

Vertical Alignment of Scientific and Engineering Practice: Collecting and Organizing Observations and Measurements

TEKS in Focus highlights key concepts and student expectations to assist educators in implementing the science Texas Essential Knowledge and Skills (TEKS). The vertical progression of a concept within the science TEKS is provided along with the detailed explanations provided in TEKS Guide. The science TEKS include scientific and engineering practices in strand one. To create a cohesive learning experience, educators should integrate scientific and engineering practices with content. Embedding these practices into the content provides students with the context in which to ask questions, develop models, and analyze data. This approach ensures that students develop critical thinking and problem-solving skills by applying scientific and engineering practices in real-world scenarios while learning the content.

Detailed explanations are provided for bold words in the student expectation. Detailed explanations call out a specific word or phrase in a student expectation to clarify what students should know and be able to do in reference to that word or phrase. Detailed explanations may include an instructional boundary that specifies Tier 1 (baseline) instructional expectations for all students.

Scientific and Engineering Practice 1E

Science TEKS	Term or Phrase	Detailed Explanations from TEKS Guide
K.1.E, 1.1.E, 2.1.E, 3.1.E, 4.1.E, 5.1.E collect observations and measurements as evidence;	measurements	In Kindergarten and grade 1, students use non-standard measurements, such as the number of books or lengths of string. Standard measurement, such as centimeters, begins at grade 2. In grade 2, students use standard measurements such as centimeters, meters, and seconds. Students in grades 3–5 use metric measurements for length, mass, and liquid volume.
6.1.E, 7.1.E, 8.1.E, Bio.1.E, Chem.1.E, IPC.1.E, Phys.1.E collect quantitative data using the International System of Units (SI) and qualitative data as evidence;	quantitative data	Students in grades 6–8 use metric measurements for force, temperature, distance, mass, and volume.
6.1.E, 7.1.E, 8.1.E, Bio.1.E, Chem.1.E, IPC.1.E, Phys.1.E collect quantitative data using the International System of Units (SI) and qualitative data as evidence;	qualitative data	Students should understand how to collect non-numeric data such as descriptions of physical properties of matter or characteristics of organisms.

TEKS Guide Glossary Terms:

Glossary terms and definitions are consistent across kindergarten through high school in the TEKS Guide. The definitions are intended to give educators a common understanding of the terms regardless of what grade level they teach. Glossary definitions are not intended for use with students.

evidence: data that supports a hypothesis or an argument and is observable through the senses or technology

qualitative data: non-numerical factual information (such as observations) used as a basis for reasoning, discussion, or calculation; often includes both useful and irrelevant or redundant information and must be processed to be meaningful

quantitative data: numerical factual information (such as measurements or statistics) used as a basis for reasoning, discussion, or calculation; often includes both useful and irrelevant or redundant information and must be processed to be meaningful

TEKS in Focus spotlights concepts or student expectations monthly to bolster TEKS alignment, rigor, and collective understanding. It does not suggest an order or timing but helps with comprehension of TEKS changes, serving as a guide when relevant to classroom instruction.