### Senato Initial Review

### K-12 Science TEKS input

## Kinder- 5<sup>th</sup> grade Input

Grade Level	TEKS/SE	Considerations/	Rationale
	Scientific Investigation	Suggestions	
	<u>Scientine investigation</u>	Tana Reasoninge	
Kinder-5th	K.1.1A/ 1.1.A/2.1.A/3.1.A/4.1.A/5.1.A	Change chemical splash goggles to splash-proof goggles.	The Texas Safety Standards manual lists the goggles in K-5 as splash goggles. Changing the term in the TEKS to splash goggles would align with that is set in the TSS Manual.
Kinder-2nd	K.4.A/ 1.4A/ 2.4.A	Remove safety goggles/chemical splash goggles	It is repetitive as this is already listed in K.1.A/ 1.1.A./ 2.1A
	Science Cor	ncepts	
Kinder-5 <sup>th</sup>	Biomes/ habitats	Consider specifying examples of biomes/habitats at each grade level.	The biomes can increase in complexity and biodiversity as the students get older. It also allows them to apply life cycles, structures and adaptations to different locations.
Kinder	K.7.C	Remove soil from K.7C	Soil is not introduced as a concept until 1 <sup>st</sup> grade.
Kinder	К.9В	Add air as basic needs for animals	Plants have air listed as a basic need but animals do not have air listed as a basic need.
1st/2nd	1.7.A/2.7.A	Consider switching these SEs (1.7.A moves to 2 <sup>nd</sup> grade and 2.7.A moves to 1 <sup>st</sup> grade)	Rocks are introduced in Kinder but then there is a jump to introduce soil in 1 <sup>st</sup> grade (1.7A) as opposed to extending

		1	1
			the rocks SE to include comparison in 1 <sup>st</sup> grade. By adding the comparison of rocks in 1 <sup>st</sup> grade and moving the soil SE to 2 <sup>nd</sup> grade, this would improve the cognitive alignment. Soil would be the next step in 2 <sup>nd</sup> grade and would be more developmentally appropriate in the progression of this SE.
1 <sup>st</sup>	1.8.B/1.8C	Consider flipping these SEs	This order aligns the SEs at subsequent grade levels.
1 <sup>st</sup>	1.9BC	Add to or clarify 1.9B	These examples listed are limited.  If examples of habitats are added as a "such as" for each grade level, these could be additional examples.  (See first bullet)
1 <sup>st</sup>	1.9C	Consider removing energy transfer.	Not developmentally appropriate. Energy transfer is a complex concept. Consider 1.9C as just introduction to the concept of food chains.
2 <sup>nd</sup>	2.5.A	Consider Including gases as a state of matter to 2 <sup>nd</sup> grade	Gases are introduced in 1st grade in 1.8D when students learn that air is all around us. Including gases is as state of matter in 2nd grade would be a reasonable extension of this.
2 <sup>nd</sup>	2.5C	Add freezing after the word melting in 2.5C	Allows for better alignment in 2.5B and

			2.5C SEs. Gives
			specificity to the SE.
2 <sup>nd</sup>	2.6A	Add freezing at end of the SE.	The SE is for increasing and decreasing amounts of heat but the current SE only talks about adding heat to
2 <sup>nd</sup>	2.8.C	Introduce the basic water cycle in 2 <sup>nd</sup> grade (explore the process of the water cycle including evaporation, condensation and precipitation as connected to weather conditions)	melt butter.  A basic introduction to the water cycle in 2 <sup>nd</sup> grade would allow for further extensions that already exist in the 4 <sup>th</sup> & 5th grades (4.8.B; 5.8.B).  Currently, the basic water cycle is not addressed at any grade level.
2 <sup>nd</sup>	2.10.A 2.10.B	Include structure and function as part of physical characteristics (2.10.A observe, record and compare how the structure and function of physical characteristics and behaviors)	Alignment of the terminology between 2 <sup>nd</sup> -4 <sup>th</sup> grade
3 <sup>rd</sup>	3.8.C	Include water cycle in 3.8C but with the clarification that the Sun in necessary for more than just the water cycle.  (Example: Describe and illustrate that the Sun is a star composed of gases that provides light and heat energy for all life on Earth and is	This will allow of extending the SEs in 4 <sup>th</sup> and 5 <sup>th</sup> grade on the water cycle to how the Sun and ocean drive the water cycle.

		necessary for the	
		water cycle).	
2 <sup>nd</sup> /3 <sup>rd</sup>	2.10.C/3.10.B	Revise these SEs or	Complete and
		add specificity to	incomplete
		include terminology	metamorphosis terms
		for complete and	or the stages are not
		incomplete	in the current TEKS.
		metamorphosis.	However, the current
			SE states "Unique
			stages". This implies
			metamorphosis and
			incomplete
			metamorphosis but
			specifying this in the
			SE will give clarity and
			specificity to the SE.
4 <sup>th</sup>	4.5A	Clarify that sink or	Developmentally
		float is referring to	appropriate extension
		density and not just	of the SE from 3 <sup>rd</sup> to
		buoyancy.	4 <sup>th</sup> grade.
5 <sup>th</sup>	5.6.C	Consider removing	The first and only
		how light travels or	time this concept it
		include vertical	covered is 5 <sup>th</sup> grade.
		connections at lower	Vertical connections
		grades	for this concept do
			not exist in previous
			grades.
5th	5.9.D	Consider revising or	Concept is an
		moving the SE Identify	important one but
		that fossils as	seems like it is just
		evidence of past living	thrown in as an SE. Is
		organisms.	there a place for it
			that will support
			vertical alignment and
-+h			content connections?
Kinder-5 <sup>th</sup>	Biomes/ habitats	Consider specifying	The biomes can
		examples of	increase in complexity
		biomes/habitats at	and biodiversity as
		each grade level.	the students get
			older. It also allows
			them to apply life
			cycles, structures and
			adaptations to
			different locations.

# 6<sup>th</sup>-8<sup>th</sup> grade input

Grade	TEKS/SE	Consideration/Suggestion	Rationale
Grade		nce Concepts	Nationale
6th	6.5C		Drovido bookground
Otti	6.50	Consider adding testing for pH; acids/bases	Provide background needed for Biology
6 <sup>th</sup>	6.6B	Add density formula to add	Density calculations
0	0.06	specificity and clarify the	need to align with 6 <sup>th</sup>
		expectation.	grade math skills.
6 <sup>th</sup>	6.6	Add the physical property	Dissolving is covered in
	0.0	of solubility	elementary but then
		Of 301dBilley	drops off 6 <sup>th</sup> -8 <sup>th</sup> grade
			TEKS. Solubility would
			be graded appropriate
			extension of this
			concept.
6 <sup>th</sup>	6.8.E	Clarify SE to include all	Allows for stronger
	0.0.2	Simple Machines	connections to KE and
			PE; allows for
			alignment to other SEs
			in that strand.
6th	6.7A	Consider revising/ moving	Fossil fuel formation
		to 5th grade to connect	and conservation of
		with fossil fuels (5.7A).	fossil fuels is
		Explaining how fossil fuels	developmentally
		are used and why need to	appropriate for 5 <sup>th</sup>
		be conserved	grade.
		Revise 6.7A- Identify	6 <sup>th</sup> grade can extend
		alternative energy sources.	this concept to focus
		How do alternative energy	on alternative energy
		sources help with	sources and their role
		conservation?	in conservation.
cth	644.5	Canada a ser i se CE to Cth	Constitution
6 <sup>th</sup>	6.11.B	Consider moving SE to 8 <sup>th</sup>	Concept is not
		grade	developmentally
			appropriate for 6 <sup>th</sup>
			grade. The concept of
			gravity as it relates to planets and the solar
			system is a more
			abstract concept then
<b>7</b> <sup>th</sup>	Majority TEKS/SEs	Consider revising or	The 7 <sup>th</sup> grade SEs lack
,	Iviajority IERO/3E3	restructuring 7 <sup>th</sup> grade SEs	flow and direction.
		to allow for more vertical	Vertical alignment to
			6 <sup>th</sup> or 8 <sup>th</sup> grade is very
		alignment and continuity	limitedalmost forced
		between grades 6 <sup>th</sup> -8 <sup>th</sup> .	in many cases.
	1		arry cases.

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			7 <sup>th</sup> grade SEs are more life science based and making connections/alignment is stretch.
7 <sup>th</sup>	Matter and Energy	Consider moving 8.5.A and 8.5.C to 7 <sup>th</sup> grade to build from where 6 <sup>th</sup> grade left off.	Move Periodic Table basics from 8 <sup>th</sup> grade to 7 <sup>th</sup> grade for stronger alignment from 6 <sup>th</sup> -8 <sup>th</sup> .  Compounds and elements in 6 <sup>th</sup> grade but then nothing again until 8 <sup>th</sup> grade. This would bridge that gap.
7 <sup>th</sup>	7.10A	Consider removing this SE	Biomes/habitats covered extensively at K-6th
7 <sup>th</sup> /8 <sup>th</sup>	7.11.ABC	Consider moving 7.11 TEKS to 8 <sup>th</sup> grade.	7.11 would align better with current 8 <sup>th</sup> grade TEKS.
7 <sup>th</sup> /8th		Consider moving 8.7 and 8.8 Space TEKS to 7 <sup>th</sup> grade	Moving 8.7 and 8.8 would for stronger alignment with prior Earth Science skills,

#### **GUIDING QUESTIONS**

- 1. Is the current structure or framework of the kindergarten-grade 12 science TEKS appropriate? If not, what recommendations do you have for organizing or structuring the TEKS?
  - a. For the most part in K-5 the current structure is appropriate. Specific TEKS suggestions are included in the above chart.
  - b. 6<sup>th</sup> -8<sup>th</sup> grade TEKS lack continuity between the grade levels. This mainly applies to 7<sup>th</sup> grade. Suggestions again have been made in the above chart.
- 2. Does each grade level and/or course follow a complete and logical development of science concepts presented within the grade level/course? If not, what improvements are needed?
  - a. For the most part K-5 has logical and complete development. There are some areas for improvement list above. For example if a TEKS is going to be assessed (like how light travels), then it should have clear vertical connections at the elementary level...Light traveling is not covered in middle school so it looks like it is just thrown out there.

- b. Specifying Biomes to the elementary grade levels would allow for increasing the complexity of the biome as the student develops and grows.
- c. 7<sup>th</sup> grade TEKS lack logical connections to 6<sup>th</sup> and 8<sup>th</sup> grade. The 7<sup>th</sup> grade TEKS are more life science based and the alignment does not flow in a complete or logical manner.
- 3. Are the core concepts specific to the disciplines of science (e.g., life science, physical science, and earth and space science) adequately addressed across the K–12 TEKS? If not, please identify the discipline and the concepts that are missing.
  - a. For the most part K-5 adequately addresses the TEKS. There is room for some clarifications and suggestions to continue to improve this.
  - b. 6<sup>th</sup>-8<sup>th</sup> grade- while 6<sup>th</sup> and 8<sup>th</sup> grade adequately address their TEKS, the 7<sup>th</sup> grade TEKS do not show continuity to adequately address the TEKS. If 7<sup>th</sup> grade were Life Science based, there would be more continuity but as it stands the TEKS would need to be restructured if the current mode if integrated science is to be covered adequately.
- 4. Do the standards adequately address the broader concepts that cross various science disciplines (e.g., systems and system models, energy and matter, stability and change)?
  - a. Yes the standards adequately address the broader concepts. 7<sup>th</sup> grade is a primary area for reflection and considerations.
- 5. Are there topics that should be eliminated because they no longer reflect current research or practices within the field? If so, please identify.
  - a. The topics in K-8 still reflect current research. There are some TEKS that seem to come out of nowhere....5.6.C- how light travels, 5.9.D- fossils, 6.7A- Earth's Energy Resources (energy sources/alt energy),; 7.8.B Texas Ecoregions; 7.9.B accommodations that allow for space exploration. There are little to no connection to other grade levels.
- 6. Are the TEKS vertically aligned so that concepts are introduced, elaborated on, and refined across multiple grade levels and students will possess the necessary knowledge and skills to be successful in later grades?
  - a. All suggestions to improve vertical alignment or developmental appropriateness are included in the chart above.
- 7. Do the high school courses sufficiently prepare students for postsecondary success?
- 8. The current K–5 science TEKS <u>encourage</u> districts to devote the percentage of instructional time to classroom and outdoor investigations as follows: kindergarten and grade 1–80%, grades 2 & 3–60%, grades 4 & 5–50%. The secondary science TEKS <u>require</u> districts to devote at least 40% of instructional time to laboratory and field investigations.

Are these designations and percentages for instructional time appropriate? Do the current student expectations adequately support the instruction?

These are adequate. While districts may not meet these % every week, lowering the expectation could cause a domino effect of few classroom and outdoor investigations.

- 9. Are the student expectations clear and specific? If not, please give examples of how the language might be improved.
  - Any suggestions made to clarify language is included in the table above.
- 10. Are there student expectations that are not essential or unnecessarily duplicative and can be eliminated? If so, please identify by grade level/course and student expectation number.