The Nature of Technology and Science

As a Supervisor of Instruction for our district, I dabble in all areas of STEM. One key reason for my participating in this program is to help me better support our teachers in the integration of STEM instruction. For the purpose of this assignment however, I have selected Technology as my focus area. “Yet because it shapes nearly every part of our lives, a basic understanding of technology is essential to make sense of today’s changing world” (ITEA, p.22, 2007).

Systems, resources, requirements, optimization and trade-off, processes, and controls are the six central tenets of technology. For students in grades 9-12, students should have had the opportunity to learn about these tenets and ready for deeper analysis. This analysis should include examination in how these tenets intersect as well as a global perspective.

While I do not have my own classroom, nor the responsibility to teach these standards directly to students, I have seen in our high school several ways in which we are attempting to address these core concepts. Our high school has implemented a 1-to-1 initiative, where every student has a Chromebook. This provides more equity and access to our student body, which 64% qualify for free or reduced lunch. Teachers are utilizing multiple avenues to instruct and engage with students with these devices. I recently worked with one of our high school teachers on a project in which they asked their students to create a podcast book review. Many students asked what is that or how do I do that. Part of the assignment was for them to figure it out on their own. Other than a rubric, students were not given directions in how to complete the assignment. Their end products were quite different, yet quite impressive.

There are so many tools available using technology to enhance instruction across curriculums and content. Giving students a wide range of experiences with these tools will hopefully foster a sense of inquiry of their own to search for the best tool to meet their need based on the task or phenomena they are learning about.

One way I can enhance the integration of STEM in our high school is to provide resources and instructional support to our teachers. So many of our teachers work so hard to provide a high level of instruction but lack the skills and resources to effectively integrate multiple disciplines. Through this course and what I have learned so far, I feel as though there are some simple steps we can take as a district to remedy this concern. As we plan for our summer professional learning experiences for our teacher, I am going to take advantage of my learning this semester. There are several documents that will be important to share and hopefully will spark some much needed conversations between content area teachers, especially among our math and science folks.

When comparing the tenets of technology to the tenets of science, you see some similarities. For instance, one tenet of science education is how science should be socially and culturally embedded. The integration of technology's core concepts, as required at the high school level really dives into the social and culture relevance. This is one way in which the science and technology standards overlap and align.

Another tenet of the nature of science is that it is inferential, imaginative and creative. This concept overlaps with technology instruction as it typically uses a variety of technological tools and processes to navigate exploration and research. For

example, if a group of students are creating their own experiment to test a hypothesis, they likely integrate use of technology along the way.

A final way in which the nature of science and the nature of technology overlap is in the tentative nature of scientific knowledge and that of technology information. We live in a world that is constantly changing and evolving. Just as theories may change in the world of science, processes, systems, and resources change as well.

Standards for Technological Literacy: Content for the Study of Technology. International Technology Education Association, 2007.

"Tenets of the Nature of Science." *Science Learning Hub*, www.sciencelearn.org.nz/resources/413-tenets-of-the-nature-of-science.