**STEMscopes Virginia-Grade 6**

Overall Rating of Standards

| **Standard** | **Determined Rating** |
| --- | --- |
| 6.1 The student will demonstrate an understanding of the scientific and engineering practices. | This standard was evaluated in the context of the content standards. |
| 6.2 The student will investigate and understand that the solar system is organized and the various bodies in the solar system interact. | Adequate |
| 6.3 The student will investigate and understand that there is a relationship between the sun, Earth, and the moon. | Adequate |
| 6.4 The student will investigate and understand that there are basic sources of energy and that energy can be transformed. | Adequate |
| 6.5 The student will investigate and understand that all matter is composed of atoms. | Adequate |
| 6.6 The student will investigate and understand that water has unique physical properties and has a role in the natural and human-made environment. | Adequate |
| 6.7 The student will investigate and understand that air has properties and that Earth’s atmosphere has structure and is dynamic. | Adequate |
| 6.8 The student will investigate and understand that land and water have roles in watershed systems. | Adequate |
| 6.9 The student will investigate and understand that humans impact the environment and individuals can influence public policy decisions related to energy and the environment. | Adequate |

Overall Rating for Instructional Design and Support

| **Instructional Design and Support** | **Determine Rating** |
| --- | --- |
| Materials emphasize the use of effective instructional practices and learning theory. | Adequate |
| The science content is significant and accurate. | Adequate |
| Materials present content in an accurate, unbiased manner. | Adequate |

Review of Standards with Curriculum Framework

| Standard | Expectation |
| --- | --- |
| 6.1 The student will demonstrate an understanding of the scientific and engineering practices by:1. asking questions and defining problems
2. planning and carrying out investigations
3. interpreting, analyzing, and evaluating data
4. constructing and critiquing conclusions and explanations
5. developing and using models
6. obtaining, evaluating, and communicating information.
 | The expectation of the 2018 *Science Standards of Learning* is that the scientific and engineering practices are embedded into the instruction of content standards.  The rating for an individual standard includes the evaluation of standard 1 as it pertained to that standard.  For specific grade level/course expectations for standard 1, see the Standards of Learning and the Curriculum Framework.  |

| Standard | Adequate | Limited | No Evidence |
| --- | --- | --- | --- |
| 6.2 The student will investigate and understand that the solar system is organized and the various bodies in the solar system interact. Key ideas include |  |  |  |
| 1. matter is distributed throughout the solar system;
 | X |  |  |
| 1. planets have different sizes and orbit at different distances from the sun;
 | X |  |  |
| 1. gravity contributes to orbital motion; and
 |  | X |  |
| 1. the understanding of the solar system has developed over time.
 | X |  |  |

| Standard | Adequate | Limited | No Evidence |
| --- | --- | --- | --- |
| 6.3 The student will investigate and understand that there is a relationship between the sun, Earth, and the moon. Key ideas include |  |  |  |
| 1. Earth has unique properties;
 | X |  |  |
| 1. the rotation of Earth in relationship to the sun causes day and night;
 | X |  |  |
| 1. the movement of Earth and the moon in relationship to the sun causes phases of the moon;
 | X |  |  |
| 1. Earth’s tilt as it revolves around the sun causes the seasons; and
 | X |  |  |
| 1. the relationship between Earth and the moon is the primary cause of tides.
 | X |  |  |

| Standard | Adequate | Limited | No Evidence |
| --- | --- | --- | --- |
| 6.4 The student will investigate and understand that there are basic sources of energy and that energy can be transformed. Key ideas include |  |  |  |
| 1. the sun is important in the formation of most energy sources on Earth;
 | X |  |  |
| 1. Earth’s energy budget relates to living systems and Earth’s processes;
 | X |  |  |
| 1. radiation, conduction, and convection distribute energy; and
 | X |  |  |
| 1. energy transformations are important in energy usage.
 | X |  |  |

| Standard | Adequate | Limited | No Evidence |
| --- | --- | --- | --- |
| 6.5 The student will investigate and understand that all matter is composed of atoms. Key ideas include |  |  |  |
| 1. atoms consist of particles, including electrons, protons, and neutrons;
 | X |  |  |
| 1. atoms of a particular element are similar but differ from atoms of other elements;
 | X |  |  |
| 1. elements may be represented by chemical symbols;
 | X |  |  |
| 1. two or more atoms interact to form new substances, which are held together by electrical forces (bonds);
 | X |  |  |
| 1. compounds may be represented by chemical formulas;
 | X |  |  |
| 1. chemical equations can be used to model chemical changes; and
 | X |  |  |
| 1. a few elements comprise the largest portion of the solid Earth, living matter, the oceans, and the atmosphere.
 | X |  |  |

| Standard | Adequate | Limited | No Evidence |
| --- | --- | --- | --- |
| 6.6 The student will investigate and understand that water has unique physical properties and has a role in the natural and human-made environment. Key ideas include |  |  |  |
| 1. water is referred to as the universal solvent;
 | X |  |  |
| 1. water has specific properties;
 | X |  |  |
| 1. thermal energy has a role in phase changes;
 | X |  |  |
| 1. water has a role in weathering;
 | X |  |  |
| 1. large bodies of water moderate climate; and
 | X |  |  |
| 1. water is important for agriculture, power generation, and public health.
 | X |  |  |

| Standard | Adequate | Limited | No Evidence |
| --- | --- | --- | --- |
| 6.7 The student will investigate and understand that air has properties and that Earth’s atmosphere has structure and is dynamic. Key ideas include |  |  |  |
| 1. air is a mixture of gaseous elements and compounds;
 | X |  |  |
| 1. the atmosphere has physical characteristics;
 | X |  |  |
| 1. properties of the atmosphere change with altitude;
 | X |  |  |
| 1. there is a relationship between air movement, thermal energy, and weather conditions;
 | X |  |  |
| 1. atmospheric measures are used to predict weather conditions; and
 | X |  |  |
| 1. weather maps give basic information about fronts, systems, and weather measurements.
 | X |  |  |

| Standard | Adequate | Limited | No Evidence |
| --- | --- | --- | --- |
| 6.8 The student will investigate and understand that land and water have roles in watershed systems. Key ideas include |  |  |  |
| 1. a watershed is composed of the land that drains into a body of water;
 | X |  |  |
| 1. Virginia is composed of multiple watershed systems which have specific features;
 | X |  |  |
| 1. the Chesapeake Bay is an estuary that has many important functions; and
 | X |  |  |
| 1. natural processes, human activities, and biotic and abiotic factors influence the health of a watershed system.
 | X |  |  |

| Standard | Adequate | Limited | No Evidence |
| --- | --- | --- | --- |
| 6.9 The student will investigate and understand that humans impact the environment and individuals can influence public policy decisions related to energy and the environment. Key ideas include |  |  |  |
| 1. natural resources are important to protect and maintain;
 | X |  |  |
| 1. renewable and nonrenewable resources can be managed;
 | X |  |  |
| 1. major health and safety issues are associated with air and water quality;
 | X |  |  |
| 1. major health and safety issues are related to different forms of energy;
 | X |  |  |
| 1. preventive measures can protect land-use and reduce environmental hazards; and
 | X |  |  |
| 1. there are cost/benefit tradeoffs in conservation policies.
 | X |  |  |

Rubric for Instructional Design and Support

|  |  |  |
| --- | --- | --- |
| **Adequate** | **Limited** | **No Evidence** |
| 1. Materials emphasize the use of effective instructional practices and learning theory.
 |
| * 1. Students are guided through critical thinking and problem-solving approaches.
 |
| Materials consistently include content promoting use of critical thinking and problem-solving approaches. | Materials inconsistently include content promoting use of critical thinking and problem-solving approaches. | Materials do not include content promoting use of critical thinking and problem-solving approaches. |
| * 1. Concepts are introduced through concrete experiences that incorporate the scientific and engineering practices.
 |
| Materials consistently promote the introduction of concepts through concrete experiences. | Materials inconsistently promote the introduction of concepts through concrete experiences. | Materials do not promote the introduction of concepts through concrete experiences. |
| * 1. Multiple opportunities are provided for students to develop and apply concepts through scientific and engineering practices.
 |
| Materials consistently provide development and application of concepts through appropriate technologies. | Materials inconsistently provide development and application of concepts through appropriate technologies. | Materials do not provide development and application of concepts through appropriate technologies. |
| * 1. Students use a variety of representations (graphical, numerical, symbolic, verbal, and physical) to connect science concepts.
 |
| Materials provide consistent use of a variety of representations of science content and concepts.  | Materials provide inconsistent use of a variety of representations of science content and concepts. | Materials do not provide use of a variety of representations of science content and concepts. |
| 1. The science content is significant and accurate.
 |
| * 1. Materials are presented in an organized, logical manner which represents the current thinking on how students learn science.
 |
| Materials consistently support the balanced use of conceptual and procedural approaches. | Materials inconsistently support the balanced use of conceptual and procedural approaches. | Materials do not support a balanced use of conceptual and procedural approaches. |
| * 1. Materials are organized appropriately within and among units of study.
 |
| Materials are consistently organized within and among units of study.  | Materials are inconsistently organized within and among units of study. | Materials are inappropriately organized within and among units of study. |
| * 1. Format design includes titles, subheadings, and appropriate cross-referencing for ease of use.
 |
| Materials consistently use formatting that is user-friendly. | Materials inconsistently use formatting that is user-friendly. | Materials do not use formatting that is user-friendly. |
| * 1. Writing style, length of sentences, vocabulary, graphics, and illustrations are appropriate.
 |
| Materials consistently include writing and visuals that are appropriate for the grade level. | Materials inconsistently include writing and visuals that are appropriate for the grade level. | Materials do not include writing and visuals that are appropriate for the grade level. |
| * 1. Level of abstraction is appropriate, and practical/real-life examples, including careers, are provided.
 |
| Materials consistently provide the appropriate level of abstraction and appropriate practical/real-life examples.  | Materials inconsistently provide the appropriate level of abstraction and appropriate practical/real-life examples. | Materials do not provide the appropriate level of abstraction and appropriate practical/real-life examples. |
| * 1. Sufficient applications are provided to promote depth of application.
 |
| Materials consistently provide sufficient applications to promote depth of application and are appropriate for the grade level. | Materials inconsistently provide sufficient applications to promote depth of application and are appropriate for the grade level. | Materials do not provide sufficient applications to promote depth of application and are not appropriate for the grade level. |
| 1. Materials present content in an accurate, unbiased manner.
 |
| Materials consistently present content in an accurate, unbiased manner. | Materials inconsistently present content in an accurate, unbiased manner. | Materials do not present content in an accurate, unbiased manner. |