
Coal City Unit District #1
STEM - DRAFT
Science Curriculum

SC.STEM:1 Students will identify a problem that affects a community, environment, or business and needs to be solved. (NGSS ETS1.A) (HS-ETS1-1)

SC.STEM:1-1 Justify why a problem needs to be solved.

SC.STEM:1-2 Describe the effect the problem has if it remains unsolved.

SC.STEM:1-3 Document background research from at least 2 different credible sources about the problem .

SC.STEM:1-4 Identify the physical system in which the problem is embedded, including the major elements and relationships in the system and boundaries so as to clarify what is and is not part of the problem.

SC.STEM:1-5 Describe societal needs and requirements that relate to the problem.

SC.STEM:2 Students will define criteria and constraints for success when designing a solution for a problem. (NGSS ETS1.A) (HS-ETS1-1)

SC.STEM:2-1 Differentiate between constraints and criteria.

SC.STEM:2-2 Generate a list of constraints and criteria that could include cost, safety, reliability, and aesthetics that specifies an acceptable solution to the problem.

SC.STEM:2-3 Rank the constraints and criteria from most to least important.

SC.STEM:2-4 Justify which constraints and criteria are most important if compromises or trade-offs must be made.

SC.STEM:3 Students will design a solution to solve a real world problem. (NGSS ETS1.C) (HS-ETS1-2)

SC.STEM:3-1 Break a complex problem down into two or more more manageable sub-problems.

SC.STEM:3-2 Propose multiple solutions to a problem based on student investigations or scientific research.

SC.STEM:3-3 Describe how solutions to sub-problems connect to solve the main problem.

SC.STEM:4 Students will evaluate multiple solutions to a problem to create a more optimum design. (NGSS ETS1.B) (HS-ETS1-3)

- SC.STEM:4-1 Analyze the strengths and weaknesses of each proposed solution.
- SC.STEM:4-2 Describe potential barriers to implementing each proposed solution.
- SC.STEM:4-3 Provide an evidence based argument for the best design or for a new design that includes the best pieces of each proposal.
- SC.STEM:4-4 Describe which part(s) of a problem may still remain if their solution is implemented.

SC.STEM:5 Students will demonstrate the ability to use appropriate communication methods, both written and oral, to present the processes and results of scientific investigations and the engineering process. (CCSS.ELA-LITERACY.RST.11-12.7)

- SC.STEM:5-1 Provide accurate data from research and student led investigations.
- SC.STEM:5-2 Integrate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to communicate the solution a problem.

SC.STEM:6 Students will communicate and collaborate with each other to simulate real world situations.

- SC.STEM:6-1 Share relevant information in a timely manner with appropriate teams.
- SC.STEM:6-2 Initiate communication as necessary to ask questions and obtain information or materials.
- SC.STEM:6-3 Choose the most efficient modes of communication (face to face, email, phone call, etc.) depending on the situation.
- SC.STEM:6-4 Communicate professionally including respectful language and technical terminology.