

NextGen TIME PRESCREEN TOOL

STEMscopes CA NGSS 3D

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Use Phenomena/Problems.

Materials provide relevant and authentic learning contexts through which students:

- engage as directly as possible with phenomena or problems to ask and answer their questions, as well as questions from other sources.
- have the potential to use the three dimensions to make sense of phenomena or design solutions to problems to the extent possible when reviewing a limited portion of the instructional materials.

SUMMARY DESCRIPTION

STEMscopes CA NGSS 3D organizes learning activities into 5E “scopes” (lessons) that are wrapped into a coherent storyline (segment). At each level, students have access to various scaffolded phenomena—daily, investigative, and anchoring phenomena. Daily phenomena are explored in hands-on investigations, problem-based learning activities, data literacy simulations, engineering design challenges, and more. Each daily phenomenon uses three-dimensional tasks and questions to help students understand the nature of these phenomena through the lens of the CCCs, DCIs, and SEPs. The daily phenomena inform the understanding of the investigative phenomenon that spans each 5E scope and culminates with a three-dimensional claim-evidence-reasoning assessment wherein students respond to the investigative phenomenon. Students apply the 3D learning gleaned from each investigative phenomenon to design a solution for the segment’s Action Plan—a real-world problem-based learning challenge centered on the anchoring phenomenon—and successfully complete the CAST-based digital assessment (3D Interactive Assessment). Each segment will take 5 to 7 weeks to complete and each scope can take 1 to 2 weeks.

Note: please use the URL we provided to see all of the elements. The STEMscopedia (informational text for each PE) and Student Journals (Graphic Organizers and Lab Journals) are provided for ease of use and for classes with limited technology. These print products are supplemental, and not intended to be compared to other providers’ textbooks.

Items to Look At...	What to Observe...
<ul style="list-style-type: none"> I. Daily phenomenon (see: Explore, within a scope) II. Investigative Phenomenon (see: Student Wondering of Phenomena in Home, within a scope) <ul style="list-style-type: none"> a. Investigative Phenomenon activity (see: Engage, within a scope) b. CER (see: Evaluate, within a scope) III. Anchoring phenomenon (see: Segments tab in top navigation bar) <ul style="list-style-type: none"> a. Action Plan / Mission Log (see: Teacher guide, within a segment) b. 3D Interactive Assessment (see: Assessment, within a segment) IV. Embedded three-dimensional supports (see: scope facilitation points in Explore, within a scope) 	<ul style="list-style-type: none"> I. Each Explore is a daily phenomenon hands-on activity; use these to support inquiry, student understanding of the investigative phenomenon, and 3D understanding. II. Bridges the 3D learning of each scope and culminates with the CER assessment. III. Create context for the coherent storyline (segment)—each investigative phenomenon supports students’ ability to design a solution to the anchoring phenomenon; students can test their 3D understanding across the entire segment with the 3D Interactive Assessment, as a way to prepare for the CAST. IV. Included throughout scope lesson activities, these callouts denote use of each of the three dimensions.

Presence of Logical Sequence.

Student learning across the 3 dimensions is:

- arranged in a logical sequence
- sufficient and appropriate for students to figure out the phenomena or problems to the extent possible when reviewing a limited portion of the instructional materials.

SUMMARY DESCRIPTION

STEMscopes CA NGSS 3D is layered into two nested logical sequences: segments and scopes. Scopes are modular, 5E lessons (plus intervention and acceleration) designed to build students' understanding of an investigative phenomenon through scaffolded instruction. Transitioning from teacher-led guided inquiry to student-led exploration and context-building, each scope contains over 25 resources. Scope activities build upon one another with increasing rigor and complexity. Segments are overarching coherent storylines that contain multiple scopes and challenge students to design a solution to a real-world problem centered on an anchoring phenomenon. Teachers and schools can easily implement a logical instructional sequence by mapping segments and their constituent scopes to the instructional calendar and scopes activities to daily teaching goals; pacing support is provided both within scope activities and STEMscopes CA NGSS 3D training.

Items to Look At...

- I. Segments (see: Segments tab in top navigation bar)
- II. Scopes (see: scopes listed in each segment's Home)

What to Observe...

- I. Segments contain a Mission Log that students return to as their 3D understanding grows over the course of the segment's 5E lessons (scopes). Once the Mission Log is complete, students can tackle the Action Plan to design a solution to the anchoring phenomenon. They then progress to the next segment after the Action Plan is complete.
- II. Scopes provide a logical sequence using the 5E lesson model. Each scope's elements—Engage, Explore, Explain, Elaborate, Evaluate—are designed to be completed sequentially. Teachers should use all Engage and Explore elements in order then select particular Explain, Elaborate, and Evaluate elements based on student needs and three-dimensional understanding.

Students are Figuring Out.

Materials position students to make sense of phenomena and design solutions to problems (to the extent possible when reviewing a limited portion of the instructional materials) by:

- asking and answering questions that link learning over time
- using the three dimensions to link prior knowledge and negotiate new understandings and abilities

SUMMARY DESCRIPTION

STEMscopes CA NGSS 3D is based on constructivism and inquiry-based learning pedagogy. Students are introduced to phenomena and then question them through Engage and Explore activities within each scope. Each scope's Explore contains 2-5 hands-on activities that scaffold students' understanding and use of the investigative phenomenon by introducing daily phenomena and eliciting use of their prior knowledge. Through these investigations, students build a three-dimensional understanding of the nature of the investigative phenomenon that allows them to comprehend the overarching anchoring phenomenon of the segment.

1. **Activity:** students complete a rigorous, hands-on activity. Teachers will highlight how students interact with daily phenomena that relate the investigative or anchoring phenomena to personally experienced situations.
2. **Scientific Investigation:** students investigate a Question of Inquiry using the scientific method. Teachers will highlight how students interact with everyday phenomena that relate the investigative or anchoring phenomena to personally experienced situations.
3. **Inquiry Investigation:** students form their own questions that can be answered through investigation. Teachers will highlight how students interact with everyday phenomena that relate the investigative or anchoring phenomena to personally experienced situations.
4. **Engineering Solution:** students design, test, and build solutions to engineering problems based on given criteria and challenges.
5. **Research:** students gather, read, and synthesize information from multiple appropriate sources.
6. **TUVA:** a task in which students analyze and interpret relevant data from real-world phenomena collected around the world.

Using the Graphic Organizer, Student Journal, and Mission Log, students amass their three-dimensional understanding over time in order to design a solution to the real-world problem posed by the anchoring phenomenon in the Action Plan of the segment.

Items to Look At...

- I. Engage lesson activities (see: Engage, within a scope)
- II. Explore lesson activities (see: Explore, within a scope)
- III. CCC and SEP Rubric (see: Home, within a scope), CCC and SEP Inventory of Skills (see: Segment Home page), and CCC and SEP Year Long Inventory of Skills (see: Teacher Toolbox 3D Supports)
- IV. Student Journal (see: Explore, within a scope)
- V. Mission Log (see: Teacher Guide, within a segment)
- VI. Action Plan (see: Teacher Guide, within a segment)
- VII. Investigate Phenomena Table (see: Engage inside a scope)

What to Observe...

- I. Introduce the investigative phenomenon and spark student inquiry, debate, and scientific argumentation.
- II. Explore the nature of the investigative phenomenon through scaffolded hands-on activities centered on daily phenomena.
- III. Provides a rubric for the teacher when the students do a SEP and CCC within a scope, and a place to track and communicate student learning as they progress throughout the year.
- IV. Supports data collection, questioning, and analysis of the daily phenomenon that students interact with in Explore.
- V. Collects three-dimensional understandings gleaned from the completion of each scope under a segment.
- VI. Application of the Mission Log to solve a real-world problem that rises from the anchoring phenomenon.
- VII. Students will use this anchor chart to show their learning progression throughout the scope.

Three-dimensional Performances.

Materials include assessments designed to:

- match the targeted learning goals; and,
- elicit evidence of students' use of the three dimensions to make sense of phenomena and/or to design solutions to problems to the extent possible when reviewing a limited portion of the instructional materials.

SUMMARY DESCRIPTION

STEMscopes CA NGSS 3D has three types of three-dimensional assessments—the 3D Interactive Assessment, Action Plan, and claim-evidence-reasoning assessment (CER). The learning goals of each segment are defined by the constituent scopes. Each scope has a three-dimensional alignment crosswalk that shows the PE(s) used in the scope as well as the relevant Evidence Statements, to show evidence of learning (the learning goals). The 3D Interactive Assessment is a CAST-style digital assessment that evaluates students' understanding of the three dimensions contained in each segment. The Action Plan is a problem-based performance where student design a solution to a real-world problem presented by the anchoring phenomenon, using their understanding of the three dimensions at the end of the all the segments' scopes. The CER is a scientific argumentation-based assessment that encourages students to critically analyze the investigative phenomenon and apply the three dimensions to a real-world scenario. Students should progressively complete CERs in each scope and the Action Plan in the segment in order to be ready for the 3D Interactive Assessment. Teachers will elicit evidence of learning the CCCs and SEPs along with the DCI by using the CCC and SEP rubrics in the Home section of the scope. Teachers can then capture their students' progress on the CCCs and SEPs in our Segment and Year Long Inventory of Skills documents. With this, teachers will be able to see evidence of learning and monitor students' progress throughout the year.

Items to Look At...

- I. Standards Alignment (see: Home section, within a scope)
- II. CER: (see: Evaluate section, within a scope)
- III. Action Plan (see: Teacher Guide, within a segment)
- IV. 3D Interactive Assessment (see: Assessment inside a segment)

What to Observe...

- I. Provides an overview of all the learning goals inside a scope.
- II. A scientific argumentation-based 3D assessment at the end of each scope.
- III. A real-world problem-based learning performance that addresses the anchoring phenomena and combines the 3D learning of all the segment's constituent scopes.
- IV. A CAST-style digital assessment that addresses the three-dimensional learning throughout the segment's scopes.