What STEM Looks Like in …

	Early childhood and Elementary School	Elementary and Middle School	Middle and High School
	Experiences and Foundations in STEM	**Connections in STEM**	**Spark for STEM**
Science *discovering the laws of nature*	EXPERIENCE: Foster curiosity OBSERVATION: Skills **⇒ World of Wonder** **⇒ Ask Why?**	OBSERVATION: Skills EXPERIMENTATION: What if? Why? Narrow focus to test ideas **⇒ World of Connections** **⇒ Ask What else?**	EXPERIMENTATION: What if? Why? Narrow focus to test ideas FORMULATION: describing, validating, communicating discovered laws of nature **⇒ World of Unknown** **⇒ Ask Do I believe that?**
Mathematics *language to describe and predict*	SPATIAL UNDERSTANDING: Language to describe and focus observation NUMERIC UNDERSTANDING: Language to quantify, relate concrete to abstract **⇒ Language for Observation**	NUMERIC UNDERSTANDING: Language to quantify, relate concrete to abstract ALGORITHMIC PROCESSING: Procedures to process measured, to find and describe patterns **⇒ Language for Patterns**	ALGORITHMIC PROCESSING: Procedures to process measured, to find and describe patterns PREDICTIVE ABILITY: Move from measured (known) into predicted (unknown) using equations, graphing methods, statistical analysis **⇒ Language for Prediction**
Technology *tools, materials, and power to create, observe, and analyze*	EXPOSURE: material types and properties MANIPULATION: experience forming, cutting, joining **⇒ Everything is a tool** **⇒ Everything can be used**	MANIPULATION: experience forming, cutting, joining CREATION: existing designs, modified designs, new designs **⇒ More strength, accuracy, ways**	CREATION: existing designs, modified designs, new designs INTEGRATION: able to pull from multiple technology areas depending on what is needed for problems at hand **⇒ Right tool for the job**
Engineering *creating solutions to human needs*	PERSISTENCE: iterative habits LOGICAL PROBLEM SOLVING: learn from failures **⇒ Making** **⇒ Ask How to do it?** **⇒ Learn It can be done**	LOGICAL PROBLEM SOLVING: learn from failures INFORMED SYNTHESIS: use experience, knowledge base, and research results **⇒ Inventing** **⇒ Ask Can we make it?** **⇒ Learn We don't have to accept the world as it is given to us**	INFORMED SYNTHESIS: use experience, knowledge base, and research results EFFICIENT DESIGN: narrow scope of possible to come to solution faster **⇒ Changing** **⇒ Ask What is related?** **⇒ Learn Nothing happens in isolation**