

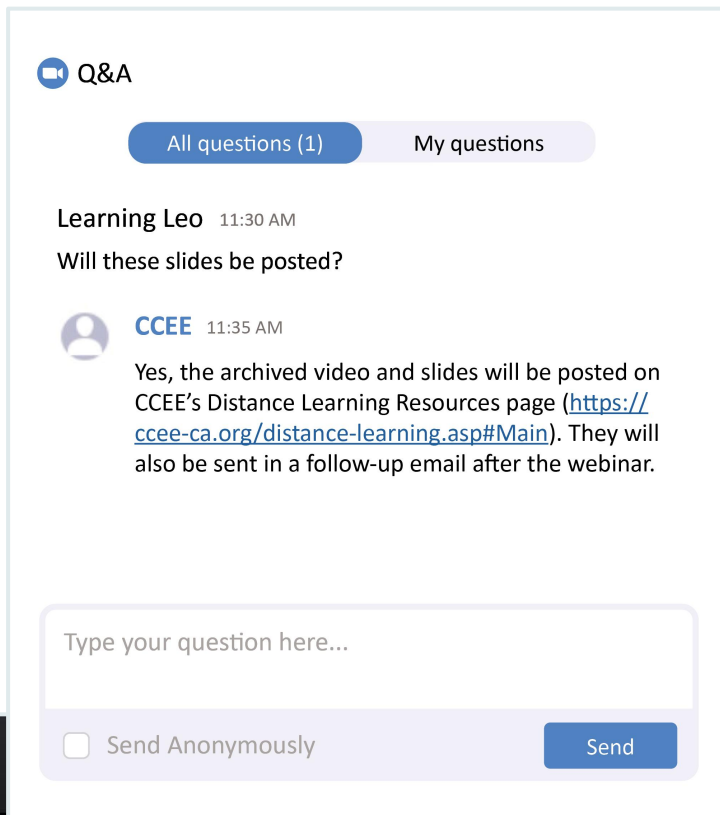
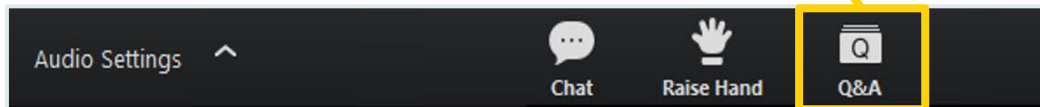
SDCOE Units of Study for Distance Learning: An Integrated and Thematic Approach

San Diego County Office of Education

USING ZOOM Q&A

FOR QUESTIONS:

In your controls at the bottom of the window, click Q&A.



PRESENTERS



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SESSION OUTCOMES

- Provide information about distance learning content and resources for LEAs
- Learn about design components embedded within the SDCOE Units of Study
- Explore the structure and examples of the SDCOE Units of Study
- Share information about future learning opportunities

Our Purpose

We have a moral imperative to ensure that:

- All students participate in and receive daily, high-quality instruction that is aligned to essential learnings and matched to their specific needs.
- Our historically underserved and high-needs students receive equitable access and opportunities to engage in deep learning

Distance Learning Project Goals

Overall Goal - Design up to four units of study that are integrated at the elementary level and thematic at the secondary level

Goal 1

Design integrated/thematic modules for distance learning that support students' deep learning within and across disciplines for use in various distance learning organizational configurations.

Goal 2

Provide support in implementing these modules using appropriate technology platforms and addressing the unique needs of the student population in each district.

San Diego County: DL Units in Grades K-12

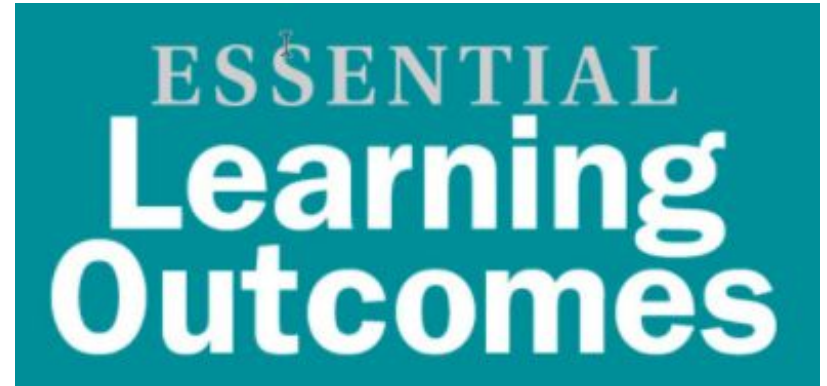
Integrated units of study in grades K-5 and thematic units in grades 6-12 developed in Google

- Units provide flexibility for teachers and students by integrating content across ELA, ELD, Mathematics, Science, History/Social Science, Arts, Computer Science, and Physical Education
- Units are designed to develop increased understanding, retention, and application of key learning concepts by incorporating flexibility and choice throughout the lessons
- Lessons within units utilize text, media, and simulations to support learning and application outside of the classroom
- Check-ins to support Social Emotional Learning are embedded throughout the unit lessons

Lessons Are Built on Essential Learnings For Each Grade Level

Criteria for determining essential learnings:

- **Enduring:** Knowledge and skills of value beyond a single test date or fixed time period
- **Leverage:** Knowledge and skills of value in multiple disciplines and outside of the classroom
- **Readiness:** Knowledge and skills that are necessary for success in the next grade level or in the next level of instruction



Develop Deep Learning Goals: Start with the 6Cs

CREATIVITY

Having an 'entrepreneurial eye' for economic and social opportunities, asking the right inquiry questions to generate novel ideas, and leadership to pursue those ideas and turn them into action.



CRITICAL THINKING

Critically evaluating information and arguments, seeing patterns and connections, constructing meaningful knowledge, and applying it in the real world.



COMMUNICATION

Communicating effectively with a variety of styles, modes, and tools (including digital tools), tailored for a range of audiences.



CHARACTER

Learning to deep learn, armed with the essential character traits of grit, tenacity, perseverance, and resilience; and the ability to make learning an integral part of living.



CITIZENSHIP

Thinking like global citizens, considering global issues based on a deep understanding of diverse values and worldviews, and with a genuine interest and ability to solve ambiguous and complex real-world problems that impact human and environmental sustainability.



COLLABORATION

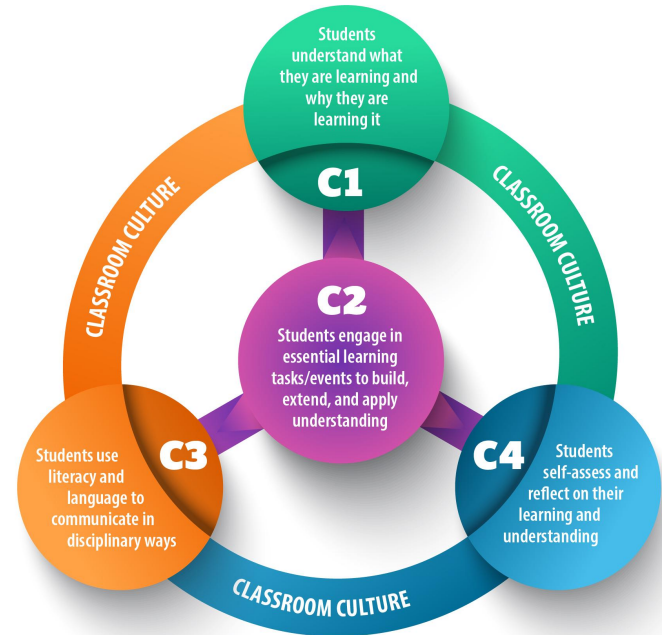
Work interdependently and synergistically in teams with strong interpersonal and team-related skills including effective management of team dynamics and challenges, making substantive decisions together, and learning from and contributing to the learning of others.



Lesson Design Principles - Components of Student Learning

There are four components of student learning that are shared across content areas and embedded in all lessons:

- Students understand what they are learning and why they are learning it
- Students engage in essential learning tasks/events to build, extend, and apply understanding
- Students use language and literacy to communicate in disciplinary ways
- Students self-assess and reflect on their learning and understanding



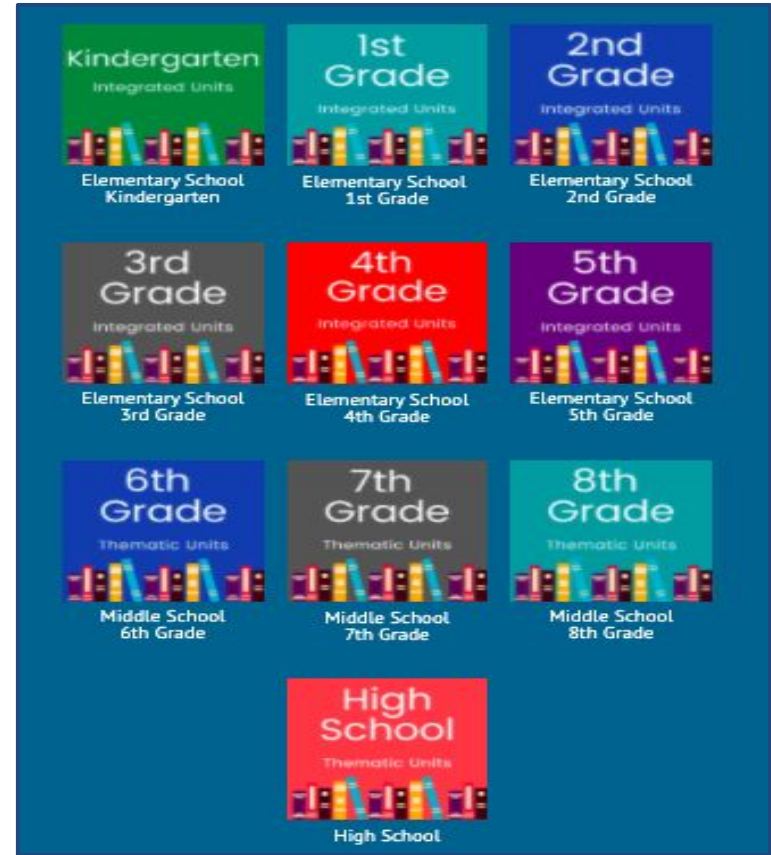
SDCOE Developed Resource



Document: Guidance for Districts: Instructional Design, Instructional Practice, and Support for ALL Students

San Diego County: DL Units in Grades K-HS

- Link to Access Units of Study:
<https://bit.ly/SDCOE-Learn>
- Two units in each grade level are live and accessible (3-5 weeks of instruction per unit)



INTEGRATED ELEMENTARY UNITS OF STUDY

Elementary Units

	K	1st	2nd	3rd	4th	5th
Unit 1	Super Me, Super We	Parts of a Whole	Observing and Describing Myself & the World Around Me	Balanced and Unbalanced	Structure and Function	Interactions and Systems: People, Communities and the Environment
Unit 2	My Community and Me	More or Less	My Family, Culture and Community Help me Know My Place in the World	Everything is Awesome: How Building Blocks Reveal the Structure of Our World	Change and Movement	Scale Up! Leverage Your Impact

3rd Grade: Balance and Unbalance

Unit

Modules



0 | Introduction to Balanced and Unbalanced Unit Grade 3



1 | What is Balance? - Balanced and Unbalanced Unit Grade 3



2 | Using Balance - Balanced/Unbalanced Unit Grade 3



3 | Balance in the World - Balanced/Unbalanced Unit Grade 3

3rd Grade: Balance and Unbalance

Module 0 - Introduction

Student materials:

→ Introduction to the Unit



CCEE Distance Learning Consortium
Grade 3 | **Balanced and Unbalanced**
Module 0 | Introduction to the Unit

During this unit, you will work through 3 modules. Each module has an idea that you will be learning about and questions to guide your learning.

You will describe balance in three ways, use balance to solve problems, consider how you balance your daily activities, and look at balance in the world.

At the end of this learning, you should be able to answer:

- How does balance affect me and the world around me?

3rd Grade: Balance and Unbalance

Module 0 - Introduction



(Source: [Pixabay](#))

Student materials:

- Introduction to the Unit
- Guiding questions

Questions to think about:

- How can I describe what balance means in my own words?
- How can I use what I know about **unbalanced**, **equal** and **centered** to explain balance?
- How can examples of balance help me understand balance?

3rd Grade: Balance and Unbalance

Module 0 - Introduction

Look for the pictures next to each activity as a reminder of what you should be doing:



Read text or **watch** a video to build understanding



Observe or **look** at a picture or situation



Record ideas, reflect, or answer questions



Follow steps to **complete** an activity



Talk to a partner, share with a group, or participate in a discussion



Think about a question or idea



Listen to a recording or a song

Student materials:

- Introduction to the Unit
- Guiding questions
- Student Action Symbols

3rd Grade: Balance and Unbalance

Module 0 - Introduction

CCEE Distance Learning Consortium
Grade 3 | **Balanced and Unbalanced**
Module 0 | Introduction to the Unit

Teacher materials:

→ About the design

Teacher Notes

The goal of this module is for your students to understand balance, various applications of balance, and the idea of balance in the world around them.

The three modules integrate 12 content areas of study, designed with a series of learning activities and reflections that help students build their understanding of balance and various applications of balance. The modules have been designed to be completed in sequential order, with notes built in for the teacher to help make important instructional decisions.

The curriculum has been designed to work in a variety of distance learning situations. We have added specific notes to the teacher when synchronous or asynchronous learning should be considered in specific learning activities.

The notes that follow are meant to help to communicate the specific inclusive design of this curriculum unit, the CA content standards that are addressed in each module, materials students will need for each module, and considerations for Social Emotional Learning (both embedded and possible extensions).

3rd Grade: Balance and Unbalance

Module 0 - Introduction

Additional Considerations

Social Emotional Learning:

Teachers are encouraged to personalize this unit to do the following:

- Let your students and families know who you are and understand your expectations.
- Get to know your students and families and build positive relationships.
- Check in on students about each of the competencies.
- Give students choices to get to know each other.
- Allow for choice in demonstrating competency/evidence.

These tasks are not evidence of student learning!

Some suggestions:

- To enhance asynchronous learning, provide students (i.e. mini-lessons to reinforce new or learned skills).

Students and household support:

We recognize that many students have unique situations in their home environment. To be inclusive of the many configurations of individuals in a household, we will refer to adults and household members that are working with a student at home as *learning partners*. Learning partners include, but are not limited to, parents, guardians, extended family members, adults residing in the home, and siblings.

As there are many opportunities to check with and provide feedback to students, it is suggested that you survey students' families and their learning partners to determine their preferred method of communication and time frames that might be more convenient.

Teacher materials:

- About the design
- Considerations and Supports

3rd Grade: Balance and Unbalance

Dance

- **3.DA:Pr5.a.** Replicate body shapes, movement characteristics, and movement patterns in a dance sequence with awareness of body alignment and core support.

English Language Arts

- **W.3.8** Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.
- **SL.3.1** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.

Health:

- **7.1M** Evaluate effective strategies to cope with fear, stress, anger, loss and grief in oneself and others.

Teacher materials:

- About the design
- Considerations and Supports
- List of content standards by module

3rd Grade: Balance and Unbalance

Module 0 - Introduction

Module 2 Materials:

- Tablet or computer for ScratchJr and various video clips
- Recording device (phone or tablet work well)
- Journal or paper and pen or pencil
- Costumes and props or materials for students to make them
- Hula Hoops or string or chalk
- Suggested Texts
- Materials to construct a Rube Goldberg machine
- Wind up toys

Teacher materials:

- About the design
- Considerations and Supports
- List of content standards by module
- List of materials

CCEE Distance Learning Consortium
Grade 3 | **Balanced and Unbalanced**
Module 0 | Introduction to the Unit

Teacher Notes

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CCEE Distance Learning Consortium
Grade 3 | **Balanced and Unbalanced**
Module 0 | Introduction to the Unit

Module 1 - What is Balance?



(Source: [Pixabay](#))

Questions to think about:

- How can I describe what balance means in my own words?
- How can I use what I know about **unbalanced**, **equal** and **centered** to explain balance?
- How can examples of balance help me understand balance?

3rd Grade: Balance and Unbalance

Module 1 - What is Balance?

d-ELD

- d-ELD Student Activities - Balanced...
- 1.0 | Introduction - Balanced an...
- 1.1 | Balanced vs. Unbalanced -...
- 1.1 | Balanced vs. Unbalanced (...
- 1.2 | Balanced means "equal" - ...
- 1.2 Balance as "equal" (Part 2) ...
- 1.3 | Balanced means "centered...
- 1.4 | Reflection - Balanced and ...
- D-ELD Teacher Resource for Ba...
- Teacher Resource for Balanced...

student

teacher

3rd Grade: Balance and Unbalance

Module 1 - What is Balance?

Sometimes the easiest way to describe something is to describe what it isn't.

In this section, we're going to try and better understand balance by looking at unbalanced.

Let's begin with ourselves. Can you think of a time when you felt unbalanced? Maybe you put on a really full backpack while seated and when you stood up you felt unbalanced.



(Source: A.Mendivil)

Students understand what they are learning and why they are learning it

C1

Sometimes feeling unbalanced is physical, like feeling dizzy or like you might fall to one side, but sometimes it's an emotional feeling. Can you think of a time when you felt unbalanced emotionally?

One way to find your emotional balance is through mindfulness exercises. Let's try one out!

student

- d-ELD Student Activities - Balanced... St
- 1.0 | Introduction - Balanced an... C:
- 1.1 | Balanced vs. Unbalanced - ... C:
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- D-ELD Teacher Resource for Ba... St
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3rd Grade: Balance and Unbalance

Module 1 - What is Balance?

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One way to find your emotional balance is through mindfulness exercises. Let's try one out!



(Source: [Flickr.com](https://www.flickr.com/photos/forbesoste/) by ForbesOste is licensed under CC BY 2.0)











Breathing Bag Mindfulness

For this activity, you'll need:

- space to lay down - a clear space on the floor works best for this, and you can use a yoga mat, rug, towel or lightweight blanket to lay on top of if that is more comfortable.
- a bean bag - you can use any small light object that won't roll easily, like a small stuffed animal or a light book.
- optional - calm, relaxing music or sounds to listen to during the activity.

You will want to read the directions through first or have someone read the directions to you, step by step, as you move through the activity.

student

	d-ELD Student Activities - Balanced...	St
	1.0 Introduction - Balanced an...	C:
	1.1 Balanced vs. Unbalanced - ...	C:
	1.1 Balanced vs. Unbalanced (...	C:
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	1.4 Reflection - Balanced and ...	C:
	D-ELD Teacher Resource for Ba...	St
	Teacher Resource for Balanced...	C:

Social - Emotional Learning embedded

3rd Grade: Balance and Unbalance

Module 1 - What is Balance?

Trade-Offs





Think of a time when you traded something for something else. What did you give up? What did you get? Was it a fair trade? Why or why not?





Share with a classmate

Another example of balance means **equal** to what you get.

Look at the following trades:

Trade this:	for this:
 <p>(Source: Adapted from Pixabay)</p>	 <p>(Source: Adapted from Pixabay)</p>

Trade this:	for this:
 <p>(Source: Pixabay)</p>	 <p>(Source: Pixabay)</p>



One of the trades above is a fair trade-off, and the other trade *might* be a fair trade for someone, but for others it won't be a fair trade.

- Describe how one of the trades is a fair trade. What makes it a fair trade to you?
- Then describe how the other trade might not be a fair trade for everyone.
- How does a **fair trade** help you understand **balanced as equal**?

student

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- 1.1 | Balanced vs. Unbalanced - ... Co
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3rd Grade: Balance and Unbalance

Module 1 - What is Balance?

Student Facing Materials	Teacher Notes
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What is balance?

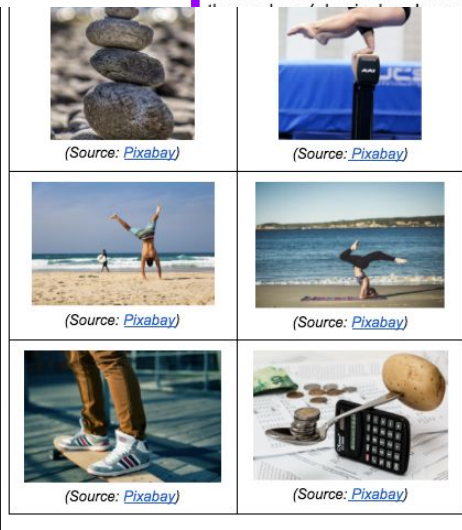
In this module, we are going to explore different ways we can think of balance. Before we begin, it's important to consider how you think of balance.

Look at these pictures below and choose two that help you describe what you think balance is. As you look at the pictures, consider:

The purpose of this module is for students to develop their understanding of balance in different context and content areas. By the end of the module, students should feel confident that they can describe what balance is (or isn't) by using **unbalanced, equal, and centered** in their definition.

In this module, students will explore balance in

- What do you notice?
- How does the picture show
- What does balance mean to



This module addresses some of the ELA reading for informational texts, speaking and listening and writing standards for 3rd grade. Students will:

- Interpret and analyze text that is read, viewed, and/or listened to
- Communicate ideas and opinions through writing, speaking, video, or a presentation

In addition, students will work towards understanding balanced and unbalanced forces (Science standard 3-PS2-1), performing an inverted balance (Physical Education standard 1.2), interpreting products and quotients (Math standards 3.OA.A) as well as other standards in Computer Science, Math, Health, History-Social Science, Physical Education, Visual Art, Media Art, Dance and Music.

A complete list of the standards are available in Module 0, and standards are listed where appropriate throughout the teacher materials.

Choice to remove barriers and increase access

Integrated Content

teacher

- d-ELD Student Activities - Balanced... St
- 1.0 | Introduction - Balanced an... Co
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- D-ELD Teacher Resource for Ba... St
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3rd Grade: Balance and Unbalance

Module 1 - What is Balance?

full backpack while seated and when you stood up you felt unbalanced.



(Source: A.Mendivil)

Sometimes feeling unbalanced is physical, like feeling dizzy or like you might fall to one side, but sometimes it's an emotional feeling. Can you think of a time when you felt unbalanced emotionally?

One way to find your emotional balance is through mindfulness exercises. Let's try one out!

Mind Full, or Mindful?



make connections with students. If this activity is run synchronously, we would encourage you to share a personal example of feeling physically unbalanced and then opening the opportunity for students to each share. If this activity is being run asynchronously, you can make a video recording introducing a personal example and ask students to respond in a chat or discussion feature of a LMS to share their experiences with unbalance.

Most people are convinced that feeling unbalanced physically is normal, and so sharing about an experience with physical unbalance usually does not

feel risky. On the other hand - there are stigmas attached in our society that link unbalanced emotions with weakness or illness. You can work to undo many negative stigmas around emotional health by helping to normalize feelings of emotional unbalance. Sharing stories, as mentioned above, can help to do this in synchronous environments. Another option is to provide examples all students can relate to such as feeling overwhelmed, feeling out of control, or trying to ignore feelings such as sadness or anger and pretending things are okay. Feeling extremely happy or excited can also be a form of unbalance - students may have experienced this if they have been overly excited or happy about a birthday party, celebration or trip (like to Disneyland), only to experience the emotional let-down after the birthday party, celebration, or trip.

This activity is adapted from the lesson [Breathing Bags](#) from [Open Phys Ed](#), which provides many other mindfulness and yoga lessons for elementary

Synchronous
or
asynchronous

Social -
Emotional
Learning
supports

teacher

Additional
resources

	d-ELD Student Activities - Balanced...	St
	1.0 Introduction - Balanced an...	C:
	1.1 Balanced vs. Unbalanced - ...	C:
	1.1 Balanced vs. Unbalanced (...	C:
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	1.4 Reflection - Balanced and ...	C:
	D-ELD Teacher Resource for Ba...	St
	Teacher Resource for Balanced...	C:

3rd Grade: Balance and Unbalance

Module 1 - What is Balance?

Suggested Resources:

Sample Texts in English:

- [Kites Sail High: A Book About Verbs](#)
- [It's hard to be a verb](#)
- [If you were a synonym](#)
- [Pitch and Throw, Grasp and Know - What Is a Synonym?](#)
- [If you were an antonym](#)

Sample Texts in Spanish:

- [Aprendo jugando](#)











Sample Language Learning Videos in English:

- [Synonyms for Kids](#)
- [Antonyms for Kids](#)
- [Action verbs-action words](#)
- [Helping verbs for kids](#)

Sample Language Learning Videos in Spanish:

- [Los sinónimos y los antónimos](#)
- [Los sinónimos y los antónimos](#)
- [El verbo](#)

d-ELD

	d-ELD Student Activities - Balanced...	St
	1.0 Introduction - Balanced an...	C:
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THEMATIC SECONDARY UNITS OF STUDY

High School Thematic Units

Unit 1

What Makes Us Human?

Unit 2

Public Health

Courses

- Chemistry in Earth Systems
- AP Computer Science A
- AP CS Principles
- Dance
- Designated ELD
- English Language Arts (9, 10, 11)
- Government
- Integrated Math (1, 2, 3)
- Media Arts
- Modern World History
- Music
- Physical Education
- Physics in the Universe
- The Living Earth
- U.S. History
- Visual Arts

Middle School Thematic Units

Unit 1

- Grade 6 - Communication
- Grade 7 - Communication
- Grade 8 - Communication

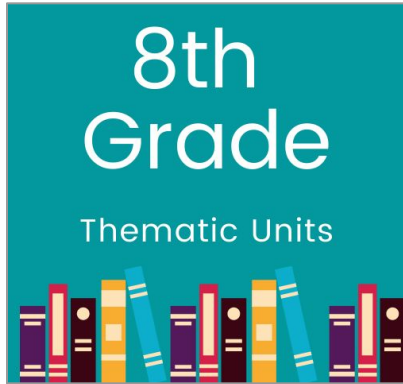
Unit 2

- Grade 6 - Creativity, Who Me?
- Grade 7 - What's Creativity Got to Do With It?
- Grade 8 - Creativity: From Imagination to Innovation

Courses

- Computer Science
- Dance
- Designated ELD
- English Language Arts
- History/Social Studies
- Mathematics
- Media Arts
- Music
- Physical Education
- Science
- Theater
- Visual Arts

Navigating to the Unit
















bit.ly/SDCOE-Learn



Name ↑
(1) Communication Unit - Grade 8
(2) Creativity: From Imagination To Innovation - Grade 8



Name ↑
0 Introduction to Communication Unit Grade 8
Computer Science Module - Communication Unit -Grade 8
Dance - COMING SOON
Designated-ELD - Communication Unit - Grade 8
English Language Arts Module- Communication Unit - Grade 8
History Social Studies - COMING SOON
Mathematics Module - Communication Unit - Grade 8
Media Arts - COMING SOON
Music - COMING SOON
Physical Education Module - Communication Unit - Grade 8
Science Module - Communication Unit - Grade 8
Theater - COMING SOON
Visual Arts - COMING SOON

 0 Introduction to Communication Unit Grade 8
 Computer Science Module - Communication Unit -Grade 8
 Dance - COMING SOON
 Designated-ELD - Communication Unit - Grade 8
 English Language Arts Module- Communication Unit - Grade 8
 History Social Studies - COMING SOON
 Mathematics Module - Communication Unit - Grade 8
 Media Arts - COMING SOON
 Music - COMING SOON
 Physical Education Module - Communication Unit - Grade 8
 Science Module - Communication Unit - Grade 8
 Theater - COMING SOON
 Visual Arts - COMING SOON
















Introduction to Communication Unit

Background information for students and teachers who are using the theme across multiple content areas.

How does communication actually take place?

Grade 8

 0 Introduction to Communication Unit Grade 8
 Computer Science Module - Communication Unit -Grade 8
 Dance - COMING SOON
 Designated-ELD - Communication Unit - Grade 8
 English Language Arts Module- Communication Unit - Grade 8
 History Social Studies - COMING SOON
 Mathematics Module - Communication Unit - Grade 8
 Media Arts - COMING SOON
 Music - COMING SOON
 Physical Education Module - Communication Unit - Grade 8
 Science Module - Communication Unit - Grade 8
 Theater - COMING SOON
 Visual Arts - COMING SOON

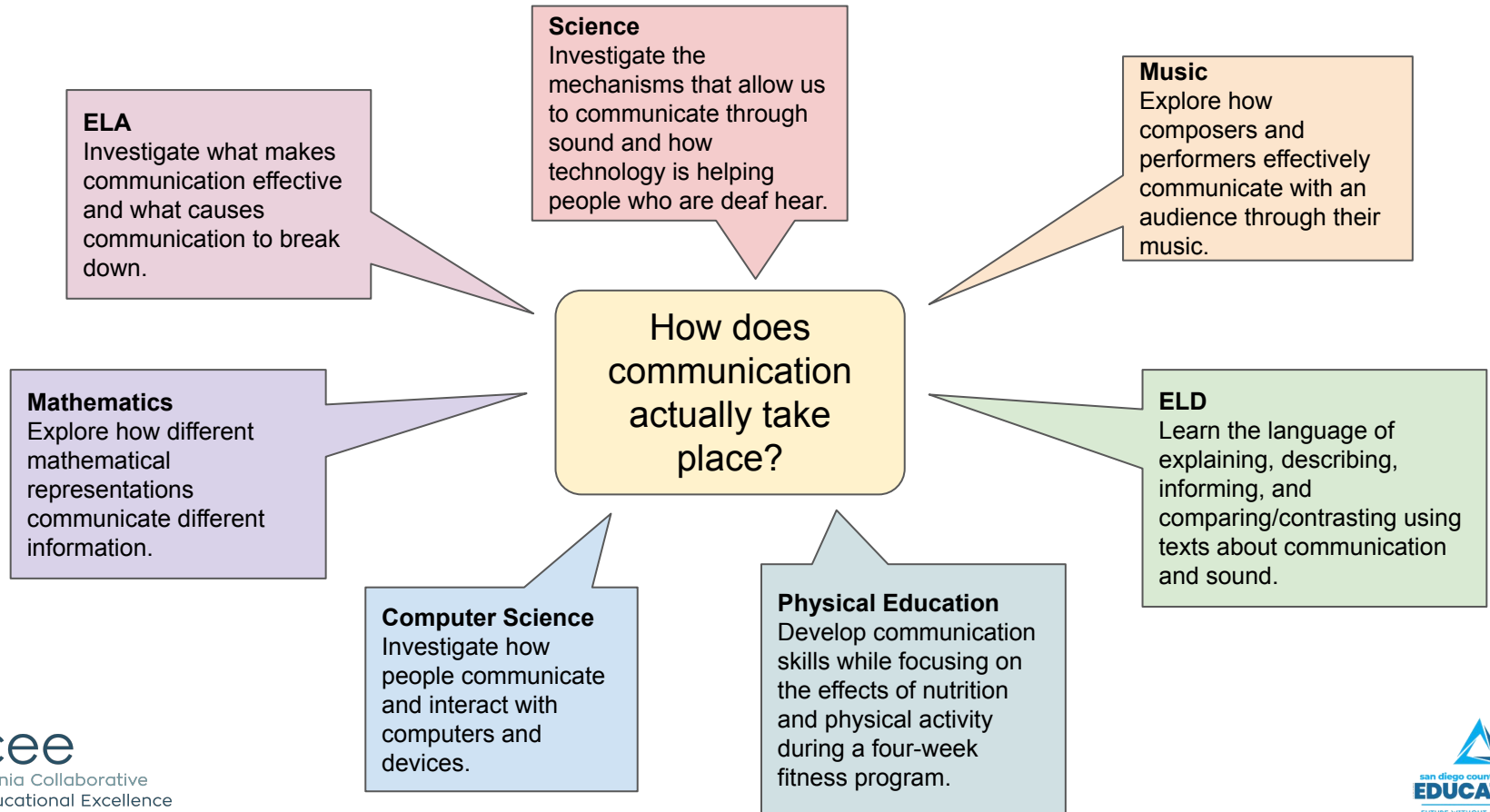















Content Modules

Modules for different content areas connect in a unique way to the overall theme of communication.

Grade 8

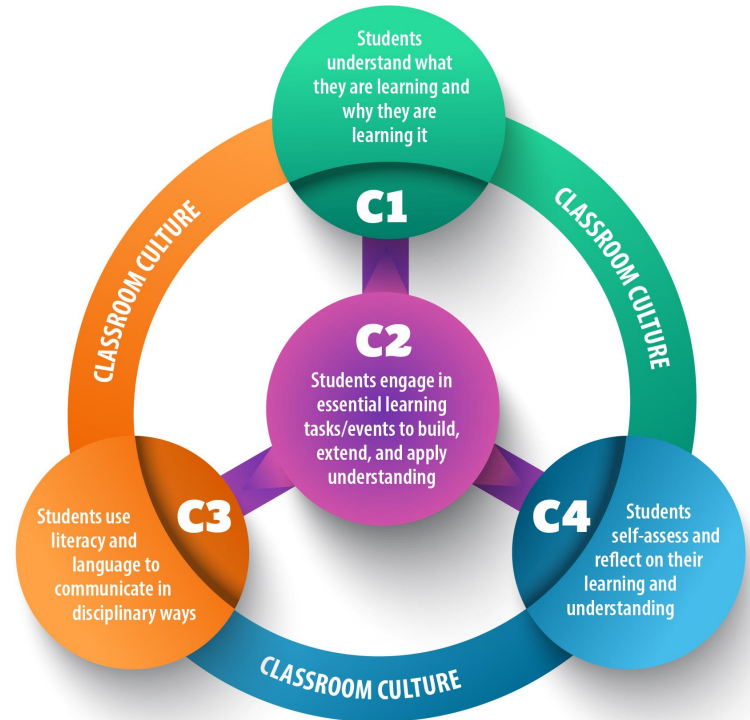
A Thematic Approach - Grade 8: Communication



 0 Introduction to Communication Unit Grade 8
 Computer Science Module - Communication Unit -Grade 8
 Dance - COMING SOON
 Designated-ELD - Communication Unit - Grade 8
 English Language Arts Module- Communication Unit - Grade 8
 History Social Studies - COMING SOON
 Mathematics Module - Communication Unit - Grade 8
 Media Arts - COMING SOON
 Music - COMING SOON
 Physical Education Module - Communication Unit - Grade 8
 Science Module - Communication Unit - Grade 8
 Theater - COMING SOON
 Visual Arts - COMING SOON



Let's look at Science 8 module!



Grade 8

Introduction Submodule



0 | Introduction - Communication S

Students think about the theme of communication.



Have you ever thought about the mechanisms by which we are really able to communicate? Imagine you and a friend are standing next to each other and your friend starts talking to you. Through a series of actions in your friend's body, through the air between you both, and inside of you, sounds are produced and perceived.

Maybe you and your friend aren't standing together, but rather talking on the phone. Again, your friend talks, but this time the sound doesn't directly travel to your ears. It instead is transferred through a digital signal that is created in their cell phone, transmitted through a digital network, interpreted by your cell phone where a tiny speaker produces a sound, and you hear your friend talking like they are right next to you.

When you stop and think about it, the process is pretty amazing!

How does communication actually take place?

Students understand what they are learning and why they are learning it

C1



1 | Introducing the Phenomenon - C



2 | Exploring Sound - Communicati



3 | Sound Simulation - Communica



4 | Initial Model of Sound - Commu



5 | Signal Generator Exploration - C

ccee

California Collaborative
for Educational Excellence

Introduction Submodule



0 | Introduction - Communication S

Students use a phenomenon and driving question as focus for learning.

In this module you will explore how we communicate through the production and interpretation of sounds. The phenomenon and driving question for this module is:

Anchoring Phenomenon:

Cochlear implants allow people to hear.

Driving Question:

How do the sound patterns in music get transferred to a cochlear implant?

How does communication actually take place?

Students understand what they are learning and why they are learning it

C1



1 | Introducing the Phenomenon - C



2 | Exploring Sound - Communicati



3 | Sound Simulation - Communica



4 | Initial Model of Sound - Commu



5 | Signal Generator Exploration - C

Initial Ideas About Sound



In this submodule you will be considering the question, "What is sound?" Take a few minutes to jot down your initial ideas about this question in your science notebook. Also spend some time just listening to the space around you. What sounds are you hearing? How would you describe each sound that you hear? What sounds are pleasant? Which ones are loud or soft? Consider taking a short sound walk and spend a few moments just noticing and listening to all the sounds around you.



Say "Ahhhhh..." loudly. Observe all that your body has to do to make the sound. Record in your science notebook how your body is able to make vocal sounds. Now whisper "Ahhhhh..." What did your body do to *change* the sound? Record your observations in your science notebook.



In your science notebook, create a reflection table like the one below and put as many ideas in each box as you can think of.

My Personal Reflection Table

	Things I know for sure...	Things I think I know but am not completely sure...	Things I wonder about or would like to know more about...
What sound is			
How sounds are transmitted from a source to a receiver			
Characteristics of sound waves			



1 | Introducing the Phenomenon - (



2 | Exploring Sound - Communicati



3 | Sound Simulation - Communica

C2

Students engage in essential learning tasks/events to build, extend, and apply understanding

C4

Students self-assess and reflect on their learning and understanding

Students

- Record initial ideas about sound
- Go on a listening walk and describe the sounds around them
- Observe and record how their body makes sound
- Self-assess prior knowledge and experiences

Sound Exploration (Part 1)



Open and make a copy or print the Sound Exploration worksheet.

[Sound Exploration](#) (1) worksheet (Source: #ProjectPhenomena)

Open the Sound Wave Simulation in your internet browser.

Waves Intro

Water Sound Light

Use the sound simulator (Source: phET)

[Sound Wave Simulation](#) (2) (Source: phET)

Use the sound wave simulator and complete Part 1 of the Sound Exploration worksheet. Follow the procedure and answer the questions in part 1.



With a group, class, or learning partner, be ready to share your observations about:

- How sound is produced
- The role particles play in sound
- What makes sound waves
- How a sound wave moves
- How particles change as a sound wave is made and moves



2 | Exploring Sound - Communicati



3 | Sound Simulation - Communica



4 | Initial Model of Sound - Commu

C2

Students engage in essential learning tasks/events to build, extend, and apply understanding

C4

Students self-assess and reflect on their learning and understanding

Students

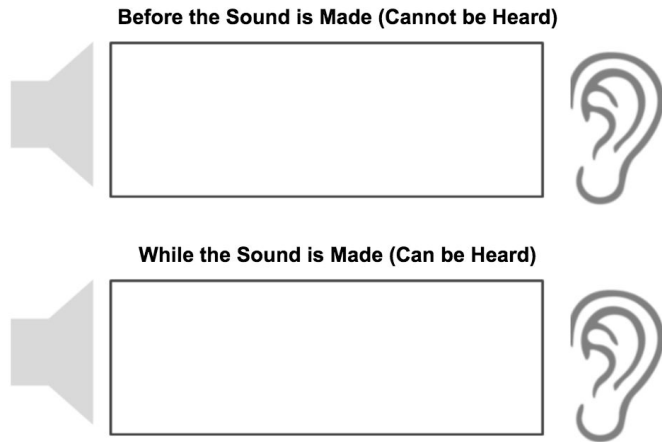
- Conduct an asynchronous simulation experiment
- Analyze data and develop initial models
- Communicate to others in a synchronous discussion to assess their understanding and learning

Creating an Initial Model



In this submodule you will work to create an initial sound model that shows how a sound pulse moves from a speaker to an ear in a closed system. Your model will show what happens prior to a sound being made and also during the making of a sound.

You will use the diagram below when creating your model.



Use the diagram provided to make a model that includes LABELS and IMAGES to show:

1. The **visible** and **invisible** components of the speaker-ear system
2. Air particles and how they are moving
3. Important parts of the speaker and their motion
4. Parts of the ear and their motion
5. The forces that are causing motion (using arrows)
6. Air pressure and differences in air pressure
7. Prediction of how the sound interacts with the ear

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3 | Sound Simulation - Communication



4 | Initial Model of Sound - Communication



5 | Signal Generator Exploration - Communication

C2

Students engage in essential learning tasks/events to build, extend, and apply understanding

C4

Students self-assess and reflect on their learning and understanding

Students

- Develop an initial model of sound using a set of criteria and data
- Compare their model with others to assess their understanding and learning
- Revise their model as needed

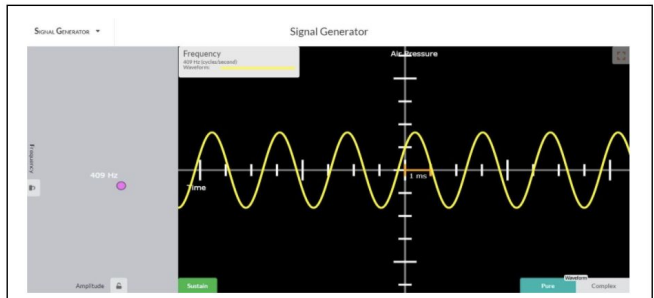


In this submodule you will explore the focus question, “How do our ears hear sound?” You will continue to use the signal generator as you test others’ perception of sound.



In this task you will use the signal generator to test others’ perception of sound by giving them a hearing test. To do this, you will need to complete these steps:

1. If this activity is done in a classroom setting, your teacher may assign you to groups or partners. If you are doing this task from home, you will need to identify 3-4 others who you can work with to complete the activity.
2. Write the names of the people of which you will be testing their perception of sound.
3. Test the volume on your computer by playing a sound, song, or video. The volume should be at a comfortable level (not too loud or soft).
4. Try to remove as many background sounds and noises in the room where you are performing your experiment as possible, including sounds from electronics and talking.
5. Go to the signal generator. **Lock the amplitude at the halfway point on the signal generator.**



Screenshot of the signal generator (Source: Listening to Waves)

[Signal Generator](#) (1) (Source: Listening to Waves)

A short [video tutorial](#) (2) on how to use this generator is available to help you learn how to use this tool (Source: Listening to Waves)



5 | Signal Generator Exploration - C



6 | Perception Range - Communicat



7 | Oscilloscope Exploration - Com

C2
Students engage in essential learning tasks/events to build, extend, and apply understanding

C4 Students self-assess and reflect on their learning and understanding

Students

- Test perceptions of sound using a signal generator
- Share their data in a class discussion
- Look for patterns in data


 Now consider the anchoring phenomenon and driving question:

Anchoring Phenomenon:

Cochlear implants allow people to hear.


Driving Question:

How do the sound patterns in music get transferred to a cochlear implant?

 Use your science notebook, the work you did throughout this module, and the models you have created to construct an explanation of the driving question.

Your explanation can be written or recorded on video. Your teacher will provide more details on how to submit your work.

A Final Reflection

 In your science notebook, create a final reflection table like the one below and put as many ideas in each box that you can think of.

My Personal Reflection Table

	Things I know for sure...	Things I think I know but am not completely sure...	Things I wonder about or would like to know more about...
What sound is			
How sounds are transmitted from a source to a receiver			
Characteristics of sound waves			



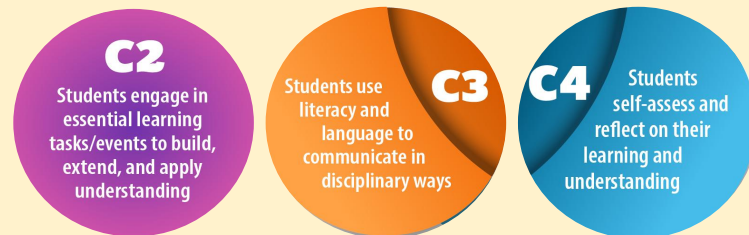
14 | What is a Cochlear Implant? -



15 | Final Explanation of the Phenomenon



Teacher Resource for Communication



Students

- Develop final model
- Respond to driving question related to phenomenon
- Communicate explanation to others
- Self-assess learning and consider new questions that have emerged



In this submodule you will create your final model which shows how sound moves from a speaker to an ear in a closed system. You will develop your model based on what you have learned from using the pHET sound simulation, signal generator, oscilloscope, and spectrogram.

As it is difficult to include all your ideas on a single diagram, you will make several drawings representing different aspects of sound. You should print the Speaker/Ear Final Model template and use it to complete your model.

[Speaker/Ear Final Model](#) (1) template (Source: #ProjectPhenomena)

Your final model should include:

- Words and images to show the invisible and visible components of the speaker/ear system and their involvement in generating and hearing sound
- Words connecting air particles' motion and density to show areas of high and low pressure, and high and low frequency, and high and low amplitude
- Show how forces, pressure, and time are connected to air particles and frequency and amplitude
- Show patterns in sound, including the terms "period" and "cycle"
- Words and images to show how frequency and amplitude are represented in the system

Remember that these models should show all of your thinking about how sound moves from a speaker to an ear in this system.

A rubric is available to help you self-assess the final sound model you have developed.

NOTE: If students cannot print out the template or rubric at home, the teacher will need to prepare and disseminate the worksheet for students to use.

Assessment Point:

This summative assessment opportunity should be used to assess a student's overall understanding of sound. If there are gaps in learning or ideas that are not clear, some re-teaching should be planned.

A [grading checklist](#) based on the [model rubric](#) is available to assess students.

NOTE: Once students have finished their final model in this submodule, they will return to the anchoring phenomenon and will construct an explanation for how cochlear implants allow someone who is deaf to hear.

Discussion Point:

If possible, students should have the opportunity to share their final model. For some students, providing the opportunity to co-construct the final model will allow for discourse opportunities and additional sense-making experiences about the learning across this module.



Teacher Resource for Communication

Teacher Supports

- Assessment Points
- Discussion Points
- Checklists and Rubrics
- Additional Notes

Upcoming Teacher Support Webinars

- Kindergarten - Grade 2
 - September 3, 3:00-4:00
 - OMS Registration to Share:
<http://sdcoe.k12oms.org/865-190397>
- Grade 3 - Grade 5
 - August 26, 3:00-4:00
 - OMS Registration to Share:
<http://sdcoe.k12oms.org/865-190398>
- Middle School
 - August 25, 3:30-4:30
 - OMS Registration to Share:
<http://sdcoe.k12oms.org/865-190407>
- High School
 - September 2, 3:30-4:30
 - OMS Registration to Share:
<http://sdcoe.k12oms.org/865-190408>



QUESTIONS?



tinyurl.com/SDCOE-814

Thank You!