

To Whom it may concern,

I propose amendments to Raised Bill SB 378 that will better serve the goal of developing creative, well-rounded students who can personalize their course selection as they prepare for life in the 21st century. We applaud the proposal to allow students more flexibility of course selection within the STEM and Humanities clusters. However, we are concerned that the sheer number of credits required in these area **would significantly reduce students' ability to elect and sustain their involvement in arts courses**, resulting in far fewer students achieving depth and excellence in content areas that spark their interest and passion. Such an outcome could hardly be called "personalized" education.

The proposed increases of 2 credits in Humanities requirements and 4 credits in STEM - the latter almost doubling the current requirements (!) - will reduce students' ability to personalize their high school curriculum, by:

- * Reducing the number of elective courses students can select;
- * Dramatically impacting district staffing, forcing districts to almost double staffing in STEM subjects that are chronic teacher shortage areas, at the inevitable cost of reduced staffing and course offerings in the arts and other core content areas; and
- * Squeezing students' schedules so that they cannot maintain participation in arts classes for four years, as many students currently do.

Increasing STEM requirements at the cost of study in the arts runs contrary to research on the background required for success in the fields of science and technology. On the contrary, [research by creativity expert Robert Root-Bernstein](#) among others reveals that the most distinguished scientists - including more than 90% of Nobel prize winners (!) - are also artists... and not just dilettante artists, but often highly accomplished, exhibiting and performing artists.

Albert Einstein (NP) not only played [music] whenever he came to a mathematical dead end (Suzuki, 1969, p. 90), but also asserted that, "The theory of relativity occurred to me by intuition, and music is the driving force behind this intuition . . . My new discovery is the result of musical perception" (Curtin, 1982, p. 84). [This appears in the [Root-Bernstein](#) document that is also cited above.]

M.I.T. Professor of Media Technology Nicholas Negroponte writes:

If you ask an auditorium filled with computer science students how many of them play a musical instrument, or how many consider themselves to have a serious interest in music, most hands shoot up. The traditional kinship between mathematics and music is manifested strikingly in contemporary computer science and within the hacker community. The Media Lab attracts some of the best computer science students because of its music. - *Being Digital*

Former Apple CEO Steve Jobs explained his company's success as follows:

Part of what made the Macintosh great was that the people working on it were musicians and poets and artists and zoologists and historians who also happened to be the best computer scientists in the world. - 1996 PBS documentary *Revenge of the Nerds*

Serious study of the arts is not just a nice enhancement, but rather a prerequisite, for excellence in science and technology.

[Whatever you say as an introduction, it is critical that you include the following "ASKS" (in your own words is fine)]

I therefore recommend that:

- * STEM requirements be increased to 7 (rather than 9), an evolutionary increase of two from the current 5 credit requirement;
- * Humanities requirements be maintained at their current level of 7 credits;
- * Technology-based arts courses such as Digital Animation and Graphic Design, Digital Music Studio and Composition be counted as STEM courses; and
- * Connecticut's new arts graduation requirement be increased to two credits, as is now true in Washington State and was proposed in the Connecticut State Department of Education's original drafts.

We are also concerned that the proposed High School Graduation Requirements Council will have sweeping authority, but - as currently proposed - will lack expertise in several of the core subject areas as defined by the new federal Elementary and Secondary Education Act, known as the Every Student Succeeds Act or ESSA. As you may already be aware, music and the arts are listed as core content areas in ESSA.

I also recommend that:

- * Connecticut's key arts professional associations - the Connecticut Music Educators Association, the Connecticut Art Education Association, and the Connecticut Arts Administrators Association - each appoint one representative to serve on the Council. I think we can all agree that we want a well rounded education for our children.

Thank you for taking the time to read my letter.