

August 8, 2006

Mary Helen Berlanga
State Board of Education District 2 Representative
2727 Morgan Avenue
Corpus Christi, TX 78405

Dear Ms. Berlanga,

You will be considering computer science as a math and/or science credit at the next State Board of Education meeting in September. I am a high school teacher certified in all four areas of mathematics, physics, chemistry, and computer science. I currently teach all four courses at Port Aransas High School. While I think the first year of computer science should remain a technology course, I think the second year should be given both a mathematics and science PIEMS number for the following reasons:

1. Computer Science is primarily a logics course. It's not all about the computer. A computer scientist and an author use a computer in a similar way. Authors must be able to use the menus within a program like office to write their prose, set the margins, and publish a paper acceptable to publishers. A computer scientist uses an IDE (Integrated Development Environment) to write programs in a specified computer 'language'. While an author may write an article in French or English, the computer scientist may write his program in JAVA, C++, or another computer language. The IDE serves as a translator to a machine language that all computers can understand. This is accomplished with the click of a button. The curriculum for a first year computer science course contains many objectives targeted at using the IDE and understanding the syntax of the language. This is analogous to using a word processor.
2. Subsequent computer science courses are no more technology courses than a creative writing course that requires typed papers. Students use logic to write programs that solve problems. The five steps of the scientific method are emphasized. Students spend more time thinking creatively to plan their programs than they did during the first year. While I would contend that all mathematics courses are 'logics' courses, students first formally learn about logic in high school geometry through if-then statements and proofs. They continue to study logic through algebraic proofs in Algebra II. While the TEKS don't require students to write the proofs independently, they must follow the logic to grasp the concept. For this reason I do not suggest students take my second year computer science course until they have completed Algebra II.

At Port Aransas, our first year course is AP Computer Science A, and our second year course is AP Computer Science AB. I know these are the second and third year courses, respectively, at most schools. Whether a school offers computer science I or AP Computer Science A as a first course, a good deal of time will be spent on using the

computer. All subsequent years will emphasize mathematical logic and the scientific method.

This summer I attended a conference for computer science teachers. Many teachers voiced their concern that pre-calculus not be dropped from the curriculum for a prospective computer science major. With the seemingly continual addition of courses added to the Recognized Diploma it becomes very hard for students to fit all the required courses into the school day. I am not suggesting students considering a computer science career omit pre-calculus in high school if they can fit it into their schedules. However, there are a number of students that take Algebra I in 8th grade but opt out of Calculus in 12th grade. Currently most of these students take no mathematics course in 11th or 12th grade. This is a travesty. It's hard to tell a 16 year-old this decision may cause him or her to fail the mathematics placement test in college when the Recognized Diploma doesn't require any more mathematics. I applaud the SBOE's consideration of four years of mathematics and science for every student. While not every student will be inclined to take pre-calculus, high school computer science also appeals to many students not bound for a computer science career. Many of my former students not majoring in computer science have stated they were glad they took the course because they now see how computer science can be utilized in their chosen field.

Sincerely,

Laurie Barello