Amplify Science

New York City Department of Education

Grade 4: Energy Conversions

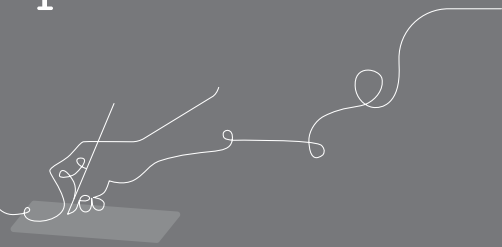
Summer Institute: Day 1

Date
Presented by Your Name

Overarching goals

By the end of this institute, you will be able to:

- Navigate program resources and describe how Amplify Science addresses 3-D learning and NYSSLS/NGSS.
- Use Energy Conversions unit resources to plan lessons that support ALL learners.



Getting to know the unit

Day 1

Day 1 Objectives

By the end of today, you will be able to:

- Explain what students learn in the unit, and how they learn it.
- Navigate the Amplify Science Curriculum.
- Recognize how lessons engage students in the three dimensions of NYSSLS/NGSS (as appropriate).
- Articulate how lesson activities support students with building complex explanations.

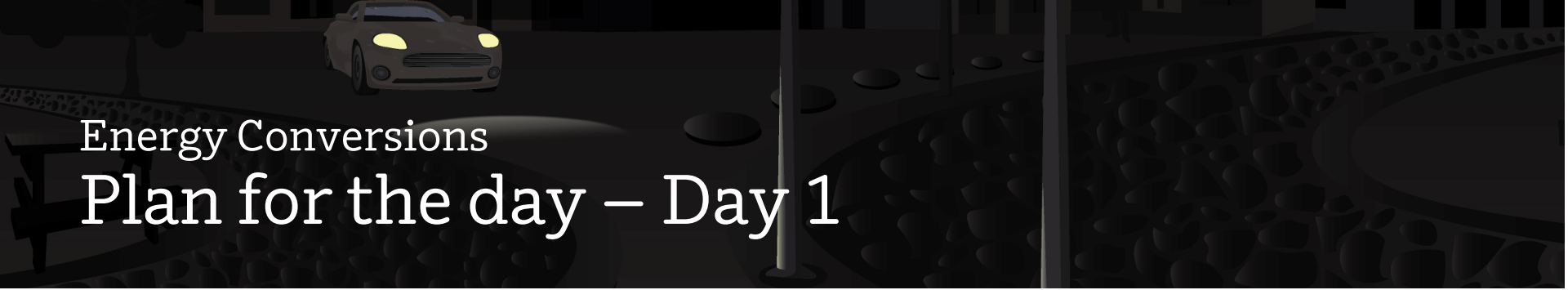
Norms: Establishing a culture of learners

Take risks: Ask any questions, provide any answers.

Participate: Share your thinking, participate in discussion and reflection.

Be fully present: Unplug and immerse yourself in the moment.

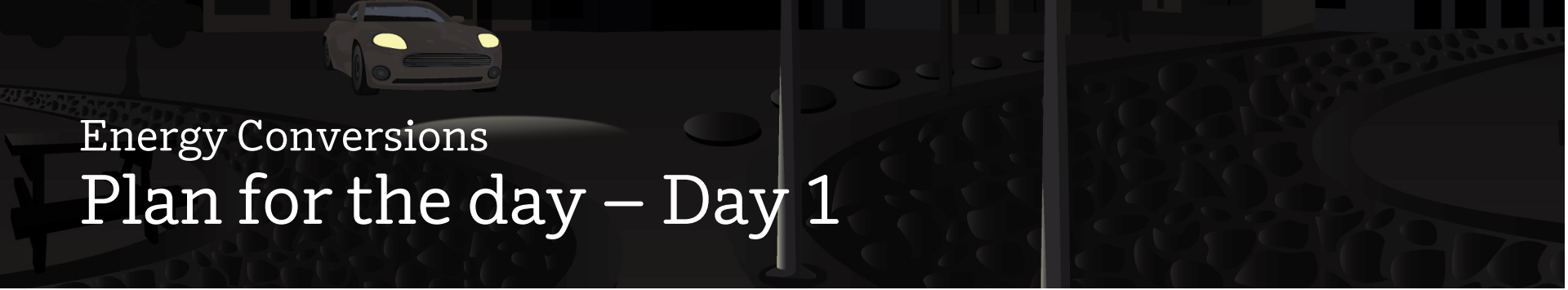
Physical needs: Stand up, get water, take breaks.



Energy Conversions

Plan for the day – Day 1

- **Framing the day**
  - What is Amplify Science?
  - Navigating the Digital Guide
- **Experiencing the unit**
  - Amplify Science approach
  - NYSSLS anticipatory activity
  - Instructional sequence with model lesson
  - Reflecting on the sequence
- **Closing**
  - Amplify Science in NYC
  - Reflection
  - Questions



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Framing the day

The purpose of this part of the day is for you to:

- Navigate the Amplify Science curriculum

THE LAWRENCE HALL OF SCIENCE
UNIVERSITY OF CALIFORNIA, BERKELEY

+ Amplify.

AmplifyScience

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

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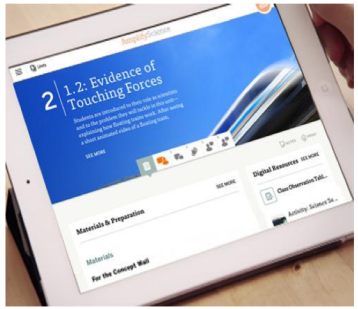
Amplify.

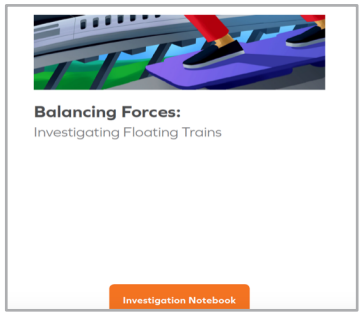
Elementary school components



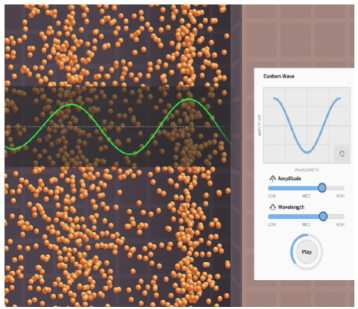
Digital Teacher's Guide

Hands-on materials

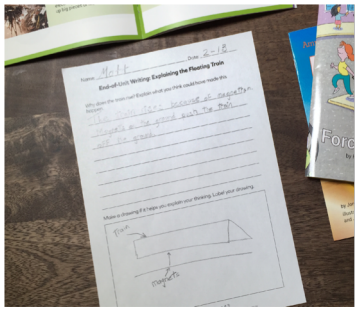
Student books



Investigation Notebooks



Digital applications (grades 2-5)



Assessments

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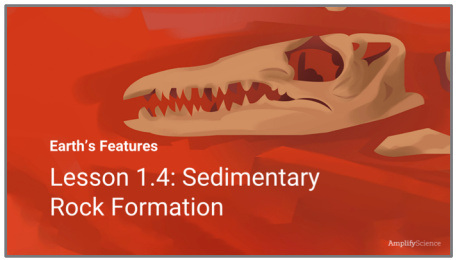
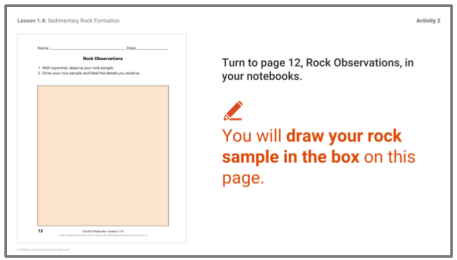
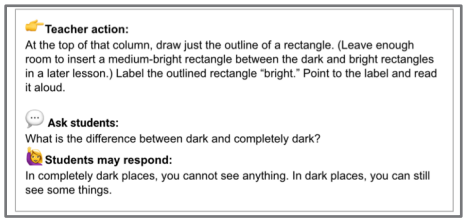
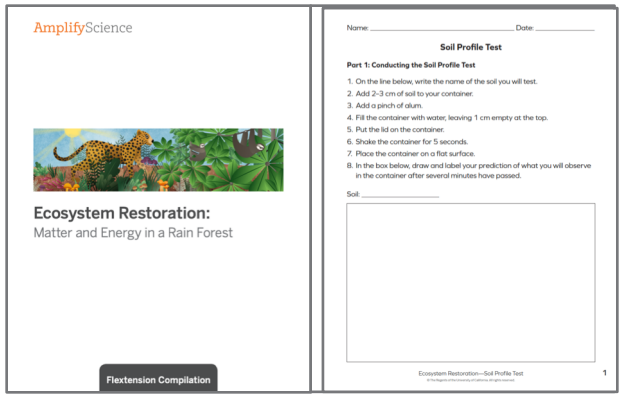
Amplify Science: What's new for 2019-2020



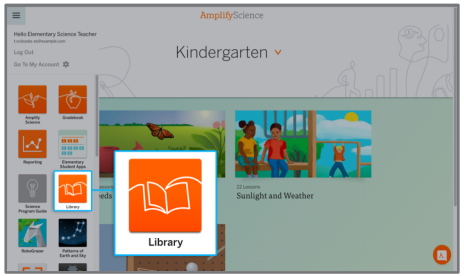




Classroom Slides



Hands-on Flextensions



New digital K–5 Student Books

Amplify.

What are the digital components of Amplify Science Elementary?

Student Simulations

Student Science Practice Tools
(sorting tool, diagramming tool, modeling tool, data tool)

Teacher's Guide

Teacher’s Guide navigation

Unit

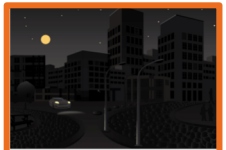
Chapters

Lessons

Activities

22 Lessons

4-PS A: Energy Conversions



Chapter 1: What happened to the electrical system the night of the...

6 Lessons

Chapter 2: What makes the devices in Ergstown output or fail to output...

4 Lessons

Chapter 3: Where does the electrical energy for the devices in Ergstow...

6 Lessons

Chapter 4: How does energy get to the devices all over Ergstown?

6 Lessons

Lesson 1.1: Pre-Unit Assessment

Lesson 1.2: Introducing Systems

Lesson 1.3: Exploring Systems

Lesson 1.4: Electrical Energy

Lesson 1.5: Forms of Energy

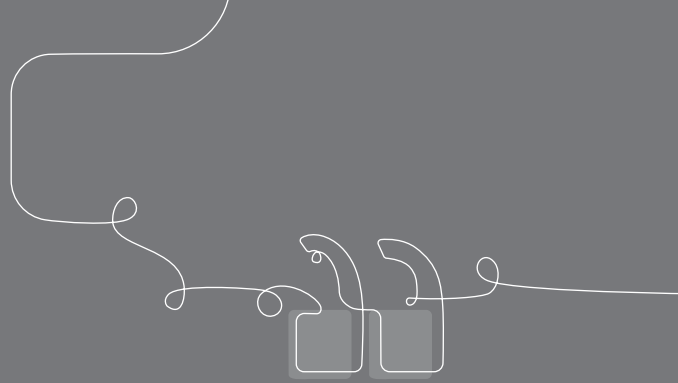
Lesson 1.6: Writing an Argument About the Blackout

Lesson Brief (3 Activities)

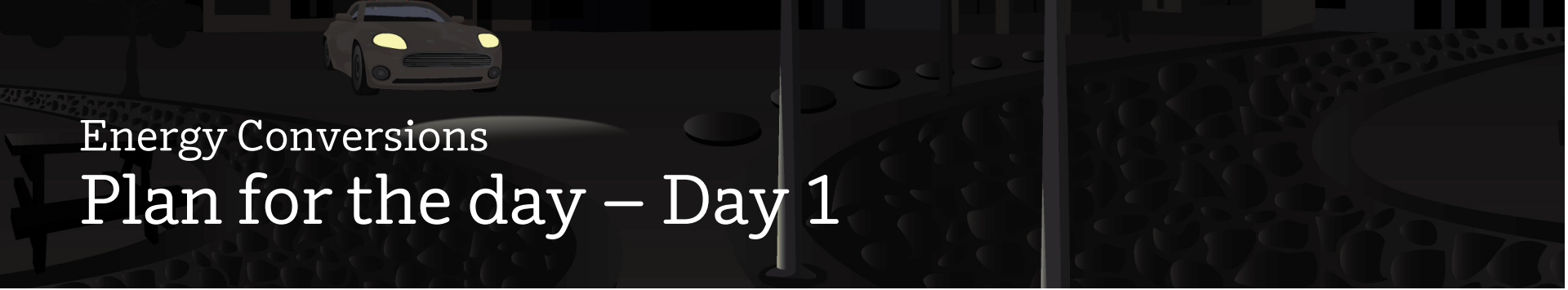
1 HANDS-ON Building a Simple Electrical System

2 TEACHER-LED DISCUSSION Parts of a Simple Electrical System

3 STUDENT-TO-STUDENT DISCUSSION Parts and Functions



Questions?



Energy Conversions

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Experiencing the unit

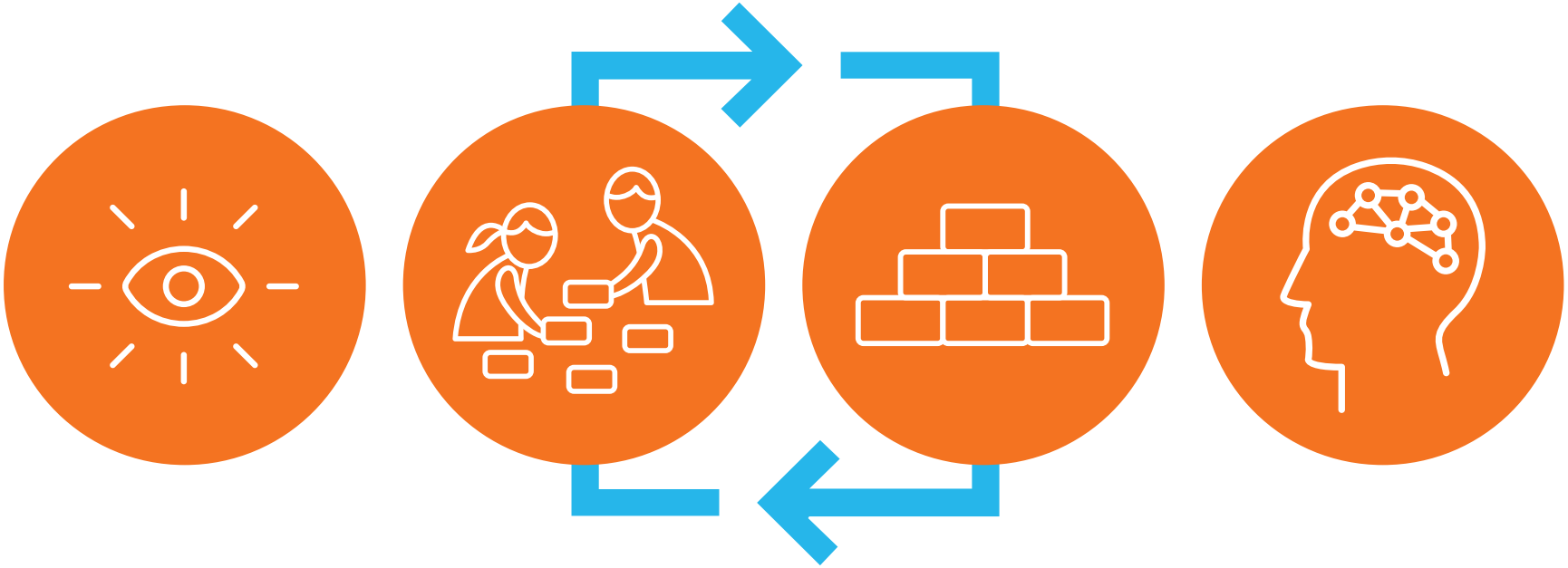
The purpose of this part of the day is for you to

- Explain what students learn in the unit, and how they learn it.
- Recognize how lessons engage students in the three dimensions of NYSSLS/NGSS (as appropriate).

Problem-based deep dives

Students inhabit the role of scientists and engineers to explain or predict phenomena. They use what they figure out to solve real-world problems.

Amplify Science approach



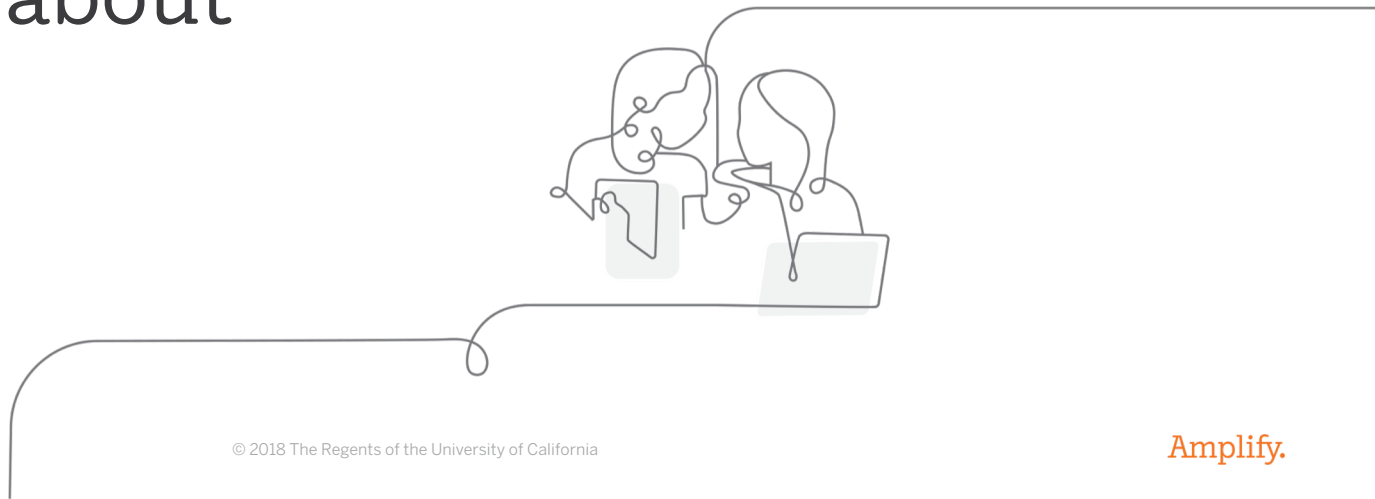
Introduce a phenomenon and a related problem

Collect evidence from multiple sources

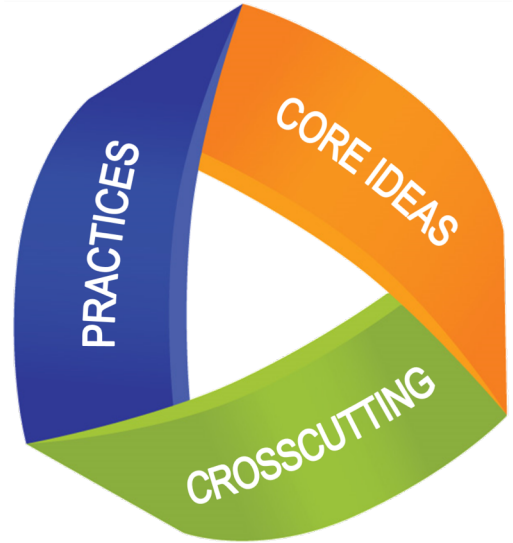
Build increasingly complex explanations

Apply knowledge to a different context

Figure out, not learn about

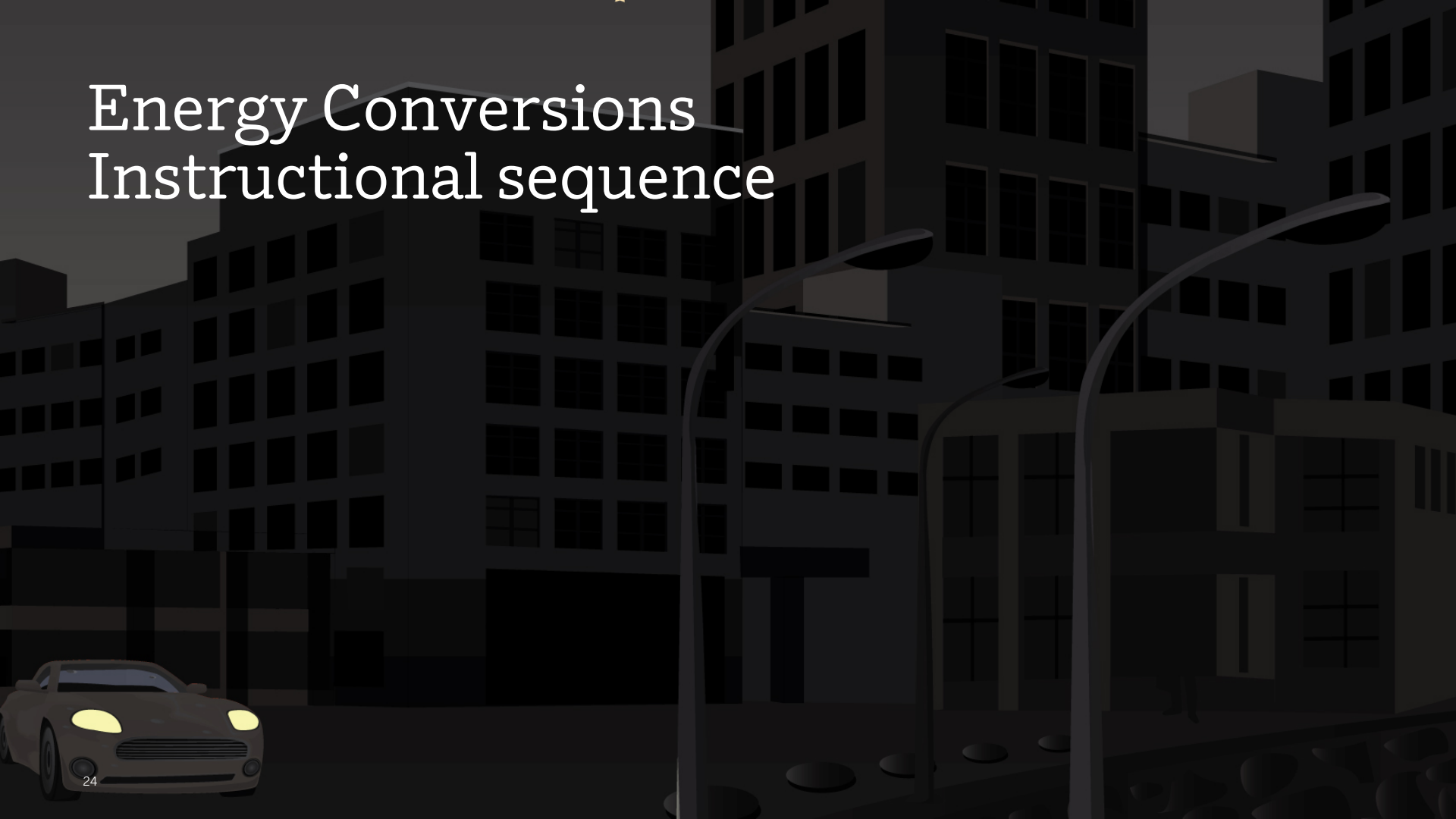


Three dimensions of NGSS and NYSSLS



Standards as three-dimensional performance expectations that integrate **disciplinary core ideas**, **science and engineering practices**, and **crosscutting concepts**

Energy Conversions Instructional sequence



Chapter 1: What happened to the electrical system the night of the blackout?

JUMP DOWN TO CHAPTER OVERVIEW

Lesson 1.1:
Pre-Unit Assessment

Lesson 1.2:
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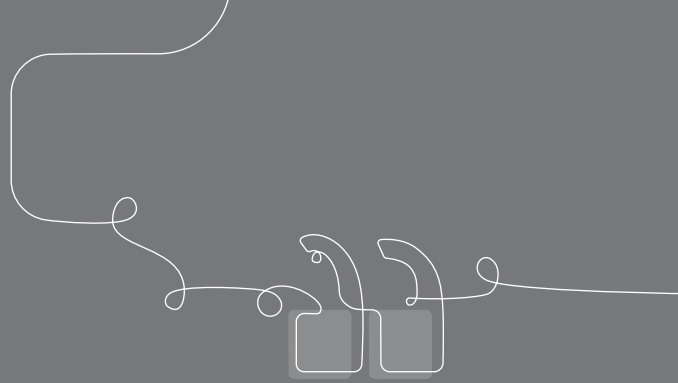

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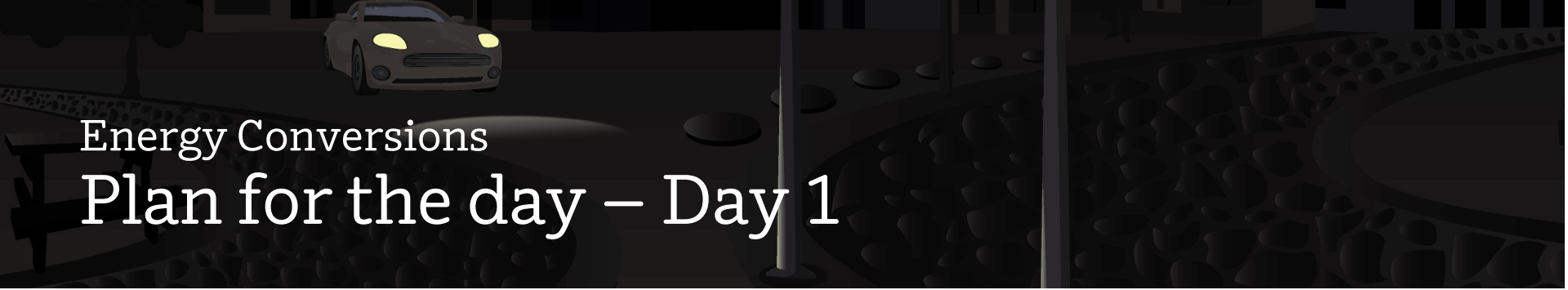

Energy Conversions

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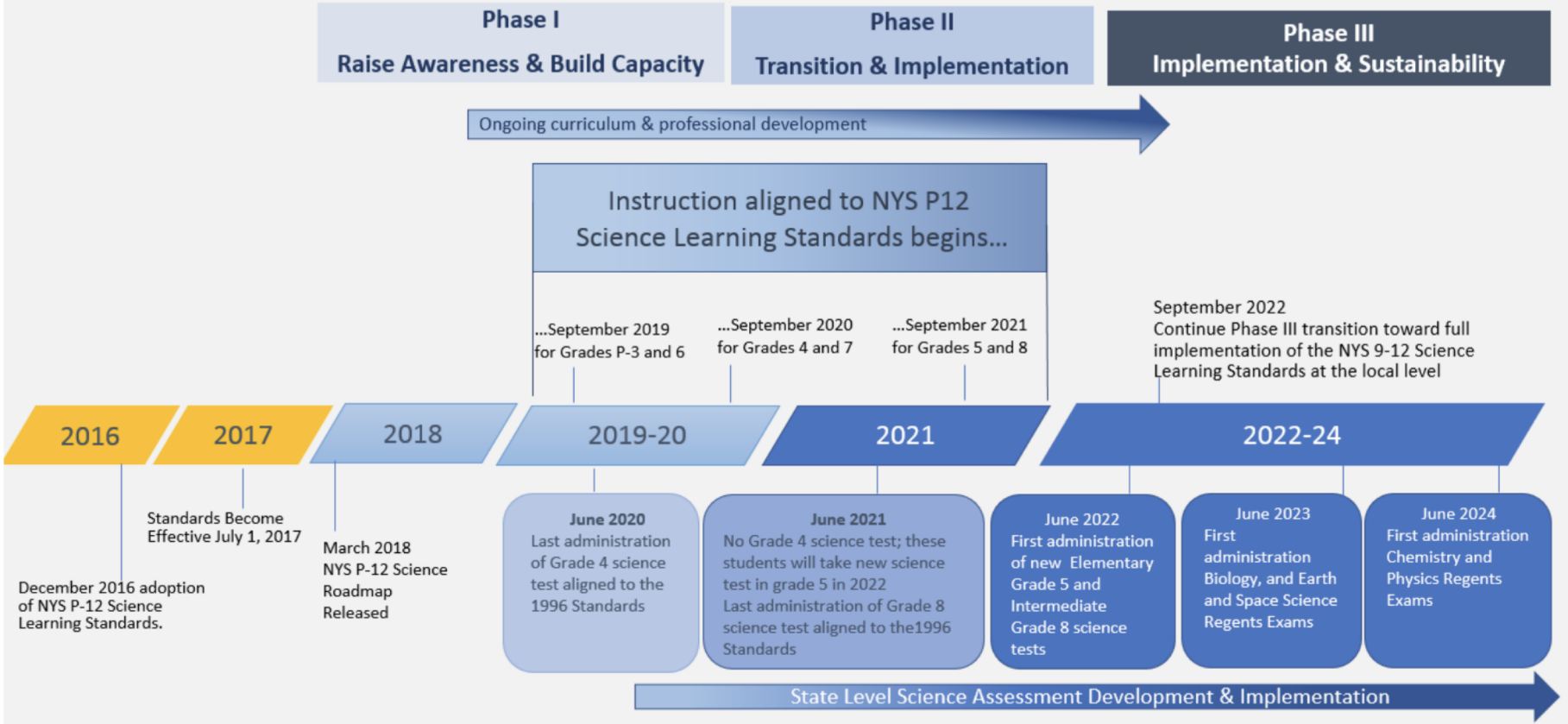
Self-reflection and closing

The purpose of this part of the day is for you to:

- Participants reflect on their ability to navigate the Teacher's Guide and their understanding of the Amplify Science Approach and how it supports three-dimensional learning.

New York State P-12 Science Standards Development, Adoption, and Implementation



Elementary school course curriculum structure

Grade K

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

Grade 1

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Grade 2

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Grade 5

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

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Middle school course curriculum structure

Middle School Curriculum New York City Edition

Grade 6

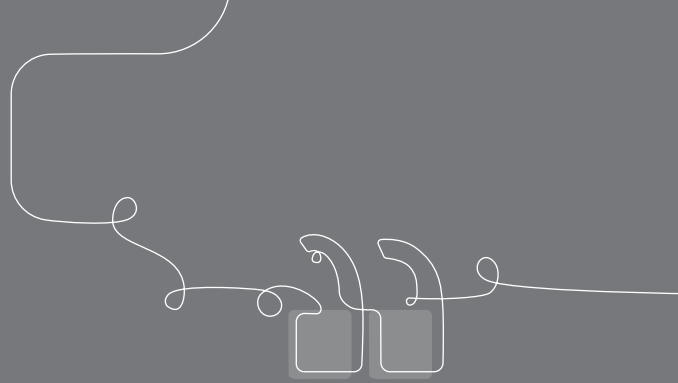
- Launch: Harnessing Human Energy
- Thermal Energy
- Populations and Resources
- Matter and Energy in Ecosystems
- Weather Patterns
- Ocean, Atmosphere,and Climate
- Earth's Changing Climate

Grade 7

- Launch: Microbiome
- Metabolism
- Phase Change
- Chemical Reactions
- Plate Motion
- Engineering Internship: Plate Motion
- Rock Transformations
- Engineering Internship: Earth's Changing Climate

Grade 8

- Launch: Geology on Mars
- Earth, Moon, and Sun
- Force and Motion
- Engineering Internship: Force and Motion
- Magnetic Fields
- Light Waves
- Traits and Reproduction
- Natural Selection
- Evolutionary History



Questions?

Day 1 Objectives

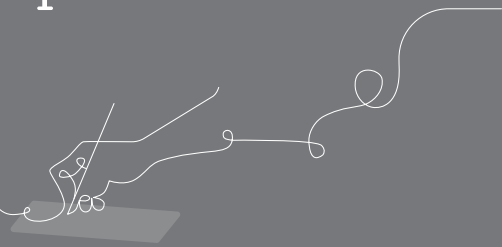
By the end of today, you will be able to:

- Explain what students learn in the unit, and how they learn it.
- Navigate the Amplify Science Curriculum.
- Recognize how lessons engage students in the three dimensions of NYSSLS/NGSS (as appropriate).
- Articulate how lesson activities support students with building complex explanations.

Overarching goals

By the end of this institute, you will be able to:

- Navigate program resources and describe how Amplify Science addresses 3-D learning and NYSSLS/NGSS.
- Use Energy Conversions unit resources to plan lessons that support ALL learners.



Amplify Science

New York City Department of Education

Grade 4: Energy Conversions

Summer Institute: Day 2

Date
Presented by Your Name

Overarching goals

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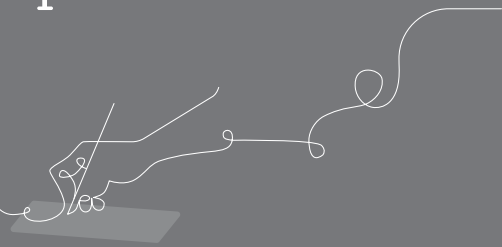

Day 1 Objectives

After yesterday, you should be able to:

- Explain what students learn in the unit, and how they learn it.
- Navigate the Amplify Science Curriculum.
- Recognize how lessons engage students in the three dimensions of NYSSLS/NGSS (as appropriate).
- Articulate how lesson activities support students with building complex explanations.

Supporting all learners

Day 2

Day 2 Objectives

By the end of today, you will be able to:

- Understand strategies to support all learners.
- Articulate how lesson activities support ALL students with building complex explanations.
- Identify the multiple types of assessments embedded within the Amplify Science curriculum.
- Apply program resources to plan to teach.

Norms: Establishing a culture of learners

Take risks: Ask any questions, provide any answers.

Participate: Share your thinking, participate in discussion and reflection.

Be fully present: Unplug and immerse yourself in the moment.

Physical needs: Stand up, get water, take breaks.

Energy Conversions

Plan for the day – Day 2

- **Opening the day**
  - Culture building
- **Story of the unit**
  - Unit Guide navigation
  - Build of conceptual understanding using Unit Guide resources
  - Progress Build
  - Coherence
- **Embedded supports for all learners**
  - Analyzing 3-D learning
  - Assessment System
  - Formative assessment
- **Considerations for an Amplify Science classroom**
- **Closing and reflection**
  - Reflection
  - Survey

Energy Conversions

Plan for the day – Day 2

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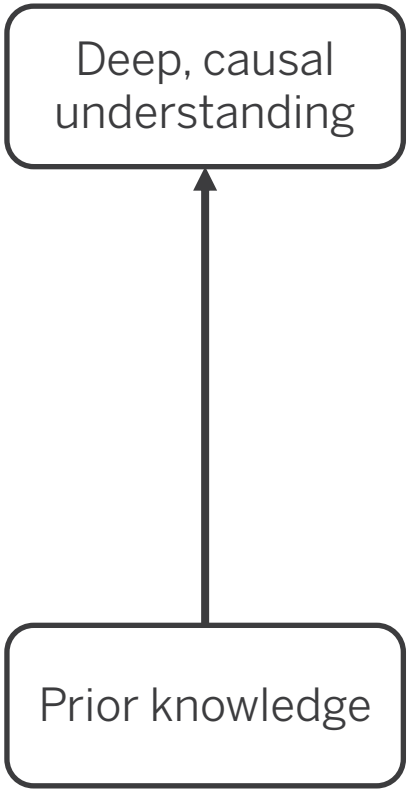
Story of the unit

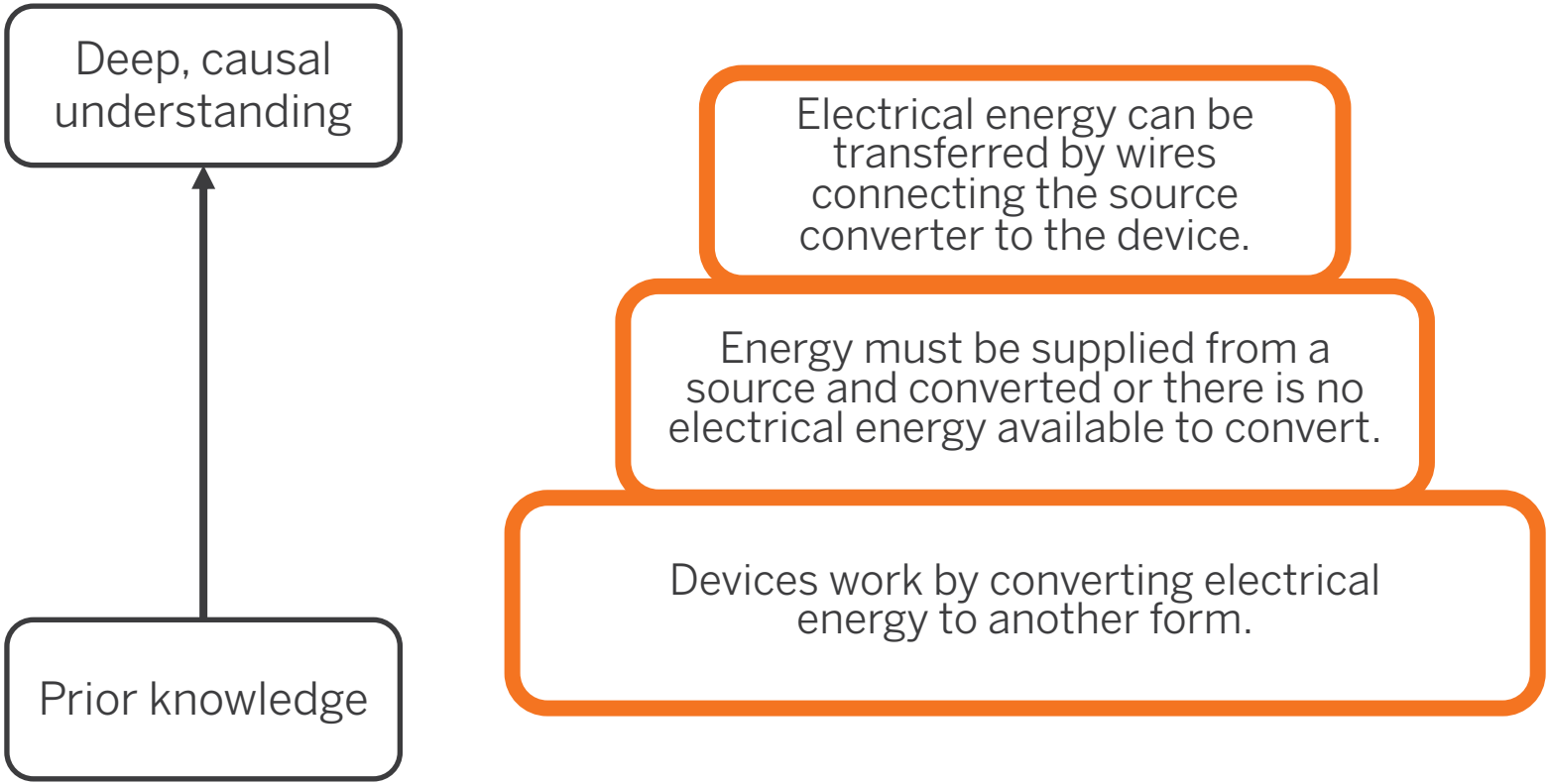
The purpose of this part of the day is for you to

- Navigate the Amplify Science Curriculum.
- Articulate how lesson activities support students with building complex explanations.

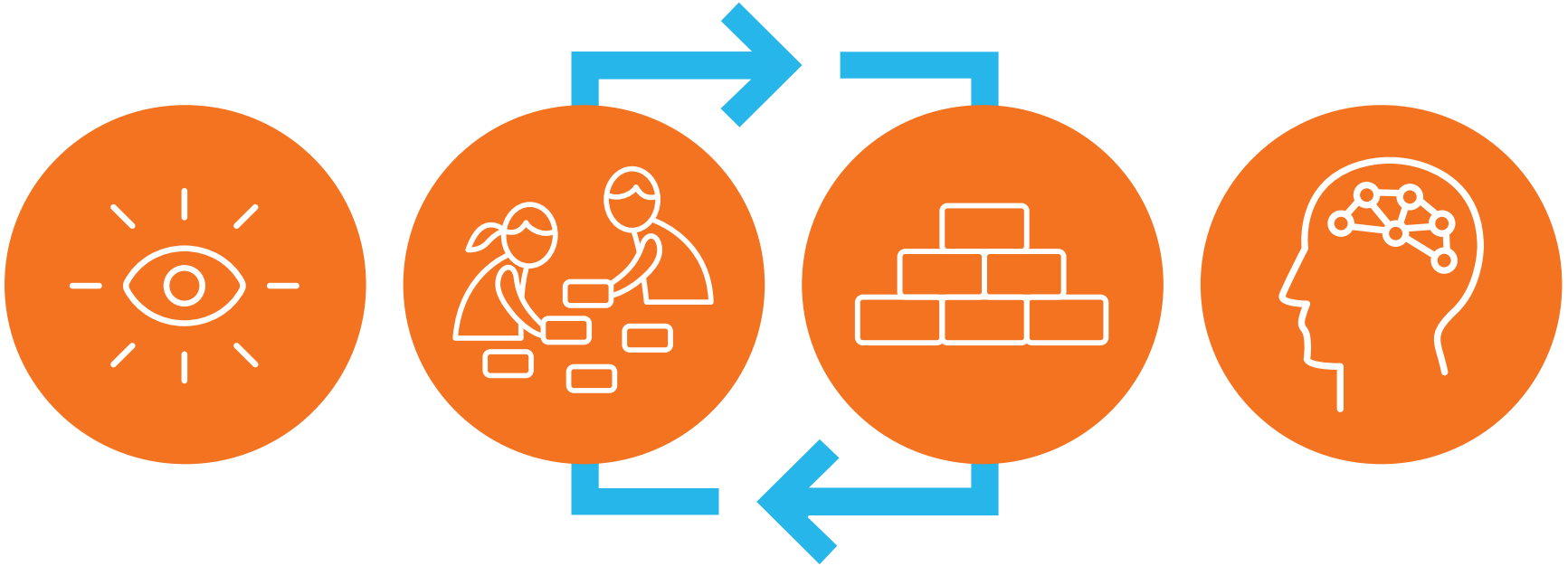
Progress Build: A unit-specific learning progression



Energy Conversions Progress Build



Amplify Science approach



Introduce a phenomenon and a related problem

Collect evidence from multiple sources

Build increasingly complex explanations

Apply knowledge to a different context

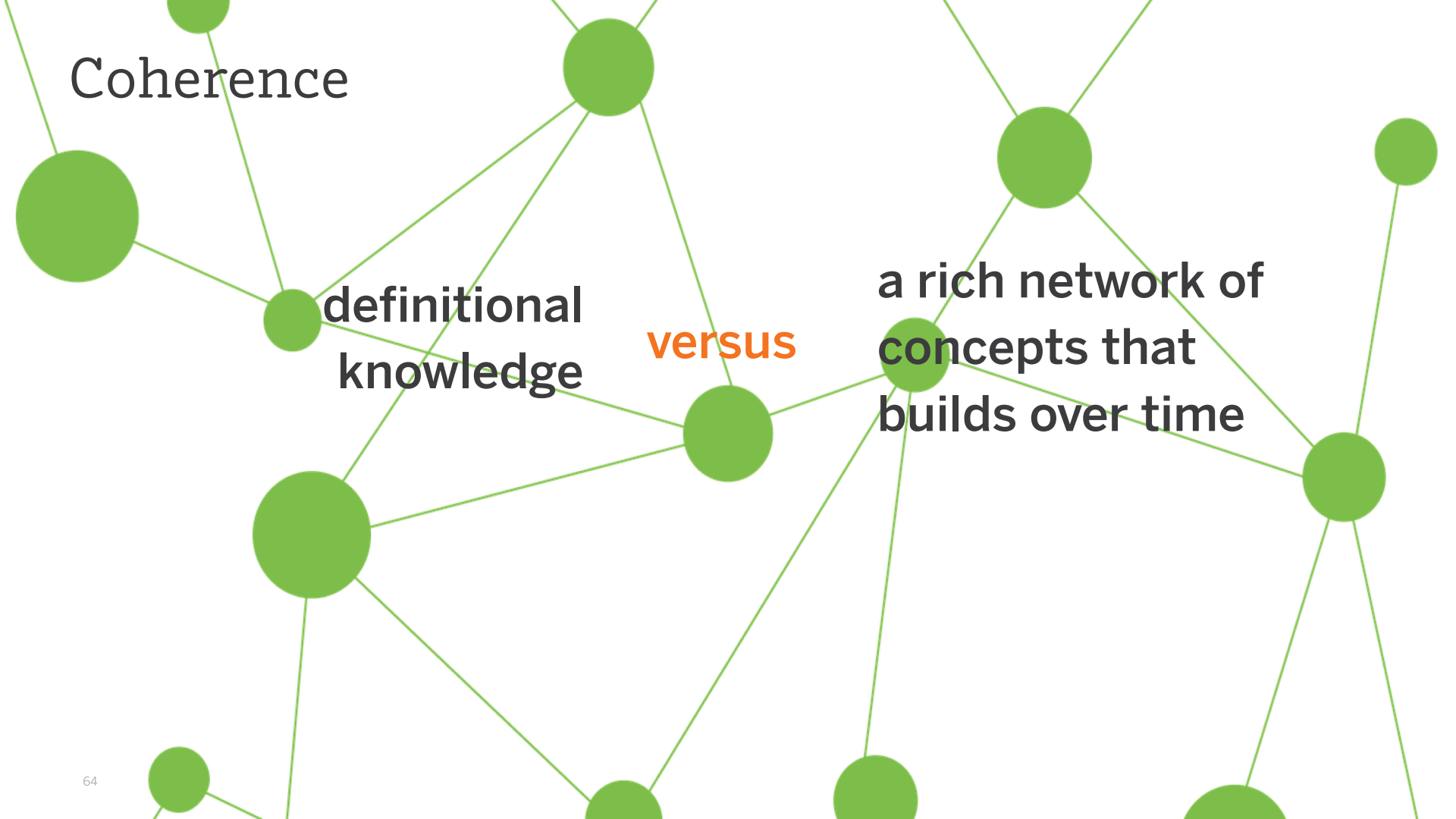
Coherence Flowchart

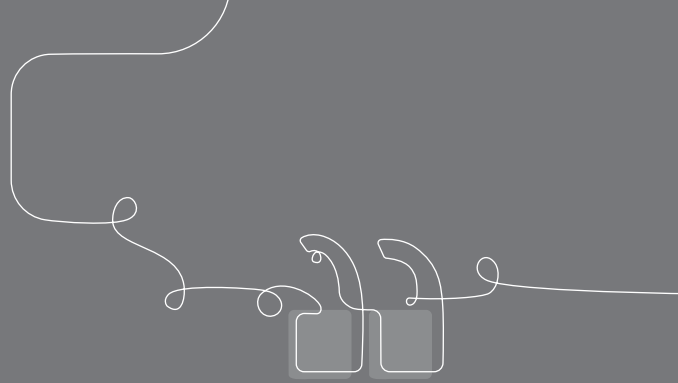
Coherence

from knowing a list of ideas

to knowing how ideas fit together

Coherence


definitional knowledge
versus
a rich network of concepts that builds over time



Questions?

Energy Conversions

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Embedded supports for ALL learners

The purpose of this part of the day is for you to:

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- Articulate how lesson activities support ALL students with building complex explanations.
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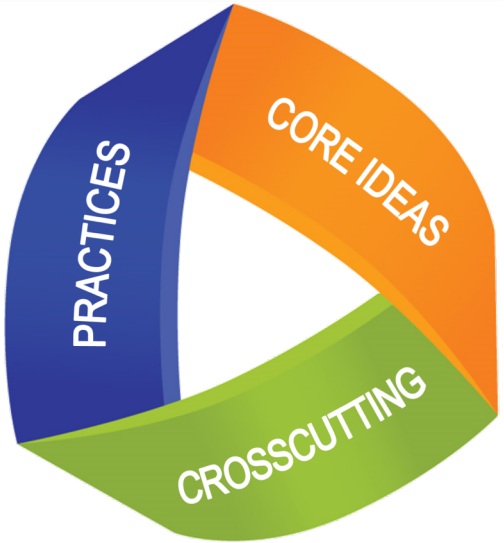
Three dimensions



Disciplinary Core Ideas

Science and Engineering Practices

Crosscutting Concepts

22 Lessons

Energy Conversions

JUMP DOWN TO UNIT GUIDE

GENERATE PRINTABLE TEACHER'S GUIDE

From unit landing page, select "JUMP DOWN TO UNIT GUIDE" to access unit-level resources

Chapter 1: What happened to the electrical system the night of the...

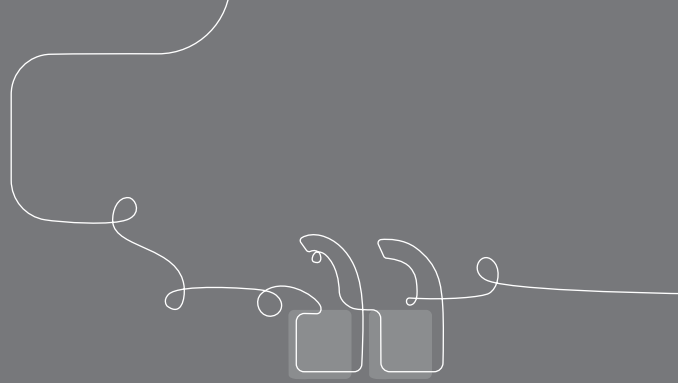
6 Lessons

Chapter 2: What makes the devices in Ergstown output or fail to output...

4 Lessons

Chapter 3: Where does the electrical energy for the devices in Ergstow...

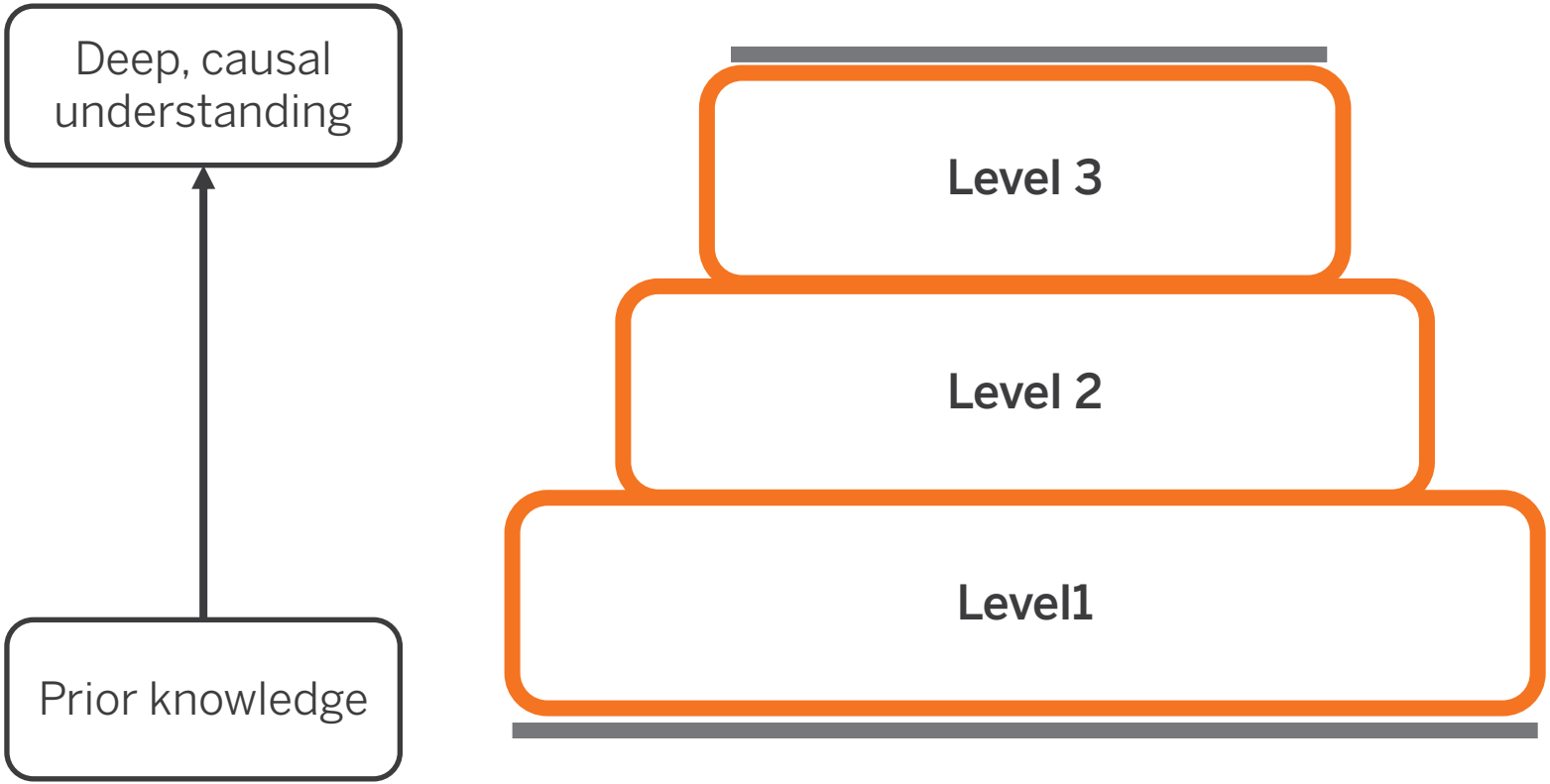
6 Lessons



Questions?

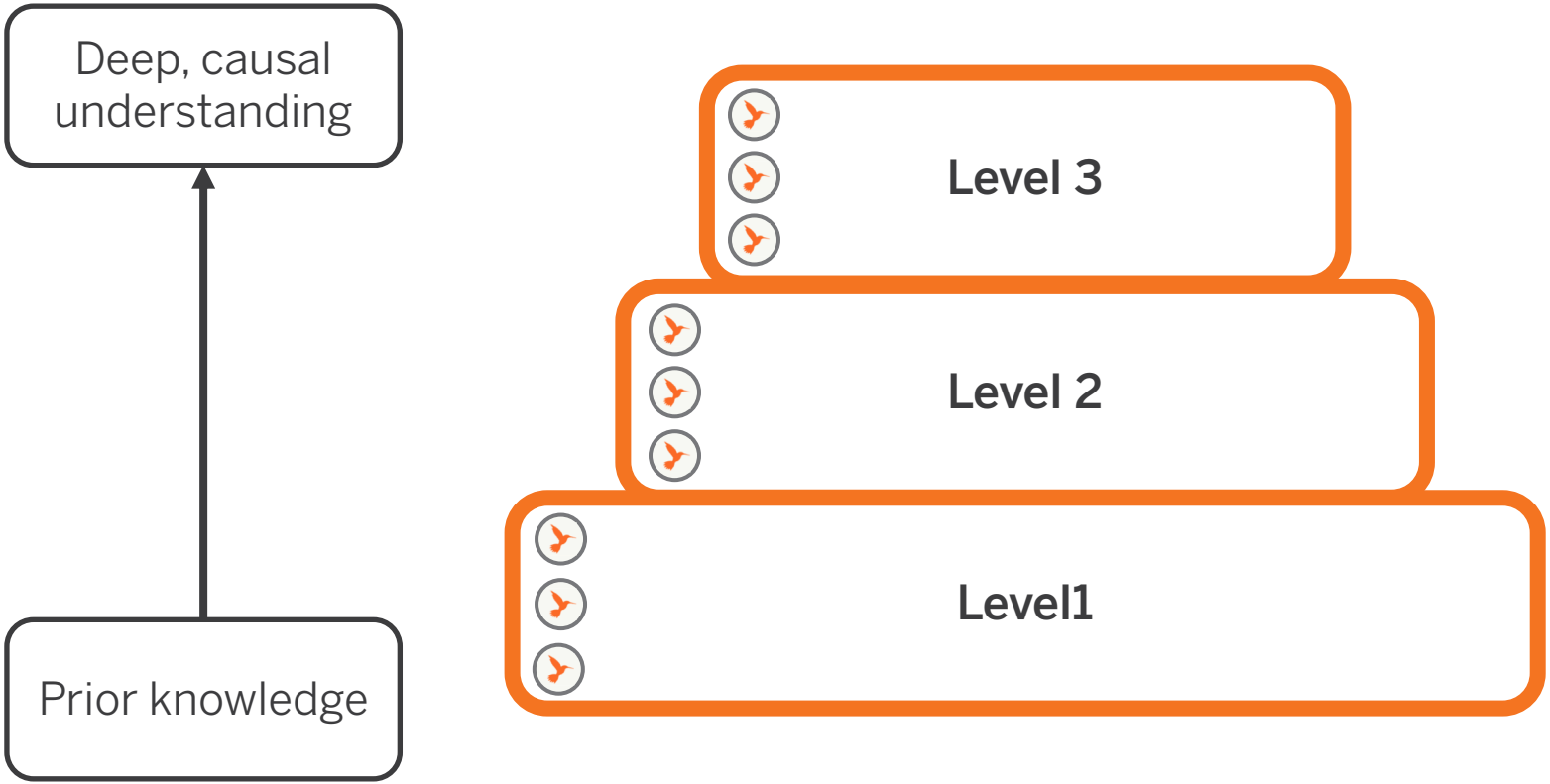
Amplify Science Assessment System

Pre- and End-of-Unit Assessments



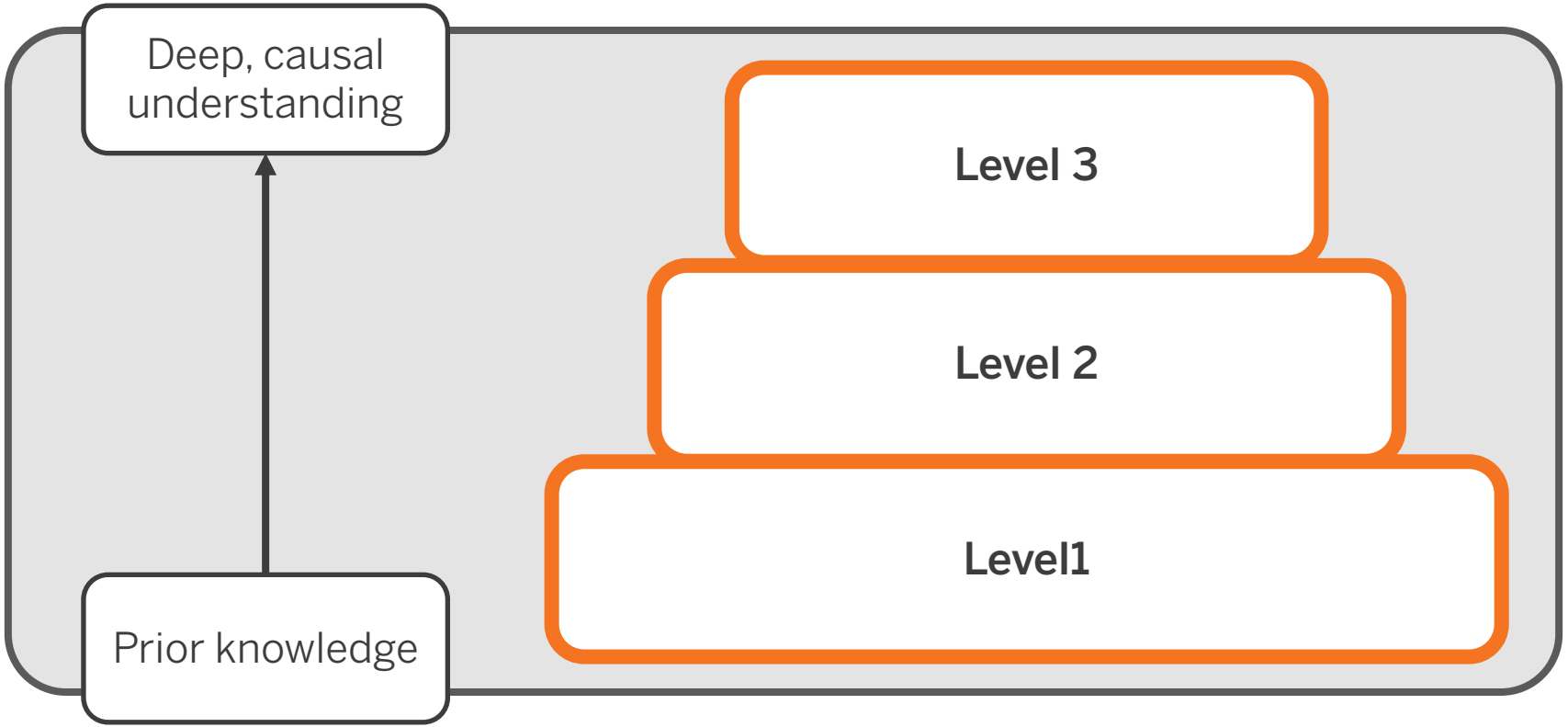
Critical Juncture Assessments

On-the-Fly Assessments

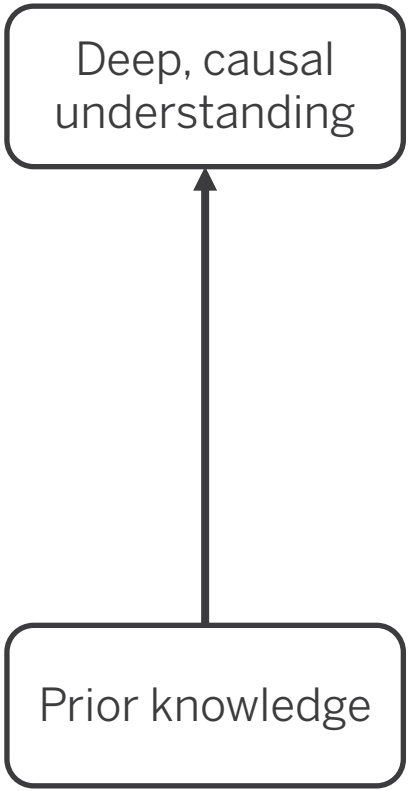


Student Self-Assessments

Portfolio Assessment



Investigation Assessment



22 Lessons

Energy Conversions

JUMP DOWN TO UNIT GUIDE

GENERATE PRINTABLE TEACHER'S GUIDE

From unit landing page, select “JUMP DOWN TO UNIT GUIDE” to access unit-level resources

Chapter 1: What happened to the electrical system the night of the...

6 Lessons

Chapter 2: What makes the devices in Ergstown output or fail to output...

4 Lessons

Chapter 3: Where does the electrical energy for the devices in Ergstow...

6 Lessons

Amplify Assessment System

- Credible
- Actionable
- Timely

Formative assessment

22 Lessons

Energy Conversions

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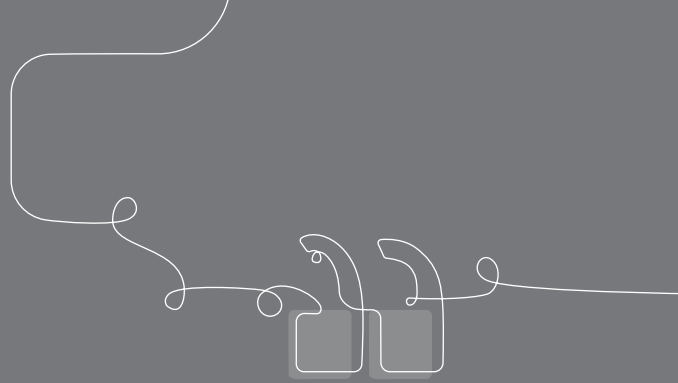


Questions?

Energy Conversions

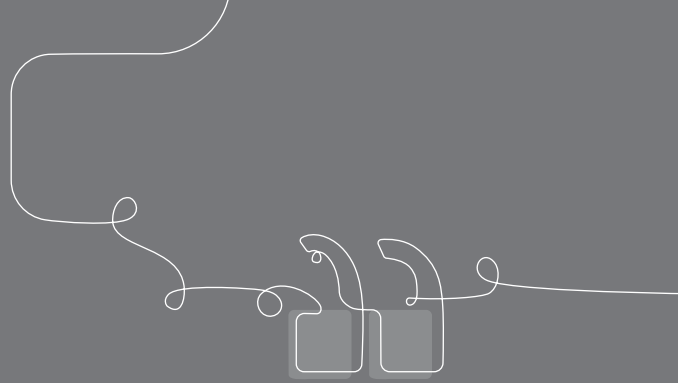
Plan for the day – Day 2

- **Opening the day**
  - Culture building
- **Story of the unit**
  - Unit Guide navigation
  - Build of conceptual understanding using Unit Guide resources
  - Progress Build
  - Coherence
- **Embedded supports for all learners**
  - Analyzing 3-D learning
  - Assessment System
  - Formative assessment
- **Considerations for an Amplify Science classroom**
- **Closing and reflection**
  - Reflection
  - Survey

Considerations for an Amplify Science classroom

The purpose of this part of the day is for you to:

- Apply program resources to plan to teach.



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Energy Conversions

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  - Reflection
  - Survey

Closing and reflection

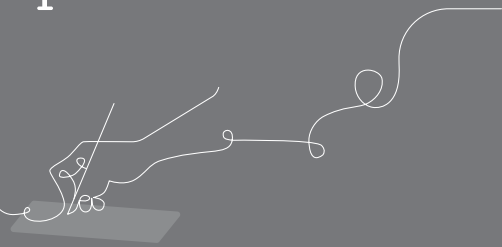
The purpose of this part of the day is for you to:

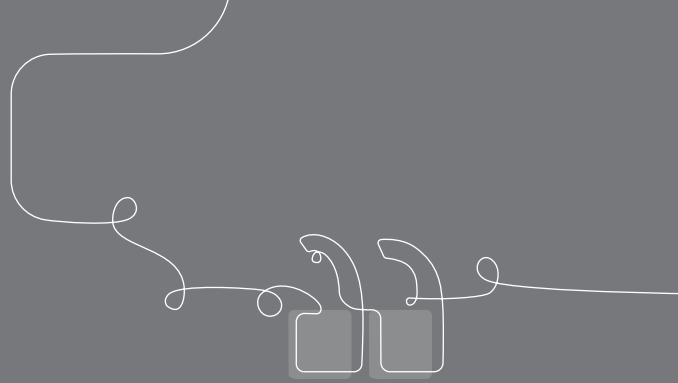
- Reflect on the learning for the day.

Overarching goals

By the end of this institute, you will be able to:

- Navigate program resources and describe how Amplify Science addresses 3-D learning and NYSSLS/NGSS.
- Use Energy Conversions unit resources to plan lessons that support ALL learners.





Questions?