

Science Learning Design

| | | | | | |
|-------------------------------------|--|---------------|--------|------------------|---------|
| Topic & Subtopics : | Heat Flow | Class: | Year 6 | Duration: | periods |
| Content Learning Objectives: | Classify a range of objects as good and poor conductors of heat. | | | | |

| | Teaching & Learning Activities | Resources | Summary |
|---|--|---|---|
| Tuning in (Engage, Elicit) <i>Determine prior knowledge and prepare pupils (5 minutes)</i> | <ol style="list-style-type: none"> 1) Pupils are shown two pots made of different types of materials. (Plastic and metal) 2) Pupils will be asked which pot is suitable for cooking chicken curry. <i>Which pot will you choose if you are to cook chicken curry?</i> | <p>Toy pot made of plastic</p> <p>Metal pot</p> | |
| Finding out & Sorting out (Explore) <i>Time to locate, gather information, organise and process ideas. (15 minutes)</i> | <ol style="list-style-type: none"> 1) It is expected that pupils will say that they would use a metal pot to cook the chicken curry. 2) Pupils will be asked why they chose the metal pot instead of the plastic pot. <i>Why do you choose the metal pot instead of the plastic pot?</i> 3) Pupils are grouped together in pairs. 4) Each pair is given a 100 cm³ beaker, a wooden spoon, a metal spoon, a plastic spoon and a ceramic spoon. 5) The teacher will prepare the hot water. 6) Safety precaution when dealing with hot water will be done before the activity. 7) Pupils read through the instruction in the worksheet and ask if they have any problem understanding the instruction. 8) Pupils are given 10 minutes to do the activity | <p>A tin filled with hot water.</p> <p>a 100 cm³ beaker</p> <p>a wooden spoon</p> <p>a metal spoon</p> <p>a plastic spoon</p> <p>a ceramic spoon</p> | <p>Expected outcomes:</p> <p>Metal pot is hot when put on the fire.</p> |

| | | | |
|--|---|------------------------------------|--|
| <p>Making Conclusions (Explain) <i>Draw conclusion and consolidate understanding</i></p> | <ol style="list-style-type: none"> 1) After the pupils have done the activity, they are given 3 minutes to discuss with their pairs or group and to write down the conclusion. 2) Then selected pairs or groups will share the findings with the rest of the class. 3) When the pupils are sharing their work, teacher would say: <i>Yes ... metal is a good conductor of heat. That is why the metal spoon feels hot when you touch it. In other word, heat can travel through metal.</i> <p><i>Plastic, ceramic and wooden spoon does not allow heat to flow through them. That is why you cannot feel any heat from these spoons. Plastic, ceramic and wood are poor conductor of heat.</i></p> <ol style="list-style-type: none"> 4) Pupils should be able to conclude that: <i>Metal is a good conductor of heat Plastic, wood and ceramic are poor conductor of heat.</i> | <p>Worksheets Attachment 1</p> | <p>I could feel the metal spoon become hot.</p> <p>The plastic spoon, ceramic spoon and the wooden spoon still feel the same as before.</p> <p>Metal is a good conductor of heat.</p> <p>Plastic, ceramic and wood are poor conductor of heat.</p> |
| <p>Go further (Elaborate, Extend, Evaluate) <i>Apply knowledge to develop further understanding</i></p> | <p>For the extend activity, pupils are to act as the staff of a catering company which is going to prepare a simple lunch for a small meeting of 20 people. They are to plan the utensils used during meal and to give their reason for using the chosen materials.</p> <p>They can produce a table as shown in attachment 2.</p> | | <p>Attachment 2</p> |

| Evaluation (with respect to the Content Learning Objectives) | |
|---|---|
| <p>What worked well?</p> | <p>What would make it even better next time?</p> |

Heat

Attachment 1

Materials provided:

- A 100 cm³ beaker
- A metal spoon
- A plastic spoon
- A ceramic spoon
- A wooden spoon
- Hot water
- A stop watch

Procedures:

- 1) Touch the spoons with your hands. Are they hot? _____
- 2) Carefully pour about 70 cm³ of hot water into the beaker.
- 3) Slowly immersed the spoons at the same time into the hot water in the beaker.
- 4) As soon as the spoon is in the hot water, start the stop watch.

Circle the correct word to describe how the spoon feels to your touch

| Time | Metal spoon | Plastic spoon | Ceramic spoon | Wooden spoon |
|------------------|-------------|---------------|---------------|--------------|
| At the beginning | Cold Hot | Cold Hot | Cold Hot | Cold Hot |
| 10 seconds | Cold Hot | Cold Hot | Cold Hot | Cold Hot |
| 20 seconds | Cold Hot | Cold Hot | Cold Hot | Cold Hot |
| 30 seconds | Cold Hot | Cold Hot | Cold Hot | Cold Hot |
| 40 seconds | Cold Hot | Cold Hot | Cold Hot | Cold Hot |
| 50 seconds | Cold Hot | Cold Hot | Cold Hot | Cold Hot |

- 5) From the above activity, what can you conclude about the materials used?



The perfect utensils

| utensils | Made from | Reason |
|----------------|-----------------|-----------------------|
| Serving tray | metal | To keep the food warm |
| Plates | | |
| Drinking glass | | |
| Spoons | | |