

Subject: Science

Level: Standard 4

Strand: Form and Function

Topic: Properties of Materials: Conduction of heat

Key Points

- There are many different types of materials.
- Some examples of everyday materials are plastics, wood, glass and metals.
- Each material has properties or features that can be observed or measured.
- For example, some of the properties of a metal spoon are:
 - grey
 - hard
 - shiny
 - able to conduct electricity
 - able to conduct heat
- A material which allows heat to flow through it, is a good conductor of heat.
- Materials have various uses, depending on their properties.

Activity 1

View the following videos, using the links (written in blue) below.

To play a video you will need to:

- keep your finger pressed on the Ctrl knob, at the bottom left of your key board.
- place the cursor (pointer) on the link until the “hand” comes up.
- click (left) on the link and the video will play.

Link for Video #1 (Materials and their properties song):

<https://www.youtube.com/watch?v=e5h5RgiagrU>

Link for Video #2 (Hunting for properties)

<https://www.youtube.com/watch?v=ZZYnERZe3Cg>

Link for Video #3 (Why materials conduct heat- Science experiment)

<https://www.youtube.com/watch?v=Ry8yXhCxclA>

Look at the videos as many times as needed and complete TABLE 1 below:


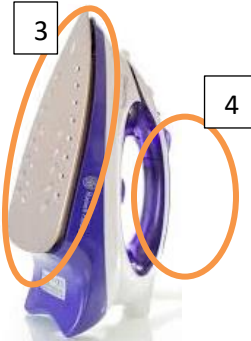

TABLE 1: Observations for the experiment with spoons


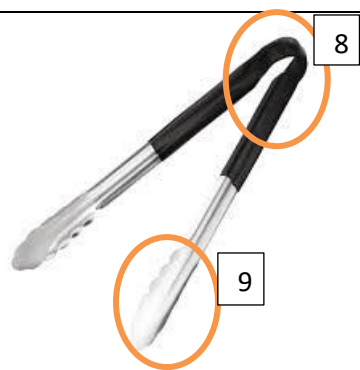
Type of spoon	Observation (Change in the butter and bead)	Conclusion (Is the spoon a good conductor of heat?)
Plastic		
Metal		
Wood		

Activity 2.

For each appliance/tool in table 2:

- indicate if the circled part is made from a good or poor conductor of heat
- give a reason for your response

TOOL or APPLIANCE	Good Conductor	Poor Conductor	Explanation
			
			
			

TOOL or APPLIANCE	Good Conductor	Poor Conductor	Explanation
			
			

Assessment:

1. Explain why cooking pots and pans are made of metal but the handles are made of wood or plastic.


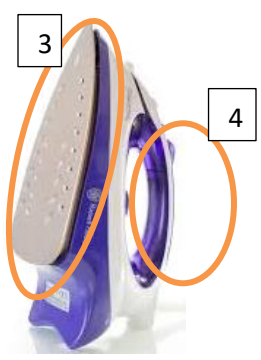
2. What else can be used to make sure the pot is held safely or you will not get burnt?


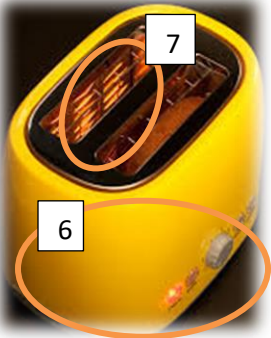

Answer Key

TABLE 1: Observations of experiment with spoons

Type of spoon	Observation (Change in the butter and bead)	Conclusion (Is the spoon a good conductor of heat?)
Plastic	Butter melted slowly so the bead hardly moved	No
Metal	Butter melted quickly so the bead moved down the spoon	Yes
Wood	Butter melted slowly so the bead hardly moved	No

TABLE 2: Classification of materials

TOOL or APPLIANCE	Good Conductor	Poor Conductor	Explanation
	2.	1.	<p>1 Handle is made of plastic or wood which are poor conductors</p> <p>2 Grill is made of metal like iron or steel, which are good conductor</p>
	1	2	<p>3. Base of iron is made of steel or aluminum which are good conductors</p> <p>4. Handle is made of plastic</p>

TOOL or APPLIANCE	Good Conductor	Poor Conductor	Explanation
		5.	5. Handle of kettle is made of plastic – a poor conductor
	7	6	6 Outer case of toaster is made of plastic – a poor conductor 7. Heating filament is made of metal – a good conductor
	8	9	8 Pincers are made of metal such as aluminium which are good conductors of heat 9 Handles are made of plastic or wood which are poor conductors of heat

Assessment.

1. Metals are good conductors of heat. Cooking pots and pans are made of metal so they will allow heat from the stove to pass through to cook the food.
Wood and plastic are poor conductors of heat. The handles are made of wood or plastic so the pot can be moved without someone being burned as the handles will not conduct heat.
2. Pot holders, made of cloth are used to lift hot pots.

Acknowledgement for videos

Video #1	Link to video:	https://www.youtube.com/watch?v=e5h5RgiagrU
	Name of video:	Materials and their Properties Song Science Music Video for Kids
	Reference:	BrainySongs

Video #2	Link to video:	https://www.youtube.com/watch?v=ZZYnERZe3Cg
	Name of video:	Hunting for Properties: Crash Course Kids #9.1
	Reference:	Crash Course Kids

Video #3	Link to video:	https://www.youtube.com/watch?v=Ry8yXhCxclA
	Name of video:	What Material Conducts Heat Best Science Experiment
	Reference:	Cool Science Experiments Headquarters

Acknowledgement for pictures

Activity with Picture	Reference
Activity 2: Grill	https://www.123rf.com/photo_77532343_bbq-grill-pit-glowing-and-flaming-hot-charcoal-briquettes-coal-food-background-or-texture-close-up-t.html
Activity 2: clothes iron	https://en.wikipedia.org/wiki/Clothes_iron
Activity 2: Toaster	https://www.amazon.co.uk/Reheating-Infinately-Removable-Container-Multifunction/dp/B07H3QPG7L
Activity 2: Electric kettle	https://www.lowes.com/pd/KALORIK-Stainless-Steel-7-Cup-Digital-Electric-Water-Boiler/1000139535
Activity 2: tongs	https://www.looper.com/other/food-tongs-with-a-rubber-gripped-handle