science professional development. (Senate Bill 200)
- Work with the state's economic development commission to set aside funding for professional development
- Create a dual-coded CTE/academic pathway of four computer science courses, including an introductory course, AP courses, and a course in cybersecurity, robotics, or mobile app/game design. (CTE pathway)
- Work with the state's ESSA planning committee to include computer science funding in Title I, II, or IV
- Partner with researchers and apply for NSF grant to implement an introductory computer science course in districts with high rate of students receiving free and reduced price meals
- Create proposal for funding for Tesla funds to assist with teacher training particularly in rural districts and Summit

Ms. Chang said the next step for the strategic plan will be that any changes or recommendations discussed at this meeting be added to the document and a final copy be returned to each member for a final review. She requested any last changes be returned to her within one week from today so she can get the document posted on the Department of Education's website. It was discussed that the computer science strategic plan should also be presented at the next STEM Advisory Council's meeting.

VII. Review and Complete Draft of Landscape Report (For possible action)

Chair Mark Newburn

Ms. Chang suggested to the group that information used on the Computer Science Landscape report can be based on the State of Indiana's Landscape report and just adapted to Nevada. She commented that additional data is needed for this report and requested that data in each of the subcommittee member's purview could be used and would be appreciated in completing the report. She added this report is for the subcommittee to use for the purpose of setting future goals for the Computer Science subcommittee.

VIII. Debrief and Discussion of the Computer Science Summit (For possible action)

Chair Mark Newburn

Ms. Chang reported on feedback from the summit. She said most feedback was positive with the exception of instruction on teacher perspective on SB 200, which it was suggested that more time be allowed at workshop rotation, especially in the elementary level. She said overall the feedback reflected that the summit had a good format. She discussed favorable and non-favorable presentations. She said it was noted that during team time strategic planning, several leaders had left prior to the end and it was suggested putting this item earlier in the day. Among the topics that feedback was received included: organization, understanding CS education in Nevada, being able to apply what was learned, recommend this session to others, presenters on time, time used well, knowledge, and presentation skills and preparedness.

Ms. Chang opened the discussion to another computer science summit next year and possible funding resources. It was agreed that another computer science summit was a good idea, but to take it to the next level making it more teacher focused, delivering best practices in every area of computer science instruction.

Ms. Chang said there is the option to charge for attendance at the conference. Ms. Scott suggested the subcommittee request funding from Tesla, or other corporate funding, to support rural teacher training and additionally request funding for another computer science summit. There was discussion on having the summit in both Northern Nevada and Southern Nevada.

Ms. Scott suggested piggy-backing a parallel conference with computer science sessions for teacher training with the annual Nevada Department of Education Mega Conference in order to better leverage conference costs. She added that the Mega Conference rotates between Las Vegas and Reno each year.

IX. Update of Licensure Requirement and Guidance Memo (For possible action)

Dave Brancamp

Mr. Brancamp commented that this item has not yet been completed by the Department of Education. This item was tabled until the next meeting of the Computer Science subcommittee.

X. Update on Future Computer Science Events (For possible action)

Cindi Chang

Ms. Chang said this item can be tabled until the next meeting of the Computer Science subcommittee, to allow for the limited time at today's meeting.

XI. Update on Professional Development (For possible action)

Frank Matthews

Mr. Matthews discussed the latest on professional development. He referred to Code.org's chart, "Computer Science Discoveries (CSD) and Computer Science Principles (CSP). He pointed out in 2016, 12 schools were teaching CSP, all in Clark County and none teaching CSD; in 2017, 22 schools were teaching CSP and 12 teaching CSD, which were in counties throughout Nevada; in 2018, 54 schools were teaching CSP and 54 teaching CSD, which were also in counties throughout Nevada. He pointed out that some smaller counties tend to have

less numbers of schools teaching CSP and CSD, which is typically due to size, funding and staffing problems.

There was a discussion on College Board funding. Mr. Mathews commented that current College Board funding will be gone at the end of the third quarter in August 2018. He said SB 200 funding is being used to fund the kick off summer of 2018 funding facilitators for PD training for teachers in Clark County. He pointed out that other counties can also choose to use SB 200 funds for this purpose. He said with the increased number of schools teaching CSP and CSD, RPDP is currently up to 20 different workshops throughout the year. He said RPDP will be doing another 40 workshops at 40 different schools, as a minimum, throughout the year at the College of Southern Nevada (CSN).

Mr. Mathews said the goal for this year is sustainability and making sure that schools currently teaching CSP and CSD continue to do so. It was suggested to offer online courses in CSP and CSD for those schools without these classes available. Chair Newburn suggested the Great Teaching and Leading Fund which is used for new or revised standards, and which if renewed in the upcoming legislative session, some of those funds could be used for further professional development, and pointed out that general professional development money would have to cover computer science as it becomes a general course. He also pointed out that Tesla is looking for other groups to fund as they move forward.

XII. Discussion on Approved Curriculum and Reporting Process (For possible action)

Chair Mark Newburn, Cindi Chang

Chair Newburn said this item can be tabled until the next meeting of the Computer Science subcommittee, to allow for the limited time at today's meeting.

XIII. Consider Future Agenda Items for the Next Meeting (For possible action)

Chair Mark Newburn

Chair Newburn said he will get together with Ms. Chang on a date for the next meeting. That meeting will include follow up to the strategic plan, a discussion on approved curriculum and reporting process, future computer science events and an update of licensure requirements and guidance memo.

XIV. Public Comment (No action may be taken upon a matter raised under public comment period unless the matter itself has been specifically included on an agenda as an action item.)

Chair Mark Newburn

Chair Newburn asked for any public comment.

Mr. Frank Mathews commented that he has been in contact with at least two teachers who feel they are "floating in limbo," due to the fact they each have a provisional license in computer science but are unable to meet the one year deadline to complete those requirements. He added these two teachers did not necessarily want to apply for this license, however their administrators required them to do so, and those teachers need more time. He asked whether the subcommittee can recommend anything to these two teachers or whether the State Board of Education may be able to relieve some of their burden. Chair Newburn suggested this request

should be address by Licensing and the Commission on Professional Standards (COPS), who develops licensing policies. There was further discussion on the regulations of a one-year provisional teaching license. Ms. Chang said she would address the matter through her office.

XV. Adjournment

Chair Mark Newburn

Chair Newburn adjourned the meeting at 2:44 P.M.

DRAFT