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**MINUTES**

Name of Organization: **Computer Science Subcommittee** of the Science, Technology, Engineering and Mathematics (STEM) Advisory Council

Date and Time of Meeting: April 28, 2017 at 11:00 A.M.

Place of Meeting: Governor's Office of Science Innovation and Technology (OSIT)  
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  
Mark Newburn, Chair

Chair Newburn called the meeting to order at 11:06 A.M.

Members Present: Mark Newburn; Dave Brancamp; Dr. Kimberly Vidoni, Melissa Scott; Kimberly Moody; Kris Carroll; Dr. Andreas Stefik; Dr. Pavel Solin; Frank Matthews, Kindra Fox, Cindi Chang

Members Excused: Rob Sidford

Guests present: Kendall Hartley, Associate Dean, Graduate College - UNLV

Staff Present: Brian Mitchell, Debra Petrelli

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.)

There was no public comment.

- III. **Welcoming Remarks**  
Mark Newburn, Chair

Chair Newburn welcomed all members and guests to the Computer Science Subcommittee meeting.

- IV. **Approval of the Minutes from the January 6, 2017 and March 23, 2017 meetings** (For possible action)  
Mark Newburn, Co-Chair

Chair Newburn asked the Subcommittee if there were any changes or additions to either the January 6, 2017 or March 23, 2017 Meeting Minutes. Ms. Moody responded that on the January 6, 2017 Meeting Minutes on page 7, second paragraph, in the first line, “ETS” should be “ECS” and “AT” should be “AP.” She said on the March 23, 2017 Meeting Minutes, on page 7, third paragraph, 6<sup>th</sup> line, “CT” should be “CTE”.

Dr. Vidoni made a motion to accept the January 6, 2017 and March 23, 2017 Meeting Minutes as amended. Ms. Scott seconded the motion. The motion passed unanimously.

- V. **Discussion and Update on SB200 (Senate Bill 200: Revises provisions relating to instruction in computer education and technology)** (For information only)  
Mark Newburn, Chair  
Brian Mitchell, OSIT

Chair Newburn commented that information on SB200 has been updated on the state website NELIS: <https://www.leg.state.nv.us/App/NELIS/REL/79th2017>. He pointed out it includes the amendment. He said Senator Woodhouse spoke with various stakeholders of the bill about amendments. The bill has been amended and re-submitted to the Senate Finance Committee. He added that those amendments included the change this subcommittee had asked for, requested by Dr. Stefik regarding students with disabilities. Other changes have to do with the funding portion, including a \$1.4 million appropriation for two years. Additional wording changes includes professional development, the appropriation and students with disabilities. There were changes in the phrasing regarding core testing, including, “would have to have at least 50% computer science” was removed and replaced with “The State Board shall determine the percentage”. Chair Newburn said Senator Woodhouse, the sponsor of the bill, had a meeting with some local

school districts and their requests were driving various changes that ended up on the amendment as well. He added that after meeting with Senator Woodhouse those changes were made while others gave cause for concern, which is why some wording was changed. He pointed out he did not believe there was any opposition to the bill, but rather the issue being that the appropriation is not part of the Governor's budget and for that reason the bill now has to go to the Senate Finance Committee, which Senator Woodhouse is the Chair. He said there seems to be a general agreement that this bill is what everyone wants, but the battle will be how it gets funded. He said his perception is that the Governor's office feels the money needed to fund this bill can come from private donors, the same as the agreement with the College Board and Code.org with funding by The Great Teaching and Leading Fund, which is controlled by the State Board of Education.

Chair Newburn said at yesterday's State Board of Education meeting the board made professional development, for new standards or updated standards, one of the three new priority items for the next two years. He said he had brought attention to the board, the various standards that could potentially change over the next two years including the update for computer science. Therefore, the board is on record they will put money forward if it is needed. He said there may be issues of how exactly this bill gets funded and may end up causing this bill not to pass in legislature. Chair Newburn said that he, Senator Woodhouse and Brian Mitchell have been working on this issue and how to get past this hurdle. Mr. Mitchell added there is a lot of support for the bill and there is a large group committed to seeing this bill through and ensuring everybody involved is comfortable with what ends up in the final package. He said, from his perspective, they want to make sure everyone is comfortable and supportive with any changes and from what he has seen there is much support in both houses of the legislature as well as having the support of the Governor. He added he is optimistic there will be a path forward for this bill and will continue to work for that until this legislative session ends. Chair Newburn added there are issues within the bill that does not require the legislature to vote on. Those issues can be done through the Department of Education and the State Board of Education. Therefore, if the bill begins to fall apart and cannot get to an agreement, items like the computer science standards can still happen. Additional professional development to expand high school computer science can also still happen independent of the bill. He added the exception would be requiring every high school to offer computer science. Chair Newburn suggested members of the Subcommittee look at the recent changes to the bill.

- VI. Update from MassCAN Conference in Cambridge, Massachusetts April 3 – 4, 2017. (For information only)  
Brian Mitchell, OSIT

Mr. Mitchell commented that a group from this Subcommittee were invited to attend this conference, hosted by Google, Code.org, MassCAN, ECEP and

others. He said Nevada was one of ten states in attendance. This was a compliment to all of the hard work being done in Nevada. He discussed one of the panels, Business Engagement, was followed by a Nevada group discussion on how to do a better job at business engagement. Building statewide coalitions were also discussed, as well as conversations about using a collective impact model for building statewide coalitions. He added this Computer Science Subcommittee is an ideal vehicle for statewide coalition. He said there was discussion about equity, in terms of rural students, underrepresented students by either gender or race, as well as students with disabilities. They heard several different action plans on this subject. He said perhaps the highlight of the conference was the panel discussion on engaging government where Mark Newburn was one of four panelists who was able to comment on all the work being done in Nevada. There were many productive state conversations and some action steps were taken that will guide the work of this subcommittee as it moves forward.

Chair Newburn remarked it was nice for everyone to get together and meet each other. He said he is trying to engage different members of this subcommittee, giving everyone some exposure to these types of conferences. It gets us together with other states and a chance to talk to their people doing state work on computer science, which is invaluable. He added at the end of each panel discussion, members from Nevada came together to talk about each issue. He said other issues discussed included "Licensing and Endorsement". He added having this subcommittee as a collective group really puts us ahead of the vast majority of states.

Chair Newburn said it was announced at the conference that Cindi Chang is going to be the new STEM Computer Science person for the Nevada Department of Education. Ms. Chang commented on the MassCAN conference and how invaluable it was to network with people in other states. She said it was discussed the importance of having some sort of combined collaborative communicative email document out to everybody so school districts are not getting information haphazardly or inaccurately. We need combined communication going out to everyone. Mr. Brancamp echoed how delighted the Department of Education is with Ms. Chang accepting this position. Ms. Moody offered her congratulations to Ms. Chang and said Southwest Career and Technical Academy and Clark County School District (CCSD) is sad to see her leave, but very happy she will get to see the bigger picture in helping to make an impact statewide. Chair Newburn offered a copy of the agenda from the MassCAN conference to anyone interested.

Ms. Chang commented that her new Department of Education email would be [cchang@doe.nv.gov](mailto:cchang@doe.nv.gov) for any material.

VII. Update Regarding ECEP Grant and Computer Science Standards (For information only)

Dave Brancamp, Nevada Department of Education, Office of Standards and Instructional Support

Mr. Brancamp thanked Brian Mitchell in the Governor's Office of Science, Innovation and Technology (OSIT) for being the fiscal agent to help get the Expanding Computer Education Pathways (ECEP) grant up and going. We were fortunate to receive this \$25,000 grant to help us with the construction of the development of computer science standards. He commented on the unfortunate side being the fiscal side which has caused a delay by a couple of months. Mr. Brancamp said the computer science standard writing has now been postponed until August 23, 24 and 25, 2017 from the original dates in May 2017. He said we will need to determine who of those that originally applied as computer science standard writers can make these new dates, as well as who it may have freed up to now take part. He commented that Mr. Mitchell tried every way to get the funding earlier, but was unsuccessful. He commented that as Ms. Chang gets started in the Department of Education next week, she will be reaching out to folks in setting up the plan with this adjustment. He said those working on the grant know we had a September deadline and are willing to push that deadline back. He pointed out we will still be able to use the funds as described, it just pushes things back with the process of developing the computer science standards. We are still moving ahead.

Chair Newburn asked whether the entire schedule would be pushed back, as there was a deadline, according to ECEP's point of view, and if those dates had been moved back correspondingly. Mr. Brancamp replied they had. Mr. Mitchell said by ECEP's perspective, he does not believe they are concerned with the end date. He added we agreed to move the end date to December 1, 2017, however we were told if we need more time after that ECEP is more than happy to keep pushing the date back. He said he made it clear to ECEP that if the process takes this long, we could not be held to the original date in the application of September 2017. He added he does not believe there will be any pressure on us for these changes. Chair Newburn said he just does not want this subcommittee to be held accountable for the delay. He added we will be looking to members of this subcommittee to help with providing and reviewing of the computer science standards. He asked Mr. Brancamp if a list assembling potential developers had been started. Mr. Brancamp replied a call had been put out for the original dates in May. He said he and Ms. Chang will compile a new list and put it back out with the new August dates, as well as reaching out to those that were unable to make the original May dates. Ms. Scott commented that she has been in contact with more people interested in getting on this list and asked whether she should continue to fill out the nomination form and if that was appropriate. Mr. Brancamp replied the date on the form will need to be adjusted.

VIII. Discussion on CS Teacher Licensing and Endorsements (For information only)  
Mark Newburn, Chair

Chair Newburn said a discussion on this topic was started in Cambridge, Massachusetts at the MassCAN conference. He said we were waiting for information to come out from the Education Commission of the States, as well Code.org for a set of recommendations. He said these recommendations have now been received and have been sent out to members of this subcommittee to bring us up to speed on what is going on around the country.

Ms. Scott commented she has a meeting scheduled for May 4, 2017 with State of Nevada Department of Education Licensure regarding the status of the 2014 updates to the computer science, computer applications, and computer literacy endorsements. She said all of these would impact the work this subcommittee is doing and vice versa. She added we will find out the status and what the changes are, as well as where we need to go from here. She invited Cindi Chang to attend that meeting with her.

Chair Newburn commented that Utah had an interesting concept for just teaching the introductory course, Exploring Computer Science. It was viewed differently than the general computer science licensing. Dr. Stepheic said after his review of the documents from the MassCAN conference he feels the issue of licensure is quite complicated. He said in having a certificate of some type, it might be difficult to make complicated certification requirements without having certain things in place. He said he feels the document is suggesting making short-term licensure requirements be much "looser" than long-term requirements. Ms. Scott said she believes it will depend on how we integrate the computer science standards for students in the lower grades, as well as what is put in place within the next four or five years may look different in what will be required in ten years. She said with K-8 core subjects, it appears that with professional development, we are looking at an additional endorsement.

Discussion ensued regarding Praxis, a national exam to earn teaching credentials. With that license, in K-8, a teacher can teach a wide-range of different subjects at the middle school level. You could teach a specific discipline and not have a specific endorsement in that discipline. Basically, a seventh grade math teacher has the exact same license as a kindergarten teacher. Even with complex mathematics at this level, currently these teachers are not specifically certified to teach seventh grade math, there is no endorsement. The subcommittee continued to discuss changes needed for generic and subject specific licensure for middle school.

Mr. Carrol said this topic was dealt with during the roll-out of science for the standards, specifically in Clark County. He said it was discussed that any teacher, secondary certified, was still able to teach any subject at the middle and high school levels. Teachers that were elementary certified could no

longer teach eighth grade science. At that time a certificate program was started to help both math and science teachers, but not necessarily to add a direct endorsement on their license. He added although teachers that completed a certain level of courses through the Nevada State Science Teachers Association and University of Nevada Las Vegas (UNLV) were able to add an endorsement to their license without it not necessarily being a requirement at the time.

Discussion ensued about the different levels of computer science currently being taught. Chair Newburn commented there is a special endorsement for computer science, it may not be perfect but is entirely reasonable for someone teaching, for instance, the CTE sequence or Computer Science A. He suggested looking at short-term licensing for endorsement that is only good for a certain amount of time. He said there is discussion nationally of how much training it takes to teach Computer Science Principals. He added he would like to see a special endorsement require at least a minor in computer science in the future.

Chair Newburn said there is an issue with the graduation requirement of one-half credit for computers. He said if that course starts to evolve to include computer science, there is the issue of professional development to get those teachers up to speed to teach the additional computer science and computational thinking. He added, in the process of this change, there is the question whether the licensure requirement for teachers would end up changing to include a twelve-credit endorsement.

Ms. Scott commented she never considered, with the one-half credit requirement for computers, that it would require current teachers to have a different license. She said she understood existing teachers could train and update the endorsement to match what is needed. She added the Computer Applications endorsement is only used for that one-half credit requirement course. Mr. Carroll added that the Computer Applications course requires twelve credits and Computer Programming, which is a different endorsement, also requires twelve credits and Computer Literacy requires six credits.

A discussion ensued regarding the 2014 licensing regulation changes wherein changes were approved for all three of those licensure endorsements. The next step process was discussed as well, whether to modify those licensure standards or start over with new standards. Ms. Scott requested OSIT to send out to members of the subcommittee, a document with the licensing regulation changes that were proposed in 2014, but never codified. These recommendations came from a task force that met in the 2011-2012 timeframe and included Clark County Math/Science, Clark CTE and UNLV. At the time, Clark County was the only district teaching anything in computer science. Mr. Mitchell responded we will send it out.

Dr. Stefic asked how difficult it would be to change a requirement in an already existing endorsement. Ms. Scott responded it is not terribly hard. It would entail getting on an agenda of the State of Nevada Department of Education Commission on Professional Standards, then it would go to a work shop and public hearing. Dr. Stefik said the reason he asks is because he understands it is extremely difficult to get a new licensure endorsement. It was agreed by the subcommittee, it is easier to modify a licensure endorsement than one that already exists.

There was discussion regarding the existing three computer-based endorsements (1-Computer-Based Applications; 2-Computer Programming or Computer Science; 3-Concepts, Skills and Basic Applications) and whether there would need to be additional tiers attached to each endorsement which could potentially change the overall structure of existing licensing. Currently there is much overlap in licensure with elementary, middle and high school. They also discussed having information up front may help this subcommittee in the long run. Ms. Scott commented that last year the Department of Education sent her a list of over 300 teachers with active computer science endorsements, however, currently it is not known whether those teachers are still teaching, especially in today's computer science world. There may be contributing factors making it difficult to pull out the information required for licensure even if you have some of this data. The subcommittee agreed. It was pointed out that some of those factors could go down to demographics as well as leadership changes within schools. Chair Newburn said until we have the standards, this issue will be very hard to solve, as well as not knowing whether SB200 will make it through the legislature. These are all factors that will come into play. We have heard a lot of good and interesting ideas today.

The subcommittee had a discussion on creating a sub-subcommittee to tackle some of the issues on endorsement. That group could begin to dig in having further discussions on this topic and then bring recommendations back to this subcommittee. Ms. Chang said she would like to be a part of that group. Ms. Scott suggested that members interested get together and draft some suggestions and bring them back to this subcommittee for further discussion. Chair Newburn said he is comfortable with several members splitting off and bringing their discussion back to this subcommittee. Ms. Scott, Ms. Chang, Mr. Carroll and Ms. Fox volunteered for that group outside of this subcommittee for discussion further on the endorsement issues and will bring that conversation along with suggestions back to this subcommittee. Ms. Scott suggested that group should meet prior to the licensure commission meeting.

IX. Discussion of Online Computer Science (CS) Courses (For information only)  
Mark Newburn, Chair



Chair Newburn said Code.org, a non-profit dedicated to expanding access to computer science and increasing participation by women and underrepresented minorities, has been looking at online computer science (CS) courses for some time. They have produced a spreadsheet with information for the subcommittee's review. The CS online course may come in to play if we get to the end on discussions about the appropriation for SB200. He said this information is important for those schools that may have a difficult time in offering computer science courses. He added online courses could be the answer for those schools. Ms. Moody said consistent with the licensure piece, the standards are the prerequisite for moving forward. She said if there was an online course we would like to offer to students and once we get the standards solidified, the actual course curriculum could follow. There was agreement amongst the subcommittee that the standards need to be completed before those courses are considered. If we go the route of "equity and access" we would need some type of quality review process for those courses. Chair Newburn agreed an online course would have to be standard-based. He said concepts in computer science principals would need to be included. He added it is a good idea we keep an online type of course in mind. Discussion ensued regarding online computer science courses.

X. Next Steps (For information only)  
Mark Newburn, Chair

Chair Newburn said getting Cindi Chang as the new STEM Computer Science person for the Nevada Department of Education was this subcommittee's next big step. We should continue to track SB200, the progress on the ECEP grant and schedule for the standards as well as looking at licensing and endorsements. He added we may not be able to come up with a final answer, on licensing and endorsements, but said this group should continue to work on them in parallel with everything else.

Dr. Pavil asked how it can be accomplished to write the new computer standards in only three days and whether the writers working on the standards will be given a chance to prepare in advance of those dates. He added this is because it does not seem like three days will be enough time to complete the standards. Mr. Brancamp replied during those dates August 23, 24, and 25, 2017, a framework, along with other documents from other states referencing this subject, will be provided to that committee for review. From there the committee starts the process, and depending on what they may like from those documents, the standards could possibly be accomplished within that time frame. It is hard to tell right now, it may take longer. He added the initial pass will be between myself, Cindi Chang and others to present the best examples of what the committee should start with. From there the committee will start making decisions. The standards will then be modified to be Nevada-specific, then on to an internal group of those that cannot be present at the August dates, as well as "Friends from the Field" will review,

making suggestions and bring them back to the committee. Eventually it will go out to the public for thirty days for review. From there it goes back to the committee for acceptance of any comments and adjustments. Mr. Brancamp said it is all together a rather long process.

- XI. Consider Agenda Items for the Next Meeting (For possible action)  
Mark Newburn, Chair

Chair Newburn suggested a conversation from Dr. Solin on NCLab (Network Computing Lab) which is an open public cloud computing platform that provides fully supported self-paced online STEM courses for K-12 schools and homeschoolers and many free basic and advances apps based on quality open source software, and his experience in teaching it and what is required to teach it, be considered for an agenda item. He said the subcommittee could benefit from his knowledge about teaching these courses. Dr. Solin agreed and added he would also like to discuss what is going on at public libraries. He said he would like to see a connection. The formal education system does not acknowledge libraries as educational institutions. He said he believes this should change. Chair Newburn agreed. Ms. Scott said when they were in Cambridge, Massachusetts for the MassCAN conference, there was discussion that this subcommittee should create a sub-subcommittee who could begin to map out a ten-year plan for the roll-out of the standards and asked whether they should move forward. It was agreed that it would be a good idea to start a ten-year plan, whether or not SB200 passes in the legislature this session. Ms. Scott asked whether a separate group should begin work on that ten-year plan. Chair Newburn suggested putting this item on the agenda for the next meeting for further discussion. Chair Newburn said he will provide a copy of a document he received containing information on the starting of strategic plans for states which will help this subcommittee in making the framework for that sub-subcommittee to start with on building a ten-year plan.

- XII. Next Meeting Date will be determined at this meeting.  
Mark Newburn, Chair

No next meeting date was determined.

- XIII. 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.)

There was no public comment.

- XIV. Adjournment

Chair Newburn adjourned the meeting at 12:19 P.M.