Illinois Computer Science Education Task Force Meeting Minutes

Meeting Summary by Task Force Members

Monday, April 17, 2017
1:00 p.m.–4:00 p.m.

- Illinois State Board of Education, Videoconference Room (3rd Floor), 100 N. First St., Springfield, Illinois
- Illinois State Board of Education, Videoconference Room (14th Floor), 100 W. Randolph St., Suite 14-300, Chicago, Illinois

Attendees

Task Force Members

Chicago
Jenna Garcia, Code.org
Ali Karbassi, CoderDojoChi
Steve Svetlik (chair), Computer Science Association
Brenda Wilkerson, Chicago Public Schools
Mike Fortner, Representative 95th District

Springfield
Randy Swikle, Illinois Press Association

Called in
Austin Betz, Illinois Federation of Teachers
Jerry Weinberg, Southern Illinois University

Illinois State Board of Education (ISBE) Staff
Brian Houser

Midwest Comprehensive Center (MWCC) Staff
Nicol Christie
Jeremy Rasmussen

Meeting Objectives

- Reach consensus on a working definition of computer science education.
- Reach consensus on at least three draft recommendations.

Mr. Svetlik called the meeting to order. He reviewed meeting objectives, stating that the primary goal was to formalize, by vote, the Task Force's stance on each recommendation. He noted that the recommendations would remain in draft form until the very last meeting. He said the Task Force also has to begin to formulate an operationalized definition of *computer science* (CS).

State Representative Mike Fortner provided guidance on how to prepare a useful report for the General Assembly. He said that, when it comes to the recommendations, to the extent possible, the Task Force should strive to distinguish between aspects of the recommendations that will require statutory changes, and aspects that will require changes to the rules by which the state agency operates. He also noted that recommendations should be stated succinctly and have supporting evidence and background.

The Task Force then reviewed the minutes from the March 13 and April 10 meetings. After reviewing the meeting minutes, Mr. Svetlik motioned to approve the March 13 minutes, Ms. Jenna Garcia seconded, and all approved; no one abstained. Mr. Svetlik then motioned to accept the April 10 meeting minutes as amended, Mr. Ali Karbassi seconded, and all approved; no one abstained.

Review of Items and Recommendations

Mr. Svetlik opened a discussion about the operationalized definition. He said that it would be used by state licensure officials, principals, school administrators, district administrators, legislators, and parents. It needed to be something accessible to all stakeholders. Mr. Svetlik suggested that Task Force members share their individual CS definitions on the basis of their completed Google form, which they had been asked to complete prior to the meeting.

Ms. Brenda Wilkerson said that her definition emphasizes computational design to solve problems and to automate processes. She added that her definition also includes the study of the design of processes used to solve a problem or automate a process to be executed by a computational device, such as programming, algorithms, hardware, software, and systems design, among others.

Mr. Karbassi's definition made the point that CS is the study of all kinds of computers as well as their impact and how they are used in everyday life. He said that, for him, the way CS affects lives is a critical component of the definition.

Mr. Austin Betz said that he believed the focus of the definition should be on solving problems by means of computers. He said that his definition excluded things like creating computer documents (in Word, spreadsheets, etc.) and included algorithms, data structures, and software development. He agreed with Mr. Karbassi that the social impact of CS is important.

Mr. Svetlik's definition came verbatim from the CS K–12 framework. He said that the CS K–12 framework document discusses what is and is not CS. He said the authors of that document

deemed computer literacy to be nonequivalent to CS as well as digital citizenship and information technology. He said that CS is not about the consumption of technology; it is really about the processes, algorithms, and technologies that ultimately give rise to new creations.

Representative Fortner said it sounded as if Mr. Svetlik was saying that parts of information technology (i.e., the way data are packaged and distributed) are not themselves CS.

Mr. Svetlik responded that CS and information technology, in his opinion, are not synonymous.

Representative Fortner said he believed that digital citizenship and information technology are more dissimilar than information technology is from CS.

Ms. Wilkerson said she took issue with the CS K–12 framework because it lumps digital citizenship, computer literacy, and information technology together, even though information technology is further removed from the first two.

Representative Fortner said that much information technology does not relate to the broad-based learning of digital citizenship and computer literacy. He said that information technology is more career- and subject-specific, and that information science and CS are tightly bound even at the college and university levels.

Mr. Svetlik replied that even things that CS does not encompass deserve a place somewhere in the K–12 curriculum. However, if the Task Force wants to clarify what CS is and is not, then it will need a much more granular definition.

Representative Fortner said he just wanted to make sure that information technology is parked somewhere and is not left out, like computer literacy.

Mr. Karbassi stated that no one had talked about the difference between software engineering and CS. He asked whether the Task Force wanted to talk about that.

Ms. Garcia said she was concerned that they were listing out all the consumers of this definition of CS. She said there is a huge disconnect between a K–12 definition of CS and a secondary education definition of CS. And when you add parents, guardians, and so on, the disconnect might be even greater.

Ms. Wilkerson said she felt that the rise of CS has usurped what used to be called information technology and that is something the Task Force will have to address.

Representative Fortner's observation of the field was that, historically, the academic discipline was called CS and the career that evolved from it was called information technology. For a while, the same professionals were exercising the same skills.

Mr. Karbassi suggested that it might be wise for the definition of CS to have three levels: (a) a thorough description of what CS is and is not, (b) a shorter definition, and (c) and a brief definition for people who are unfamiliar with the field.

Ms. Wilkerson wondered whether this is achievable, given the difficulty of this task.

Representative Fortner said that it might be helpful not to rely on black-and-white descriptors. He suggested using phrasing like, "CS is *primarily* and is *not primarily*; thus, things related to CS (but that are not primarily CS) would not be definitively excluded.

Mr. Svetlik said that the field of CS has existed for only 40 to 50 years, largely as a niche area of study. He said that, if you were to ask an academic who teaches mathematics at the postsecondary level what they think mathematics is, the response would differ dramatically from a high school math teacher's. He said that he believed that this Task Force would not come up with a definitive definition of CS. He said that we can say that learning about CS does have the potential by-product of helping students become more computer literate, or better typists, and so forth. He said that the Task Force could not progress with the work it is doing when there is a business marketing and computer education endorsement, business marketing and computer programming endorsement, a computer applications endorsement, and a CS endorsement. He stated that merely naming those four distinct areas exemplified the kind of confusion created by not having had this conversation (defining CS) previously within the local CS community.

It was suggested that the Task Force start listing key words for the definition of CS (i.e., what it is and what it is not).

Mr. Karbassi said he was concerned about taking this approach. For example, a CS programming class might have a component of computer literacy that could be removed or left out because computer literacy falls outside CS.

Representative Fortner reiterated that Mr. Karbassi's concern was the reason he favored using terms such as *primarily*.

Mr. Svetlik then read the revised recommendation for a definition of CS:

"There shall be established a formalized and operationalized definition of CS to be adopted by ISBE inclusive of both what primarily constitutes CS and what is not primarily synonymous with CS."

Mr. Svetlik said that, if the CS office recommended by the Task Force was to be established, it would know how to negotiate the conversations to achieve the recommended definition of CS.

Mr. Svetlik then asked the Task Force for key words.

Mr. Betz suggested automation of processes, problem solving, algorithms, software development, hardware design, hardware development, impact on society, and some mention of type of device—not only computers.

Dr. Jerry Weinberg suggested that the Task Force be careful with how the term *automation of processes* is used. He said that, unless you have a broader image of the word *process*, it discounts all human interactions with computers.

Mr. Karbassi asked whether the Task Force should define algorithms. He said that math has algorithms, too.

Mr. Svetlik suggested algorithmic thinking and that they add the word *creative* as well.

Representative Fortner said that the Association for Computing Machinery (ACM) lists 18 pieces that compose CS, which he read from the website, as follows:

- Algorithms and complexity
- Architecture and organization
- Computational science
- Discrete structures
- Graphics and visualization
- Human computer interaction
- Information assurance and security
- Information management
- Intelligent systems
- Networking and communications
- Operating systems
- Platform-based development
- Parallel and distributed computing
- Programming languages
- Software development fundamentals
- Software engineering
- Systems fundamentals
- Social issues and professional practice

Ms. Garcia mentioned that the Task Force should ensure that the preface to the recommendations report state that not all 18 of these elements had to fit into one course.

Mr. Svetlik then asked for key terms regarding what is *not* primarily synonymous with CS.

Mr. Karbassi said that digital literacy, digital citizenship, data entry, web design, and use of digital tools (i.e., using a camera) are not CS.

Ms. Wilkerson said that office application skills (Microsoft Office, Excel, etc.) and the use of various digital media are not CS.

Ms. Garcia suggested using the term *consumption of digital media* instead of *the use of*.

Mr. Svetlik then asked Mr. Randy Swikle for his input.

Mr. Swikle said that he found the conversation very interesting, especially because he is a layperson when it comes to CS. He said that his focus is more on the ethical use of computers and that he was hoping the definition of CS would somehow address the ethical use of computers, especially in regard to how students use them.

Mr. Svetlik said that the ethical use of CS sometimes is added to consideration of the societal impact of CS, but that it is important to acknowledge and recognize the ethical use of computing as a standalone issue.

Mr. Svetlik then asked whether the Task Force could vote on a motion to use the following language as a starting point for the definition of CS:

"There shall be established a formalized and operationalized definition of CS to be adopted by ISBE inclusive of both what primarily constitutes CS and what is it not primarily synonymous with CS. The definition should be digestible to all stakeholder groups including specifically, but not limited to: parents and guardians, K–12 CS teachers and school administrators, any member of the CS postsecondary community, and industry professionals. This definition should therefore be written in language that is accessible to all stakeholder groups to ensure that the definition may be applicable toward the achievement of the other recommendations stated here."

Mr. Svetlik said that this recommendation also includes Part A (the Task Force recommends that the CS definition be as follows), which, currently, is in the form of a list of what CS is and is not.

Ms. Wilkerson suggested that the Task Force cite the ACM website as the source of the items listed as part of defining CS.

Mr. Brian Houser suggested delaying the vote on this draft definition of CS and instead trying to reach agreement within the Task Force that this would be the working draft definition. All agreed.

Mr. Svetlik discussed the idea of a CS mission statement (i.e., a set of beliefs). He shared an example of the Arkansas CS Task Force report to inform the development of a mission statement. Mr. Svetlik said that perhaps the next meeting should focus on crafting a set of beliefs.

Mr. Svetlik moved the discussion on to Item 3, which calls for equitable access to CS. He said that the notion of CS and equity is highly adoptable.

Mr. Houser said this recommendation would benefit from identifying modes of providing equitable access (i.e., virtual education).

Representative Fortner agreed with Mr. Houser. He said that Recommendation 3, in its current form, is not actionable.

Dr. Weinberg said that this speaks to his suggestion to provide funding in a way that ensures that CS teachers or resources are equitably distributed across the state.

Representative Fortner proposed that the recommendation read as follows: "The Task Force recommends that the state board of education design its CS program in a manner that specifically addresses underserved populations."

Ms. Wilkerson asked whether the Task Force could add low-income to the list of underserved students.

Mr. Svetlik said yes.

Mr. Svetlik then mentioned that Item 4 also highlights equity and he reviewed the portion where equity is mentioned:

"The Principal Consultant of Computer Science Education shall work directly with the Office of the State Superintendent of Education to ensure that all students have equitable access to the highest quality research-based Computer Science education possible."

Mr. Svetlik said that the most important thing about this recommendation is that there would beongoing funding exclusively for the Principal Consultant of Computer Science Education position.

Mr. Svetlik then motioned to adopt Recommendation 4 as currently written. All Task Force member voted yes, except for Representative Fortner, who abstained.

For item 1, Representative Fortner suggested distinguishing actionable recommendations from findings that support the recommendations. He said that the portion of the recommendation covering what is and is not CS might be better placed under a findings section that would immediately follow the actionable recommendation.

Mr. Svetlik suggested taking the first sentence from Recommendation 1 and adopting it as the recommendation:

"There shall be established a formalized and operationalized definition of CS to be adopted by ISBE inclusive of both what primarily constitutes CS and what is it not primarily synonymous with CS."

Citing the Google document, Ms. Garcia said that she believed that everything before Part A could be used as the recommendation, which would read as follows:

"There shall be established a formalized and operationalized definition of CS to be adopted by ISBE inclusive of both what primarily constitutes CS and what is it not primarily synonymous with CS. The definition should be digestible to all Illinois stakeholder groups including specifically, but not limited to, parents and guardians, K–12 CS teachers and school administrators, any member of the CS postsecondary community, and industry professionals. This definition should therefore be written in language that is accessible to all stakeholder groups to ensure that the definition may be applicable toward the achievement of the other recommendations stated here."

Mr. Svetlik agreed and then motioned to adopt everything up to Part A as the recommendation. Mr. Betz seconded. All Task Force member voted yes except for Representative Fortner, who abstained.

The Task Force then moved on to Item 5, which Mr. Svetlik read aloud:

"The Illinois State Board of Education shall revise the process by which they collect course enrollment data to ensure the public has timely access to accurate, detailed, and informative Computer Science enrollment data to measure ongoing statewide progress towards successful implementation of 'CS for ALL' across all of Illinois. Such data shall be shared with the Office of Computer Science Education, as defined above, for the purpose of measuring progress across all regions of Illinois and among all demographic groups therein toward supporting all schools' growth in expanding access to Computer Science Education. Particular emphasis shall be devoted to those schools with demonstrated need for increased fiscal/personnel support so as to further our collective mission of providing every student in Illinois with high-quality Computer Science Education."

Mr. Karbassi asked whether the Task Force should define the collection of enrollment data.

Representative Fortner said that a definition of the collection of enrollment data could potentially go in a findings section.

Mr. Svetlik then motioned for this to be adopted as a recommendation. Ms. Garcia seconded. All Task Force members voted yes except for Representative Fortner, who abstained.

It was suggested that Item 6 be discussed at the next meeting.

Representative Fortner suggested organizing Item 6 similarly to Item 1 because of its length: actionable recommendation followed by evidence section.

Dr. Weinberg suggested that the Task Force think about adding as a new recommendation how CS classes would count toward graduation requirements.

Public Comment

Mr. Svetlik opened the floor for public comment. There was one guest, Kim Jablonski of Maine207 School District. She shared with the Task Force that, in her role as a department chair, she deals with the operationalized definition of CS and the ramifications that a CS definition can have on a daily basis. She said that, as new and innovative CS courses emerge, it is becoming increasingly difficult to align the various teacher endorsements with state course code. She said that her school currently offers CS programming and CS courses, and the semantics of naming can make things difficult. She reported being encouraged, realizing that there might be relief for schools trying to increase CS enrollment, although she said that if she could increase CS enrollment to the levels she would like to see, she would run out of qualified CS teachers. There is no incentive for veteran teachers already at the top of the pay scale to take 24 credit hours to attain a CS endorsement.

Mr. Svetlik said that there will soon be an option for licensure called a *short-term authorization* for positions that would otherwise go unfilled. He said that this approval would be valid for 3 years and would allow educators who are not fully qualified for an endorsement to teach if they had taken 9 semester hours of content course work. He said this endorsement included CS.

Ms. Jablonski said that this sounded like a helpful short-term solution. She said that, as schools move toward career pathway models, she encourages the Task Force to look at different definitions (of CS) in that context (i.e., career pathways) as well.

The meeting was adjourned at 4:00 p.m.