STATE OF NEVADA

**GOVERNOR'S OFFICE OF
SCIENCE, INNOVATION &
TECHNOLOGY**
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Brian Sandoval
Governor

Brian L. Mitchell
Director

PUBLIC MEETING MINUTES

Name of Organization: Computer Science Subcommittee

Date and Time of Meeting: Thursday, November 8, 2018 @ 4:00 PM

Place of Meeting: Nevada State Library and Archives
                     Governor's Office of Science Innovation and Technology
                     100 North Stewart Street, Suite 220
                     Carson City, NV 89701

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 4:02
P.M. on Thursday, November 8, 2018, on the above conference line.

Members Present
Andreas Stefik
Cindi Chang
Dave Brancamp
Frank Mathews
Irene Waltz
Jaci McCune
Kimberly De Lemos
Mark Newburn

Members Absent
Heather Crawford-Ferre
Jonathan Reynolds
Kindra Fox
Kris Carroll
Melissa Scott

Pavel Solin
Rob Sidford

Guests Present
Jerrad Barczyszyn, Southern Nevada Regional Planning Development Program (RPDP)
Glenn Krieger, Southern Nevada RPDP

Staff Present
Brian Mitchell
Debra Petrelli
Tracey Gaffney

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.

IV. **Approval of the Minutes from the August 22, 2018 and September 18, 2018 Meetings** (For possible action)
Chair Mark Newburn

Chair Newburn asked if there are any changes or corrections to the August 22, 2018 Minutes as written, or the September 18, 2018 as written. None were made. Mr. Mitchell made a motion to approve the August 22, 2018 Minutes as written, and the September 18, 2018 Minutes as written. Ms. Chang seconded the motion. The motion passed unanimously.

V. **Discussion of Possible 2019 Bill Draft Resolution (BDR) for Any Needed Changes to the SB 200 Law or Additional Funding** (For possible action)
Chair Mark Newburn

Chair Newburn received an email from Senator Joyce Woodhouse stating she had an extra Bill Draft Request (BDR) and asked whether any follow-up, changes or additional funding is required for SB 200. He said outside groups and national organizations have been contacted, asking what should be addressed next in computer science. He pointed out some of the issue is SB 200 just starting to roll out, and if problems start to occur, they are unknown at this time. Ms. Chang reported on SB 200 feedback received from those outside groups. She began by requesting feedback from the subcommittee as well. She addressed recommendations received from Code.org and Expanding Computing Education Pathways (ECEP). She said Carol Fletcher at ECEP recommended the following:

"I'm attaching our Advocacy Priorities from Texas in case they might be useful to you. One of the strategies we are using is to try and get support for CS "baked into" the school funding system so that we don't have to fight for funding every legislative session. That is why we are asking CS to move to CTE. In Texas, schools that have students enrolled in CTE courses get extra weighted funding to pay for the costs of those courses. This funding can be used for teacher PD, technology purchases, equipment, student competitions, etc. It is state money on top of the Perkins $$. If there is a way to incentivize districts to offer CS and then direct them to use those financial incentives on teacher PD, that might be a good long term capacity building approach to take in Nevada as well. Those funds will only flow to support HS teachers however so we are also asking for K-8 teacher PD support."

Ms. Chang pointed out this priority is already in place in Nevada, which ties into Career and Technical Education (CTE) and funding, and is in place in high schools and soon to be at middle schools in Nevada. She said another recommendation came from Anne Leftwich at ECEP as follows:

"I think the easiest thing to ask is that the elementary preservice teachers are prepared to teach CS at the 6th grade level (as a bare minimum). This should technically be an expectation since it's in the standards at the elementary level, but preservice programs may not be thinking of it. For extra credit, I might try having some kind of requirement for all teachers entering into teacher education programs that they have some exposure to CS, but I would be specific about the content (how the Internet works, Digital Citizenship, basic coding ideas) or perhaps just being able to meet the basic elementary standards (since they would have missed all that information from their own K-12 experiences. Does this make sense? For extra extra credit, you could ask that all teacher education programs develop proposals for creating a preservice CS track/program/option."

Ms. Chang pointed out this recommendation includes asking whether elementary pre-service teachers are prepared to teach computer science, as well as a requirement for all teachers entering the teacher education programs to have exposure to computer science. She addressed the next recommendation from Katie Hendrickson with Advocacy and Public Policy for Code.org, who recommended:

"We have two suggestions in our Making CS Fundamental doc for pre-service, and sample legislative language here (see section 9). It mostly comes down to incentives. Here's the sample language:

SECTION 9. INCENTIVES FOR PRE-SERVICE TEACHER PREPARATION.

(a) The [STATE APPROPRIATIONS ENTITY] shall create and appropriate funds for a scholarship program for pre-service teachers to take a course in computer science. A pre-service teacher enrolled in a state accredited institution of higher education and working towards a degree to become qualified to teach any K-12 subject may receive a [$1000] scholarship after successful completion of one course in computer science.

(b) The [STATE APPROPRIATIONS ENTITY] shall appropriate funds to eligible preservice education programs in the state to develop and implement pathways in computer science education. The pathways would prepare an enrolled pre-service teacher to add a certification to teach computer science education to their intended major and area of certification. The pathways would be open to pre-service teachers at both secondary and elementary levels, and may include collaborations among schools of computer science, schools of education, and non-profit organizations."

Ms. Chang said this recommendation had two suggestions; creating appropriate funding for a scholarship program for pre-service teachers to take this course in computer science, and funding for eligible pre-service education programs to develop direct pathways. She added one is a scholarship directly to teachers with $1,000 after completion of the coursework, and the other is an education program to develop pathways for computer science education.

Ms. Chang said for possible changes to the statutes, she referred to pre-service teacher programs. She said her thoughts are to provide a specific line item of funding for RPDP's professional development (PD) programs, in addition to the districts/rurals/charters, and then to add something in the bill that says Universities/Colleges with Teacher Prep programs must include computer science education for their pre-service teachers by 2022, for example.

Chair Newburn asked whether there are any big problems with the current statute for SB 200 and whether anything needs to be fixed or any additions made. Dr. Stefik commented that clarification may be needed as he feels that colleges are totally disconnected from K-12 who currently have a good pipeline laid out for computer science, and asked whether something could be built into the bill to "prod" colleges to connect their curriculum with K-12. He added in looking at requirements of what students should learn, it appears there is a match to the first year of college, and asked if a change or mandate could be made requiring colleges to adapt a pipeline similar to the current K-12 pipeline to computer science, ultimately benefitting the state. Chair Newburn replied he is not sure Nevada colleges have yet recognized there is a fundamental change in computer science. He said the pathways and transitions from K-12 to college have changed and is an issue to be addressed, but is currently unsure how to address it. He asked the subcommittee for any input.

Ms. Chang asked whether putting "…by 2022, colleges and universities with pre-service teacher programs include computer science education as part of their pathway of instruction." She added this may get it on their radar. She said perhaps that could become the computer course that all students entering a university need to take.

She pointed out that having a deadline requiring universities to start developing a specialization pathway, i.e. math or science, either in the college of education or college of engineering, to recognize this is happening and that pre-service teachers are required to come out of those programs having some knowledge of computer science as well as the standards, based on whether they are elementary or secondary teachers. She agreed with Dr. Stefik, as things build and grow, students will come out of school with more knowledge that may allow them to "test-out" of an entry level course.

Chair Newburn suggested asking universities and colleges to provide an analysis and report back to the legislature on how they will take advantage of the expanded access to computer science in K-12. He said it would basically be asking how they are going to take advantage of changes in K-12, in terms of pathways for computer science and computer science for all occurring. He added that this will allow higher education to look at the opportunities this occurrence is going to present to them. Dr. Stefik agreed. Ms. Chang asked whether this type of request to colleges and universities would need to be written in statute. Chair Newburn replied this would not necessarily be setting a policy, but rather asking a group for an analysis and provide a report back to the legislature. The question is how strong of a request this would be. Chair Newburn pointed out this is early in the process, and may need to be tied in with the pre-service process. There was further discussion on Code.org's suggestion for funding for pre-service education programs to develop and implement pathways in computer science education. Chair Newburn suggested including an analysis request in this section as well. Ms. Chang asked whether specific funding dollar amounts are required. Chair Newburn replied the bill would get a fiscal note since the higher education system will be asked to make changes to their pre-service programs to support "recently changed STEM standards."

Ms. McCune said she believes the state is going to get into a big rut if pre-service is not addressed in some way. She said right now so much time, money and resources are being spent for professional development for teachers, especially at the elementary level and K-8 level, because they have never received the pre-service training. She pointed out the content is almost new for everyone. She added if it does not eventually become a requirement for teachers in the State of Nevada, the state will never get out of this rut of professional development for these teachers.

Chair Newburn asked the group how pre-service could be made a requirement. Dr. Stefik asked whether there is a teaching endorsement currently for computer science. Chair Newburn replied there are academic standards and teacher endorsements for computer science. He suggested including pre-service work for K-8, and particularly K-5, to also get those endorsements, which are targeted towards the one-half credit and computer science principles.

Mr. Mitchell said he recently visited a middle school in Clark County that would like to teach Computer Science Discoveries in grades 6 through 8, however currently in Infinite Campus it is only an 8th grade course. He said they are hoping that will change. Ms. Chang replied that change would be a school district decision on where courses are placed. Ms. De Lemos said this is true in Clark County, and their Computer Science Discovery course is at the middle school level, but does not believe it is required to only be taught in the 8th grade, but rather there is language that says this course is appropriate for grade 8. She said many times when a recommendation is made, schools believe it is mandatory. She suggested Mr. Mitchell get in touch with her after the meeting to address this issue at the middle school he visited.

Chair Newburn asked for any suggested additions that may be needed for SB 200. He said it appears the subcommittee is looking at pre-service work and asking for an analysis on the transition to exploit more advanced computer skills. Ms. Chang added that teacher education programs and pipeline recommendations, as mentioned earlier by Ms. McCune, are on-point.

Chair Newburn asked for any funding suggestions for SB 200. Ms. Chang said in addition to possibly targeting specific funding for RPDP, whether a mechanism by which any unused

portion of funding could be carried-over into the next year, or at the very least revert back to the Department of Education, Office of Standard and Instructional Support, to possibly fund a summit or provide extra PD. Mr. Mitchell stated it is very difficult to get any type of language in a bill that would revert left-over funds back to the grantee as opposed to going back to the General Fund, especially if the funds were not used for the original intended purpose. He suggested in the original funding request, possibly including a percentage (i.e. 5%) that could be set aside for a statewide activity. He said ultimately, whatever amount of funding is awarded, that an effort is made to make sure the entire amount is spent by school districts.

Chair Newburn discussed the last two years of funding and asked what worked and what did not work for SB 200. Ms. Chang said there was a glitch in the beginning of the grant funding process in the determination of who would be handling the funding, which was her. She pointed out this worked out well, once that information was known, which caused the grant funds to go out late in the year to the school districts. She pointed out that funding went out on time this year. She said that first year, even though the funding went out late in January, the school districts spend 91% of the funding. She said she expects a full 100% will be spent this year. Ms. De Lemos discussed some of the challenges in the first year of grant funding for Clark County.

Ms. McCune said Northwest Nevada RPDP could not apply for funding last year for training or stipends, so several rural school districts created a consortium and worked together to come up with a plan. She said it ended up that Lyon County wrote the grant application, Douglas County is the fiscal agent, and she and Robert Maw both with RPDP, are doing the training. She pointed out there has been a lot of shuffling of paperwork and coordination and commented how much simpler it would have been if RPDP could have applied for the grant themselves. Ms. Chang commented on the fantastic job the rural areas and Clark County are doing in teacher training through the work of RPDP and agreed that this process must be streamlined to be more productive for everyone. Chair Newburn asked whether this meant that wording in the bill should be changed so to allow RPDP to also apply for the grant funding. Ms. De Lemos commented on the outstanding job that RPDP has done and agreed with Ms. Chang. She pointed out that if RPDP could be included to apply for grant funding directly, they could possibly increase their capacity for more training.

Dr. Stefik suggested that long-term hope for SB 200 is that, after 10 years, the training will trail off and pre-service kick in. He discussed a possible scholarship program to encourage students and the impact it would have, such as a huge surge in enrollment and with the increase in enrollment in computer science, the possibility of college departments needing to increase in size. Chair Newburn said this would be a scholarship program to get teachers coming out of school to attain the CS endorsement, and believes colleges do increase in size in accordance with their enrollment.

Chair Newburn asked the subcommittee if they felt SB 200 funding should include equipment. Ms. De Lemos said she believes the focus should be on the training and professional development. Ms. Chang discussed a classroom experience wherein the focus was on professional development, but blending it with laptops (equipment), and using them as an incentive and to reinforce teacher programs. Ms. De Lemos stated, based on past experience, that oftentimes when teachers are provided with technology equipment, that equipment does not get utilized in the manner in which it was intended, simply because there is not the level of

knowledge. She pointed out in Clark County, training has a long way to go and feels it could be multiple years before teacher training is fully infiltrate into the system.

Dr. Stefik commented that much of computer science training is done online and asked whether rural areas in Nevada have sufficient internet access to take advantage of these programs. Mr. Mitchell replied that connections in rural areas are currently a top priority with OSIT's broadband division. He said not every rural school is well connected currently, but progress is being made and changes should be made in the next year or two. Chair Newburn said he and Ms. Chang will use all topics discussed today and put together an initial set of items for SB 200, which is due back to Senator Woodhouse on November 9, 2018.

VI. Ed Tech Standards Revision Update (For possible action)
Cindi Chang

Ms. Chang updated the subcommittee on the Ed Tech Standards. She said a workshop had taken place on November 18 and 19, 2018, to include 25 members from 8 elementary, 8 middle and 9 high schools, as well as some members from industry. She said several members of the computer science writing team were also present for continuity and consistency. She pointed out the reference material used for the Ed Tech Standards included the 2010 Nevada K-12 Technology Standards, the new ISTE National Standards from 2016, as well as input from Washington, South Carolina, Virginia, Arizona and Utah standards. She said as the Ed Tech Standards were being written it was voted in unison they need to be updated, and the group was careful not to duplicate the work already covered in the Computer Science Standards. She said the goal was that both the Computer Science Standards and the Technology Standards reside in a single document. The team decided to name this one complete standard document, the Nevada Academic Content Standards for Computer Science and Integrated Technology. She presented the new draft version of the document to the subcommittee for comments and said the timeline to return those comments is November 16, 2018. She commented the document will then be sent to the Department of Education's Internal Review Committee, then out to the public for 30 days. She said the Academic Standards Council (ASC) does not meet again until June or July 2019, which marks the first that these standards can go before the ASC for review.

VII. Report on Code.org/CSTA State Computer Science Policy Forum in Denver, CO and CSForAll Summit/ECEP State Convening in Detroit, MI (For discussion only)
Cindi Chang and Melissa Scott

Ms. Chang commented on the Code.org/CSTA State Computer Science Policy Forum held in Denver, Colorado, which she and Ms. Scott attended. She commented on how Nevada is being asked more often to represent, along with a select few other states, at these types of forums, recognizing Nevada as a leader in the computer science initiative. She commented on a flash-talk she gave, as well as a second presentation with Sara Dunton of ECEP on the recent Computer Science Summit held in Las Vegas in August 2018. She briefly discussed several thoughts and suggestions that came out of that meeting including funding and some of Arkansas' incentive programs. She said New Mexico had several good summit ideas as well. She said after the forum a state planning meeting was held to discuss possible upcoming events for Nevada.

Ms. Chang, along with Ms. McCune and Dr. Stefik, attended the CSForALL Summit/ECEP in Detroit, Michigan. She said UNLV and the Nevada Department of Education, because of their commitments to computer science, are being recognized on the CSForALL website. She also commented on other presentations at the summit, and pointed out ECEP is NSF funded and has been renewed and is now being called ECEP2.0 and has additional new leadership. She added that computer science mini-grants from ECEP2.0 will still be available to Nevada and pointed out other resources that can be found on their website.

VIII. Update on Computer Science Progress (For possible action)
Chair Mark Newburn and Cindi Chang

Ms. Chang updated the subcommittee on the progress of computer science. She said a first newsletter and computer science announcements were sent out to the public. She commented that AP Computer Science Principles participation has soared through the roof and Nevada's scores have made national headlines. She said the Las Vegas Review Journal had written an article on this topic. She said college courses towards new licensing endorsements have begun as follow:
- Touro University - series of 6 courses to include all 5 classes needed for both endorsements and a 6th course for Practical Application of Computer Science across Disciplines. 16 people enrolled from ES, MS, and HS, from all subject areas, most wanting to get endorsed to teach CS and some just want to know more about it for professional growth
- UNLV (through SN-RPDP) - Java course has run two cohorts for a total of 22 teachers. CS concepts (CSD and CSP trainings including 5 training session with extra project and artifacts), Offered in spring 2019.
- SUU (through NWRPDP)
  - 4 courses: Concepts of CS, 2 Languages, Methods of CS
  - 31 teachers currently signed up for this cohort to complete all 4 courses by June 2018

Ms. Chang also reported on Professional Development (RPDP / Code.org):
- Several cohorts of CS Discoveries (MS) and CS Principles (HS) took place this summer; cohorts are currently in their quarterly workshops
- For the 2018-19 school year 58 CSP teachers have been trained in Nevada.
- For the 2018-19 school year 60 CSD teachers have been trained in Nevada.
- For the 2018-19 school year 206 Elementary teachers have been trained in CSF
- An additional 300 Elementary teachers are scheduled to be trained by June 2019
- (2017-18 CSP-21 and CSD-12 teachers trained in Nevada.)
- Past cohorts of MS and HS teachers have indicated that they would like attend a a 2nd year follow up workshop. At least one workshop or possibly 2 workshops for the year 2 follow up. No follow up workshop dates have been set/organized pending funding for Facilitators and Venues.
- The RPDP's will be offering course work for CS endorsements in January 2019. At that time we will be collecting data on the numbers of registering teachers interested in pursuing cs endorsement.
- Training Data for NWRPDP - Focused on NVACS-CS, content, and pedagogy.

Ms. Chang requested suggestions for a smoother communication flow to get information discussed in the subcommittee out into the school districts and charter authorities, administration and down to teachers.

IX. **Discussion on Potential Statewide Events for CS Ed Week** (For possible action)
Chair Mark Newburn and Cindi Chang

Chair Newburn asked whether the subcommittee is interesting in a possible event during the CS Education Week. Ms. Chang suggested a CS Education week kickoff event, and noted the event is December 3 – 9, 2018. She said possibly a kickoff to that week could be an invitation going out to schools for students to participate in a contest creating videos about why they need computer science in their schools and why it is important to them. She said these projects would be due in the springtime for judging, with the winning videos to be shown as a trailer in movie theaters across Nevada. She said she is currently working on this project and it is looking viable. Ms. Waltz suggested breaking down the groups for this type of contest between elementary, middle and high school levels, then compiling the winners into one trailer. Ms. Chang agreed.

Chair Newburn pointed out to the subcommittee, that at some point, they will need to address the write up of an op-ed on K-12 computer science, consisting of a "500-page" story on the strategies of computer science in Nevada then distribute statewide to newspapers to publish for the public, so they can fully understand these strategies. He pointed out this was done with STEM during the 2015 legislation to give the public much needed information on the subject.

X. **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.

XI. **Adjournment**
Chair Mark Newburn

Chair Newburn adjourned the meeting at 5:20 P.M.