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Nature of STEM

Methods of Stem Education

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When considering the Nature of English and Language Arts, the heart of the curriculum is in communication - the idea of knowing and being known. The foundational skills of English and Language Arts are reading, writing, speaking, and listening. These four skills center on the individual's ability to not only understand and express their own ideas, but to create greater understanding and by synthesizing and analyzing the expressions of others. There is an incredible opportunity here to build on one another's ideas and to build constructive dialogue that ultimately leads to a deeper and richer understanding amongst all those involved in the process of this meaning-making.

In the same vein, the heart of English and language arts study is deeply rooted in helping us to understand what it means to be human. Through the implementation of the previously mentioned skills we stand to gain an incredible sense of empathy by sharing experiences that we could only encounter through text. Likewise, we can seek to be known through the sharing and recounting of our own experiences.

Within the classroom, I help my students practice these skills through many different means. We read texts that come from many different perspectives. I always challenge my students to find something they can relate to within a text (finding a similarity or commonality) and find one way in which they differ ideas or characters presented in a text. In the same way,

students are constantly in dialogue with one another on any given topic or idea presented in class.

To enhance these tenets of communication, meaning-making, and perspective sharing in my English and language arts classroom is an ever evolving process. To practice these skills with integrity, students need a scaffolded approach to learn how to interact with one another appropriately. As Peters-Burton states in her article, “content knowledge is not enough to develop a literate citizenry” (2014). Students do not become competent communicators simply by learning how to speak, they have to be guided through authentic conversations pertaining to issues they care about.

As Peters-Burton goes on to say, “Instruction on the meta-workings of a discipline is also necessary because it helps students to understand why they are learning what they learn and gives students the epistemic framework to operate successfully in the discipline” (2014). Although the article was written in connection with more traditional STEM subject areas, the sentiment rings true. Students have to understand how concepts are connected and interrelated. They have to grasp the “why” behind the learning to be able to become successful within the practice of the given discipline.

Thinking practically about a simple application of this principle, this education in the “meta-workings” of ELA could include providing students with helpful sentence stems to show them how to disagree with someone respectfully, to support their ideas with explicit evidence, and to challenge them to interact with other students throughout the classroom (Peters-Burton, 2014). Students would then be equipped with communication tools whose use would extend far beyond the ELA classroom. In addition, by supporting learners in this way, I would also be continually building the culture of learning within my classroom, creating a safe place for

students to make mistakes and learn from them. The beauty here is that these concepts of the nature of ELA are dynamic and ever-evolving. They can be adapted to any type of expression, whether presented as text, visual, auditory or otherwise. It is all about creating meaning out of any form of communication that is intending to communicate a message.

While reviewing the Next Generation Science Standards, I made many connections between the Nature of Science and the Nature of ELA instruction. For starters, phenomena based learning can be used for both subject areas. In both instances, students become engaged in inquiry by observable events in the real world (NGSS, 2013). This can apply to a universal truth embedded in a text, or a scientific concept illustrated in an experiment. Additionally, according to the NGSS standards, science investigations use a variety of methods and tools to make measurements and observations (NGSS, 2013). This is also the case for English and Language Arts as observable human interactions are evaluated and analyzed through a variety of expressions, genres, and formats. Just as Science is a human endeavor of making sense of observations of the natural world, the study of ELA is a human endeavor of making connections and meaning to better understand the human experience (NGSS, 2013). Finally, as Scientific knowledge "assumes an order and consistency in natural systems," the same holds true for grammar and mechanics, as well as standards for acceptable spoken English rules within ELA. It is undeniable that there is considerable overlap between these subject areas.