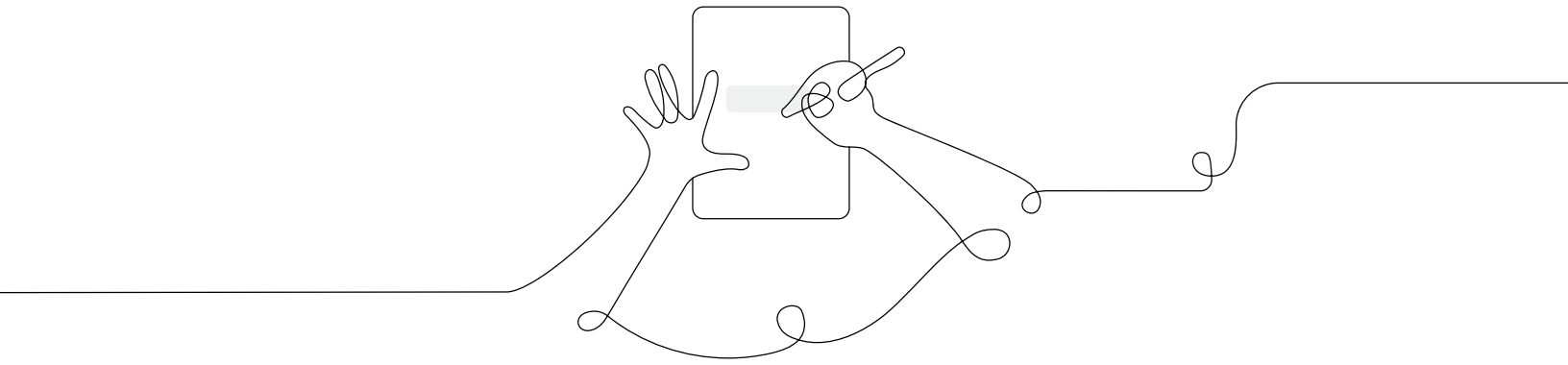
Amplify Science

Grades K-5

Administrators' Orientation

Participant Notebook



Welcome to the workshop

This Participant Notebook will serve as a resource during today's workshop.

Administrators' Orientation
Grades K–5

Amplify Science

Amplify Science:
K-5 Administrators' Orientation agenda

Introductions

Framing the day

- What is Amplify Science?

Experiencing Amplify Science

- Amplify Science approach
- Experience Grade 3: Balancing Forces
- Introduction to multi-modal instruction
- Progress Builds and assessments

Supporting the implementation of Amplify Science

- Common implementation reaction scenarios
- Getting started with Amplify Science K-5

Closing

- Next steps and contact information
- Feedback survey and farewells!

Demo account for your workshop:

URL: **learning.amplify.com** (Log in with Amplify)

Temporary account: **_____@tryamplify.net**

Password: **AmplifyNumber1**

Elementary school course curriculum structure

Grade K

- Needs of Plants and Animals
- Pushes and Pulls
- Sunlight and Weather

Grade 1

- Animal and Plant Defenses
- Light and Sound
- Spinning Earth

Grade 2

- Plant and Animal Relationships
- Properties of Materials
- Changing Landforms

Grade 3

- Balancing Forces
- Inheritance and Traits
- Environments and Survival
- Weather and Climate

Grade 4

- Energy Conversions
- Vision and Light
- Earth's Features
- Waves, Energy, and Information

Grade 5

- Patterns of Earth and Sky
- Modeling Matter
- The Earth System
- Ecosystem Restoration

AmplifyScience

authored by THE LAWRENCE HALL OF SCIENCE UNIVERSITY OF CALIFORNIA, BERKELEY

Three dimensions of NGSS reference

3-D learning engages students in using scientific and engineering practices and applying crosscutting concepts as tools to develop understanding of and solve challenging problems related to disciplinary core ideas.

Science and Engineering Practices

1. **Asking Questions and Defining Problems**
2. **Developing and Using Models**
3. **Planning and Carrying Out Investigations**
4. **Analyzing and Interpreting Data**
5. **Using Mathematics and Computational Thinking**
6. **Constructing Explanations and Designing Solutions**
7. **Engaging in Argument from Evidence**
8. **Obtaining, Evaluating, and Communicating Information**

Disciplinary Core Ideas

Earth and Space Sciences:
ESS1: Earth's Place in the Universe
ESS2: Earth's Systems
ESS3: Earth and Human Activity

Life Sciences:
LS1: From Molecules to Organisms
LS2: Ecosystems
LS3: Heredity
LS4: Biological Evolution

Physical Sciences:
PS1: Matter and its Interactions
PS2: Motion and Stability
PS3: Energy
PS4: Waves and their Applications

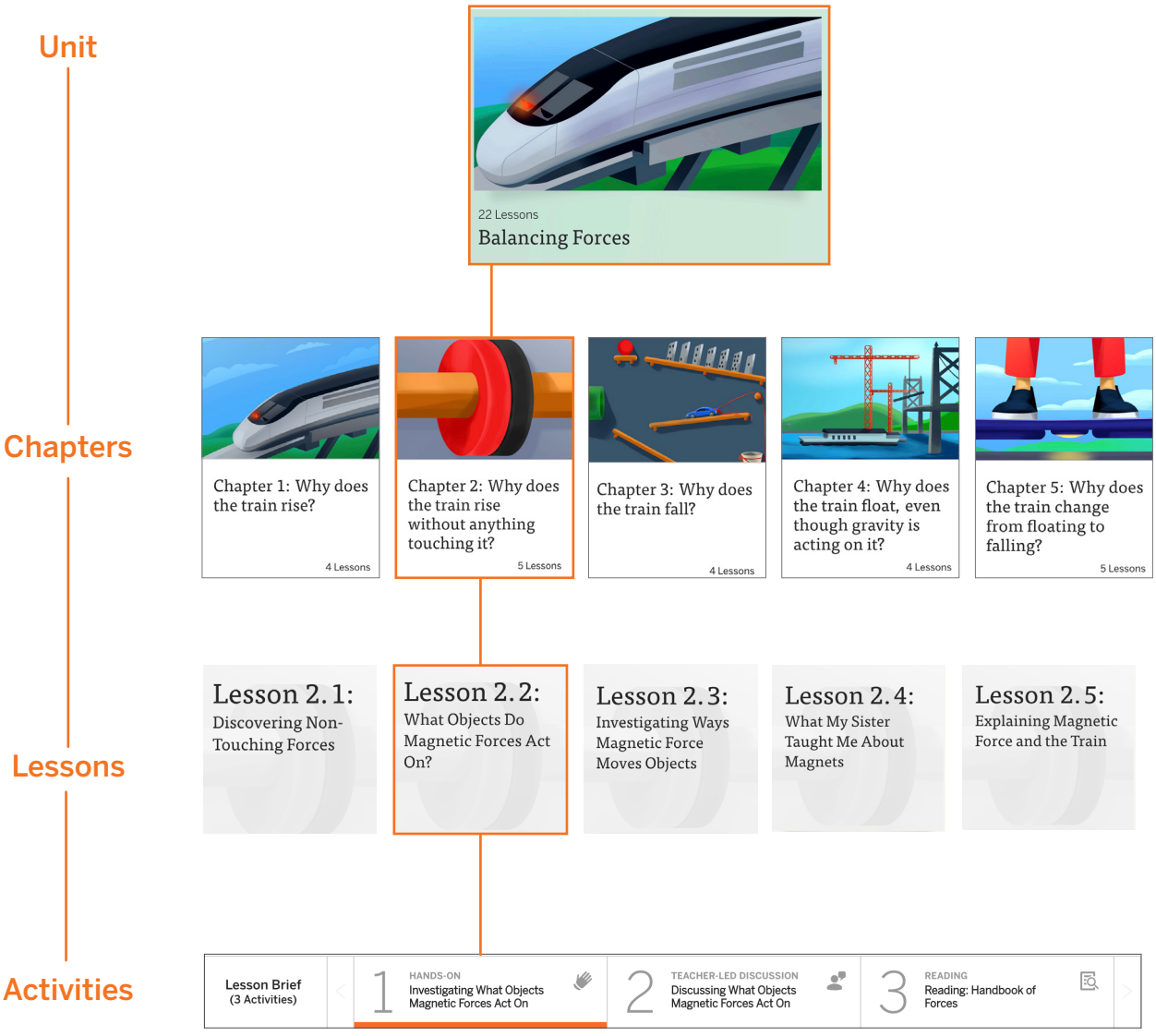
Engineering, Technology and the Applications of Science:
ETS1: Engineering Design
ETS2: Links among Engineering Technology, Science and Society

Crosscutting Concepts

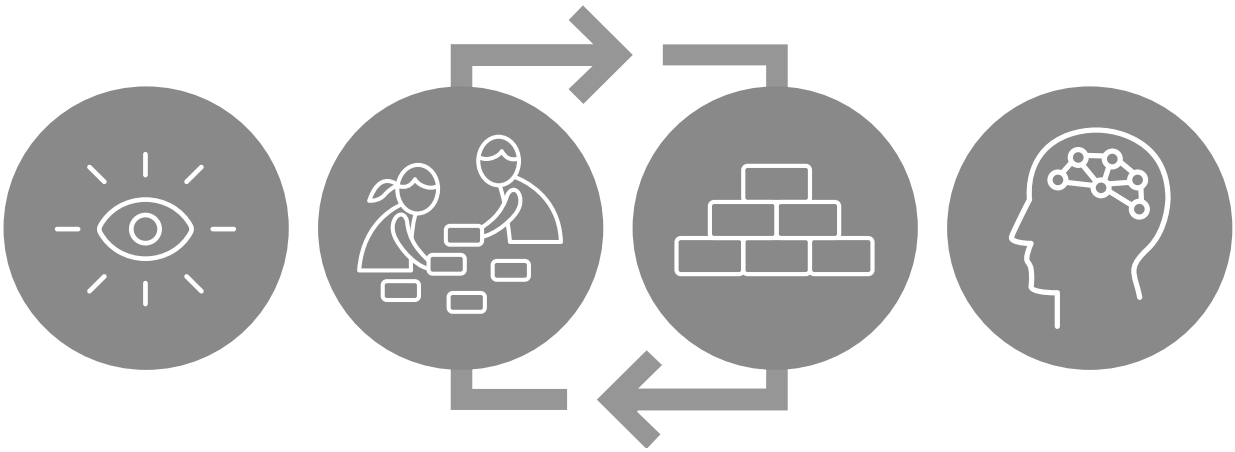
1. **Patterns**
2. **Cause and Effect**
3. **Scale, Proportion, and Quantity**
4. **Systems and System Models**
5. **Energy and Matter**
6. **Structure and Function**
7. **Stability and Change**

Balancing Forces unit structure

Each unit in the Amplify Science elementary curriculum is structured as a series of chapters. Each chapter contains lessons, and each lesson contains activities.



Amplify Science approach



What is the phenomenon or problem in the unit?	*Students gather evidence from multiple sources to lead them to science concepts, which they use to build increasingly complex explanations. How did you gather evidence from multiple sources to construct science concepts?*	*Students apply their knowledge to a different context.*
How does multimodal instruction support students in figuring out the solution to the unit problem?		

Unit Map

How is it possible for a train to float?

Students are challenged to figure out how a floating train works in order to explain it to the citizens of Faraday. People in Faraday are excited to hear that a new train service will be built for their city, but concerned when they hear that it will be a floating train. Students develop models of how the train rises, floats, and then falls back to the track, and then write an explanation of how the train works.

Chapter 1: Why does the train rise?

Students figure out: A train is a big object. Objects can start moving when they are pushed or pulled on by a second object. There must be some force acting between the train and another object to make the train rise.

How they figure it out: Students plan and carry out hands-on investigations and explore text as they seek explanations for why the train rises. They discover patterns in what can make an object change motion by starting to move or stopping. They write their first scientific explanation.

Chapter 2: Why does the train rise without anything touching it?

Students figure out: When the train starts moving as it rises off the track, it does so because of a non-touching force: magnetic force. The train rises because a repelling force acts between magnets on the tracks and magnets on the train.

How they figure it out: Students gather evidence to explain how the train could rise without anything touching it. They plan and conduct investigations that help them discover that magnets can exert forces at a distance. To find out how magnetic force can make objects move, they conduct more investigations, analyze data to find patterns, and gather evidence by reading. As they figure out what they think causes the train to rise, students write new explanations and create both physical models and diagram models that represent the magnetic forces at work.

Chapter 3: Why does the train fall?

Students figure out: When the train falls, it does so because a force is acting on it. Since a second object is not pushing or pulling the train, there must be a non-touching force at work. The train falls because of the force of gravity. We know that forces always act between two objects. The force of gravity is acting between the train and Earth. Earth attracts the train, and the train moves toward it.

How they figure it out: Students figure out what they think causes the train to fall. They make observations and pose questions about gravity and gather evidence from a reference book. They design chain reactions involving touching forces and non-touching forces: magnetic force and gravity. They analyze patterns in data from the chain reaction and make diagrams modeling the forces involved. Students apply what they learned about gravity to write scientific explanations for why the train falls.

Chapter 4: Why does the train float?

Students figure out: More than one force can be exerted on the train at a time. The force of gravity is pulling the train toward Earth, and magnetic force is pushing the train up away from the tracks. Those forces work in opposite directions so when the forces are balanced, the train floats and stays in the air.

How they figure it out: Students investigate why an object might not move even when a force is acting on it. Students gather evidence to support the claim that two forces can act on an object at once. They learn about balanced forces by planning and conducting investigations with a floating paper clip and by reading about an engineer who uses balanced forces to design stable bridges. They go on to create physical models and diagrams, then write scientific explanations to describe why the train floats.

Chapter 5: Why does the train change from floating to falling?

Students figure out: When the track's electromagnet is turned off, magnetic force is no longer exerted and the forces are no longer balanced. When gravity is the only acting force, the forces on the train become unbalanced, and the train falls.

How they figure it out: Students figure out why the train changes from floating to falling. Using the floating paper clip again, they plan and conduct investigations and use mathematical thinking to discover what can make forces not balanced anymore. They apply their developing understanding of balanced and unbalanced forces, and stability and change, to read about and engage in argumentation about a new invention: a hoverboard. They also gather evidence about electromagnets from a demonstration and a reference book. Students synthesize all they have learned to explain the forces that move the train to the citizens of Faraday. They create physical models as evidence of how the train could work and then create diagram models to show the role that forces play. Finally, they write scientific explanations to answer the question *Why does the train change from floating to falling?*

Balancing Forces

Connecting Progress Build levels to chapter explanations

Discuss the connection between the levels of the Progress Build and the explanations students construct in each chapter.

Progress Build level description	Explanation
(1) A force is a push or pull exerted on an object. When something starts or stops moving, that is evidence of a force. Forces always act between two objects.	**Chapter 1** The train rises because a force acts upon it. A force acts between two objects so there must be another object besides the train that this force acts between. **Chapter 2** The train rises without anything touching it because a magnetic force acts on it. I know this because the train starts moving without anything touching it, and that change is evidence of a force. Magnetic force is a non-touching force, and magnets can repel other magnets. There must be a magnet in the track repelling a magnet in the train. This is why the train can rise without anything touching it. **Chapter 3** The train falls because of the force of gravity. Gravity acts between the train and Earth and is a non-touching force. Earth pulls the object toward it with the force of gravity. **Chapter 4** The train floats because there are balanced forces acting on it. One force acting on the train is the repelling magnetic force between the track and the train. Another force acting on the train is an attracting force of gravity between the train and Earth. These forces are in opposite directions. They are balanced and the train floats. **Chapter 5** The train changes from floating to falling because forces that were balanced become unbalanced when the electromagnet turns off. The train floats when the magnet is turned on and the forces on the train are balanced. When the train is floating, there is gravity on it from Earth and magnetic force on it from the track, and they are the same strength. The forces are balanced, so the train doesn't move even though there are forces on it. The train starts to fall when the magnet is turned off and the magnetic force goes away. When the train is falling, the forces aren't balanced anymore because the magnetic force is gone and there is just gravity. Earth pulls the train down with the force of gravity and it falls.
(2) Forces can be touching or non-touching. Gravity is a non-touching force that acts between Earth and all other objects. Magnetic force is a non-touching force that acts between magnets and some other metal objects.	
(3) More than one force can act on an object at a time. If the forces are in opposite directions and of the same strength, the forces are balanced, and a nonmoving object will not start to move. If the forces are in opposite directions and are not of the same strength, the forces are unbalanced, and the object will move in the direction of the stronger force.	

Assessment System reference (grades K-1)

Assessment type	Description	Student experience	Teacher resources
Pre-Unit Assessment	Formative, 3-D performance assessment meant to gauge students' initial understanding and pre-conceptions about core ideas in the unit	• Full-class teacher-led discussion, supported by visual cues	• Assessment Guide (available in Digital Resources)
End-of-Unit Assessment	Summative, 3-D performance assessment to evaluate students' understanding of core ideas in the Progress Build	• Full-class teacher-led discussion, supported by visual cues	• Rubric and Possible Responses in Assessment Guide (available in Digital Resources)
Critical Juncture Assessments	Embedded formative assessments for assessing students' progress along the Progress Build	• Activities are embedded into existing instructional activities leveraged for assessment opportunities – often student-to-student discussions, investigations, or modeling activities	• Full text of assessment includes "Assess Understanding" section and "Tailor Instruction" suggestions accessible in Instructional Guide by clicking the hummingbird icon • All Critical Juncture Assessments are included in Reference: Embedded Formative Assessments (available in the Unit Guide) • Clipboard Assessment Tool includes tailored sets of questions and the specific activities that present an opportunity to ask those questions. Also included is space to write notes about students' ideas. • Augmenting Instruction notes (accessible in Teacher Support tab) provide additional suggestions for supplemental instruction at the class, group, and student level
On-the-Fly Assessments	Embedded formative assessments for noting students' progress with one or more of the following: science disciplinary core ideas, science and engineering practices, crosscutting concepts, sense-making strategies, and collaborative science work	• Activities are embedded into existing instructional activities, leveraged for assessment opportunities. Artifacts can include full-class or student-to-student discussion, kinesthetic activities, notebook pages, etc.	• Full text of assessment includes what to "Look for" and "Now What?" instructional suggestions accessible in Instructional Guide by clicking the hummingbird icon • All On-the-Fly Assessments are included in Reference: Embedded Formative Assessments (available in the Unit Guide) • Clipboard Assessment Tool includes tailored sets of questions and the specific activities that present an opportunity to ask those questions. Also included is space to write notes about students' ideas.

Assessment System reference (grades K-1) cont.

Assessment type	Description	Student experience	Teacher resources
Student Self-Assessments	Opportunity for students to reflect on whether they understand or don't yet understand the core concepts from the unit	• Reflection prompts through teacher-led discussion and partner talk • Provided at or near the end of each chapter	• Information about Student Self-Assessments in Reference: Assessment System (in Unit Overview) • Teacher Support Notes accessible in Instructional Guide by clicking the Teacher Support tab • Discussion prompts in the Instructional Guide
Investigation Assessments	Summative, 3-D performance assessment to evaluate students' performance of the science and engineering practices of Planning and Carrying Out Investigations and Analyzing and Interpreting Data, as well as their application of disciplinary core ideas and crosscutting concepts	• Prompts for planning investigation and recording results in the Investigation Notebook or a copymaster (available in Digital Resources). Additional support and spoken teacher prompts in K-1. • Physical materials for conducting investigation	• Rubrics and Possible Responses in Assessment Guide (available in Digital Resources) • Possible Responses also accessible in Instructional Guide by clicking the Possible Responses tab
Portfolio Assessments	Opportunity for students to compile and reflect on key work products collected at the end of each unit. Final portfolio compilation occurs at the end of the school year and allows students to select and reflect on work products which they feel best demonstrate their growth in understanding throughout the year	• Compilation of work products that show growth over the course of the year • Reflection on chosen work products • Rubrics for evaluating work products (available in Program Guide → *Assessments → Additional Assessment Resources*)	• Assessment Rubrics (available in Program Guide → *Assessments → Additional Assessment Resources*) • Guidance for communicating to parents about student progress (available in Program Guide → *Assessments → Additional Assessment Resources*)

Assessment System reference (grades 2-5)

Assessment type	Description	Student experience	Teacher resources
Pre-Unit Assessment	Formative, 3-D performance assessment meant to gauge students' initial understanding and pre-conceptions about core ideas in the unit	• Pre-Unit Writing copymaster (available in Digital Resources)	• Assessment Guide (available in Digital Resources)
End-of-Unit Assessment	Summative, 3-D performance assessment to evaluate students' understanding of core ideas in the Progress Build	• End-of-Unit Writing copymaster, Versions A and B (available in Digital Resources) • For select units, End-of-Unit Writing Part 2 (available in Digital Resources or the Investigation Notebook)	• Rubric and Possible Responses in Assessment Guide (available in Digital Resources)
Critical Juncture Assessments	Embedded formative assessments for assessing students' progress along the Progress Build	• Written task in the Investigation Notebook • For written explanation and argumentation-based tasks, scaffolded version of assessment provided as a copymaster (available in Digital Resources)	• Full text of assessment includes "Assess Understanding" section and "Tailor Instruction" suggestions accessible in Instructional Guide by clicking the hummingbird icon • All Critical Juncture Assessments are included in Reference: Embedded Formative Assessments (available in the Unit Guide) • Possible Responses accessible in Instructional Guide by clicking the Possible Responses tab • For written explanation and argumentation-based tasks, Rubrics and Possible Responses in Assessment Guide (available in Digital Resources)
On-the-Fly Assessments	Embedded formative assessments for noting students' progress with one or more of the following: science disciplinary core ideas, science and engineering practices, crosscutting concepts, sense-making strategies, and collaborative science work	• Activities are embedded into existing instructional activities, leveraged for assessment opportunities. Artifacts can include discussion, use of a digital tool, notebook pages, etc.	• Full text of assessment includes what to "Look for" and "Now What?" instructional suggestions accessible in Instructional Guide by clicking the hummingbird icon • All On-the-Fly Assessments are included in Reference: Embedded Formative Assessments (available in the Unit Guide)

Assessment System reference (grades 2-5) cont.

Assessment type	Description	Student experience	Teacher resources
Student Self-Assessments	Opportunity for students to reflect on whether they understand or don't yet understand the core concepts from the unit	• Reflection prompts in the Investigation Notebook • Provided at or near the end of each chapter	• Information about Student Self-Assessments in Reference: Assessment System (available in the Unit Guide) • Teacher Support notes accessible in Instructional Guide by clicking the Teacher Support tab
Investigation Assessments	Summative, 3-D performance assessment to evaluate students' performance of the science and engineering practices of Planning and Carrying Out Investigations and Analyzing and Interpreting Data, as well as their application of disciplinary core ideas and crosscutting concepts	• Prompts for planning investigation and recording results in the Investigation Notebook or a copymaster or copymaster (available in Digital Resources) • Materials (physical or digital) for conducting investigation	• Rubrics and Possible Responses in Assessment Guide (available in Digital Resources) • Possible Responses also accessible in Instructional Guide by clicking the Possible Responses tab
Portfolio Assessments	Opportunity for students to compile and reflect on key work products collected at the end of each unit. Final portfolio compilation occurs at the end of the school year and allows students to select and reflect on work products which they feel best demonstrate their growth in understanding throughout the year	• Compilation of work products (written explanations and/or arguments, models) that show growth over the course of the year • Reflection on chosen work products • Rubrics for evaluating work products (available in Program Guide → *Assessments* → *Additional Assessment Resources*)	• Assessment Rubrics (available in Program Guide → *Assessments* → *Additional Assessment Resources*) • Guidance for communicating to parents about student progress (available in Program Guide → *Assessments* → *Additional Assessment Resources*)

Common implementation reactions

Scenario	Response
(1) How does Amplify Science align to our school/district goals?	
(2) Since I don't have time in the school day to teach 45 or 60 minute lessons I will probably skip some parts. Some of the lessons seem to repeat ideas anyway.	
(3) I have never taught this science content before. I am concerned that students will ask me questions I don't know the answers to.	

Getting started with Amplify Science K-5: Guide for Instructional Leaders

Getting Started Checklist	
Organizational Area	**Points to Remember**
INITIAL TRAINING & PROFESSIONAL LEARNING OPPORTUNITIES □ Schedule time for teachers to receive training □ Provide an opportunity for teachers to understand your school's vision for implementing Amplify Science as the core curriculum prior to their training and/or expected start of instruction □ Devise and deliver messaging to parents	● Teacher buy-in.
PACING UNITS THROUGHOUT THE SCHOOL YEAR □ Determine pacing/scope and sequence of units and time allocated for daily science instruction in collaboration with the department chair or grade level lead □ Identify how much time is dedicated to Science Instruction at **each** grade level and modify the schedule to accommodate full implementation of your new core science curriculum	● Twenty-one (21) units make up the K-5 Curriculum: o **K-2** (45 mins. lessons) – 3 units with 22 lessons each o **3-5** (60 mins lessons) – 4 units with 22 lessons each
TECHNOLOGY READINESS & ACCESS □ Identify a technology support person (school & district level) □ Test internet connection speeds to ensure teachers and students are able to successfully access internet □ Ensure ALL teachers have account logins and accessed the digital Teacher's Guide □ Ensure ALL teachers establish routines and logistics for device management in their classroom (if applicable) □ Ensure content filters aren't blocking digital Teacher's Guide (learning.amplify.com) □ Ensure that all teachers are using either Chrome or Safari web browsers □ Devices in-use by teachers (and students) are: iPad 3 or more recent models, MacBooks, Chromebooks, or Windows laptops or desktops	● Although Amplify Science can be taught in a variety of technology situations, the Amplify Science curriculum contains videos and digital simulations that require internet access and projection capabilities. ● Contact scihelp@amplify.com if you have any teacher login issues ● Technology readiness will ensure teachers' implementation of agreed upon pacing and support their ability to teach all units and address all standards.
MANAGING SCIENCE RESOURCES □ Appoint a point of contact to organize and distribute kit resources for immediate teacher access based on unit order and pacing □ Ensure kit resources are provided to the teacher at least 1 week prior to the expected start of instruction □ Review the materials list inside of each kit, at each grade level, and identify the items on the list that are "teacher provided items"; secure these items at least 1 week prior to the expected start of instruction □ Ensure ALL teachers establish routines for managing kit resources in their classrooms (includes manipulatives, Investigations Notebooks, etc.)	● The Amplify Science curriculum integrates hands-on materials and classroom wall resources. Some items are provided in the kit and others are "teacher provided."
MONITORING INITIAL IMPLEMENTATION □ Schedule time to observe initial implementation, at least two weeks after the units' start date (pacing, routines for technology management and routines for materials management, Investigations Notebooks are set up) □ Visit classes to identify successes and challenges and provide teachers with feedback □ Identify successes and coordinate opportunities for peer-to-peer supports to build capacity and consistency of routines □ Devise an ongoing Professional Learning Plan	● Amplify Science: Getting started look-for tool (located in Participant Notebook)

Amplify Science: Getting started look-for tool

Look for #1: Students are accessing the resources: *This category is intended to highlight visible signs of using the Amplify Science curriculum. These observations can be made over 5-10 minutes or longer.*	
Sample evidence through observations and questions	**Notes and observations**
Classroom environment look-fors: ● Classroom wall ● Co-constructed charts ● Established routines for ease of access to resources ● Projections and posters are clear **Student look-fors:** ● Referencing classroom wall resources as appropriate ● Accessing digital tools, print, and physical resources with ease	

Look for #2: Students are engaged in gathering evidence from multiple sources to Investigate Phenomena. This category is intended to highlight how students are accessing the curriculum in a way that promotes three-dimensional learning. These look-fors need at least 15 minutes to a full lesson, or multiple lessons, to observe.

Tip: Reference the 3-D statement and the "Standards and Goals" section in the specific lesson you are observing for the specific core ideas, crosscutting concepts and science and engineering practices in the lesson.

Indicators of engaging with multiple sources of evidence may include students figuring out phenomena like a scientist, engaged in 3-D learning. You will notice students participating in multiple modalities (do, read, talk, write and/or visualize), during which they use academic language and unit words to access and convey ideas. Over time, you will notice students having multiple opportunities to construct understanding.

Sample evidence through observations and questions	Notes and observations
Classroom environment look-fors: ● Students engaged in their work in pairs, in small groups, as a full class, or individually. ● Students engaged in one or more of the Science and Engineering Practices to figure out core ideas, and/or applying crosscutting concepts to connect what they are learning to other ideas in science. **Student look-fors** ● Students writing or drawing ● Students engaged in hands-on investigations, modeling or design ● Students engaged in digital investigations or modeling ● Students reading ● Students discussing **Student Questions to ask:** ● What are you figuring out today? ● What can you tell me about the chapter question? ● How did you figure that out? What is your evidence?	

Look for #3: Students engage in deep learning over time, along the Progress Build. This category is intended to highlight how students are deepening their understanding over time and may require observations over time, across multiple class periods within a unit. Indicators of deepening understanding along the progress build may include how students constructing increasingly complex explanations over time. You may notice students engaged in flexible, differentiated small group instruction in response to assessment. Over time, students working towards meeting grade-level expectations for practices, CCC, or DCIs in the NGSS.	
Sample evidence through observations and questions	**Notes and observations**
Classroom environment look-fors: ● Lesson connecting to prior or future learning; **Teacher questions:** ● In this lesson, what are students figuring out? ● Are there some students who are having some difficulty engaging in practices, understanding core ideas or applying CCCs? What are next steps for them? ● What are you learning from your students that is impacting your instructional plans? **Student questions:** ● What have you figured out so far in this unit? ● Has your thinking changed over time?	

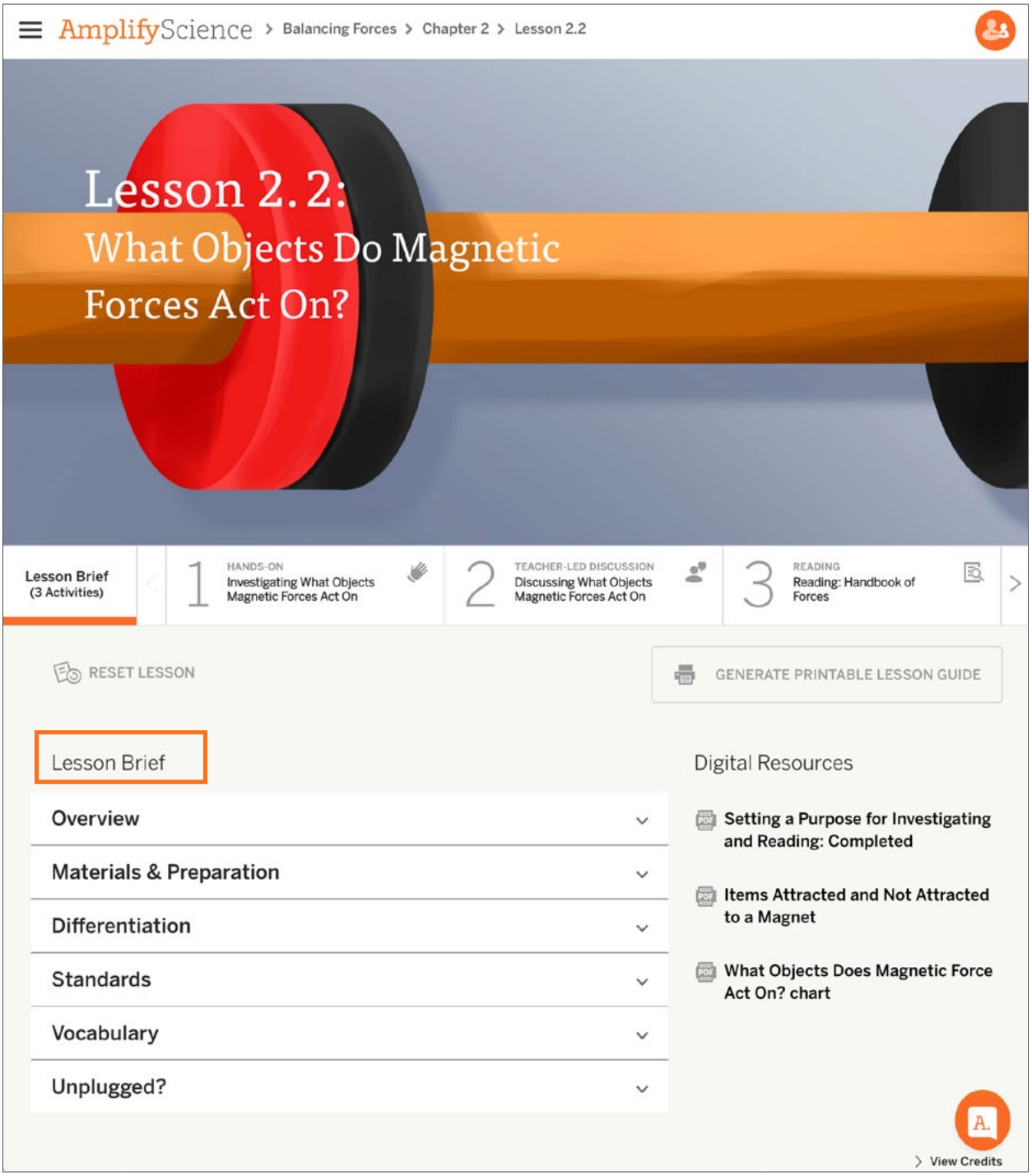
Amplify Science guided tour

Directions:

1. Open an incognito window through chrome and navigate to the guided tour: **learning.amplify.com/science-guidedtour**
2. Select "teacher"
3. Select "Get started"
4. Select the unit to explore:
    a. *Plant and Animal Defenses (1st grade unit)*
    b. *Balancing Forces (3rd grade unit)*
    c. Light Waves (Middle School unit)
    d. Force and Motion (Middle School unit)
5. *Use the table below to record any observations and questions.*

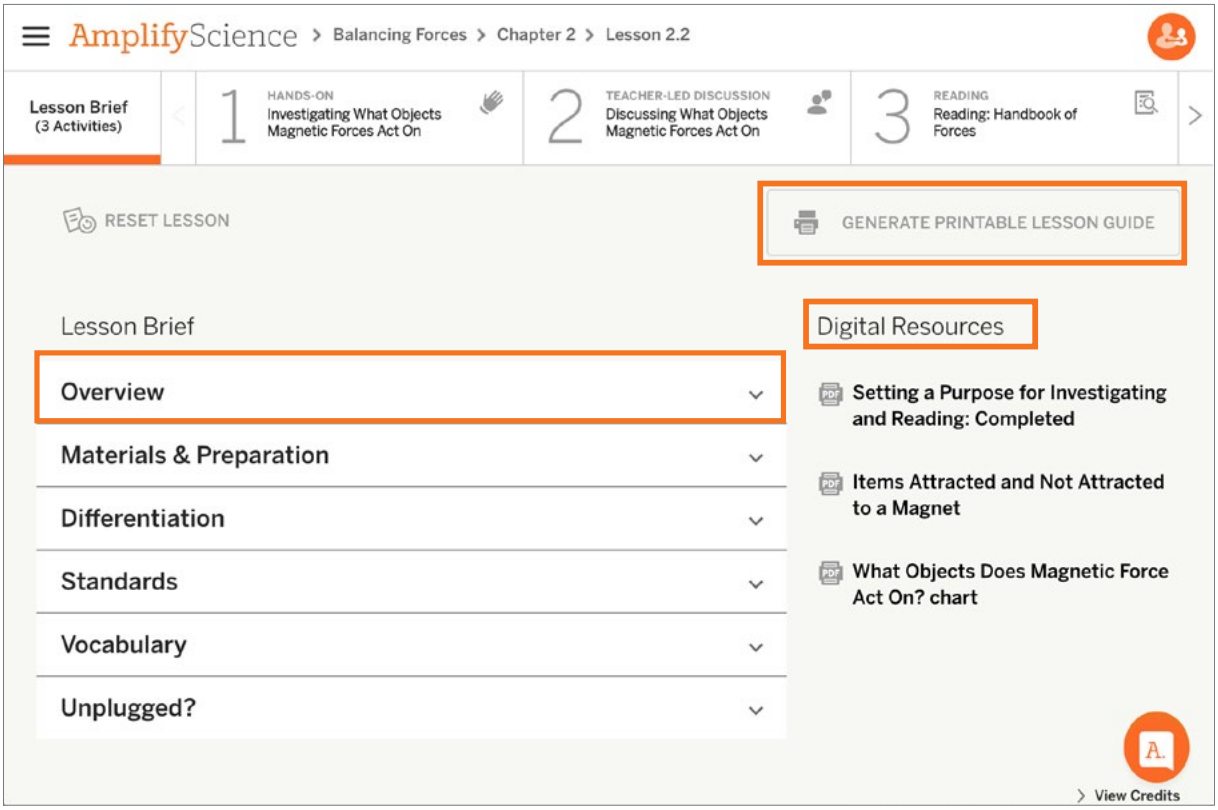
Observation notes	**Questions**

Navigation within a lesson

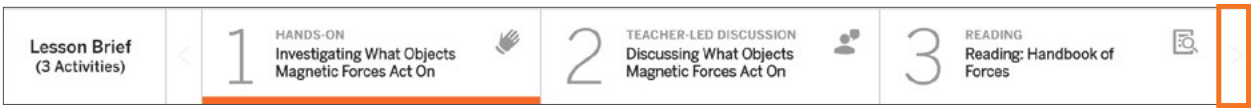


1. The lesson's landing page is referred to as the **Lesson Brief**. To the left, is an example from a lesson in the grade 3 Balancing Forces unit. The Lesson Brief provides valuable information to support teachers, including an overview of the content that will be covered in the lesson.

Navigation within a lesson cont.

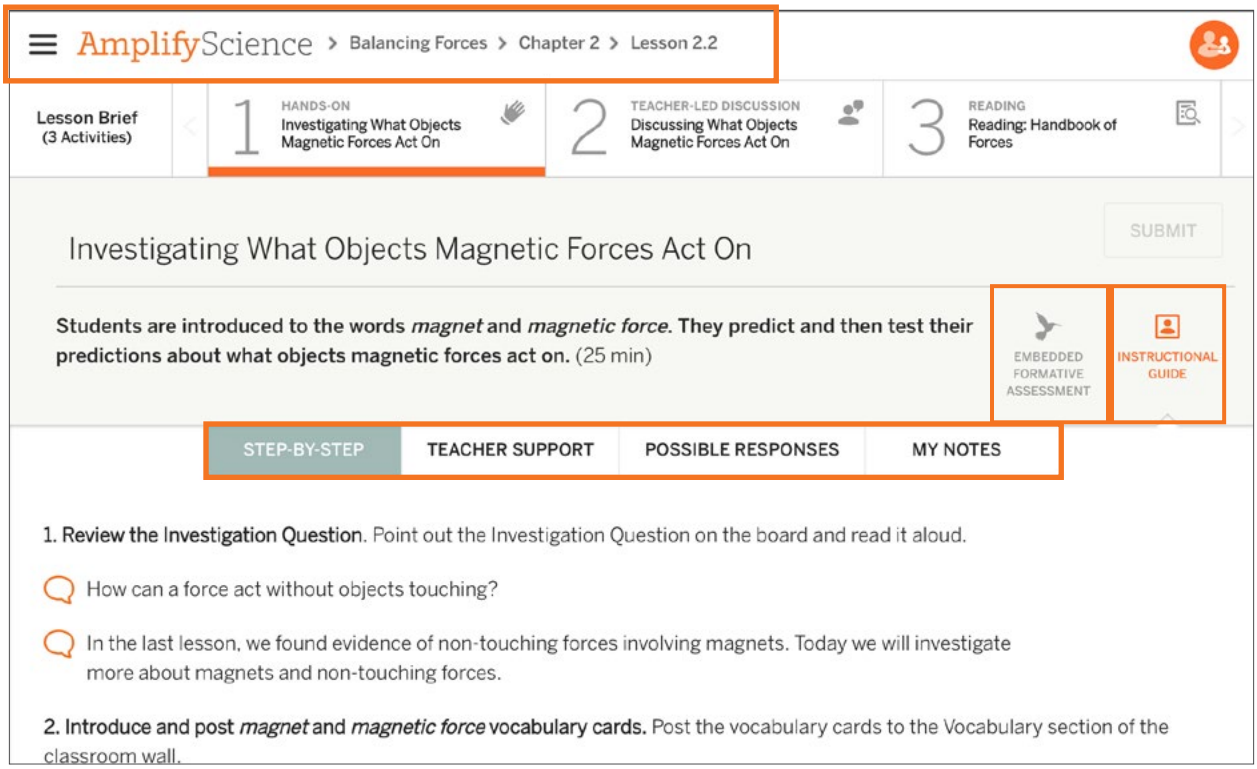


2. Selecting the drop-down arrow expands each selection.
   - The **Overview** includes a summary of the lesson, describes what students will learn, and provides activity summaries and timing.
   - **Materials and Preparation** provides a list of materials for the lesson, and how to prepare for teaching.
   - **Differentiation** describes supports and strategies for differentiation.
   - **Standards** details which standards the lesson is aligned to.
   - **Vocabulary** lists focal vocabulary emphasized in the lesson.
   - **Unplugged** lists recommendations for working offline.
3. Select **GENERATE PRINTABLE LESSON GUIDE** to access a downloadable PDF that includes all of the content in digital format, including teacher supports, possible responses, and assessments.
4. **Digital Resources** provide all of the resources for a lesson, which may include projections, copymasters, videos, and reference illustrations for teacher reference. Each resource can be downloaded before each lesson.



5. The **Lesson Map**, shown above, displays the sequence of the activity titles which, once selected, access each activity's instructional guide. An arrow > at the right end of the lesson map lets you know that there are more activities in a lesson than what's shown.
6. **Activity titles** in the Lesson Map are numbered to help teachers navigate through the lesson.

Navigation within a lesson cont.



7. Once in an activity, you will see the **INSTRUCTIONAL GUIDE**, within which are the following tabs:

   STEP-BY-STEP lists all of the steps for teaching the activity. This will be open by default when you first navigate to the activity.

   - **Bold lead-ins** summarize what happens in each instructional step.
   - Purple speech bubbles indicate **teacher talk**, suggestions for what you should say as you teach.
   - Text in brackets **[ ]** indicates an expected student response.

   TEACHER SUPPORT provides suggestions, rationale, and background information.

   POSSIBLE RESPONSES indicate what student answers for written or oral prompts may be.

   MY NOTES provides a space to record thoughts and observations about each activity.

   Note: If there are no Teacher Support notes for the activity, the Teacher Support tab will not appear. Likewise, if there are no possible responses for the activity, the Possible Responses tab will not appear.

8. The **grey hummingbird** indicates there is an **embedded formative assessment** in this activity. Click on the hummingbird to view the assessment (the icon turns orange to indicate selection).

9. The **breadcrumb trail** (top left) can be used to navigate to different parts of the unit.

Unit Guide resources

Once a unit is selected, select **JUMP DOWN TO UNIT GUIDE** in order to access all unit-level resources in an Amplify Science unit.

Planning for the unit

Unit Overview	Describes what's in each unit, the rationale, and how students learn across chapters
Unit Map	Provides an overview of what students figure out in each chapter, and how they figure it out
Progress Build	Explains the learning progression of ideas students figure out in the unit
Getting Ready to Teach	Provides tips for effectively preparing to teach and teaching the unit in your classroom
Materials and Preparation	Lists materials included in the unit's kit, items to be provided by the teacher, and briefly outlines preparation requirements for each lesson
Science Background	Adult-level primer on the science content students figure out in the unit
Standards at a Glance	Lists NGSS Standards (Performance Expectations, Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts), Common Core State Standards for English Language Arts, and Common Core State Standards for Mathematics

Teacher references

Lesson Overview Compilation	Lesson Overview of each lesson in the unit, including lesson summary, activity purposes, and timing
Standards and Goals	Lists NGSS (Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts) and CCSS (English Language Arts and Mathematics) standards in the unit, explains how the standards are reached
3-D Statements	Describes 3-D learning across the unit, chapters, and in individual lessons
Assessment System	Describes components of the Amplify Science Assessment System, identifies each 3-D assessment opportunity in the unit
Embedded Formative Assessments	Includes full text of formative assessments in the unit
Books in This Unit	Summarizes each unit text and explains how the text supports instruction
Apps in This Unit	Outlines functionality of digital tools and how students use them (in grades 2-5)

Printable resources

Copymaster Compilation	Compilation of all copymasters for the teacher to print and copy throughout the unit
Investigation Notebook	Digital version of the Investigation Notebook, for copying and projecting
Multi-Language Glossary	Glossary of unit vocabulary in multiple languages
Print Materials (8.5" x 11")	Digital compilation of printed cards (i.e. vocabulary cards, student card sets) provided in the kit
Print Materials (11" x 17")	Digital compilation of printed Chapter Questions and key concepts provided in the kit

Unit essentials reference

Unit essential	Description of unit essential
Student role	In each Amplify Science unit, students embody the role of a different professional scientist or engineer.
Unit type	There are four types of units, and each one emphasizes a particular science and engineering practice: Investigation, Modeling, Design, and Argumentation. Within each unit, there is a focus on a particular aspect of the unit's practice. For example, in a Modeling unit, students might focus specifically on developing evidence-based models to represent unobserved processes. While each unit emphasizes a particular practice, students engage in a variety of practices throughout each unit.
Focal crosscutting concept	Amplify Science units provide explicit instruction around crosscutting concepts, with supported opportunities for students to practice making meaning of science ideas with a crosscutting concept lens. While each unit has a focal crosscutting concept, students engage with a variety of crosscutting concepts throughout each unit.
Sense-making strategy	Each unit equips students with a strategy for making meaning of what they learn. Students practice using this strategy in reading-focused and science-focused activities.
Writing genre	The curriculum develops students' skills in two writing genres: explanation and argumentation. Each unit provides explicit instruction on one of those two genres, and opportunities for practice.

Unit essentials reference cont.

Grade	Unit	Student role	Unit type	Focal crosscutting concept	Sense-making strategy	Writing genre
K	Needs of Plants and Animals	scientist	investigation	systems	setting a purpose	explanation
	Pushes and Pulls	pinball engineer	design	cause and effect	visualizing	explanation
	Sunlight and Weather	weather scientist	modeling	cause and effect	making predictions	explanation
1	Animal and Plant Defenses	aquarium scientist	modeling	structure and function	visualizing	explanation
	Light and Sound	light and sound engineer	design	cause and effect	asking questions	explanation
	Spinning Earth	sky scientist	investigation	patterns	making predictions	explanation
2	Plant and Animal Relationships	plant scientist	investigation	systems	setting a purpose	explanation
	Properties of Materials	glue engineer	design	cause and effect	making predictions	design argument
	Changing Landforms	geologist	modeling	scale, proportion, and quantity	visualizing	explanation
3	Balancing Forces	scientist	modeling	stability and change	setting a purpose	explanation
	Inheritance and Traits	wildlife biologist	investigation	patterns	asking questions	explanation
	Environments and Survival	biomimicry engineer	design	structure and function	making inferences	explanation
	Weather and Climate	meteorologist	argumentation	patterns	visualizing	scientific argument
4	Energy Conversions	systems engineer	design	systems	synthesizing	design argument
	Vision and Light	conservation biologist	investigation	structure and function	asking questions	explanation
	Earth's Features	geologist	argumentation	stability and change	making inferences	scientific argument
	Waves, Energy, and Information	marine scientist	modeling	patterns	visualizing	explanation
5	Patterns of Earth and Sky	astronomer	investigation	patterns	visualizing	explanation
	Modeling Matter	food scientist	modeling	scale, proportion, and quantity	making inferences	explanation
	The Earth System	water resource engineer	design	systems	synthesizing	explanation
	Ecosystem Restoration	ecologist	argumentation	energy and matter	making inference and synthesizing	scientific argument

Amplify Science support

Program Guide

Glean additional insight into the program's structure, intent, philosophies, supports, and flexibility.
my.amplify.com/programguide

Amplify Help

Find lots OF advice and answers from the Amplify team.
my.amplify.com/help

Customer care

Seek information specific to enrollment and rosters, technical support, materials and kits, and teaching support, weekdays 7AM-7PM EST.

scihelp@amplify.com

800-823-1969

Amplify Chat

When contacting customer care, be sure to:

- Identify yourself as an Amplify Science user.
- Note the unit you are teaching.
- Note the type of device you are using (Chromebook, iPad, Windows laptop, etc.).
- Note the web browser you are using (Chrome or Safari).
- Include a screenshot of the problem, if possible.
- Cc: your district or site IT contact.

Notes