Rubric to Assess a STEM *Authentic Learning Unit*

	Novice	Apprentice	Practitioner	Expert
Problem-Based Task Statement to Compel Students to Learn Curricular Content	• inspired by cross-cutting concepts • presents a problem to solve • connects content to real or imagined scenario • identifies the state standards	• inspired by science topics or cross-cutting concepts • connects to another content area indirectly • presents an open-ended problem to solve • connects content to real life • addresses state standards • addressed to an audience	• **inspired by science topics and cross-cutting concepts** • **presents an open-ended problem to solve** • **connects to one or more content areas directly or through a common theme** • **connects content to the real world, students' personal experiences, and/or an authentic context** • **addresses state standards and provides opportunities to extend beyond** • **begins with a "hook" from students' experiences, the news, statistics, and/or other motivating factors** • **addressed to an authentic audience** • **naturally embeds design process language**	all of *Practitioner* plus: fosters development of solutions that become part of the community (home, school, town, or state)
Analytic Rubric to Provide Final Product Expectations	• includes at least 5 rows, detailing standards associated with the final solution/product • describes grade-level content • uses a combination of quantitative and qualitative criteria across the columns	• includes at least 5 rows, detailing what the final solution/product looks like • describes mastery of grade-level content • uses language that is positive • uses criteria that are mostly qualitative across the columns • uses some words related to the design process steps	• **includes at least 5 rows, where each row details an aspect of what the final solution/product looks like** • **describes mastery of grade-level content in terms of understanding and application of standards to the product** • **uses language that is positive and objective** • **uses criteria that are mostly qualitative and progress in complexity across the columns** • **develops *Expert* column by including extended content, higher cognitive levels, or metacognitive reflection** • **uses language related to the outcome of design process steps** • **uses nested rubrics where applicable**	all of *Practitioner* plus: leaves 1 row open for students to describe the final product in terms of their choice of media for presentation, to be approved by the teacher

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Differentiating Learning Plan (*Scaffold* and *Activity List*)	• provides opportunities for students to learn and practice skills
	• designs an *activity list* that offers students autonomy in learning
		• creates a variety of activities providing students with rich and diverse opportunities to learn and practice
		• designs an *activity list* that offers students choices and autonomy in learning
			• **identifies and creates multiple and varied learning and practice activities that:**
			  ○ **take into account varied cognitive levels and learning styles**
			  ○ **offer instruction in grade-level curricular expectations**
			  ○ **utilize a variety of participatory structures**
			  ○ **build design process skills**
			  ○ **build executive function skills**
			  ○ **incorporate use of STEM kits, robotics, 3D printers, virtual reality goggles, etc.**
			  ○ **require students to apply content to the final solution/product**
			• **each designed *activity list* contains all elements of the *Practitioner* column of the "*Rubric for Creating a Purposeful Activity List*"**
				all of *Practitioner* plus: includes opportunities for students to identify or design learning activities to add to the *activity list*

Formative Assessments to Drive Instruction	• lists unit skills and concepts • identifies formative assessment opportunities and designs assessment tools	• designs a *facilitation grid* outlining major content, skills, and concepts covered in the unit for each content area • designs 3 to 5 assessments to be used as formative assessment checkpoints • develops probing questions to use during facilitation	• **divides unit content, concepts, and skills into weekly *facilitation grids*** • **uses 4 types of formative assessment** • **designs weekly technology and nontechnology formative assessments to be used as checkpoints throughout the unit** • **creates a list of probing questions of varying cognitive levels to encourage higher-order thinking while facilitating**	all of *Practitioner* plus: designs a variety of both technology-based and nontechnology-based formative assessments to be used daily
Summative Assessments	creates a summative assessment	creates a summative assessment that reflects the style of state tests	**creates a summative assessment that:** • **includes a variety of questions modeled after state testing,** • **requires higher-order thinking and application of content** • **includes at least one performance-based question to apply learning to a new situation**	all of *Practitioner* plus designs separate performance-based transfer tasks along with a scoring tool

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