


Using design and thinking skills to create an interdisciplinary learning environment.

“What we resolve to do in school only makes sense when considered in the broader context of what the society intends to accomplish through its educational investment in the young.” -- Jerome S. Bruner, *The Culture of Education*

<p>Problem statement</p>	<p>The US is losing out to other nations who are developing the innovative and creative systems and products for society. Our PreK-5 grade education system is failing to excite our students about engineering, science and mathematics. Students need to be passionate about learning for today’s world environment so that when they enter middle school, they know they can do all disciplines including the engineering, sciences and math studies.</p>
<p>Today’s learning environment</p> <p><i>All kids can learn ... But not on the same day and not in the same way</i></p>	<p>Our students experience learning in silos by being taught in discrete subjects. Students don’t see the relevance of what they are learning and we need more opportunities to learn in different “learning styles” (Howard Gardner “Multiple Intelligences”) and about how to think skillfully. PreK-5 grade teachers are generally more comfortable with language arts than math and science, thus limiting the students understanding of these disciplines. Our learning environment does not foster a creative playful attitude.</p>
<p>Proposal</p> <p>An integrated holistic learning process approach that fosters learning and excitement across many disciplines.</p>	<p>Create an interdisciplinary learning environment that connects literature to science and math using the engineering design process and thinking skills.</p> <p>Build a learning environment that engages students in learning and expands their natural curiosity thru probing questions and meta-cognitive reflection. The teachers act as the facilitators with the belief that all students can learn.</p>
<p>Methodology</p> <p>What can we use to connect all these discrete subjects?</p> <p>Engineering is about designing useful products & processes to make life better using all disciplines but mainly science & mathematics.</p>	<p>Our process shows how to engage students to finding design challenges in stories by looking through the eyes of an engineer. These design challenges can then be worked on in an inquiry team process. The process begins with literature, such as fairy tales, starting in the lower grades and leading to more sophisticated stories at older ages – stories that engage students. Using the engineering design process & skillful thinking methodology, PreK-5 teachers can create motivating questions that will give students the opportunity to probe, poke and peek into the mysteries of science & mathematics while doing an engineering project.</p> <p>A professional development (PD) program will be created for the teachers that demonstrates how to Infuses thinking skills such as critical and creative thinking into the learning process. Learning occurs from real world examples and leverages both on-line and face to face learning experiences.</p>
<p>Why it will succeed</p> 	<ul style="list-style-type: none"> • The learning builds on what teachers are already doing and their strengths. • Enhances the engagement and energy between the student and teacher. • Supports different learning styles. • Captures the excitement and abilities of the children in this age group. Creative learning encourages a playful learning attitude. • Can be integrated into the state’s teacher colleges for sustainability. • Provided scaffolding material and web site to support teachers.