

# 1.3 ACTIVE LISTENING

## Lesson Summary

Students will be able to notice, describe, and use active listening with each other. Listening is truly a challenging activity involving self-control and social awareness. Instead of listening, people often spend time thinking about their ideas so they are prepared to say something when the other person is done talking. The students will learn to listen carefully so that they can paraphrase what their classmates say. This active listening will be helpful as students work with their peers in their science lessons and service-learning experience.

*(Approx. total time: 25 minutes)*



## Social and Emotional Learning Skills

### Social and Emotional Competencies

**Relationship Skills:** The ability to establish and maintain healthy and rewarding relationships with diverse individuals and groups. This includes communicating clearly, listening actively, cooperating, resisting inappropriate social pressure, negotiating conflict constructively, and seeking and offering help when needed.

**Social Awareness:** The ability to take the perspective of and empathize with others from diverse backgrounds and cultures, to understand social and ethical norms for behavior, and to recognize family, school, and community resources and supports.

*Excerpted text from CASEL (2017).*

## Objectives

### By the end of the lesson students will

#### *Know (facts/information):*

- Definitions of active listening and paraphrase.

#### *Understand (concepts, big ideas):*

- The best solutions arise when people with different knowledge and perspectives listen to each other, communicate respectfully, and collaborate to solve problems.

*Be able to do (skills/behaviors):*

- Notice, describe, and use active listening behaviors with each other.
- Listen actively (MNPS SEL "I Can" Statement).

### Vocabulary

- **active listening:** refers to a kind of communication in which each person pays attention to the person talking well enough that he or she could repeat what the speaker is saying, if asked
- **paraphrase:** restating someone's ideas and thoughts in your own words in a way that shows understanding and respect for what they said

### Materials

- Teacher Materials:
  - Active Listening Diagram - Available electronically to be used on an interactive whiteboard or recreated as an anchor chart.

### Instructional Strategies

#### Link to Prior Knowledge (15 minutes)

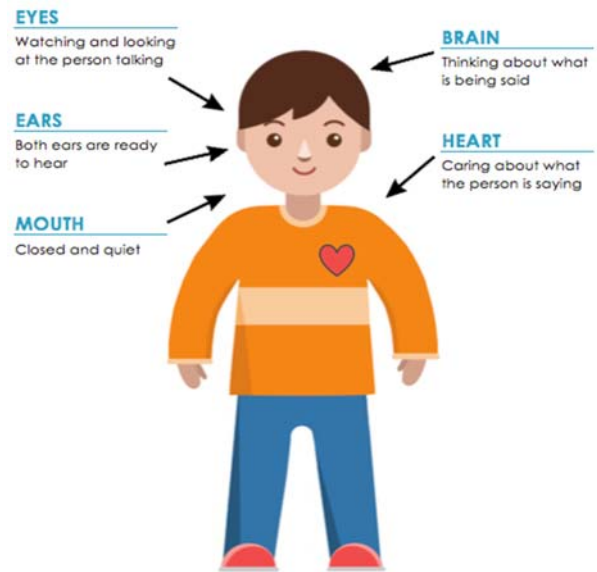
**Model what it looks like to engage in active listening.**

*Today we are going to talk about what it means to be an active listener. Listening actively is very important when we are working together to accomplish a goal. I'm going to model what it looks like to listen actively. I want you to use your observation skills and notice how I act.*

Model active listening with another adult or student. Make eye contact with the person talking. Turn to face the other person and nod to acknowledge what the other person is saying. Wait until the speaker is finished, and then, ask a follow-up question.

Have students describe what active listening looked like. Fill out the diagram of a person as a class.

*What did you notice about my body language as I listened actively to \_\_\_\_? Can you help me fill out this diagram? What did you notice about my eyes? What did you notice about my mouth? What were my ears doing? What do you think was going on in my mind? What about my heart?*



Lead the students in a process of filling out a diagram of a person. The diagram can be recreated on an anchor chart or projected on an interactive white board. Teachers may choose to give the person a name (e.g., Lee the Listener, Hannah Hears) to refer back to throughout the lesson and year.

Goal responses will highlight each active listening behavior: eyes watching, mouth closed, brain thinking about what is being said, ears ready to hear, heart showing caring for the person talking.

### Instruction (5 minutes)

Introduce the concept of paraphrasing. Demonstrate how good active listening means that you can paraphrase your partner's ideas.

*One way to know that you're doing good active listening is that you are able to paraphrase what you hear. Can anyone tell me what it means to paraphrase?*

*When we paraphrase what someone else said, we are restating their ideas and thoughts in our own words. This means we are really thinking carefully about what the other person is saying (not generating our own thoughts and ideas while we listen). Listening this carefully is a sign that we care about the person who is talking and understand what they said. We want our partner to feel heard and respected. Now to show my heart cared and my brain was thinking about what was said, I would like to say what \_\_\_\_ said in my own words. Can you help me paraphrase what \_\_\_\_ said?*

Work together to paraphrase the other person's story. After listening to student contributions, give a paraphrased version of one or two sentences.

### Ask two students to model active listening and paraphrasing.

Call on two students and assign one to be the speaker and one to be the listener. If needed, explain that modeling active listening means that you, as the teacher, will suggest a topic. (Potential topics include details about a recent family trip, their last birthday, or their favorite school subject.) Then, the speaker will talk about that topic and the listener will demonstrate active listening behaviors.

*Now I am going to ask two of you to model what active listening and paraphrasing look like. Who would like to model this for the class?*

*As \_\_\_\_\_ and \_\_\_\_\_ model, I want you all to watch. What do you notice? Pay attention to what their bodies are doing. What signs do we see that they are listening actively?*

After the two students model, ask the students to share what they noticed about the model pair. Repeat the student responses and gesture to the board or anchor chart to support learning.

Students should describe the behaviors they notice. Then, invite the students to identify a partner with whom to practice active listening.

### **Have students find a partner, practice active listening skills, and paraphrase what their partner says.**

*Now we are all going to practice. I am going to count down from 5 to 0. When I get to 0, I want each of you to be sitting with a partner to practice active listening.*

*With your partner, you are going to practice active listening while discussing \_\_\_\_\_. I would like one person to discuss this topic while the other uses their new active listening skills. After the first person is done speaking, the listener will paraphrase what their partner said. When I say, "go," you will practice with your partner while I walk around and observe.*

Circulate and make sure each partner has the chance to be the speaker and the active listener. Be sure the students are also paraphrasing.

### **Closing (5 minutes)**

#### **Ask the students to reflect on their experience using active listening and paraphrasing.**

Select from the questions below as a closing for the lesson:

- What did you notice about active listening?
- What did you notice your partner doing with their body that let you know they were listening actively to you?
- How did you feel when you were talking and your partner was listening actively to you?
- Was it easy or hard to paraphrase what your partner told you?
- How did active listening help you to paraphrase what your partner told you?

*I am glad we got to practice new skills today. We will practice active listening and paraphrasing throughout the year, especially when we work as a group on our service-learning project and during our science lessons on renewable and non-renewable resources. These skills will come in handy when we discuss problems and solutions because you all will have many ideas to share and listening actively helps us learn and shows that we care about each other's ideas.*

During the remainder of the unit, revisit the active listening diagram your class created when your class is going to be working in pairs, groups or even preparing for a guest to come speak to your class.

### Assessment

Notice and record instances when you see students using active listening with their peers.

### Optional Extensions

Adapt the closing activity to match the needs of your class or individual students. This could be a group discussion or students could be asked to turn and talk with a partner to increase accountability. This discussion could be extended into a brief journal entry or exit ticket about their experience with active listening and paraphrasing. A sample topic may include: How did active listening feel similar to and different from how you usually listen?

### References

Collaborative for Academic, Social, and Emotional Learning. (2017). *Core social and emotional learning competencies*. Retrieved from <http://www.casel.org/social-and-emotional-learning/core-competencies/>

Truesdale, S. P. (1990). Whole-body listening: Developing active auditory skills. *Language, Speech and Hearing Services in Schools*, 21: 183-184. Note. Some teachers prefer to call active listening “whole-body listening,” as described in this article by Truesdale.

### Planning Page

**Students will be able to notice, describe, and use active listening with each other.**

#### Link to Prior Knowledge (15 minutes)

*Model what it looks like to engage in active listening.*

*Have students describe what active listening looked like. Fill out the diagram of a person as a class.*

#### Instruction (5 minutes)

*Introduce the concept of paraphrasing. Demonstrate how good active listening means that you can paraphrase your partner's ideas.*

*Ask two students to model active listening and paraphrasing.*

*Have students find a partner, practice active listening skills, and paraphrase what their partner says.*



### Closing (5 minutes)

*Ask the students to reflect on their experience using active listening and paraphrasing.*

# 1.3 ACTIVE LISTENING

## EYES

Watching and looking at the person talking

## BRAIN

Thinking about what is being said

## EARS

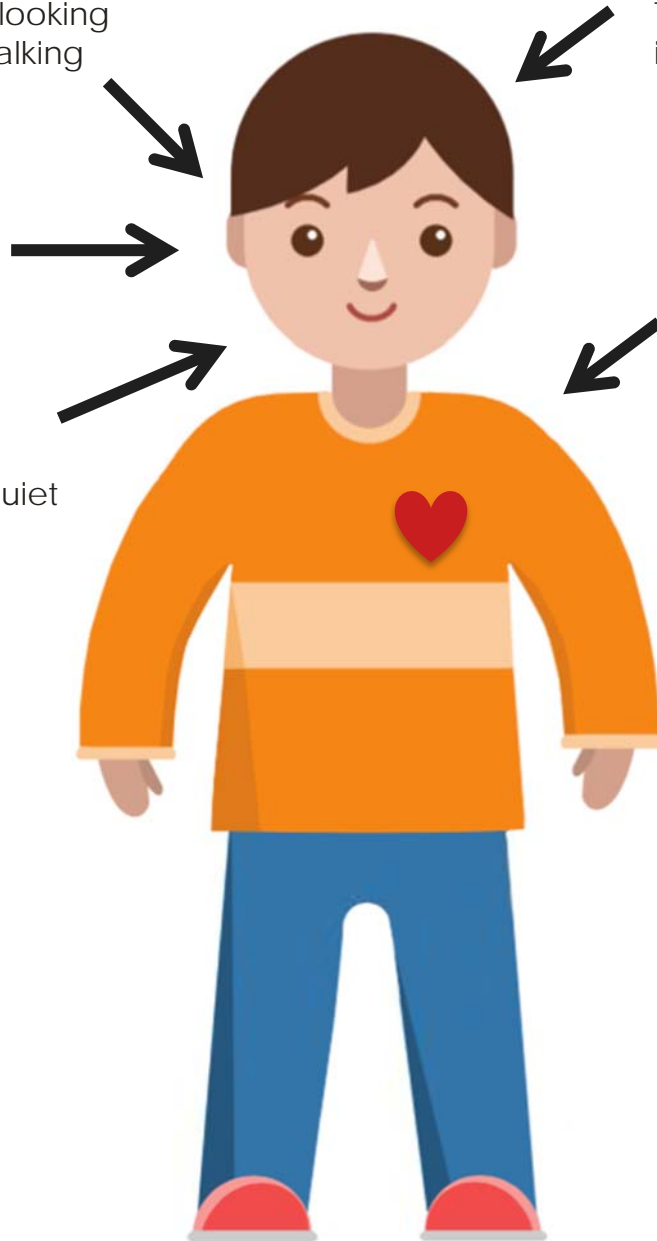
Both ears are ready to hear

## HEART

Caring about what the person is saying

## MOUTH

Closed and quiet





# 1.4 RESPECTFUL COMMUNICATION

## Lesson Summary

Students will be able to use respectful language to agree, disagree, and ask questions about other students' ideas. Group work can be challenging and it is essential for students to learn respectful ways to agree and disagree with each other. Further, respectful language is important in science as students question each other's lines of reasoning in their search for high quality scientific explanations of phenomena. Learning and practicing sentence stems to agree, disagree and ask questions will help students be prepared for the challenges of group work.

*(Approx. total time: 30 min.)*



## Standards

### Social and Emotional Competencies

**Social Awareness:** The ability to take the perspective of and empathize with others from diverse backgrounds and cultures, to understand social and ethical norms for behavior, and to recognize family, school, and community resources and supports.

**Relationship Skills:** The ability to establish and maintain healthy and rewarding relationships with diverse individuals and groups. This includes communicating clearly, listening actively, cooperating, resisting inappropriate social pressure, negotiating conflict constructively, and seeking and offering help when needed.

*Excerpted text from CASEL (2017).*

## Objectives

### By the end of the lesson students will

#### *Know (facts/information):*

- Respectful communication sentence stems and respectful language.

#### *Understand (concepts, big ideas):*

- The best solutions arise when people with different knowledge and perspectives listen to each other, communicate respectfully, and collaborate to solve problems.

*Be able to do (skills/behaviors):*

- Use respectful language to agree, disagree and ask questions about other student's ideas.
- Show respect, even when they disagree with another student's ideas.
- Communicate needs and feelings verbally (MNPS 4th Grade SEL "I Can" Statements).

## Vocabulary

- **respectful communication:** a way of speaking, listening and behaving toward others that shows that you care about them and that you are open to their ideas

## Materials

- Teacher Materials:
  - Chart paper
  - Marker
  - Respectful Communication Anchor Chart
  - Respectful Communication Image - Available electronically and can be used on anchor chart, interactive whiteboard or printable for students

## Instructional Strategies

### Link to Prior Knowledge (5 minutes)

**Introduce the idea that disagreements occur often during group work and that it is okay to disagree.**

*We are going to start with a short activity to get you thinking about situations that may happen when you are working with others. I'm going to say some statements about working with groups and you are going to give me a thumbs up if you agree with the statement, a thumbs down if you disagree, and a thumb in the middle if you are not sure.*

1. *Group members always have to agree with each other.*
2. *If you agree with someone, you should tell him or her.*
3. *If you disagree with someone, you should tell him or her.*
4. *It is okay to disagree with someone.*
5. *There is a respectful way to tell someone that you disagree with them.*

## 1.4 RESPECTFUL COMMUNICATION

*I noticed that some of you said that group members always have to agree with each other. Did you know you don't ALWAYS have to agree with each other? It is important to know that in group work people often disagree. That's a normal part of group work. If people in a group care a lot about their shared work, disagreements can be really common.*

*Many of you did think that if you disagree with someone you should tell them and that there is a respectful way to tell someone that you disagree with them. That is a very important idea.*

**Ask students to talk about how to show respect when they disagree with someone. Explain that even if we disagree, we want to communicate in ways that show respect.**

*Let's take a minute to yourself and think of a way that you could tell a classmate that you disagree with them but do it in a way that shows respect. When you have an idea, give me a thumbs up on your knee. Share with your partner your idea. Ask your partner how they would feel if you expressed disagreement in this way. Would you feel respected?*

### Instruction (15 minutes)

**Display and explain the image of the person with the thought bubble and the speech bubble.**

*This picture really helps me think about respectful communication. There have been times that I have thought something in my head but realized it wouldn't be respectful to say out loud. Has that ever happened to you?*

*I might disagree with someone and think (point to thought bubble) "No! You are wrong!" (Or, I might even get really mad and not be able to think of anything to say!)*

*But, instead, I pause. Then, I use respectful communication to disagree and say (point to speech bubble) "I see why you might think that. But, have you ever thought of trying it like this?"*

*Sometimes I think and pause. Then, I use respectful communication to learn more about the person's idea. Maybe it is a good idea but I need to hear the whole idea before making a decision. Then, I would say (point to speech bubble), "Can you say more about that idea?"*

**Define respectful communication.**

*Respectful communication is a way of speaking, listening, and behaving toward others that shows that you care about them and that you are open to their ideas.*

# 1.4 RESPECTFUL COMMUNICATION

**Introduce sentence stems as a way to help us communicate respectfully about ideas.**

*Communicating respectfully with each other is an important part of group work, especially when we disagree. Respectful communication is important because it allows you to express your thoughts and feelings and have good relationships with your classmates. Today we are going to learn about sentence stems. Sentence stems give us a new way to communicate respectfully. We are going to create and practice sentence stems so that we can use them to help us be respectful while collaborating. This helps us to filter our thoughts to make sure the words we chose are respectful words and convey our meaning.*

**Start an anchor chart for sentence stems you would like your class to use. Create three categories on the anchor chart (agree, disagree, and ask questions).**

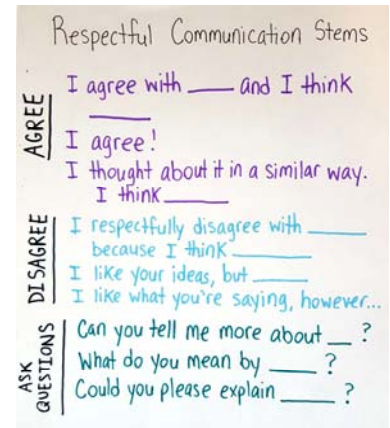
You will be adding sentence stems to this chart with input from your class. Ask your students for input and then choose sentence stems that you think your students will be able to use well.

**Have students generate and share what words to use when you agree.**

Reword the student phrases (if needed) and write two or three sentence stems to use to agree.

Example goal responses:

- “I agree with \_\_\_\_\_ and I think that \_\_\_\_\_.”
- “I like what you are saying and \_\_\_\_\_.”



*Sometimes when you're working in a group and you hear an idea that you really like, you may want to share that you're enthusiastic about this idea. You can use one of these sentence stems to agree with someone.*

**Have students generate and share what words to use when you disagree.**

Reword the student phrases (if needed) and write two or three sentence stems to use to disagree.

Example goal responses:

- “I hear your idea but \_\_\_\_\_.”
- “I thought about it in a different way and \_\_\_\_\_.”
- “I'm sorry but I disagree with \_\_\_\_\_ because I think that \_\_\_\_\_.”

## 1.4 RESPECTFUL COMMUNICATION

*Remember that when we're working as a group, we don't always agree and that's okay. Before you disagree, it is important that you listened carefully to what someone else said. Then, if you disagree, you can use a sentence stem like, "I hear your idea but..." to show respect while you explain that you have a different opinion.*

### Have students generate and share what words to use when you ask questions.

Reword the student phrases (if needed) and write two or three sentence stems to use to ask questions.

*Learning how to listen and ask good questions about other people's ideas is an especially important skill in science. Questions help you learn more about the ideas that someone else is proposing and helps you understand their line of reasoning. Instead of agreeing or disagreeing with someone's idea, asking questions helps you deepen the conversation to fully understand what someone else is thinking. Adult scientists work hard to listen carefully to other people's ideas and ask good, precise questions.*

Example goal responses:

"Can you say more about \_\_\_\_\_?"

"What did you mean by \_\_\_\_\_?"

### Create a simple example. Model the use of each statement from the anchor chart.

*Let's take a simple example. Let's say that my friend and I are talking about parks and I think that parks with big empty spaces are nicer than parks with lots of trees. My friend might say, "I like parks with big empty spaces because I like to play soccer and run and play." I could use a sentence stem and say, "I like what you are saying and I think parks with big empty spaces are nice, too."*

*What if my friend says, "I like parks with lots of trees because I think the trees are better for the earth." I may think that parks with trees are boring. Instead of telling my friend that she is wrong, I would say, "I hear your idea, but I like parks with big open spaces because I like to play frisbee."*

*My friend might say, "I like parks with big empty spaces because I like to play soccer and run and play." I could add on to my friend's idea and say, "I'd like to add on to your idea. Big empty spaces are good for soccer and to run and play. Big open spaces are good for frisbee, too, and I like to play frisbee. Big spaces help kids like us get exercise and time outdoors and that helps us be healthy."*

### Have students practice sentence stems with a partner.

Ask students to choose a partner. Provide them with a topic. Have each student use the sentence stem to agree with the topic. Then, have each student use the sentence stem to disagree with the topic. Have each student use the sentence stem to add on to the topic.



## 1.4 RESPECTFUL COMMUNICATION

Sample topics may include:

- I think all kids should ride the bus to school.
- I think it's better to drive in a car to school.
- I like to pack my own lunch (versus buy lunch in the cafeteria).
- All kids should have their own cell phone.
- Kids should have TV in their room.

Note: Point out the active listening skills anchor chart to remind students to practice these skills, as well.

### Closing (5 minutes)

**After the students practice, call on a pair of students who used sentence stems effectively to share with the class.**

*Let's hear about your conversation about taking the bus to school. \_\_\_\_\_, why don't you explain that you think all students should take the bus to school.*

*Then, \_\_\_\_\_, let's hear you use a sentence stem to agree with your friend.*

*Then, let's hear you use a sentence stem to disagree. Next, use your sentence stem to ask questions about your friend's idea.*

**Reflect on respectful communication. Discuss how it is especially challenging to be respectful when you disagree.**

*Let's talk about respectful communication and your use of these sentence stems. Did the sentence stems help you show respect? How?*

*Did anyone notice that it is harder to be respectful when you disagree with someone's idea than when you agree? Why do you think that's the case?*

*What did you notice about your feelings and body language when you used these sentence stems? Do you think you will be able to use these sentence stems when you are talking about ideas in your science class or other subjects?*

*What did you notice about the sentence stem for asking questions? Do you think that using this sentence stem can help you have better conversations about ideas in science?*

*Let's take a look at our chart we made today with these new sentence stems. Throughout the day today, I'm going to listen and notice when I hear you using these stems as you communicate respectfully with your classmates. At the end of the day, we will revisit the sentence stems and see how many we used. We will look at which one's we used, which ones were easy or difficult to use, and how we can use these in the future. If you think of more sentence stems, you can write them down on a sticky note.*



## Assessment

Notice and record instances when you see students using sentence stems for respectful communication with their peers.

## Optional Extensions

Practice the sentence stems before science class and show how these stems can be used to help students engage in arguments from evidence. For instance, if one student is proposing a solar energy plan for the future, another student can use the sentence stem and say, "I agree with your solar energy plan and I think that solar is a great idea for this area because it's so sunny." Alternatively, a student can say, "I thought about it in a different way and I think we'll have problems using solar power because the sun doesn't always shine, and it costs a lot to make batteries to store solar energy." Students can practice asking questions by asking, "Can you say more about your plan to store the solar energy?" Or, "What did you mean when you said that you will find a new kind of battery that uses materials that are easy to find?"

## References

Collaborative for Academic, Social, and Emotional Learning. (2017). *Core social and emotional learning competencies*. Retrieved from <http://www.casel.org/social-and-emotional-learning/core-competencies/>

### Planning Page

**Students will be able to use respectful language to agree, disagree, and add on to other students' ideas.**

#### Link to Prior Knowledge (5 minutes)

*Introduce the idea that disagreements occur often during group work and that it is okay to disagree.*

*Ask students to talk about how to show respect when they disagree with someone. Explain that even if we disagree, we want to communicate in ways that show respect.*

#### Instruction (15 minutes)

*Display and explain the image of the person with the thought bubble and the speech bubble.*

*Define respectful communication.*

*Introduce sentence stems as a way to help us communicate respectfully about ideas.*

## 1.4 RESPECTFUL COMMUNICATION

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*Start an anchor chart for sentence stems you would like your class to use. Create three categories on the anchor chart (agree, disagree, and ask questions).*

*Have students generate and share what words to use when you agree.*

*Have students generate and share what words to use when you disagree.*

*Have students generate and share what words to use when you ask questions.*

*Create a simple example. Model the use of each statement from the anchor chart.*

*Have students practice sentence stems with a partner.*

### **Closing (5 minutes)**

*After the students practice, call on a pair of students who used sentence stems effectively to share with the class.*

## 1.4 RESPECTFUL COMMUNICATION

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*Reflect on respectful communication. Discuss how it is especially challenging to be respectful when you disagree.*

# 1.4 RESPECTFUL COMMUNICATION



# 2.6 RESPECTING MULTIPLE PERSPECTIVES

## Lesson Summary

Students will be able to identify and analyze different points of view and respect and value perspectives that are different from their own. The teacher will read and discuss *The Sandwich Swap* to show how two children can have different points of view on the same situation. The class will generate sample situations involving more than one point of view. Students will learn strategies to learn more about other people's perspectives and show respect for those perspectives.



*(Approx. total time: 45 minutes)*

## Standards

### Social and Emotional Competencies

**Social Awareness:** The ability to take the perspective of and empathize with others from diverse backgrounds and cultures, to understand social and ethical norms for behavior, and to recognize family, school, and community resources and supports.

*Excerpted text from CASEL (2017).*

## Objectives

### By the end of the lesson students will

#### *Know (facts/information):*

- People have different perspectives and these perspectives stem from people's past experiences, attitudes, preferences, and beliefs.

#### *Understand (concepts, big ideas):*

- The best solutions arise when people with different knowledge and perspectives listen to each other, communicate respectfully, and collaborate to solve problems.

#### *Be able to do (skills/behaviors):*

- Identify and analyze different points of view.



## 2.6 RESPECTING MULTIPLE PERSPECTIVES

- Respect and identify other people's perspectives and behaviors (MNPS 4th Grade SEL "I Can" Statement).
- Evaluate social situations based on expression and body language (MNPS 4th Grade SEL "I Can" Statement).

### Vocabulary

- **perspective:** a person's point of view or how one person thinks about a situation
- **respect:** to think and act in a way that shows others you care about their feelings and their well-being

### Materials

- Teacher Materials:
  - *The Sandwich Swap* by Queen Rania of Jordan Al Abdullah and Kelly DiPucchio (If the book is not available, use a version available online, such as: <http://tinyurl.com/Sandwich-Swap>)
  - Respecting Multiple Perspectives Chart (Prepare ahead of class by selecting relevant sample situations)
- Student Materials:
  - Respecting Multiple Perspectives Student Reflection Handout

### Instructional Strategies

#### Link to Prior Knowledge (15 minutes)

Read *The Sandwich Swap*. Pause to ask questions about how Salma and Lily have different experiences. Help students link Salma and Lily's experiences to their own lives.

*In a few weeks, we will start working on our service-learning project. When we do, we will find that the students in our class have many different opinions about how to do our work. Today I would like to share with you a book by Queen Rania of Jordan Al Abdullah called, *The Sandwich Swap*. This book will help us understand the importance of respecting multiple perspectives and working together with people who have different opinions than our own.*

Sample questions to ask:

*How do you think Lily and Salma felt when their friend described their sandwich as yucky? Look at their faces in this picture. What do their expressions say about how they feel?*

## 2.6 RESPECTING MULTIPLE PERSPECTIVES

*Have you ever been in a situation where two friends had different opinions and you felt you had to choose sides? This part reminds me of when we learned about respectful communication. Lily and Salma are thinking things in their heads that they shouldn't say aloud.*

*Look closely at the picture. What event did Salma and Lily decide to hold at school? Why do you think they decided to do this?*

*Do you think everyone is going to like every food they try? Is it okay not to like the same things? Sure, of course it's okay not to like the same things.*

*Everyone brings their own life experiences to everything that they do. Some things that are important to one person might not be important to another person.*

*Remember, we don't always have to agree with every other person in our group but we do need to listen to and respect their perspective, even if their perspective is very different from our own. We always treat others in a way that shows that we respect them, even if we do not like their ideas.*

**Discuss the feelings the two girls had and help the students connect those feelings to their own past experiences.**

*Salma and Lily felt frustrated and annoyed toward each other. Have you ever felt frustrated or annoyed toward a friend or family member who liked something different from what you liked? Yes, that can be frustrating, can't it?*

*But, let's think about it. It is okay for two people to have different perspectives on something. Can you both be correct in your feelings?*

*When we work on group projects (like the service-learning project that we will do in a few weeks), we will encounter people that look at the same situation differently.*

*Let's reflect, have you ever had this situation before?*

**Define perspective. Give an example of when people had different perspectives in their classroom.**

*Everyone brings their own life experiences to everything that they do. Some things that are important to one person might not be important to another person. We always treat others in a way that shows that we respect them, even if we do not like their ideas.*

*We also want try to understand other people's perspectives. **Perspective means a person's point of view or how one person thinks about a situation.** If we only see a situation from our point of view, then we can't learn from other people and we can't appreciate other people's opinions and interest. Just like *The Sandwich Swap*, if Salma and Lily took a moment to respect each other's point of view, some of their arguing could have been resolved. They would have appreciated each other more and been able to get along better. This is an important life skill. Different people having different perspectives make our lives much more interesting.*

## 2.6 RESPECTING MULTIPLE PERSPECTIVES

### Define respect.

*Respect means to think and act in a way that shows others you care about their feelings and their well-being. Even if we don't necessarily agree with someone, it is important that we show respect to one another.*

### Instruction (15 minutes)

### Discuss the Respecting Multiple Perspectives chart.

*Now let's take some time to try to understand some ideas from other perspectives. Let's see what this might look like and why it is important. Let's think about some sample situations that could come up in our classroom.*

This chart can be shared on an interactive white board, created on chart paper, or completed with a document camera.

RESPECTING MULTIPLE PERSPECTIVES		
Sample Situation	What are some questions you could ask to understand more?	What do you say and do to show respect?
I am a vegetarian.		
I like football.		
My family takes the bus around town.		
My favorite subject in school is science.		

### Generate sample situations including what questions you could ask to understand more about that perspective. Discuss what students can say or do to show respect.

For the Sample Situation column, choose examples that are relatable for the students in your class. For instance:

- I am a vegetarian.
- I like sharing a room with my little brother.
- I speak Spanish at home.

Also, for the Sample Situation column, you may choose examples relevant to energy use.

- My family tries to save money and gas by taking the bus when we want to go somewhere.
- When I am cold at home in the winter, I put a sweater on instead of turning up the heat.

*Let's look at the first example together. Let's say that you meet someone who is a vegetarian. Imagine that you're someone who really likes to eat meat. You like chicken, beef, pork -- really all the meats are tasty to you and they make your belly feel full and happy. Instead of being mean to the person who is the vegetarian and saying, "Oh, you're missing out on all this good food!" you can ask them some questions.*

## 2.6 RESPECTING MULTIPLE PERSPECTIVES

*What are some questions you would like to ask to know more about vegetarians? How might we ask those questions respectfully? What are some things we might do that show we are being respectful of our friend?*

*Well, we might show respect by not drawing attention to the person's food choices, offering vegetarian friendly snacks and meals if they come to our house, or asking them to tell you more about why they are vegetarian. We need to respect others' perspectives, but it is also important to think about why we should show respect. In this instance, the person might be a vegetarian because it is part of their religion. It could also be a health concern.*

*People bring their own life experiences to form their beliefs and opinions. We can learn from each other by asking these questions. We don't always have to agree, but we can learn. For example, maybe you didn't know that some religions don't allow some kind of meat, or maybe you didn't know lambs are kept in cages and people can protest this by not eating lamb. Now, through asking respectful questions and showing respect for others' choices, we've learned something new. This can add to or change our own opinions as well.*

The goal is to help students see that they can respect the perspective of a vegetarian, even if they would not make the same choice for themselves.

### Continue with the next sample situation.

Continue through the exercise with the class as a whole group or have students partner with someone near them and then share answers before writing them down. This can also be done as an independent activity where students reflect individually about each perspective and then share with a partner or small group.

### Closing (5 minutes)

**Draw attention back to *The Sandwich Swap* and discuss situations where people have different perspectives.**

*Today we read *The Sandwich Swap* and discussed situations where people had different perspectives. We will be working on a service-learning project this year and there may be times in our work where others in our work group see things from a different perspective. We know this will happen so we need special skills to handle this situation.*

*Is it always easy to see both sides of every situation?*

*Were some situations harder than others? Why do you think that?*

*Let's go back to *The Sandwich Swap*. If Lily had grown up with food like the food in Salma's house, how might things have been different?*

*If Salma had grown up with food like the food in Lily's house, how might things have been different?*

## 2.6 RESPECTING MULTIPLE PERSPECTIVES

*How could they have each learned by looking at the situations through each other's perspective?*

**Optional: Distribute student reflection handouts and lead an exercise to help students take other people's perspectives.**

*I am passing out a Student Reflection Handout for each of you. I want you to think about a time when you disagreed or got into an argument with your brother, sister, cousin or friend. The Student Reflection Handout says "friend or sibling" but in your mind, you can substitute cousin or another person in the story in your mind.*

*Write one or two sentences about a time when you disagreed or got into an argument with a friend or sibling. Now, take your friend or sibling's perspective. What do you think your friend or sibling was thinking and feeling in this situation? Write about that. Looking back, what do you think you could have done or said differently to respect your friend or sibling's perspective? If you had been more respectful, do you think things would have turned out differently? Explain what you mean.*

*For example, I am writing: One time my sister and I were in a huge fight over the bathroom. She was always taking a long time doing her hair and I needed to get in there to take a shower. I just kept pounding on the door and she kept it locked and ignored me. I needed to take a shower to get to school on time. She didn't get it. When I thought about it from her point of view, I realized she had an important job interview and was trying to make her hair look perfect. She also was stressed out and was short tempered because of it. Maybe if I had asked her nicely or helped her with her hair first, I could have gotten into the shower sooner and would not have had an argument before school.*

### Assessment

Notice and record evidence that students are noticing and respecting different perspectives.

Read and reflect on the responses on the Student Reflection Handout.

### Optional Extensions

Make a connection to Language Arts. In *The Sandwich Swap*, the author chose to write about a small moment in her life that had a big impact on her point of view. Challenge students to write about something that seemed little but helped them to learn or understand a lot about themselves or others.

**Adaptation:** The Student Reflection Handout can be done in pairs with one student writing and another student telling his/her story. Alternatively, pairs of students can talk through the questions on the Student Reflection Handout instead of writing responses to them.



## 2.6 RESPECTING MULTIPLE PERSPECTIVES

### References

Abdullah, A. R. (2010). *The sandwich swap*. New York: Disney Hyperion.

Adapted from Delaware Respect in Civil Society Unit. Retrieved from <http://www.doe.k12.de.us/cms/lib09/DE01922744/Centricity/domain/66/grade%202/Respect%20in%20Civil%20Society.doc>, Page 10.

Collaborative for Academic, Social, and Emotional Learning. (2017). *Core social and emotional learning competencies*. Retrieved from <http://www.casel.org/social-and-emotional-learning/core-competencies/>

[Melrose High TV]. (2014, June 26). *Summer read along: The sandwich swap*. [Video File]. Retrieved from <https://www.youtube.com/watch?v=2df-XsBYtm4&feature=youtu.be>



## 2.6 RESPECTING MULTIPLE PERSPECTIVES

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### Planning Page

Students will be able to identify and analyze different points of view and respect and value perspectives that are different from their own.

#### Link to Prior Knowledge (15 minutes)

*Read The Sandwich Swap. Pause to ask questions about how Salma and Lily have different experiences. Help students link Salma and Lily's experiences to their own lives.*

*Discuss the feelings the two girls had and help the students connect those feelings to their own past experiences.*

*Define perspective. Give an example of when people had different perspectives in their classroom.*

*Define respect.*

#### Instruction (15 minutes)

*Discuss the Respecting Multiple Perspectives chart.*

## 2.6 RESPECTING MULTIPLE PERSPECTIVES

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*Generate sample situations including what questions you could ask to understand more about that perspective. Discuss what students can say or do to show respect.*

*Continue with the next sample situation.*

### **Closing (5 minutes)**

*Draw attention back to The Sandwich Swap and discuss situations where people have different perspectives.*

*Optional: Distribute student reflection handouts and lead an exercise to help students take other people's perspectives.*

# 2.6 RESPECTING MULTIPLE PERSPECTIVES

Sample Situation	What are some questions you could ask to understand more?	What do you say and do to show respect?

# RESPECTING MULTIPLE PERSPECTIVES

## Student Reflection

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Write one to two sentences about a time when you disagreed or got into an argument with a friend or sibling.

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Take your friend or sibling's perspective. What do you think your friend or sibling was thinking and feeling in this situation?

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What could you have done or said differently to respect your friend or sibling's perspective?

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If you had been more respectful, do you think things would have turned out differently? Explain.

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# 2.7 RENEWABLE VS NON-RENEWABLE RESOURCES

## Lesson Summary

Students will be able to distinguish between renewable and non-renewable energy sources. Students will note examples of each and provide justification for why they are renewable or non-renewable sources. They will make a list of energy and resource problems that need solutions.

*(Approx. total time: 45 minutes)*



## Standards

### NGSS Disciplinary Core Ideas

ESS3.A: Natural Resources

Energy and fuels that humans use are derived from natural sources. Some resources are renewable over time, and others are not.

## Objectives

### By the end of the lesson, students will

#### *Know (facts/information):*

- Most of the electricity in our country is produced by using non-renewable energy sources.

#### *Understand (concepts, big ideas):*

- Limited amounts of natural resources are available on earth. Each decision we make about our use of natural resources can have positive or negative impacts on the environment and other people.

#### *Be able to do (skills/behaviors/scientific and engineering practices):*

- Sort energy sources into renewable and non-renewable sources and justify their decisions.

## 2.7 RENEWABLE VS NON-RENEWABLE RESOURCES

### Vocabulary

- **biomass:** material from plants or animals that can be used for energy
- **coal:** a sedimentary rock formed from plants that lived millions of years ago
- **geothermal:** heat from inside the earth that can be used for energy (from the Greek words geo [earth] and therme [heat])
- **hydropower:** moving water released from a dam to produce electricity
- **natural gas:** a clean-burning gas formed in between rock layers from plants and animals that lived millions of years ago
- **non-renewable resource:** a resource that cannot be easily made or replaced naturally in our lifetime
- **petroleum (oil and gasoline):** a black liquid found underground from plants and animals that lived millions of years ago
- **perspective:** a person's point of view or how one person thinks about a situation
- **renewable resource:** a resource that can be replaced or restored naturally
- **solar panel:** a panel that uses the sun's light to generate electricity or heat
- **uranium (nuclear):** a metal often used by nuclear power plants because its atoms are easy to split apart
- **wind turbine:** a machine that uses blades to collect energy from the wind

### Materials

- Teacher Materials:
  - Projector, computer and speakers
    - This video to view: <https://www.youtube.com/watch?v=T4xKThjcKaE>
  - Chart paper to begin an Energy and Resource Problems We've Discovered list
- Student Materials:
  - Resource cards, 1 per student (students can cut or can be cut ahead of time)
  - Student vocabulary cards
  - Students who want to learn more about a specific energy source can click on any of the sources from this page to learn more:
    - <http://tinyurl.com/ConnectScience-energy-sources> or



## 2.7 RENEWABLE VS NON-RENEWABLE RESOURCES

### Instructional Strategies

#### Link to Prior Knowledge (5 minutes)

Elicit prior knowledge about fossil fuels.

*What types of energy sources did you learn about yesterday? Where do fossil fuels come from?*

Allow students to share what they remember about the group activity from yesterday.

#### Instruction (30 minutes)

Watch a video. Have students construct meanings for renewable and non-renewable resources.

*Today, you will learn about some other energy sources that are used in our country for transportation and electricity.*

*These resources can be sorted into two groups: non-renewable and renewable. All of the fossil fuels that we learned about yesterday were non-renewable. Here's a video that shows some examples of renewable resources:*

Show this video about renewable energy sources:

- <https://www.youtube.com/watch?v=T4xKThjcKaE>

Note: at the very end of the video, the narrator uses the term “intermittency,” which means that energy sources like solar and wind provide energy at times, but are **not continuously available** (e.g. at night or when the wind is not blowing).

*Let's pause for a few minutes and add non-renewable and renewable resources to our key vocab list. Write your own definition, and draw a sketch for each word.*

*What does non-renewable mean? Can someone help me define it? What about renewable? Take some time to write and draw your own definitions now on your vocabulary cards.*

*Refer to these definitions and word wall cards as needed:*

***Non-renewable resources cannot be easily made or replaced naturally after they have been used up.***

*When deciding if a resource is non-renewable, you have to think about where the resource comes from.*

***Renewable resources can be replaced naturally in our lifetime.*** *What are some examples of renewable resources?*

Brainstorm ideas with students about what they could draw in the boxes.

## 2.7 RENEWABLE VS NON-RENEWABLE RESOURCES

Support students as they complete a card sort to classify resources into two groups: renewable and non-renewable.

Pass out the cards to students, and give them 5 minutes to read and explore the cards. If needed, ask students to read the words on each card in the whole group or with a partner before the sort activity.

*Read the cards and look at the pictures, thinking about which ones you have heard of and which ones are new.*

*Now, sort your cards into two groups using the headers (renewable and non-renewable energy sources). A few of them may be new to you; read about them and make your best guess about which group to put them in.*

Circulate and note which examples are being placed in each category. If you notice some confusion, spend a moment with the whole class to have students share why a particular example is renewable or non-renewable. Ask students to justify their answers from the perspective of ‘can it be replenished naturally in our lifetime’? Then give groups a moment to revisit their sort.

Review the final sort together. Hold up a few cards and ask the group:

*Is this renewable or non-renewable? How do you know?*

### Closing (5 -10 minutes)

Have students begin a list of energy and resource problems.

Use chart paper to generate a list of problems that students have discovered so far about our use of natural resources for energy in our community.

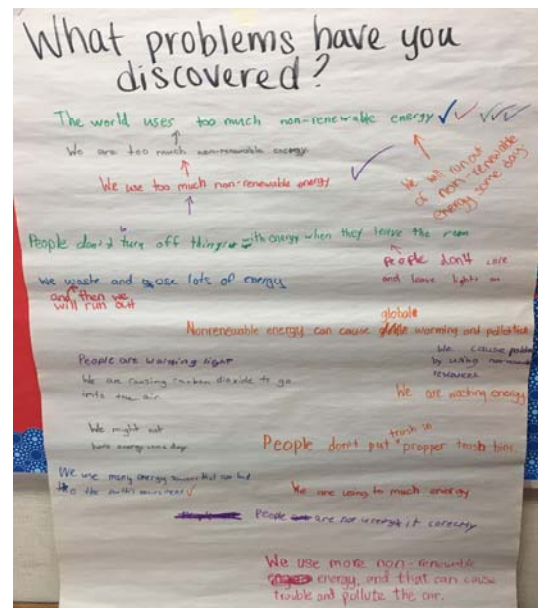
*Think back to what we've learned so far about where energy comes from, and how we use natural resources as energy sources. We're going to start a list of problems that we've heard about that we might be able to work on together.*

Follow-up questions (if needed):

*Who can think of a problem about our use of energy and natural resources?*

*How do we get electricity to our homes? Which energy sources do we use?*

*What energy sources do we use for transportation? Are those sources renewable or non-renewable?*



## 2.7 RENEWABLE VS NON-RENEWABLE RESOURCES

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### Assessment

Use formative assessment for this lesson. The sorting tasks allow you to assess whether students know the definitions of renewable and non-renewable energy sources, and can categorize sources into each group.

### Optional Extensions

Read *Energy Island* by Allan Drummond, or *The Boy Who Harnessed the Wind (Young Reader's Edition)* by William Kamkwamba, Bryan Mealer, and Anna Hymas.

### References

[Student Energy]. (2015, May 17). *Renewable Energy 101*. [Video File]. Retrieved from <https://www.youtube.com/watch?v=T4xKThjcKaE>

U.S. Energy Information Administration. What is energy? Retrieved from <https://www.eia.gov/KIDS/energy.cfm>

## 2.7 RENEWABLE VS NON-RENEWABLE RESOURCES

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### Planning Page

Students will be able to distinguish between renewable and nonrenewable energy sources.

#### Link to Prior Knowledge (5 minutes)

*Elicit prior knowledge about fossil fuels.*

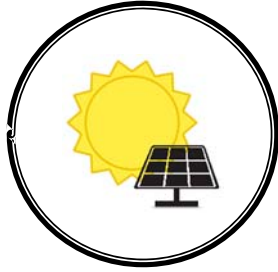
#### Instruction (30 minutes)

*Watch a video. Have students construct meanings for renewable and non-renewable resources.*

*Support students as they complete a card sort to classify resources into two groups: renewable and non-renewable.*

#### Closing (5 -10 minutes)

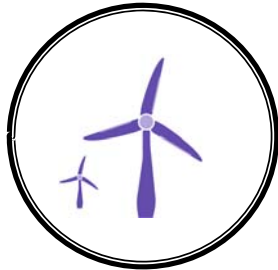
*Have students begin a list of energy and resource problems.*

**SOLAR PANEL**

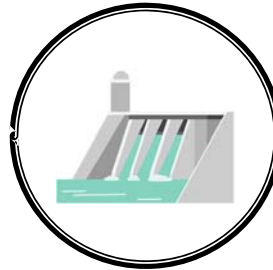
A panel that uses the sun's light to generate electricity or heat

**URANIUM (NUCLEAR)**

A metal often used by nuclear power plants because its atoms are easy to split apart

**WIND TURBINE**

A machine that uses blades to collect energy from the wind

**HYDROPOWER**

Moving water released from a dam to produce electricity

**PETROLEUM**

A black liquid found underground from plants and animals that lived millions of years ago

**COAL**

A sedimentary rock formed from plants that lived millions of years ago

**BIOMASS**

Material from plants or animals that can be used for energy

**NATURAL GAS**

A clean-burning gas formed in between rock layers from plants and animals that lived millions of years ago

**NON-RENEWABLE  
RESOURCE**

**RENEWABLE  
RESOURCE**

# 2.8 ENERGY FOR THE FUTURE

## Lesson Summary

Students will be able to review pros and cons of each energy source as well as interpret graphs to identify which sources are used frequently in the United States. Students will discuss which sources should be used more in the future, using evidence to back their decisions.

*(Approx. total time: 45 minutes–1 hour)*



## Standards

### NGSS Disciplinary Core Ideas

#### ESS3.A: Natural Resources

Energy and fuels that humans use are derived from natural sources. Some resources are renewable over time, and others are not.

### NGSS Science and Engineering Practices

#### Engaging in Argument from Evidence

Respectfully provide and receive critiques from peers about a proposed explanation by citing relevant evidence and posing specific questions.

#### Obtaining, Evaluating and Communicating Information

Communicate scientific and/or technical information orally and/or in written formats, including various forms of media as well as tables, diagrams, and charts.

## Objectives

### By the end of the lesson, students will

#### *Know (facts/information):*

- Most of the electricity in our country is produced by using non-renewable energy sources.
- Each energy source has pros and cons that must be considered when making a plan for the future.

#### *Understand (concepts, big ideas):*

- Limited amounts of natural resources are available on earth. Each decision we make about our use of natural resources can have positive or negative impacts on the environment, the economy and other people.



- The best solutions are found when people with different knowledge and perspectives listen and communicate respectfully, and then come to an agreement.

*Be able to do (skills/behaviors/scientific and engineering practices):*

- Analyze and interpret a chart that explains energy sources for electricity production in the United States.
- Respect and value a perspective that is different from their own.

### Vocabulary

- **biomass:** material from plants or animals that can be used for energy
- **coal:** a sedimentary rock formed from plants that lived millions of years ago
- **geothermal:** heat from inside the earth that can be used for energy (from the Greek words *geo* [earth] and *therme* [heat])
- **hydropower:** moving water released from a dam to produce electricity
- **natural gas:** a clean-burning gas formed in between rock layers from plants and animals that lived millions of years ago
- **nonrenewable resource:** a resource that cannot be easily made or replaced naturally in our lifetime
- **oil (petroleum):** a black liquid found underground from plants and animals that lived millions of years ago
- **perspective:** a person's point of view or how one person thinks about a situation
- **renewable resource:** a resource that can be replaced or restored naturally
- **solar panel:** a panel designed to absorb the sun's light as a source of energy for generating electricity or heat
- **uranium (nuclear):** a metal often used by nuclear power plants because its atoms are easy to split apart
- **wind turbine:** a machine that uses blades to collect energy from the wind

### Materials

- Teacher Materials:
  - Computer and projector
  - Use this video to grab attention at the beginning of the lesson:
    - <https://www.youtube.com/watch?v=Fep4CSRoreE>
  - Select one of these websites to view and project:
    - <https://www.eia.gov/state/>
    - <https://www.tvakids.com/electricity/production.htm>
  - More background information for teachers about local energy production:
    - [https://www.washingtonpost.com/graphics/national/power-plants/?utm\\_term=.2e1b9c202129](https://www.washingtonpost.com/graphics/national/power-plants/?utm_term=.2e1b9c202129)
    - <https://www.tva.com/Energy/Our-Power-System/Renewables>



- Student Materials:
  - Energy source cards from Lesson 2.7, 1 per student (students can cut or can be cut ahead of time)
  - Energy for the Future pros and cons chart handout
  - Energy in My State handout
  - Renewable v. Non-Renewable Chart on US Energy handout for each student (or projected on screen)

### Instructional Strategies

#### Link to Prior Knowledge (5 minutes)

Elicit prior knowledge about energy sources and personal connections to the topic. Share a short video about wind energy.

*What types of energy sources did you learn about yesterday? Was there a new energy source that you hadn't heard of, that you would like to learn more about? Which one?*

Allow students to share what they remember about energy sources from the card sort yesterday.

*We've heard a lot about fossil fuels. Here's an example of an energy source that's renewable that is starting to be used more often.*

Show video:

- <https://www.youtube.com/watch?v=Fep4CSRoreE>

*Does anyone have a family member that works at a power plant, or another place (e.g. gas station, coal mine) where energy is produced or sold? Tell us about the work that they do.*

#### Instruction (30-45 minutes)

Pass out pros/cons for each energy source and have students review them.

Hand out pros/cons table, and give students time to read it. (Teacher modification: Consider reading the pros and cons chart together.)

*No energy source is perfect: each has things that are good about it, and problems that come with using it. Here is some information about some of the pros and cons of each energy source. Sit with a partner, and read the pros and cons together.*

**Ask students to rank the energy sources in order, from lowest use to highest use in the future.**

*People in our country discuss energy sources a lot as they plan for our future. Everyone knows that we need to use more renewable resources in the future, but people don't always agree on which ones, or how we should start setting up systems that use more renewable resources. Have you heard adults around you talking about power plants or different types of energy sources? What are they saying?*

*You guys will be the city planners and problem solvers in the future. Imagine you are planning for the future of our city, thinking about what you want to change about power production in 50 years. Now, look at your energy source cards again. Put them in order from the ones you think we should be using the most in 50 years, down to the ones that we should be using the least. Be ready to justify the reasons for your decisions using information about each source from your table. There are no absolutely right or wrong answers to this problem; each state and country chooses different energy sources for different reasons. You may have knowledge about some of these energy sources from other places that will influence your decisions.*

**Ask students to explain their reasoning to partners, using information from the chart to back their claims.**

*Turn and talk with a partner, using your active listening skills. Share which energy source you each put first on your list, and why. Discuss why you agree or disagree. This is a time when there will be a lot of different perspectives about which energy source is best. Be respectful of other perspectives. Often the best ideas are reached after a group of people make decisions that take everyone's perspectives into consideration. If you change your mind about which sources should be used more in the future after listening to your partner, move your cards around.*

**Ask students to report their final decisions to the group. Create a visual representation of student ideas about energy sources.**

Teacher choice: Summarize student data on a white board or ask students to put their first choice on a sticky note to put on chart paper.

*Let's take a few minutes to summarize what you guys think.*

*Now that you've discussed ideas and listened to each other's perspectives, write the name of one energy source that you think should be on top of the list (on the board or on a sticky note), to see how much we agree on this important topic.*

Give students time to complete this and review the number of students that picked each choice.

*Did you agree on which energy sources should be used the most? Why or why not? I noticed a lot of you wrote\_\_\_\_. Can someone explain why they picked that? Does anyone have a different perspective to add?*

### Have students interpret a chart and reflect on energy use in the United States.

Project the U.S. energy consumption chart using a document camera or projector, or make copies for students to use.

*Now I'd like to show you a chart that shows the energy sources we use in our country right now.*

*What do you notice about this chart?*

Students may notice that petroleum is used a lot. Point out that oil and gas are used for transportation, and this is why there are so many oil barrels in the chart.

Explain what the numbers on the chart mean if students are having a hard time interpreting the chart. Allow students to count and write down the number of each energy source if needed.

Take time to be sure all students can understand this representation of data before proceeding.

*How well does your order match our current energy uses?*

*Is the U.S. using your first choice of an energy source? Why or why not? What are some important reasons why a state or city would choose one type of energy source over another? (Examples include cost, environmental impacts, human impacts, animal impacts, etc.)*

### Closing (10 minutes)

#### Briefly discuss which energy sources are used most in your community and state.

*Each community decides which energy sources to use based on things like how much it costs and which resources are available nearby. Do you know which energy sources we use in our community?*

Pull up one of these websites to show students a map or graph, and ask them to tell you what they notice and think about energy sources used in their city/state.

*Why do you think we use these sources? Are there facts you've learned that people may have used to guide this decision?*

- <https://www.tvakids.com/electricity/production.htm>
- <https://www.eia.gov/state/>
- <https://www.tva.gov/Energy/Our-Power-System>
- <https://www.tva.com/Energy/Our-Power-System/Renewables>

## Assessment

Use formative assessment for this lesson. As you circulate and listen to conversations, reflect on how well students are doing with respecting different perspectives. Pause to listen and provide suggestions for sentence stems when students get stuck or disagree with each other.

### Optional Extensions

Have students construct their own hundreds chart for Tennessee, using the same template as the one for energy sources in the United States that you displayed.

Consider inviting a guest speaker from Tennessee Valley Authority to talk with your students about their energy sources/power plants nearby, or planning a field trip to visit a nearby power plant.

### References

- Green Mountain Energy. (n.d.). Wind energy. Retrieved from <https://www.youtube.com/watch?v=Fep4CSRoreE>
- Muyskens, J., Keating, D., & Granados, S. (2017, March 28). Mapping how the United States generates its electricity. *The Washington Post*. Retrieved from [https://www.washingtonpost.com/graphics/national/power-plants/?utm\\_term=.2e1b9c202129](https://www.washingtonpost.com/graphics/national/power-plants/?utm_term=.2e1b9c202129)
- Tennessee Valley Authority. (n.d.) Renewables. Retrieved from <https://www.tva.com/Energy/Our-Power-System/Renewables>
- Tennessee Valley Authority. (n.d.) Our power sources. Retrieved from <https://www.tva.gov/Energy/Our-Power-System>
- Tennessee Valley Authority Kids. (n.d.) How TVA makes electricity. Retrieved from <https://www.tvakids.com/electricity/production.htm>
- U.S. Energy Information Administration. (n.d.) *Energy sources*. Retrieved from <https://www.eia.gov/kids/energy.cfm?>
- U.S. Energy Information Administration. (n.d.) *Recent statistics*. Retrieved from <https://www.eia.gov/kids/energy.cfm?page=stats>
- United States Energy Information Administration. (n.d.) *State profiles and energy estimates*. Retrieved from <https://www.eia.gov/state/>

### Planning Page

Students will be able to review pros and cons of each energy source as well as interpret graphs to identify which sources are used frequently in the United States.

#### Link to Prior Knowledge (5 minutes)

*Elicit prior knowledge about energy sources and personal connections to the topic. Share a short video about wind energy.*

#### Instruction (30-45 minutes)

*Pass out pros/cons for each energy source and have students review them.*

*Ask students to rank the energy sources in order, from lowest use to highest use in the future.*

*Ask students to explain their reasoning to partners, using information from the chart to back their claims.*

*Ask students to report their final decisions to the group. Create a visual representation of student ideas about energy sources.*

## 2.8 ENERGY FOR THE FUTURE

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*Have students interpret a chart and reflect on energy use in the United States.*

### **Closing (10 minutes)**

*Briefly discuss which energy sources are used most in your community and state.*

# ENERGY IN MY STATE

Use the data that your teacher shares with you to fill in the type of energy used in your state.  
Use a key to show what color represents each source of energy.


<input type="checkbox"/>	_____	<input type="checkbox"/>	_____	<input type="checkbox"/>	_____
<input type="checkbox"/>	_____	<input type="checkbox"/>	_____	<input type="checkbox"/>	_____
<input type="checkbox"/>	_____	<input type="checkbox"/>	_____	<input type="checkbox"/>	_____




# ENERGY FOR THE FUTURE

	PROS	CONS
<b>BIOMASS</b>	<ul style="list-style-type: none"> <li>• Renewable</li> <li>• Reuses materials like manure, leftover wood and crops that might not be used for other things</li> </ul>	<ul style="list-style-type: none"> <li>• Releases carbon dioxide when burned</li> <li>• Leftover ash after burning needs to be treated carefully so that it does not pollute water</li> </ul>
<b>COAL</b>	<ul style="list-style-type: none"> <li>• Inexpensive</li> <li>• There is a lot of coal underground in the United States</li> <li>• Many coal power plants are already built</li> </ul>	<ul style="list-style-type: none"> <li>• Non-renewable</li> <li>• Releases carbon dioxide when burned</li> <li>• Leftover ash after burning needs to be treated carefully so that it does not pollute water</li> </ul>
<b>HYDROPOWER</b>	<ul style="list-style-type: none"> <li>• Renewable</li> <li>• No air pollution or carbon dioxide emissions</li> </ul>	<ul style="list-style-type: none"> <li>• Dams flood large areas of land and change river ecosystems</li> <li>• Fish cannot migrate unless fish ladders are built</li> </ul>
<b>NATURAL GAS</b>	<ul style="list-style-type: none"> <li>• Inexpensive</li> <li>• Pollutes the air less than coal</li> <li>• There is a lot of natural gas underground in the United States</li> </ul>	<ul style="list-style-type: none"> <li>• Non-renewable</li> <li>• Releases carbon dioxide when burned</li> <li>• Releases another gas called methane into the air when it leaks from wells and pipelines</li> </ul>
<b>PETROLEUM (OIL AND GASOLINE)</b>	<ul style="list-style-type: none"> <li>• Can be used for transportation</li> <li>• Most cars, trucks and that we use today need oil and gasoline</li> <li>• Is used to make other things, like plastics</li> </ul>	<ul style="list-style-type: none"> <li>• Non-renewable</li> <li>• Releases carbon dioxide when burned</li> <li>• Oil spills can damage ecosystems</li> </ul>
<b>SOLAR PANELS</b>	<ul style="list-style-type: none"> <li>• Solar panels do not pollute air or water</li> <li>• The sun is free and shines everywhere</li> </ul>	<ul style="list-style-type: none"> <li>• Sometimes the sun does not shine</li> <li>• Batteries to store solar power are expensive and use minerals that are hard to find</li> </ul>
<b>URANIUM (NUCLEAR)</b>	<ul style="list-style-type: none"> <li>• No air pollution or carbon dioxide released into the air</li> <li>• The supply of uranium will last for a long time</li> </ul>	<ul style="list-style-type: none"> <li>• Non-renewable</li> <li>• Used fuel rods are harmful to people and animals, so they need to be stored carefully underground for a long time</li> </ul>
<b>WIND TURBINE</b>	<ul style="list-style-type: none"> <li>• Renewable</li> <li>• No air pollution or carbon dioxide emissions</li> </ul>	<ul style="list-style-type: none"> <li>• When wind is not blowing, other energy sources must be used, or electricity must be stored in expensive batteries</li> <li>• Birds or bats may be injured by blades</li> </ul>


# U.S. Energy Consumption by Energy Source (2015)





 Petroleum


 Nuclear


 Wind


 Natural Gas

 Biomass

 Solar

 Coal

 Hydroelectric

 Geothermal