Grade 5 Science Instructional Materials Scoring Rubric

Gateway: The publisher must provide a Tennessee standards alignment guide as a part of the scope and sequence for the material. If this gateway is not met, the materials will not be scored. All Tennessee standards must be addressed within the material. If this is not met, the material will not pass review by the Tennessee Textbook and Instructional Materials Quality Commission.

Introduction:

The following Instructional Materials Scoring Rubric for Science is designed to score materials in the following categories:

- Instructional Focus
- Attending to Multiple Dimensions of Science Instruction
- Accessibility Features
- Alignment of Content

Scoring:

Each section is to be scored using a 0, 1, or 2. Use the following scoring guideline.

Tables 1-2:

- Adhere to the provided rubric statements for scoring.

Tables 3-4:

- 0: The standard is not present within the material.
- 1: The standard is present within the material. The intent and/or frequency component of the standard is not fully met.
- 2: A rating of 2 indicates the standard is present and all aspects of the standard are fully met.

Table 1: Instructional Focus **Directions:** **Adhere to the provided rubric statements for scoring.**					
Indicator	**0**	**1**	**2**	**Score**	**Evidence**
Central Phenomenon	Unit has **no phenomenon, or only a "hook"** to capture student interest at the beginning of the unit.	All units include one or more **smaller phenomenon or design challenge(s) and/or not all lessons connect to the phenomenon** or design challenge.	All units have a central phenomenon or design challenge that **develops throughout every lesson** of the unit.		
Activity Purpose	Material contains hands-on activities **do not serve** to grade-level scientific ideas	Hands-on activities **reinforce** scientific ideas aligned with grade-level standards.	All hands-on activities serve to **uncover** scientific ideas aligned with grade level standards.		
Use of Science Engineering Practices (SEPs)	Some units **do not provide students opportunities** to use the SEPs.	SEPs are present in all units, but **loosely or not connected to central phenomenon**.	In every unit, the **primary use** of the SEPs ties directly to explaining the central phenomenon or solving the design challenge.		
Student Engagement	**Neither of the given features** are present.	**One of the given features** is present.	Materials give students opportunities to: • expressly connect the DCI content from each lesson to		

Table 1: Instructional Focus **Directions:** **Adhere to the provided rubric statements for scoring.**					
			relevant crosscutting concepts. • practice with the SEP that is relevant to that day's lesson.		
Concepts before vocabulary.	Materials **pre-teach vocabulary.**	In **some instances**, materials develop conceptual meaning first.	In **all instances**, materials provide experiences (e.g., investigations, data analysis, discussions) where students develop conceptual meaning of a scientific idea before introducing technical vocabulary.		
Connections across component ideas.	Materials **describe** connections for students, or connections are absent.	Some units include **standalone questions** in place of activities, where students communicate their understanding of connections between component ideas.	All units include **activities** where students communicate their understanding of connections between science ideas from *two or more component ideas* within the grade (e.g., LS1.A and LS2.C, ESS2.A and PS1.A).		
Connections across disciplines.	Materials **describe** connections for students,	Some units include **standalone questions** in place of activities, where	All units include activities where students communicate their		

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	or connections are absent.	students communicate their understanding of connections between component ideas.	understanding of connections between science ideas from *two or more disciplines* within the grade (e.g., LS and PS).		
Review opportunities	End of unit review is **not anchored to a phenomenon**.	End of unit review assesses learning of the **central phenomenon for the unit** only.	Materials provide opportunities for students to transfer new learning to **analogous phenomenon** in a review at the end of every unit.		
				Total	

Table 2: Attending to Multiple Dimensions of Science Learning **Directions:** **Adhere to the provided rubric statements for scoring.**					
Indicator	**0**	**1**	**2**	**Score**	**Evidence**
Distribution of SEPs as required by the standards	Materials **do not include** a focal SEP for one or more units.	One or more SEPs are **disproportionately** featured as the focal SEP.	Materials identify one or more focal science and engineering practices (SEPs) for every unit(s) with a **balanced** distribution of all SEPs as a focal SEP throughout the units.		

Table 2: Attending to Multiple Dimensions of Science Learning **Directions:** **Adhere to the provided rubric statements for scoring.**					
Support for a focal SEP	**No** student facing or teacher facing supports for the SEPs.	Relevant **support strategies are absent** from teacher materials.	Every unit contains a focal SEP is featured in **student-facing materials and teacher materials** including instructional strategies for the particular unit and focal SEP.		
Connections across to crosscutting concepts as required by the standards.	Materials **describe connections with CCCs** or do not specifically address CCCs.	In every unit students make connection between the CCCs and **either** the SEPs or DCIs.	In every unit, students make connections between the crosscutting concepts (CCCs) and **both** the SEPs and disciplinary core ideas (DCIs).		
Developing crosscutting concepts (CCCs)	Materials **provide examples** of other instances of the CCCs or CCCs absent.	Students make connections between CCCs and **content not addressed in other units.**	In every unit, the materials lead students to **make connections between the CCCs in that unit and appearances of the CCCs in other units**.		
				Total	

Table 3: Accessibility Features				
Directions: • **0: The standard is not present within the material.** • **1: The standard is present within the material. The intent and/or frequency component of the standard is not fully met.** • **2: A rating of 2 indicates the standard is present and all aspects of the standard are fully met.**				
Digital Materials	**0**	**1**	**2**	**Evidence**
All lessons within the materials are available in digital form and include a printable option.				
In every lesson, materials include recommended supports, accommodations, and modifications for Students with Disabilities and English language learners that will support their regular and active participation in accessing on grade level material (e.g., modifying vocabulary words within word problems, sentence starters, etc.).				
			Total	

Table 4: Alignment of Content				
Directions: • **0: The standard is not present within the material.** • **1: The standard is present within the material. The intent and/or frequency component of the standard is not fully met.** • **2: A rating of 2 indicates the standard is present and all aspects of the standard are fully met.**				
Conceptual Understanding: The materials support the intentional development of students' conceptual understanding of key science ideas, practice, and concepts.	**0**	**1**	**2**	**Evidence**
5.PS1.1 Analyze and interpret data from observations and measurements of the physical properties of matter to explain phase changes between a solid, liquid, or gas.				
5.PS1.2 Analyze and interpret data to show that the amount of matter is conserved even when it changes form, including transitions where matter seems to vanish.				

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5.PS1.3 Construct an argument using the physical properties of matter that combining substances may or may not result in a new substance.				
5.PS2.1 Plan and carry out an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of the object.				
5.PS2.2 Make observations and measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.				
5.PS2.3 Use evidence to support that the gravitational force exerted by Earth on objects is directed toward the Earth's center.				
5.PS2.4 Explain how forces can create patterns within a system (moving in one direction, shifting back and forth, or moving in cycles), and describe conditions that affect how fast or slowly these patterns occur.				
5.LS1.1 Compare and contrast animal responses that are instinctual versus those that are learned by gathering information through the senses, which is then processed in the brain and stored as memories to guide their actions.				
5.LS3.1 Distinguish between inherited characteristics and those characteristics that result from a direct interaction with the environment. Apply this concept by giving examples of characteristics of living organisms that are influenced by both inheritance and the environment.				
5.LS3.2 Provide evidence and analyze data that plants and animals have traits inherited from parents and that variations of these traits exist in a group of similar organisms.				

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5.LS4.1 Use evidence to construct an explanation for how variations in characteristics among individuals within the same species may provide advantages to these individuals in their survival and reproduction.				
5.ESS1.1 Explain that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from the Earth.				
5.ESS1.2 Research and explain the position of the Earth and the solar system within the Milky Way galaxy, and compare the size and shape of the Milky Way to other galaxies in the universe.				
5.ESS1.3 Use a model to explain how the orbit of the Earth and sun cause observable patterns: a. day and night; b. changes in length and direction of shadows over a day.				
5.ESS1.4 Explain the cause and effect relationship between the positions of the sun, earth, and moon and resulting eclipses, tides, and appearance of the moon.				
5.ESS1.5 Relate the tilt of the Earth's axis, as it revolves around the sun, to the varying intensities of sunlight at different latitudes. Evaluate how this causes changes in day-lengths and seasons.				
5.ESS1.6 Use tools to describe the position of constellations and how they appear to move from the Earth's perspective throughout the seasons.				
5.ETS1.1 Plan and carry out tests on one or more elements of a prototype in which variables are controlled and failure points are considered to identify which elements need to be improved. Apply the results of tests to redesign the prototype.				

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5.ETS2.1 Use appropriate tools to make measurements and answer testable questions.				
Total				