**Learning Objectives**

By the end of the lesson, students will be able to:

1. Define **work** in physics as the transfer of energy when a force moves an object.
2. Explain how a moving object (e.g., a car) can do work on another object (e.g., another car, a barrier).

Apply knowledge of work and kinetic energy to understand car accidents

**1. Engagement (10 min) – Hook & Prior Knowledge Activation**

* **Think-Pair-Share:** Ask students:
  + Where do we get heat from?
  + How do we make fire today?
  + What do you think people did before lighters and matches?
* **Brainstorm:** Create a class word bank of **heat sources** (e.g., Sun, fire, friction, electricity, body heat).
* **Demonstration:**
  + Rub hands together to show how **friction** produces heat.

**2. Explanation (10 min) – Understanding Heat Energy**

* Define **heat (thermal) energy** as:
  + "The energy that makes things warm or hot."
* **Key Sources of Heat:**
  + **Natural:** Sun, fire, volcanoes, lightning.
  + **Human-Made:** Stoves, heaters, light bulbs, friction.
* Show images of different heat sources and discuss their uses.

**3. Exploration (15 min) – Traditional Fire-Starting Methods**

* Introduce how Aboriginal and Torres Strait Islander Peoples used **fire for survival** (e.g., cooking, warmth, signaling, land management).
* **Video or Visuals:** Show a short clip or images of traditional fire-starting techniques.

<https://www.youtube.com/watch?v=Jbyd0LuVoZw>

<https://www.youtube.com/watch?v=ZPr-a8kht2E>

* **Hands-on Demonstration (if safe & allowed):**
  + Use **two wooden sticks** to demonstrate friction (without making fire).
  + Show how heat builds up when rubbing sticks together.
* **Discussion:**
  + Why do you think this method was important?
  + What skills were needed to use these techniques?
  + How does this connect to modern fire-starting tools (e.g., lighters, matches)?

**4. Application (10 min) – Compare & Connect**

* **Group Task:** Compare traditional fire-starting methods with modern methods.
  + **Traditional:** Firesticks, flint stones, hand drill, bow drill.
  + **Modern:** Matches, lighters, gas burners.
* **Class Discussion:**
  + What are the advantages of traditional fire-starting methods?
  + How does this knowledge help Indigenous communities today?

**5. Reflection & Exit Ticket (5 min)**

* **Sentence Stems:**
  + One source of heat energy is…
  + Aboriginal and Torres Strait Islander Peoples made fire by…
  + Fire was important for…
* **Quick Share:** Ask a few students to read their sentences aloud.

**EAL/D Support Strategies**

✔ **Visuals & Videos** – Reinforce concepts with images and demonstrations.  
✔ **Simple Language** – Use clear, everyday words and define key terms.  
✔ **Scaffolding** – Provide sentence starters and word banks (e.g., "friction," "rubbing," "heat").  
✔ **Hands-on Learning** – Use physical objects to demonstrate concepts.  
✔ **Cultural Respect & Connection** – Emphasize Indigenous knowledge as valuable science.

**Assessment & Evaluation**

✅ **Observation:** Can students identify different heat sources?  
✅ **Group Task:** Can students explain traditional and modern fire-starting differences?  
✅ **Exit Tickets:** Do students complete sentence stems correctly?

Additional resources:

Black Kites spread fire

<https://www.youtube.com/watch?v=5zcJs16aZ5s>