

Guidelines for Content Advisor Feedback

Please review the final recommendations for the science Texas Essential Knowledge and Skills (TEKS) for kindergarten–grade 8.

There is no specific format required for your feedback. When referencing specific portions of the TEKS, please indicate the grade level and the specific letter/number of the standard to which you are referring, as appropriate. For example, 1.7.B (Grade 1, student expectation (7)(B)).

GUIDING QUESTIONS

1. Do the final recommendations adequately address scientific concepts? If not, please give examples of how the standards may be improved. Yes, most recommendations address scientific concepts. The Workgroup has continued to improve upon the draft since SBOE first reading. Please see recommendations below for some fine-tuning of science principles.
2. Are the final recommendations aligned vertically and horizontally and don't create gaps in scientific concepts and skills? If not, what gaps or concepts are still missing that should be addressed? Yes, the vertical and horizontal alignment shows continued improvement. One recommendation was added as SE 8.11C, assigning "value" to our precious energy resources and elaborating the benefits to humanity. This TEKS lends credence to the importance of conservation.
3. Are the student expectations clear and specific? If not, please give examples of how the language might be improved. Yes, expectations are clear and specific, there are a few recommendations listed below.
4. Do you have any other suggestions for ways in which the elementary and middle school TEKS can be improved? Yes, by incorporating the recommendations below, we can be assured that our students are receiving a true and thorough understanding of currently updated science principles.

Thank You: K-8 Draft Workgroup Writers, TX Science Teachers, and TEC (Texas Energy Council): You are to be admired for devoting your expertise, time and talent to the writing/editing of this document, especially during difficult and trying times. Thank you for your input and suggestions to refine this draft for TX Science Education.

	K-8 Draft Language	Recommendation	Justification
SEP 4B	4(B) make informed decisions by evaluating evidence from multiple appropriate sources to assess the credibility, accuracy, and methods used; and	4(B) make informed decisions by evaluating evidence from multiple appropriate sources to assess the credibility, accuracy, cost-effectiveness and methods used; and	Alignment with high school’s “cost benefit analysis,” in science and engineering practices, cost is always a factor with projects, lab practices, and decision-making .

	K-8 Draft Language	Recommendation	Justification
SEP 4C	(C) research and explore connections between grade-level appropriate science concepts and STEM careers.	N/A	N/A
TEKS Guide Recommendations <ul style="list-style-type: none"> Consider resources such as museums, libraries, in-person/virtual visits by local professional volunteers, organizations, private companies, or online platforms and mentors employed in the STEM field to learn more about STEM careers. Provide websites and resources 			

	K-8 Draft Language	Recommendation	Justification
SEP 5	Please see next page 5A-G (too large to insert here)	Delete all of SEP 5, A-G.	Cumbersome, repetitive, and an overload for teachers. This language is found in every KS Statement , where it is followed with specific examples, and teachers can make sense of it. The 1-4 SEP’s will be new for teachers, adding on an additional lengthy #5 seems extremely burdensome. If we retain SEP 5, it upsets the “entire” TEKS (K-8) numerical system. Please delete SEP 5, it is not needed. See next page.
TEKS Guide Recommendations <ul style="list-style-type: none"> As a solutions, SEP 5 A-G could be placed in the TEKS Guide as an “Introduction to Science.” 			

<p><u>(5) Recurring themes and concepts. The student uses recurring themes and concepts to make connections across disciplines. The student is expected to:</u></p>	<p><u>(5) Recurring themes and concepts. The student understands that recurring themes and concepts provide a framework for making connections across disciplines. The student is expected to:</u></p>	<p><u>(5) Recurring themes and concepts. The student understands that recurring themes and concepts provide a framework for making connections across disciplines. The student is expected to:</u></p>
<p><u>(A) identify and use patterns to describe phenomena or design solutions</u></p>	<p><u>(A) identify and use patterns to explain scientific phenomena or to design solutions</u></p>	<p><u>(A) identify and apply patterns to understand and connect scientific phenomena or to design solutions</u></p>
<p><u>(B) investigate and predict cause and effect relationships in science</u></p>	<p><u>(B) identify and investigate cause and effect relationships to explain scientific phenomena or analyze problems</u></p>	<p><u>(B) identify and investigate cause and effect relationships to explain scientific phenomena or analyze problems</u></p>
<p><u>(C) describe the properties of objects in terms of relative size (scale) and relative quantity</u></p> <p><u>Grade 2 only</u> <u>(C) measure and describe the properties of objects in terms of size and quantity</u></p>	<p><u>(C) use scale, proportion, and quantity to describe, compare, or model different systems</u></p>	<p><u>(C) analyze how differences in scale, proportion, or quantity affect a system's structure or performance</u></p>
<p><u>(D) examine the parts of a whole to define or model a system</u></p>	<p><u>(D) examine and model the parts of a system and their interdependence in the function of the system</u></p>	<p><u>(D) examine and model the parts of a system and their interdependence in the function of the system</u></p>
<p><u>(E) identify forms of energy and properties of matter</u></p>	<p><u>(E) investigate the flow of energy and cycling of matter through systems</u></p> <p><u>Grade 4 and 5 only</u> <u>(E) investigate how energy flows and matter cycles through systems and how matter is conserved</u></p>	<p><u>(E) analyze and explain how energy flows and matter cycles through systems and energy and matter are conserved through a variety of systems</u></p>
<p><u>(F) describe the relationship between structure and function of objects, organisms, and systems</u></p>	<p><u>(F) explain the relationship between structure and function of objects, organisms, and systems</u></p>	<p><u>(F) analyze and explain the complementary relationship between Structure and function of objects, organisms, and systems</u></p>
<p><u>(G) describe how factors or conditions can cause objects, organisms, and systems to change or stay the same</u></p>	<p><u>(G) explain how factors or conditions impact stability and change in objects, organisms, and systems</u></p>	<p><u>(G) analyze and explain how factors or conditions impact stability and change in objects, organisms, and systems</u></p>

	K-8 Draft Language	Recommendation	Justification
SE K 10.A	K. 10 9.A describe and classify rocks by the observable properties of size, shape, color, and texture.	N/A	N/A
TEKS Guide Recommendation			
<ul style="list-style-type: none"> Stress that texture is also how an object “feels.” 			

	K-8 Draft Language	Recommendation	Justification
SE 1.10 B	1. 10 B9.C investigate and describe how water can move rocks and soil from one place to another.	1. 10 B9.C investigate and describe how water can move rocks and soil particles from one place to another.	Water generally does not move giant boulders. “Particles” is more accurate wording.
TEKS Guide Recommendation			
<ul style="list-style-type: none"> Elaborate on “rock particle size” 			

	K-8 Draft Language	Recommendation	Justification
SE 2.10 A	2. 10 9.A investigate and describe how wind and water move soil and rocks across the earth’s surface such as wind blowing sand into dunes on a beach or a river carrying rocks as it flows.	2. 10 9.A investigate and describe how wind and water can move soil and rocks rock and soil particles across the earth’s surface such as wind blowing sand into dunes on a beach or a river carrying rocks particles as it flows.	Keep same wording as 1.10B, the word “particle” is appropriate.
TEKS Guide Recommendation			
<ul style="list-style-type: none"> Elaborate on “rock particle size” 			

	K-8 Draft Language	Recommendation	Justification
SE 3.12 D	3. 12 4.D identify fossils as evidence of past living organisms.	3. 12 4.D identify fossils as evidence of past living organisms, including common state fossils	Encourages teachers to bring in hands-on activities to learn about fossils in their state, in addition to helping with retention.
TEKS Guide Recommendation			
<ul style="list-style-type: none"> TX has quite a colorful fossil record, encourage students to bring in and explore local TX fossils 			

	K-8 Draft Language	Recommendation	Justification
SE 4.11 A`	4.11 10 .A identify and <u>explain the advantages and disadvantages of using classify</u> Earth's renewable resources, <u>such as including wind air, plants,</u> water, <u>sunlight, plants,</u> and animals, and nonrenewable resources, <u>such as including</u> coal, oil, and natural gas; and	4.11 10 .A identify and <u>explain the the advantages and disadvantages of using classify</u> Earth's renewable natural resources, <u>such as including wind air, plants,</u> water, <u>sunlight, plants,</u> and animals, and nonrenewable resources, <u>such as including</u> coal, oil, and natural gas; and	Definition of renewable and nonrenewable is 10 years out of date. Current science defines it in terms of “energy harnessed.” In other words, define in terms of natural resources, instead of energy resources.
<p>TEKS Guide Recommendation</p> <ul style="list-style-type: none"> The definition of “renewable” and “nonrenewable” has changed. Why? Sunlight and even water (hydropower) cannot be harnessed without conventional energy sources, and that depends on the elements used to harness them; therefore, it is best to use a more encompassing definition. Ex. Natural gas can fall into either category (renewable or nonrenewable), depending on the source. So avoid using renewable and nonrenewable, and guide students toward using, “natural resources.” 			

	K-8 Draft Language	Recommendation	Justification
SE 4.11 B`	4.11 10 .B explain how conservation, disposal, and recycling of renewable and non-renewable natural resources impact the environment.	4.11 10 .B explain how conservation, disposal, and recycling of renewable and non-renewable natural resources impact the environment.	Same as 4.11 A above
<p>TEKS Guide Recommendation</p> <ul style="list-style-type: none"> The definition of “renewable” and “nonrenewable” has changed. Why? Sunlight and even water (hydropower) cannot be harnessed without conventional energy sources, and that depends on the elements used to harness them; therefore, it is best to use a more encompassing definition, just use “natural resources.” 			

	K-8 Draft Language	Recommendation	Justification
SE 4.12 C`	4.12 11 .C identify and describe past environments based on fossil evidence. (Isn't this supposed to be 4.12 A ?)	4.12 11 .C identify and describe past environments based on fossil evidence, <u>including common state fossils.</u>	Encourages teachers to bring in hands-on activities to learn about fossils in their state, associating this with past environmental conditions
<p>TEKS Guide Recommendation</p> <ul style="list-style-type: none"> During the construction of the Dallas Fort Worth Airport (1970’s), the rocks underneath contained so many dinosaur fossils that it was coined Cretaceous Airport (dinosaurs and sea monsters). Resource: <i>Cretaceous Airport</i> by Louis Jacobs 			

	K-8 Draft Language	Recommendation	Justification
SE 5.11 A	5.11 10 .A design and explain solutions <i>such as conservation, recycling or proper disposal</i> to minimize environmental impact on the environment from the use of renewable and non- renewable natural resources <i>such as</i>	5.11 10 .A design and explain solutions <i>such as conservation, recycling or proper disposal</i> to minimize environmental impact on the environment from the use of renewable and non- renewable -natural resources <i>such as</i>	Same as 4.11 A above
TEKS Guide Recommendation <ul style="list-style-type: none"> The definition of “renewable” and “nonrenewable” has changed. Why? Sunlight and even water (hydropower) cannot be harnessed without conventional energy sources, and that depends on the elements used to harness them; therefore, it is best to use a more encompassing definition, just use “natural resources.” 			

	K-8 Draft Language	Recommendation	Justification
SE 6.6 C	6.6. 5 . C classify elements on the periodic table as metals, nonmetals, and metalloids using their physical properties;	N/A	N/A
TEKS Guide Recommendations <ul style="list-style-type: none"> On periodic table, in referencing the “rare earth elements” at the bottom of the chart, note their importance to modern life. These precious metals have a strategic impact in high technology devices, including smart phones, digital cameras, computer hard disks, fluorescent and light-emitting-diode (LED) lights, flat screen televisions, computer monitors, and electronic displays. Some of the rare-earth metals (and their atomic weights) commonly used in electronics include lanthanum (57), cerium (58), neodymium (60), samarium (62), europium (63), terbium (65), and dysprosium 			

	K-8 Draft Language	Recommendation	Justification
SE 6.10 C	6.109.C describe how <u>metamorphic, igneous, and sedimentary</u> rocks <u>form and</u> change through geologic processes in the rock cycle and classify rocks as metamorphic, igneous, or sedimentary by the processes of their formation.	N/A	N/A
TEKS Guide Recommendations <ul style="list-style-type: none"> Sedimentary rock is deposited in horizontal layers, but these layers can be changed over time, such as mountain formation, etc. 			

	K-8 Draft Language	Recommendation	Justification
SE 8.10 A	8.109.A describe how <u>energy from the sun, the hydrosphere and atmosphere interact and influence</u> weather and climate are influenced by interactions involving sunlight, the hydrosphere, and atmosphere;	N/A	N/A
TEKS Guide Recommendation <ul style="list-style-type: none"> Include the updated current definition of “climate” from the (IPCC) Intergovernmental Panel on Climate Change. Example: Climate is an area’s long-term weather patterns. It is a statistical description in terms of the mean and variability of relevant quantities over a period ranging from months to thousands or millions of years. The classical period for averaging these variables is 30 years. The relevant quantities are most often surface variables such as temperature, precipitation, and wind. 			

	K-8 Draft Language	Recommendation	Justification
SE 8.10 B	8. 10 ⁹ .B identify global patterns of atmospheric movement and how they influence local weather; and	Leave SE as is.	Draft writers wrote to include “ weather maps ” in 8 th grade tools. Please remember to include.

	K-8 Draft Language	Recommendation	Justification
SE 8.11 B	8. 11 ¹⁰ .B use scientific evidence to describe how human activities can influence climate <u>such as the release of greenhouse gases.</u>	8. 11 ¹⁰ .B use scientific evidence to describe how human activities can influence climate <u>such as the release of greenhouse gases.</u>	Greenhouse gases? Kids generally do not know how a greenhouse works. Maybe focus on how natural environmental processes are disrupted, such as clear-cutting a rainforest (deforestation), urbanization (heat islands), changing crop patterns, etc.

TEKS Guide Recommendation

- Helpful to use examples that kids can relate to, such as deforestation and how it affects the **water cycle**. Water vapor accounts for 97% of the total greenhouse warming of planet. Elaborate on how and why it causes changes.
- Newest data from peer-reviewed scientists needs to be addressed, climate change is in a state of flux, with evidence of systemic bias.
- Ex. Date: Mon, Aug 16, 2021 at 10:51 AM
Subject: Big Breaking News: Challenging UN, Study Finds Sun—not CO2—May Be Behind Global Warming
New peer-reviewed paper from dozens of scientists finds evidence of systemic bias in UN data selection to support climate-change narrative. The review states that the IPCC did not consider the role of solar energy in explaining increased temperatures, calling the IPCC ‘s conclusions premature (incomplete data about the Sun’s total irradiance).

	K-8 Draft Language	Recommendation	Justification
ADD New SE SE 8.11 C	N/A	Add SE 8.11C... research and describe the role of energy in reducing global poverty, malnutrition, and air and water pollution.	Aligns with 7.10B, human activities impacting ocean systems. Without energy, ex. electrical energy, the human condition deteriorates. It is strongly recommended to emphasize the “role of energy, and its precious value.” This also reinforces energy conservation practices.
TEKS Guide Recommendation <ul style="list-style-type: none"> • Potential resource: Part 1, <i>Switch</i> and Part 2, <i>Switch On</i> by Dr. Scott Tinker (Documentary/Adventure). • http://switchon.org/ Student materials from the Switch Energy Alliance 			