

Sound Energy Unit for Middle & High School

**For
Special
Ed**

Special Needs for Special Kids





This unit was created with this guy in mind. He has autism and an intellectual disability. He is a non-reader, and loves the sound of piano keys. With some support he is able to do this unit, and enjoys the challenge. He is my tester!!

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This unit contains over 150 pages of material. I have included a detailed lesson plan to help you make the most of everything in this unit including how to add some group activities.

Sound Energy Lesson Plan

Preparation

- Print out a vocabulary board for each student to use throughout unit
 - Laminate or place in page protector
- Book
 - Print out, laminate, and bind
 - OR your students can listen to the pre-recorded version
- Vocabulary cards
 - Print out a set of cards onto cardstock and laminate
 - Make one set for each student and also one for the teacher to use in I Spy games

Preassessment (do day 1 before starting lesson)

- Choose the form of the assessment that best fits the learning level of your students
- Give the assessment to assess what your students may already know
- I cannot emphasize enough how important this step is. If you want to see growth, this preassessment is so important!!

Teaching Tips

1. *Color Coding:* this is a really easy way to add more structure to a matching activity. Outline or color in an empty box or sorting label. Outline or color in the corresponding picture symbols the same colors. Becomes a color matching task.
 - a. For more info, read more here:
<https://specialneedsforspecialkids.org/2015/09/05/using-color-coding-for-differentiation/>
 - b. I also have a blog post on differentiating one activity 3 ways:
<https://specialneedsforspecialkids.org/2018/10/22/differentiating-1-activity-3-ways-easily-and-effectively/>
2. *Make your own copies of the activities:* Every day I review the activity we did yesterday. For that reason:
 - a. I often complete the activity myself and often laminated it for easy review that I could use year after year.
 - b. My copies were also helpful as either a model for students who needed more support or as a way for more advanced students to self-check their work.

The lesson plans contain:

Overall tips for teaching
students with significant
needs

Quick Look

Day	Activity	Day	Activity
1	<ul style="list-style-type: none"> • Book • Vocab cards activity • Circle map 	7	<ul style="list-style-type: none"> • Book • Experiment #2
2	<ul style="list-style-type: none"> • Book • Vocab cards activity • Sorting Activity 	8	<ul style="list-style-type: none"> • Book • Vocab cards cut and paste • Vocabulary puzzle
3	<ul style="list-style-type: none"> • Book • Vocab cards activity • Sorting activity 	9	<ul style="list-style-type: none"> • Book • Vocab cards cut and paste • Vocabulary puzzle
4	<ul style="list-style-type: none"> • Book • Vocab cards activity • Sequencing activity 	10	<ul style="list-style-type: none"> • Book • Vocab cards activity • Close worksheet
5	<ul style="list-style-type: none"> • Book • Vocab cards activity • Sequencing activity 	11	<ul style="list-style-type: none"> • Book • Vocab cards activity • Close worksheet
6	<ul style="list-style-type: none"> • Book • Experiment #1 	12	<ul style="list-style-type: none"> • Assessment

The lesson plans contain:

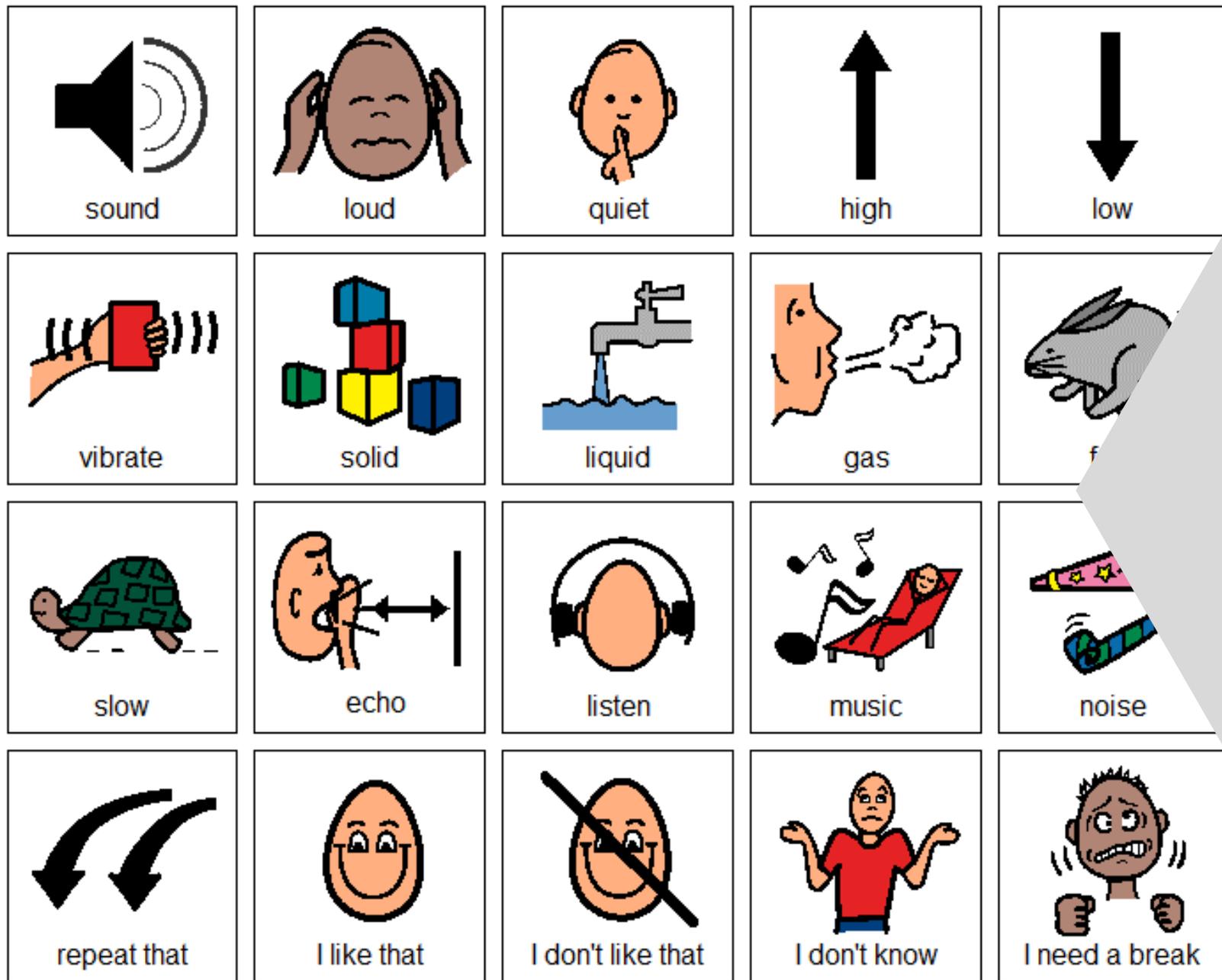
A quick look at what you will do each day

Day 11

Activity	Notes	Materials
Read or listen to a recording of the book (10 minutes)	<ul style="list-style-type: none"> • Read through the story, asking lots of questions • Continue to make connections between book and vocabulary board 	<ul style="list-style-type: none"> • Book • Vocabulary board
Vocabulary cards Puzzle Game (10 minutes)	<ul style="list-style-type: none"> • Give each student a pile of pieces • Have them reassemble the pieces into the correct symbols • They may have to ask each other if someone else has the second half to a piece they have. Great for increasing communication and sharing. 	<ul style="list-style-type: none"> • Vocabulary cards (set where each card is cut in half) •
Review (5 minutes)	<ul style="list-style-type: none"> • Review the close worksheet from yesterday 	<ul style="list-style-type: none"> • Finished close worksheet
Close Worksheet (10 minutes)	<ul style="list-style-type: none"> • Complete page 2 close worksheets • Use color coding if needed (see note on page 1 for more information) • This is your first real chance to begin assessing if your students are making connections to the material. 	<ul style="list-style-type: none"> • Book (if needed for students to find answers) • Vocabulary board • Close worksheet • Scissors • Glue
Sharing (10 minutes)	<ul style="list-style-type: none"> • Each student shares their finished close worksheet 	<ul style="list-style-type: none"> • Completed worksheet • Communication devices
Time to Assess	<ul style="list-style-type: none"> • At this point, you should have a fairly good idea of how well your students are doing with the material. • What areas do you need to re-teach before moving onto the final assessment? • Consider redoing some of those specific activities. • Do NOT be afraid of repetition. • Move onto the assessment when you feel your students are ready. 	

The lesson plans contain:

Detailed instructions on how that day's lesson should run



This unit comes with a vocabulary board.

Vocabulary boards are great for ALL students to assist with participation and engagement in group discussions.

Tips on how to use in the unit!!



That vibration travels until it hits another surface where it is either absorbed, transferred, or reflected.



Sound waves travel faster through the water than through the air. That is one reason why certain animals, like sea lions, are better hunters in the water. They can hear things faster and from further away when in the water than when they are on land.

There is a 38 page book with this unit using simple text and photos.

It comes in a pdf version as well as a voice recorded powerpoint (so you don't have to print it out.)

sound

Form of energy that travels through a medium.



vibrate

Molecules moving very fast.



longitudinal wave

A wave that moves through something, pushing the molecules in the same direction it is moving.



frequency

How many vibrations occur in one second.



intensity

How loud a sound is.



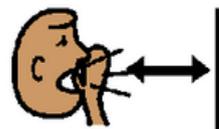
decibel

How the loudness of a

dB

echo

Sound wave that is repeated because it is reflected back off a hard, smooth surface.



echolocation

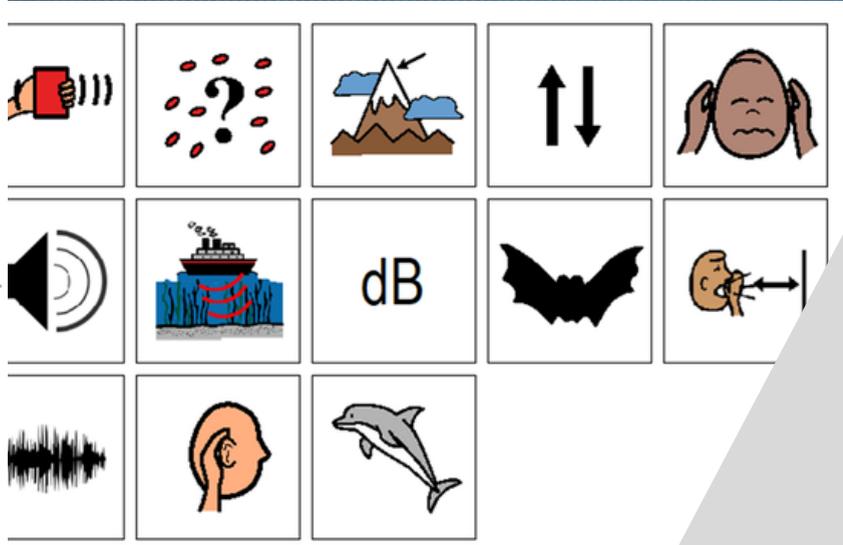
Bats send out ultrasounds that are reflected back and show the location of objects.



There are 13 vocabulary cards that come in color and black and white.

Included are suggestions for group activities to do with these each day.

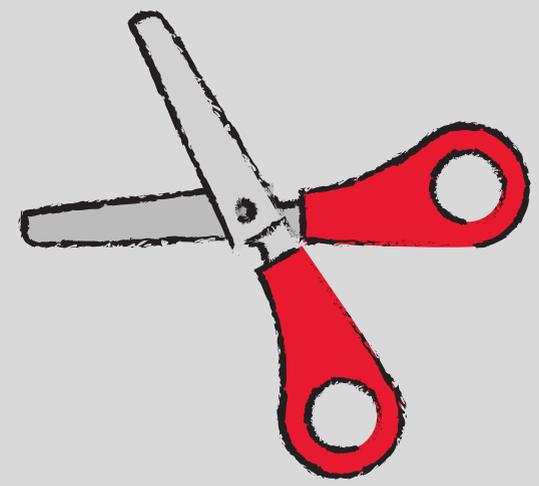
<p>sound</p> <p>Form of energy that travels through a medium.</p> <div style="border: 1px solid black; width: 50px; height: 50px; margin: 10px auto;"></div>	<p>vibrate</p> <p>Molecules moving very fast.</p> <div style="border: 1px solid black; width: 50px; height: 50px; margin: 10px auto;"></div>
<p>longitudinal wave</p> <p>A wave that moves through something, pushing the molecules in the same direction it is moving.</p> <div style="border: 1px solid black; width: 50px; height: 50px; margin: 10px auto;"></div>	<p>frequency</p> <p>How many vibrations occur in one second.</p> <div style="border: 1px solid black; width: 50px; height: 50px; margin: 10px auto;"></div>

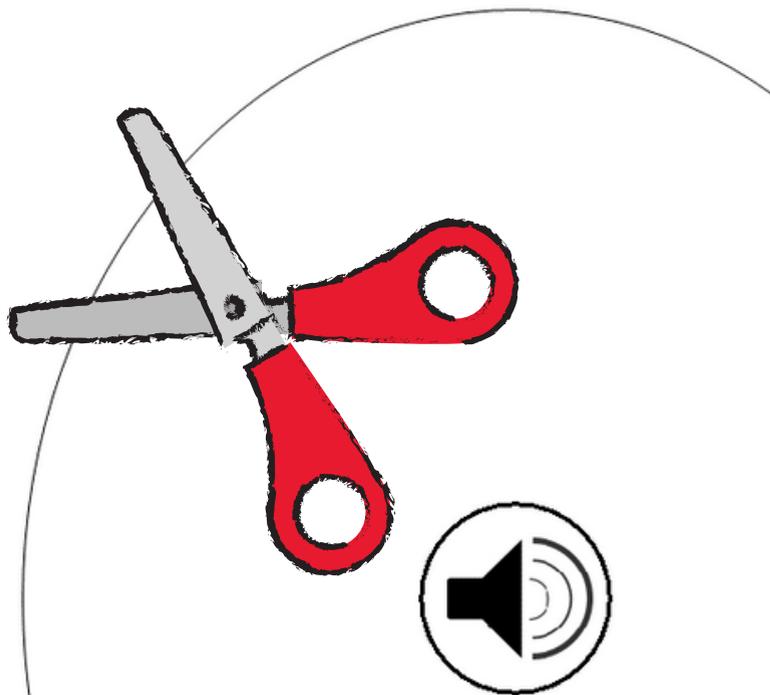


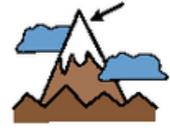
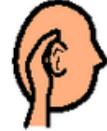
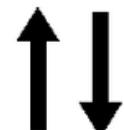
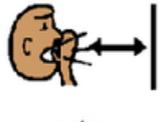
<p>pitch</p> <div style="border: 1px solid black; width: 150px; height: 30px; margin-bottom: 10px;"></div> <div style="text-align: center; font-size: 2em;">↑↓</div>	<p>audible</p> <div style="border: 1px solid black; width: 150px; height: 30px; margin-bottom: 10px;"></div> <div style="text-align: center;"></div>
<p>ultrasounds</p> <div style="border: 1px solid black; width: 150px; height: 30px; margin-bottom: 10px;"></div> <div style="text-align: center;"></div>	<p>amplitude</p> <div style="border: 1px solid black; width: 150px; height: 30px; margin-bottom: 10px;"></div> <div style="text-align: center;"></div>

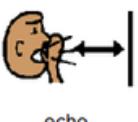
How loud a sound is
A wave that moves through something, pushing the molecules in the same direction it is moving.
Sound wave that is repeated because it is reflected back off a hard, smooth surface.
A sound most people can hear.
Bats send out ultrasounds that are reflected back and show the location of objects.
Molecules moving very fast.
How many vibrations occur in one second.

On days 8 & 9 there is an activity where students will match either the picture to the definition or the definition to the picture (harder).





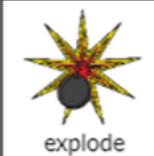
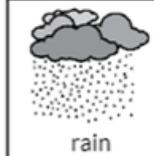
 ultrasounds	dB decibels	 amplitude	 audible
 intensity	 pitch	 longitudinal waves	 vibrate
 echo	 sonar	 frequency	 echolocation

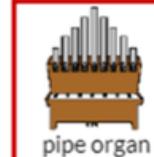
 ultrasounds	 sour	 amplitude	 audible
 intensity	 pitch	 longitudinal waves	 vibrate
 echo	 sonar	 soft	 echolocation
 spiny	dB decibels	 frequency	 salty

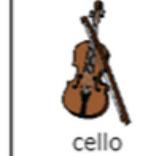
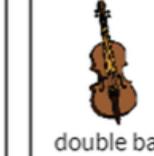
There is a circle map.

Circle maps are a great way for students to see the concept at a glance. There are 2 versions:

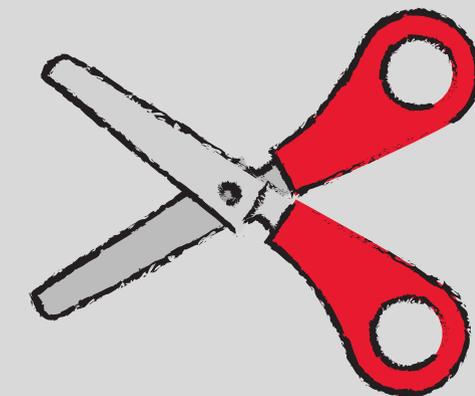
- One is errorless
- One has wrong answers mixed in students will have to set aside

 low intensity		 high intensity	
 bird	 explode	 fireworks	 rain
 hum	 fire truck		 FIRE
 purr	 jet	 high pitch	

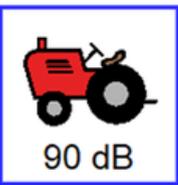
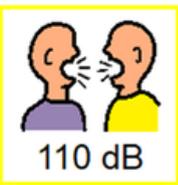
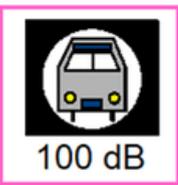
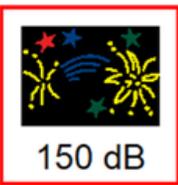
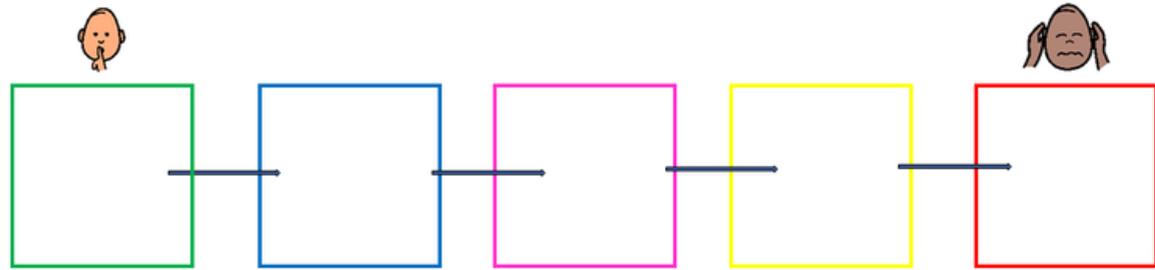
 low intensity		 high intensity	
 tuba	 rhythm sticks	 drum set	 pipe organ
		 triangle	 maracas
 low pitch		 xylophone	 guitar and amp

 ukulele	 cello	 triangle	 double bass
 piccolo	 bass guitar	 flute	 gong
 tuba	 violin	 trumpet	 trombone

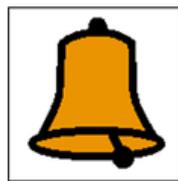
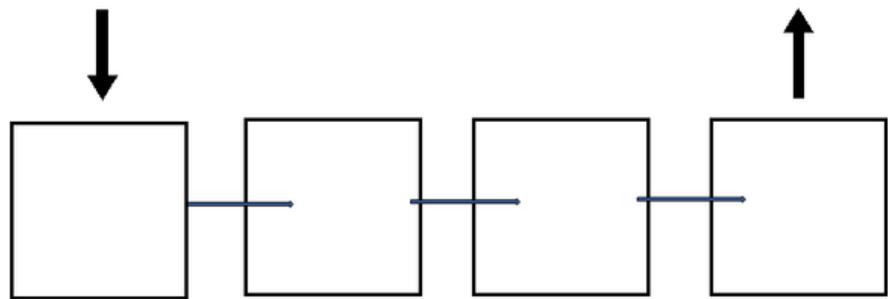
There are 3 sorting activities exploring intensity and pitch. There are color-coded options provided.



Place the object below in order from lowest intensity to highest intensity.

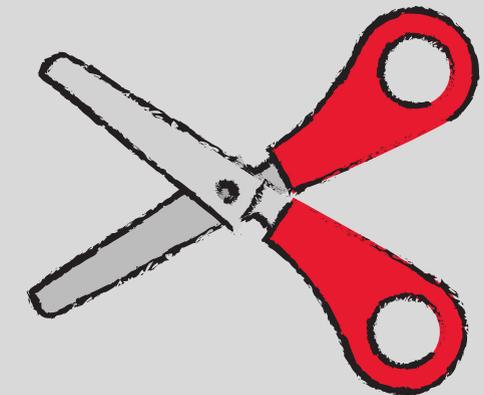


Place the bells below in order from lowest pitch to highest pitch.



There are 4 sequencing activities. 3 of them put objects in order by intensity and one sequences the pitch of different shaped bells.

There are color coded options provided.

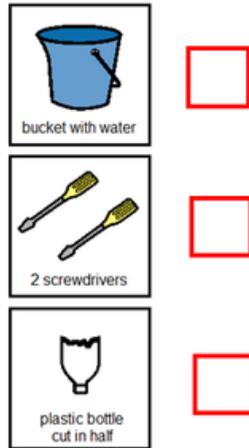


Sound Energy Experiment #1

Sound in water

People on my team: _____

Materials needed:



Sound Energy Experiment #1

Sound in water

The Experiment:

1. Bang the metal part of the 2 screwdrivers together in the **air**.
2. Record how loud the sound is on a scale of 1-5.
3. Bang the metal part of the 2 screwdrivers together in the **water**.
4. Record how loud the sound is on a scale of 1-5.

Results (color in the box):



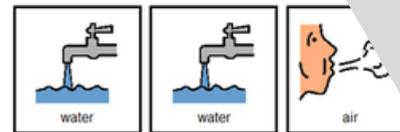
Sound Energy Experiment #1

Sound in water

What I learned

Sound travels **better** in than in

Sounds are **louder** in than in



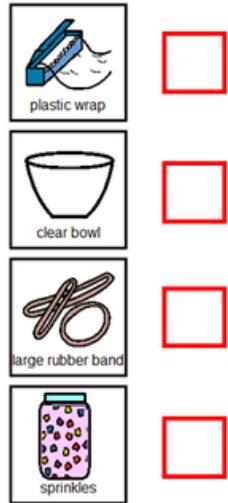
There are 2 experiments included in this unit. The first one explores how sound travels in water. It guides students through creating and testing a hypothesis. At the end they summarize what they have learned.

Sound Energy Experiment #2

See the sound

People on my team: _____

Materials needed:



Sound Energy Experiment

See the sound

The Experiment:

1. Place the plastic wrap tightly on the top of the I
2. Place a rubber band around the top edge.
3. Place sprinkles in the middle of the plastic wrap.
4. Record what happens to the sprinkles when the loud sound.

Results:

Object	What the sprinkles did (circle one)			
yell	bounce	move	jump	nothing
whisper	bounce	move	jump	nothing
clap	bounce	move	jump	nothing
loud music	bounce	move	jump	nothing

Sound Energy Experiment #2

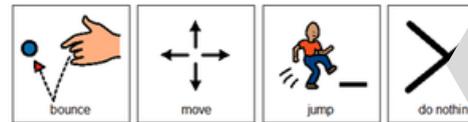
See the sound

What I learned

Loud sounds make the sprinkles

Quiet sounds make the sprinkles

The made that move



The second experiment explores how sound causes vibrations. It guides students through creating and testing a hypothesis. At the end they summarize what they have learned.

Sound Energy

 audible			 vibrate	 pitch	 sound
 vibrate		 pitch	 audible		 sonar
 sound			 sonar		
		 audible	 sound	 vibrate	 intensity
	 audible				 vibrate
 pitch	 sonar	 vibrate		 sound	 audible

Sound Energy

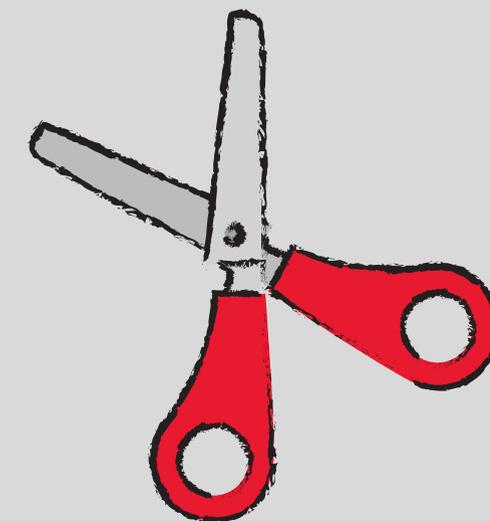
		 intensity	
	 sound		 pitch
	 vibrate	 sound	 intensity
 sound			 vibrate

Place the following images in the empty squares on the previous page, completing the sudoku puzzle.

 sound	 vibrate	 vibrate	 pitch
 pitch	 pitch	 intensity	 intensity

There is a Sudoku puzzle in this unit as well. This is a great way to work with the new vocabulary!!

There are 2 versions plus answer keys.



Sound Energy

ULTRASOUNDKNASH
 YWABETHWEWKPEOE
 MDUIHBLECAYHCUN
 NWDMEODHVS KHNU
 LSIDIVNCOEZAODE
 FOBENVGYS AJRLYO
 ANLCTEIANFNEOHX
 MAEIEKTAOVWJCDT
 PRXBNBUPJIBDAQI
 LHBESLDICBH YTQQ
 IXELIQITNRSQIDJ
 TUSSTBN CXAEKOFQ
 UGJJYTAHITBZNR F
 DUJSEFLWEEEWBTM
 ESGFREQUENCYZHY

echolocation	longitudinal	ultrasound	frequency
intensity	amplitude	decibels	audible
sound	vibrate	sonar	pitch
wave	echo		

Sound Energy

ULTRASOUNDKNASH
 YWABETHWEWKPEOE
 MDUIHBLECAYHCUN
 NWDMEODHVS KHNU
 LSIDIVNCOEZAODE
 FOBENVGYS AJRLYO
 ANLCTEIANFNEOHX
 MAEIEKTAOVWJCDT
 PRXBNBUPJIBDAQI
 LHBESLDICBH YTQQ
 IXELIQITNRSQIDJ
 TUSSTBN CXAEKOFQ
 UGJJYTAHITBZNR F
 DUJSEFLWEEEWBTM
 ESGFREQUENCYZHY

echolocation	longitudinal	ultrasound	frequency
intensity	amplitude	decibels	audible
sound	vibrate	sonar	pitch
wave	echo		

There is also a word search to work with vocabulary. If your students cannot do a word search, have them highlight the circle words on the answer key.

Sound Energy

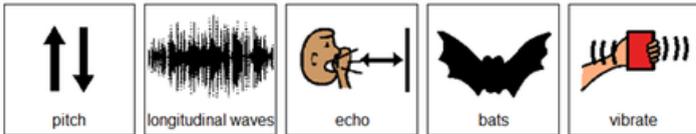
1. Sound travels in .

2. The sound waves cause the molecules to .

3. If the vibration bounces off a surface, it creates an .

4. use echoes to keep from running into things at night.

5. A flute has a higher than a tuba.



Sound energy

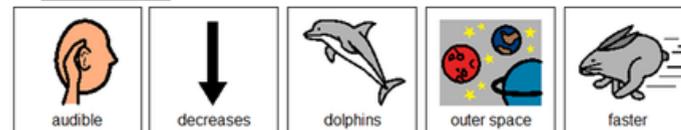
6. The intensity of a sound as you move away.

7. Sounds moves through water than through air.

8. There is no sound in .

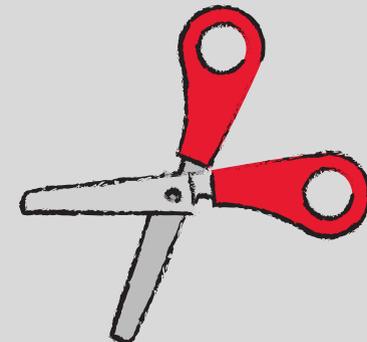
9. Sounds most people can hear are in the range.

10. are one animal that can hear ultrasounds.

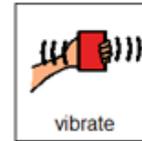
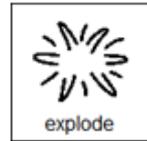


Close worksheet are a great informal assessment. This unit has 10 questions that review sound energy.

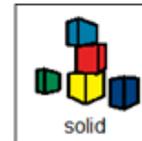
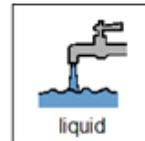
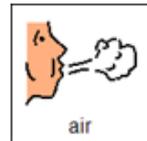
Answer key included.



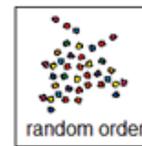
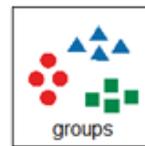
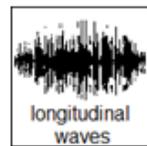
1. Sound travels through a solid, liquid, or gas when the molecules:



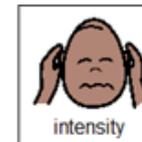
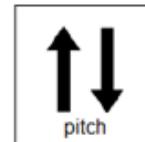
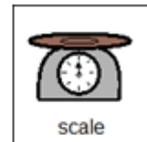
2. Sounds travels the **fastest** in:



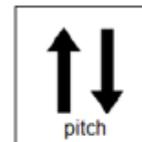
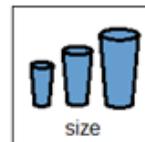
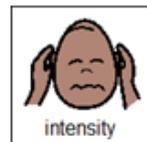
3. Sound travels in:



4. This is how high or low a sound is:



5. This is how loud or quiet a sound is:



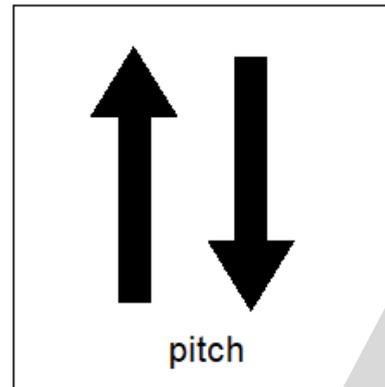
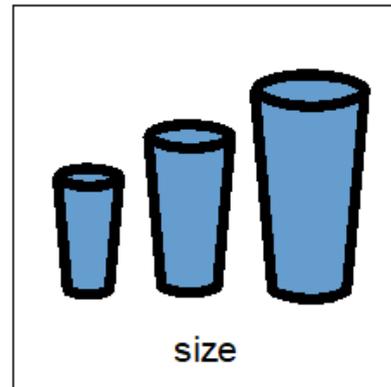
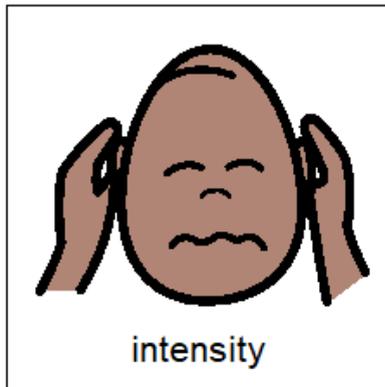
FINALLY the assessment!! There are 3 versions. This version has **10 questions** with 3 picture choices for each question.

Answer key included.

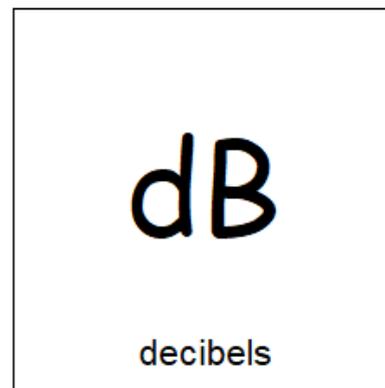
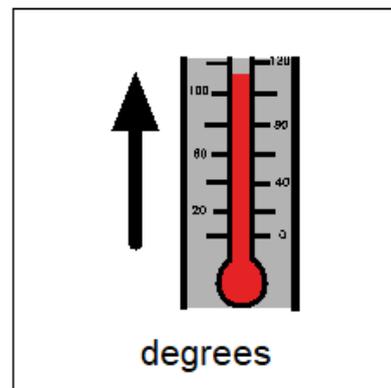
Version 2

Print onto cardstock or mount on index cards. Cut pictures apart and show student answer choices for each question.

Q 5



Q 6



With this version, you cut out the answer choices and glue them on index cards. Ask the student the question, and they point to the correct answer.

1. Sound travels through a solid, liquid, or gas when the molecules:
 - A. Explode
 - B. Melt
 - C. vibrate
2. Sounds travels the **fastest** in:
 - A. Air
 - B. Liquid
 - C. solid
3. Sound travels in what form:
 - A. Longitudinal waves
 - B. Groups
 - C. Random order
4. This is how high or low a sound is:
 - A. Scale
 - B. Pitch
 - C. intensity
5. This is how loud or quiet a sound is:
 - A. Intensity
 - B. Size
 - C. Pitch
6. Sound is measured in:
 - A. Tons
 - B. Degrees
 - C. Decibels

This is your traditional multiple choice version. It can also be used as a recording sheet if your students are using the version with index cards.



[Click Here to read more!!](#)

I realize there will be some students out there unable to do cutting activities. I have a blog post with ways to complete activities without a pair of scissors!!

All of the activities (except the books and fact sheet) come in color and black and white.