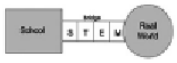
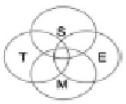
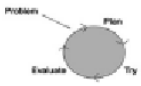
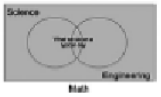
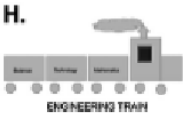
NanoScience – NanoTechnology / NST

ID analyst: Reflection worksheet

1) Which of the following teacher-generated models of STEM Education (Ring et al. 2017) best describes your perception for STEM Education?

Table 1. Eight models of STEM education with descriptions as found in Ring et al. (2017).

STEM model code	Image of model	Brief description
A – STEM as an Acronym	A. 	Models showed a traditional model of teaching science and/or mathematics in separate classrooms with little emphasis on the roles of technology and engineering pedagogies.
B – Real-World Problem Solving as Context	B. 	Models showed STEM education as focusing on the relationship between school and the real-world, providing contexts to make STEM concepts relevant to students' lives.
C – Science as Context	C. 	Models represented STEM education as teaching scientific concepts while calling upon technology, engineering, and mathematics as needed.
D – Science, Technology, Engineering, and Mathematics as Separate Disciplines	D. 	Models depicted siloed disciplines that included other disciplines as supporting roles, but these did not integrate across the disciplines in meaningful or substantial ways.
E – Integrated Disciplines	E. 	Models had components that represented the confluence of science, technology, engineering, and mathematics teaching.
F – Engineering Design Process as Context	F. 	Models focused on the iterative process of engineering design as the process by which students learn science and mathematics concepts using technology.
G – Science and Engineering Design Process as Context	G. 	Models placed an equal emphasis on teaching scientific concepts and the engineering design process using technology and mathematical concepts when appropriate.
H – Engineering as Context	H. 	Models represented an emphasis on engineering calling upon science, technology, and mathematics as needed.

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Mark only one:

A	B	C	D	E	F	G	H	OTHER

2) Why did you choose the particular model? Justify your selection.

3) What would be your alternative/second preferred model? Justify why.

4) (Optional). In case the above selection(s) do not fully represent your views, draw your own design about how would you depict your model of STEM Integration.

5) Describe the model that you drew in words below.

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6) What experiences (from the NST module or others) inform your model?

7) Prioritize (in descending order, i.e. from the most important to the least important) what discipline teacher (Science/Technology/Engineering/Math) would you choose to collaborate with in implementing a STEM teaching course.

	1 (least important)	**2**	**3**	**4 (important)**
Science				
Technology				
Engineering				
Math				

References

Dare, E. A., Ring-Whalen, E. A., & Roehrig, G. H. (2019). Creating a continuum of STEM models: Exploring how K-12 science teachers conceptualize STEM education. *International Journal of Science Education*, *41*(12), 1701-1720.

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Ring, E. A., Dare, E. A., Crotty, E. A., & Roehrig, G. H. (2017). The evolution of teacher conceptions of STEM education throughout an intensive professional development experience. *Journal of Science Teacher Education*, *28*(5), 444-467.

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