Tools/ Applications covered in the class

Tool	Use/Purpose/Application
6 Hats	• To teach children abut different ways of thinking • Directs & focuses thinking • Interdisciplinary problem-solving tool • Use at Open Circle time; introduce one hat at a time • Use with professional groups/colleagues • Group problem-solving • Especially good for discussing controversial issues
Definitions/ Job Roles -engineers, scientists, mathematicians, artists	• Draw pictures of each (beginning/end of yr) • Eliminate stereotypes; provide a deeper understanding • How they relate to one another & what they do
Moodle	• Connect with colleagues; reference
Engineering design framework	• Design process • Using science & math to solve problems
Items box (i.e. ice cream scoops, flashlights, etc)	• Compare/Contrast, Analyze, Evaluate • Show that engineering is all around • Develop concepts of design requirements
Thinking skills: tools of engineering	• Incorporate thinking skills into literature & other content areas • Includes creative/critical thinking, questioning skills, strategies, meta-cognitive reflection • Trying to access higher-order thinking (i.e. from Bloom's taxonomy)
Story Maps	• Identify parts of a story as well as design challenges
Think in advance – building schema	• Problem of the day as morning work that they will work on in the afternoon as group work
Ideation/Generative-thinking tools	• Ideas to get kids thinking
• Problem framing	• Revising/revisiting a problem to open up possibilities for solutions • Get at essential questions & issues • Could use for open circle time
• Values	• Taking character's values into account when developing a solution; important to take people's values into consideration when

Tool	Use/Purpose/Application
	designing solutions
• Constraints	• Provide the project with direction; limitations imposed on design in advance
• Brainstorming	• Pre-teaching, accessing prior knowledge • Group generated regional stories • Letter of the week, predicting
• Brainwriting	• Allows for more participation, may generate more ideas from shy students • Creative writing, poetry, scientific observation, use everywhere!
• Morphological Analysis	• Provide curriculum constraints/connections; integrate any skills; could do with whole class
• Blue Sky (shaping)	• Mundane→Magical; pre-writing activity • Encourages "magical thinking" • Helps make a new & innovative solution
• Requirements	• Requirements shape the solution • Survey to gather requirements and rate them in importance • May be related to location/habitat, availability of materials • Earlier-identified constraints become part of requirements
• Negotiation - Pugh Analysis (convergent)	• Use prioritized requirements to weigh options & help make decisions • Sometimes leads to discovery of additional requirements or realization that some requirements are not that important • Helps refine your design; make revisions • Could also use to set rules for classroom and/or group work
Evaluate Designs	• To encourage higher-order thinking skills
Consideration of "failures" and feedback	• Discuss what was learned and how it will shape subsequent design tasks