**STEMscopes Virginia-Grade Four**

Overall Rating of Standards

| **Standard** | **Determined Rating** |
| --- | --- |
| 4.1 The student will demonstrate an understanding of the scientific and engineering practices. | This standard was evaluated in the context of the content standards. |
| 4.2 The student will investigate and understand that plants and animals have structures that distinguish them from one another and play vital roles in their ability to survive. | Adequate |
| 4.3 The student will investigate and understand that organisms, including humans, interact with one another and with the nonliving components in the ecosystem. | Adequate |
| 4.4 The student will investigate and understand that weather conditions and phenomena affect ecosystems and can be predicted. | Adequate |
| 4.5 The student will investigate and understand that the planets have characteristics and a specific place in the solar system. | Adequate |
| 4.6 The student will investigate and understand that there are relationships among Earth, the moon, and the sun. | Adequate |
| 4.7 The student will investigate and understand that the ocean environment has characteristics.. | Adequate |
| 4.8 The student will investigate and understand that Virginia has important natural resources. | Adequate |

Overall Rating for Instructional Design and Support

| **Instructional Design and Support** | **Determined 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 |
| --- | --- |
| 4.1 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 |
| --- | --- | --- | --- |
| 4.2 The student will investigate and understand that plants and animals have structures that distinguish them from one another and play vital roles in their ability to survive. Key ideas include |  |  |  |
| 1. the survival of plants and animals depends on photosynthesis;
 | X |  |  |
| 1. plants and animals have different structures and processes for obtaining energy; and
 | X |  |  |
| 1. plants and animals have different structures and processes for creating offspring.
 | X |  |  |

| Standard | Adequate | Limited | No Evidence |
| --- | --- | --- | --- |
| 4.3 The student will investigate and understand that organisms, including humans, interact with one another and with the nonliving components in the ecosystem. Key ideas include |  |  |  |
| 1. interrelationships exist in populations, communities, and ecosystems;
 | X |  |  |
| 1. food webs show the flow of energy within an ecosystem;
 | X |  |  |
| 1. changes in an organism’s niche and habitat may occur at various stages in its life cycle; and
 | X |  |  |
| 1. classification can be used to identify organisms.
 | X |  |  |

| Standard | Adequate | Limited | No Evidence |
| --- | --- | --- | --- |
| 4.4 The student will investigate and understand that weather conditions and phenomena affect ecosystems and can be predicted. Key ideas include |  |  |  |
| 1. weather measurements create a record that can be used to make weather predictions;
 | X |  |  |
| 1. common and extreme weather events affect ecosystems; and
 | X |  |  |
| 1. long term seasonal weather trends determine the climate of a region.
 | X |  |  |

| Standard | Adequate | Limited | No Evidence |
| --- | --- | --- | --- |
| 4.5 The student will investigate and understand that the planets have characteristics and a specific place in the solar system. Key ideas include |  |  |  |
| 1. planets rotate on their axes and revolve around the sun;
 | X |  |  |
| 1. planets have characteristics and a specific order in the solar system; and
 | X |  |  |
| 1. the sizes of the sun and planets can be compared to one another.
 | X |  |  |

| Standard | Adequate | Limited | No Evidence |
| --- | --- | --- | --- |
| 4.6 The student will investigate and understand that there are relationships among Earth, the moon, and the sun. Key relationships include |  |  |  |
| 1. the motions of Earth, the moon, and the sun;
 | X |  |  |
| 1. the causes for Earth’s seasons;
 | X |  |  |
| 1. the causes for the four major phases of the moon and the relationship to the tide cycles; and
 | X |  |  |
| 1. the relative size, position, age and makeup of Earth, the moon, and the sun.
 | X |  |  |

| Standard | Adequate | Limited | No Evidence |
| --- | --- | --- | --- |
| 4.7 The student will investigate and understand that the ocean environment has characteristics. Key characteristics include |  |  |  |
| 1. geology of the ocean floor;
 | X |  |  |
| 1. physical properties and movement of ocean water; and
 | X |  |  |
| 1. interaction of organisms in the ocean.
 | X |  |  |

| Standard | Adequate | Limited | No Evidence |
| --- | --- | --- | --- |
| 4.8 The student will investigate and understand that Virginia has important natural resources. Key resources include |  |  |  |
| 1. watersheds and water;
 | X |  |  |
| 1. plants and animals;
 | X |  |  |
| 1. minerals, rocks, and ores; and
 | X |  |  |
| 1. forests, soil, and land.
 | 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. |