

Science Learning Design

Topic & Subtopics :	HEAT GAIN AND HEAT LOSS	Class:	Year 4/6	Duration:	5 periods
Content Learning Objectives:	<ul style="list-style-type: none"> • State that when an object gains heat, it becomes warmer. • State that when an object loses heat, it becomes cooler. • List some effects of heat gain/loss in daily life. 				

Teaching & Learning Activities	Resources	Summary
<p>Tuning in (Engage, Elicit) <i>Determine prior knowledge and prepare pupils</i></p> <p style="text-align: center;">[5 MIN]</p>	<ul style="list-style-type: none"> ▶ Review back previous lesson by asking the pupils about Olaf from the Frozen movie. Ask these questions: <i>What is Olaf made of?</i> ▶ Shows a slide of Olaf under the Sun. <i>? Guess what will happen to Olaf if he standing too long under the Sun?</i> ▶ Let the pupils write their answer on the mini whiteboard or post-it notes. ▶ Show a short clip about Olaf melting. ▶ Ask the pupils to raise the GREEN traffic light for the correct answer and the RED traffic light for the wrong answer. 	<p>Small whiteboard</p> <p>Marker pens</p> <p>A short video clip of Olaf melting: http://youtube.com/watch?v=iCET9nFSz2M</p> <p>GREEN and RED traffic lights</p>
<p>Finding out & Sorting out (Explore) <i>Time to locate, gather information, organise and process ideas.</i></p> <p style="text-align: center;">[40 MIN]</p>	<ul style="list-style-type: none"> ▶ Show a picture slide of Olaf and Anna. In pair groups, ask the children these questions: <i>? Where is the place?</i> <i>? What happens to Olaf? Why?</i> ▶ Let the pupils predict/answer the questions above on their mini whiteboard. ▶ Next they will share and discuss their ideas in group. Tell them NOT to change or erase their answers during the pair groups activity. ▶ ACTIVITY 1: Tell the pupils they are going to do a simple experiment based on today's topic. ▶ In groups, give out these objects: a plastic food container and a glass/cup of cold water and also a thermometer. ▶ Get them to measure the water in the container and in the cup before placing the cup in the water. Record their finding on the worksheet provided. ▶ Have them predict how they think the temperature in the container and cup will change, then record the changes in temperature in 5 minutes intervals over a period of 30 minutes [Teacher can shorten the minutes interval and periods]. ▶ Get the pupils to record their prediction and observation on the worksheet provided. 	<p>A picture slide of Olaf melting in front of Anna: https://turntherightcorner.files.wordpress.com/2013/11/disneys-frozen-2013-screenshot-olaf-melting.jpg</p> <p>Small whiteboards</p> <p>Marker pens</p> <p>Objects for Activity 1: thermometers, plastic cups, food containers, stop watches.</p> <p>Worksheets to record their findings/result</p>

<p>Making Conclusions (Explain) <i>Draw conclusion and consolidate understanding</i></p> <p>[15 MIN]</p>	<ul style="list-style-type: none"> ▶ They present their results and findings. ▶ They compare their results with other groups and find similarities and differences. ▶ Choose the best answer from the group and display it on the whiteboard. Elicit from the children the temperature changes and its relation to heat gain and loss ▶ Relate what happen to Olaf from the picture shown earlier on. 	<p>The pupils' worksheets</p> <p>Visualizer</p>	<p>Pupils elicit that Object loses heat when its temperature decreases and gain heat when its temperature increases.</p>
<p>Go further (Elaborate, Extend, Evaluate) <i>Apply knowledge to develop further understanding</i></p> <p>[40 MIN]</p>	<p><u>ACTIVITY 2:</u></p> <ul style="list-style-type: none"> ▶ Divide the pupils into four groups. Each group will conduct different experiments related to today's topic. ▶ Before they are given the objects, remind the pupils of the safety precautions when handling hot objects. ▶ Each group will be given roles as stated below: <ul style="list-style-type: none"> ▶ A leader ▶ A recorder ▶ A presenter ▶ A Equipment ▶ These are the activities given to each group. <p>GROUP1: will be provided with an electric water kettle. [TEACHER PROVISION NEEDED]</p> <p>GROUP 2: Wet towels and clothes pins.</p> <p>GROUP 3: Frozen butter and a small plate.</p> <p>GROUP 4: Frozen jelly and a small plate.</p> ▶ Each group will be given the worksheets and observe what happens to all the objects they had given. They need to predict first before attempting to do the experiment. ▶ Each child will carry their roles [within the group] as mentioned before. All of them will observe and record and finally present their findings/result to their friends. 	<p>Items for ACTIVITY 2: an electric kettle, wet towels and clothes pins, frozen butter, frozen jelly, stoop watches and small plates</p> <p>Worksheets for recording their findings/result</p> <p>Mahjong papers</p> <p>Marker pens</p> <p>Mini whiteboard.</p>	<p>Pupils will apply their knowledge and answer the questions about heat gain and loss through some simple experiments.</p>

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