

Katie Novak  
Standards Analysis Assignment  
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To start, I explored the Common Core Mathematics Standards, Next Generation Science Standards (NGSS), and the ITEEA Standards for Technological and Engineering Literacy Standards. Upon exploring these standards, I realized that there is a lot of overlap between them. Throughout my Methods of STEM course and my Arts in STEM courses in Spring, we explored various standards that I didn't really even know existed. I found that there is so much more overlap than I knew existed.

When exploring the Common Core Mathematics Standards I focused on Grade 4, because that is what I teach. I noticed the standard 'CCSS.MATH.CONTENT.4.OA.C.5: Generate and analyze patterns.' This standard could be used when relating to problem solving, such as the Glass Puzzle that we explored this week. Depending on the problem solving or engineering design you could be focusing on patterns or rules.

Through exploring the NGSS Standards, there is an entire section labeled "3-5 ETS1" which focuses on Engineering Design. All three of the standards listed in that umbrella category focus on engineering design and problem solving. The disciplinary core ideas focus on defining problems, and developing possible solutions. It also talks about thinking about possible trade-offs, which connects to '*The Engineer Design Method*' by Garmire that we read this week. Lastly, when exploring the ITEEA Standards for Technological and Engineering Literacy Standards in the 3-5 strand students focus on how systems and things work, and

exploring the engineering model of how they are made, more specifically STEL-3D.

The three sets of standards that I researched share a lot of commonalities, this includes but is not limited to; solving problems (CCSS.4.MD.A.1, 3-5.ETS.1-1, STEL.3-F), working through a process to find solutions, and using evidence (NGSS: 4-PS3-1). Students need to use evidence when problem solving in the design process as brainstorming and analyzing alternatives. Some of the differences include just focusing on applying mathematical or science knowledge such as addition or subtraction, or just science based. The NGSS standards are very heavily related to the standards for Technological and Engineering Literacy standards.

I think that the engineering design problem solving is a solid unifying concept and skill. When I taught in New Jersey we were just starting to get started with the Next Generation Science Standards, and I loved that there was such a focus around problem-solving. I felt that my students connected much better to a focus of designing possible solutions and working through those problems and solutions to see what worked and what didn't. Students learn so much more through observation, brainstorming, researching and analyzing than they do through traditional lecture or very basic experiments. I think this connects the science, math, and technology world together for them. As stated in '*The Engineering Design Method*' article that we read, problem solving is such an important skill in today's world and we need to teach students HOW and WHY to problem solve.

**Resources:**

Preparing America's Students For Success.  
<http://www.corestandards.org/>

Next Generation Science Standards <https://www.nextgenscience.org/>