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Ana Maria Alvarez
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Date: October 23, 2015

To: Dr. Karen Janney, Superintendent

From: Ana Maria Alvarez, Assistant Superintendent

Re: **Computer Science – Programming Language vs. ALICE**

The purpose of this memorandum is to provide the Board of Trustees with additional information regarding the type of programming tool used in Computer Science, ALICE and the reasoning behind its use. In researching this question, I relied on the expertise of Dr. Katrine Czajkowski and Artie Lopez. The information below is directly from them.

- The primary goal of the CSP course is to encourage students to get into programming and computational thinking. It is an "entry level" course. As such, the course uses ALICE to help avoid the hostile syntax characteristic of languages used in industry (i.e. C+++. JavaScript, etc.). Emphasis of the course is on computational thinking, not programming.

- ALICE is the platform used in the course Beth Simon designed for training and use at UCSD. CSP uses the same curriculum (based on ALICE) used in the course receiving credit from UCSD. ALICE is therefore the basis of a recognized curriculum.

- ALICE provides a graphical user interface and tile-based programming where settings can enable users to view the JavaScript behind the commands so students can use ALICE and still recognize the formal programming language used to animate figures. The immediate consequences provided to students/users via ALICE offer the feedback that is so crucial for learning to program.

- Dr. Czajkowski and Mr. Lopez agree that the CSP course based on ALICE is a ***start*** in the right direction. The C-STEM (IMI with Computing/Robotics) course requires students to program in Ch (based on C) where they have to demonstrate all the syntax of a formal program. However, teachers of that course provide students with programs they modify or adapt for specific purposes. That is how students are beginning their experience with computer science and are not expected to program from a blank page.

When we talk about "CS Pathways," what I envision is a series of experiences/courses that culminate in the "cash language" of formal programming (in Java or C++). We want to expand the number of sites offering AP Computer Science A (object-oriented programming in Java). ***How*** we get students ***into*** those pathways is the trick. I think using ALICE in CSP is intended to open a portal to students who might otherwise miss out.

I do believe we (CTE, CSP, math, etc.) must better ***articulate*** how various pathways can and must intersect in the SUHSD. Art's "baby" is CSP; mine is becoming CS in math (C-STEM, Finite Pilot, etc.); Sandy's and Haley's is robotics; and the Arias brothers at SOH are all about Eco-Engineering. Computer science must be evident (and supported) in all of these arenas and we ***must*** make the relationship(s) among them more transparent for parents, students and community members.

Ultimately, all roads need to lead to college and career readiness. Computational thinking -- and the subset of skills known as "programming" -- must be a critical component of our plan for helping students arrive at their destination of college and career readiness.