**2020 STEL Benchmarks at 6-8 Grade Level 5/7/2020**

|  |  |
| --- | --- |
| Grade Band | **STEL Benchmark** |
|  | **STEL 1 Nature and Characteristics of Technology and Engineering** |
| 6-8 | **1J.** Develop innovative products and systems that solve problems and extend capabilities based on individual or collective needs and wants. |
| 6-8 | **1 K.**  Compare and contrast the contributions of science, engineering, mathematics and technology in the development of technological systems. |
| 6-8 | **1 L.** Explain how technology and engineering are closely linked to creativity, which can result in both intended and unintended innovations. |
| 6-8 | **1 M.** Apply creative problem-solving strategies to the improvement of existing devices or processes or the development of new approaches. |
|  | **STEL 2 Core Concepts of Technology and Engineering** |
| 6-8 | **2M.** Differentiate between inputs, processes, outputs, and feedback in technological systems. |
| 6-8 | **2N.** Illustrate how systems thinking involves considering relationships between every part, as well as how the system interacts with the environment in which it is used**.** |
| 6-8 | **2O.** Create an open-loop system that has no feedback path and requires human intervention. |
| 6-8 | **2P**. Create a closed-loop system that has a feedback path and requires no human intervention. |
| 6-8 | **2Q.** Predict outcomes of a future product or system at the beginning of the design process. |
| 6-8 | **2R.** Compare how different technologies involve different sets of processes. |
| 6-8 | **2S.** Defend decisions related to a design problem. |
|  | **STEL 3 Integration of Knowledge, Technologies, and Practices** |
| 6-8 | **3E**. Analyze how different technological systems often interact with economic, environmental, and social systems. |
| 6-8 | **3F.** Apply a product, system or process developed for one setting to another setting. |
| 6-8 | **3G.** Explain how knowledge gained from other content areas affects the development of technological products and systems. |
|  | **STEL 4 Impacts of Technology** |
| 6-8 | **4K.** Examine the ways that technology can have both positive and negative effects at the same time. |
| 6-8 | **4L.** Analyze how the creation and use of technologies consumes renewable and non-renewable resources and creates waste. |
| 6-8 | **4M.** Devise strategies for reducing, reusing, and recycling waste caused from the creation and use of technology. |
| 6-8 | **4N.** Analyze examples of technologies that have changed the way people think, interact, and communicate. |
| 6-8 | **4O.** Hypothesize what alternative outcomes (individual, cultural, and/or environmental) might have resulted had a different technological solution been selected. |
|  | **STEL 5 Influence of Society on Technological Development** |
| 6-8 | **5F.** Analyze how an invention or innovation was influenced by its historical context. |
| 6-8 | **5G.** Evaluate trade-offs based on various perspectives as part of a decision process that recognizes the need for careful compromises among competing factors. |
|  | **STEL 6 History of Technology** |
| 6-8 | **6C.** Compare various technologies and how they have contributed to human progress. |
| 6-8 | **6D**. Engage in a research and development process to simulatehow inventions and innovations have evolved through systematic tests and reﬁnements. |
| 6-8 | **6E**. Verify how specialization of function has been at the heart of many technological improvements. |
|  | **STEL 7 Design in Technology and Engineering Education** |
| 6-8 | **7P.** Illustrate the benefits and opportunities associated with different approaches to design. |
| 6-8 | **7Q.** Apply the technology and engineering design process. |
| 6-8 | **7R.** Refine design solutions to address criteria and constraints. |
| 6-8 | **7S.** Create solutions to problems by identifying and applying human factors in design. |
| 6-8 | **7T.** Assess design quality based upon established principles and elements of design. |
| 6-8 | **7U.** Evaluate the strengths and weaknesses of different design solutions. |
| 6-8 | **7V**. Improve essential skills necessary to successfully design. |
|  | **STEL 8 Applying, Maintaining, and Assessing Technological Products and Systems** |
| 6-8 | **8H.** Research information from various sources to use and maintain technological products or systems. |
| 6-8 | **8I**. Use tools, materials, and machines to safely diagnose, adjust, and repair systems. |
| 6-8 | **8J**. Use devices to control technological systems. |
| 6-8 | **8K**. Design methods to gather data about technological systems. |
| 6-8 | **8L**. Interpret the accuracy of information collected. |
| 6-8 | **8M.** Use instruments to gather data on the performance of everyday products. |