

Engineering Solutions for Global Health



Texas Essential Knowledge Standards Connections

The following table lists the Texas Essential Knowledge Standards for Career and Technical Education that are addressed by the activities in the Engineering Solutions for Global Health Kit. The table also provides details about the connections of the activities to those elements.

Texas Essential Knowledge Standards	Student Expectations	Engineering Solutions for Global Health Connections	Activities			Post-Investigation Questions
			1	2	3	
Career and Technical Education			✓	✓	✓	✓
130.222 Principles of Health Science	The student applies mathematics, science, English language arts, and social studies in health science.	Students define and analyze the global issue of world hunger and malnutrition, including the social, economic, and environmental factors involved. Students use mathematical calculations to recommend the appropriate amount of protein to include in a treatment proposal based on a calculated recommended daily allowance of protein. Students write a final treatment proposal in the form of an evidence-based argument.	✓	✓	✓	✓
130.410 Engineering Design and Presentation I	The student uses engineering design methodologies.	Students conduct an investigation to collect evidence about the protein content of various protein liquids to create an initial treatment proposal for protein-energy undernutrition. Students consider constraints and validate their initial treatment proposal with simulated outcomes to test its effectiveness and make revisions to the proposal as appropriate. The final treatment proposal takes into account constraints and trade-offs, and considers social, environmental, and economic factors.	✓	✓	✓	✓



General Biology: Curriculum Connections

Texas Essential Knowledge Standards	Student Expectations	Engineering Solutions for Global Health Connections	Activities			Post-Investigation
			1	2	3	Questions
Career and Technical Education			✓	✓	✓	✓
130.412 Engineering Design and Problem Solving	The student applies knowledge of science and mathematics and the tools of technology to solve engineering design problems.	Students use mathematical calculations to determine the recommended daily allowance of protein for patients with protein-energy undernutrition. Students test various protein liquids with Bradford reagent to determine which to include in a treatment proposal solution to protein-energy undernutrition.		✓	✓	✓
130.412 Engineering Design and Problem Solving	The student creates justifiable solutions to open-ended real-world problems using engineering design practices and processes.	Students design a treatment proposal to address protein-energy undernutrition using evidence from an experiment to test protein liquids using Bradford reagent; students consider appropriate constraints and tradeoffs to create a final treatment proposal in the form of an evidence-based argument.	✓	✓	✓	
130.414 Engineering Science	The student understands material properties and the importance of choosing appropriate materials for design.	Students calculate the recommended daily allowance of protein for patients with protein-energy undernutrition. Students then estimate the concentration of protein in various protein liquids using Bradford reagent and choose an appropriate liquid to include in a treatment proposal for patients with protein-energy undernutrition.		✓	✓	

Bio-Rad is a trademark of Bio-Rad Laboratories, Inc.

Bio-Rad Explorer

explorer.bio-rad.com

