Heat Vulnerability PROJECT

Disaster Risk REDUCTION & RESILIENCE Funded by the National Disaster Risk Reduction Program

Heat Education Framework

This framework includes lesson plans for six sessions to teach children about the impacts of high heat. The first five sessions are adapted from the original lesson plans used by the Heat Vulnerability Project in Port Hedland, in partnership with the Youth Involvement Council. The last lesson was developed due to the release of the Heat Vulnerability Map. For more information go to https://heatvulnerabilityproject.org.au/

Session one: the heat and my body

Interactive Lesson Framework: Understanding the Effects of Extreme Heat on the Body

Duration: 60-90 minutes

Learning Objectives:

- Understand how extreme heat affects the body.
- Learn practical prevention strategies to stay safe in extreme heat.
- Foster group collaboration and discussion around heat safety.

Heat and the body example activity (20 minutes)

Materials Needed:

- Stopwatches or timers
- Blank paper and pens for recording data
- Access to a warm area (like outside on a sunny day or a heated room)
- Water bottles (for after the activity)
- Heart rate monitor

Effects of heat Discussion and explainer:

- Heart Beats Faster: When it gets hot, your heart pumps faster to help cool you down.
- Sweating: Your body starts to sweat. Sweat helps cool you off when it evaporates from your skin, like how a wet towel feels cooler when it dries.
- Blood Vessels Open Up: The blood vessels in your skin widen, letting more blood flow to the surface. This helps heat escape from your body.
- Losing Water: When you sweat a lot, you lose water. If you don't drink enough, you can get dehydrated, which makes you feel tired and weak.
- Feeling Tired: Being in the heat for too long can make you feel tired and less energetic.
- Struggling to Think: Heat can make it hard to concentrate and think clearly, which is important when you're trying to play sports or study.

- Skin Issues: Spending too much time in the heat can lead to problems like sunburn or heat rash.

- Heat Problems: If it gets too hot and you don't take care of yourself, you can get heat exhaustion or even heat stroke, which are serious conditions that can make you feel dizzy, sick, or confused.

Session two: Science to stay safe
Interactive Lesson Framework: Making electrolytes with salt to stay hydrated
Duration: 60-90 minutes
Learning Objectives:

- Young people will understand what electrolytes are and why they are important for the human body.
- Young people will create their own homemade electrolyte solution to observe and test its effectiveness

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Materials Needed:

- Water (500 mL)
- Salt (table salt or sea salt)
- Baking soda
- Sugar
- Lemon or lime juice
- Measuring spoons and cups
- Small plastic cups or beakers
- Stirring rods or spoons
- pH strips (optional)
- Labels (for labelling the cups)
- Notebook for notes and observations

3. Instructions:
Distribute the materials to each group.
Guide students to make the following electrolyte solutions in their cups:

1. Basic Electrolyte Solution:
    - 500 mL of water
    - 1/2 teaspoon of salt
    - 1/2 teaspoon of baking soda
    - 1 tablespoon of sugar
2. Citrus Electrolyte Solution (Optional Variation):
    - 500 mL of water
    - 1/2 teaspoon of salt
    - 1 tablespoon of lemon or lime juice
    - 1 tablespoon of sugar
3. Alternative Electrolyte Solution (Experiment Variation):

- Students can experiment by adjusting the amount of salt, sugar, or citrus to see how the taste or pH level changes.

Stir and Taste Test:

- Have students stir their solutions and taste them. (Encourage them to take small sips and note the flavour.)

Session three: Stay cool training

Interactive Lesson Framework: Finding effective and fun ways to stay cool in times of high heat

Duration: 60-90 minutes

Learning Objectives:

- Learn practical prevention strategies to stay safe in extreme heat.
- Foster group collaboration and discussion around heat safety.
- Develop a toolkit for staying cool when it's hot.
- Learn ways to keep yourself, your friends and family safe when it's hot.

Materials Needed:

- Bucket with water
- 2 x pedestal fan
- Bucket of ice
- Water bottles (for after the activity)
- Air-conditioned room
- Fruit & veg (optional)

Activities for staying cool

- Hands in cold water: When it gets hot, you can put your hands in a bucket of cold water – this helps lower your body temperature, at home you can also do this with your feet.

- Eating your water: Pack snacks with the most water-intense foods you can. Cucumbers and tomatoes are 96% and 95% water, respectively, making the pair an excellent option. On the sweeter side watermelon is 92% water.

- Makeshift air-conditioner: Work in teams to fill a container up with ice and then combine it with a pedestal fan to make a homemade aircon, placing a bucket of ice in front of a fan as a homemade AC unit is just as effective. As the air passes over the ice, it will be chilled and will circulate refreshingly cold air around the room.

Session four: Cool down mindfulness

Interactive Lesson Framework: Practicing mindfulness in heat and the impacts of cooling down on mental wellbeing

Duration: 60-90 minutes

Learning Objectives:

- To teach teenagers mindfulness techniques to manage stress and cool down their bodies and minds during extreme heat.
- For young people to note the impacts that cooling down can have on their mental health.

Materials Needed:

- Water bottles (for after the activity)
- Air-conditioned room
- See here for Mindfulness cards
- Additional resources include: The Climate Anxiety Toolkit

Cool Breath Exercise

- **Goal**: Use breathing to activate relaxation and cool the body.
    - **Instructions**:
        1. Sit comfortably, close eyes, and focus on your breath.
        2. Inhale deeply through the nose, imagining cool air entering your body.
        3. Exhale slowly through the mouth, releasing heat and tension.
        4. Repeat for 5-7 cycles.
    - **Purpose**: Reduces stress and promotes a sense of cooling.

Body Scan for Heat Relief (15 minutes)

- **Goal**: Increase body awareness and release heat-induced tension.
    - **Instructions**:
        1. Lie or sit comfortably, close your eyes.
        2. Start from your feet, tense and release each body part slowly, imagining coolness spreading over you.
        3. Move up through the body (legs, abdomen, chest, arms, neck, face).
        4. Focus on breathing and cooling sensations during the scan.
    - **Purpose**: Helps relax muscles and releases physical heat and tension.

Visualization: Cooling Breeze

Goal: Use mental imagery to feel cooler and more relaxed.

- **Instructions**:
    1. Sit or lie comfortably, close your eyes, and take deep breaths.
    2. Visualize a cool breeze or icy environment (beach, snow, mountains).
    3. Imagine the breeze washing over your body, lowering your temperature.
    4. Stay in the image for several minutes, focusing on the cool sensations.
- **Purpose**: Visualization helps lower perceived body temperature and promotes relaxation.

Gentle Cool-Down Stretch

- **Goal**: Release any remaining tension and promote physical relaxation.
  - **Instructions**:
    1. Perform slow neck stretches, shoulder rolls, and gentle torso twists.
    2. Focus on deep breathing with each stretch.
    3. End with a full body stretch and a deep breath in, then exhale slowly.
  - **Purpose**: Enhances relaxation and restores calm after mindfulness practices.

Session Five: Elder led Aboriginal ways of being in heat
Lesson Framework: Learning and listening to First Nations Elders to learn about their experiences of heat and lessons learned.
Duration: 60-90 minutes

Learning Objectives:

- Learn and listen to First Nations story tellers.
- Learn about the traditional seasons.
- Learn key words for environmental aspects of the Country.
- Learn ways to keep yourself, your friends and family safe when it's hot.

Session Six:
Interactive Lesson Framework: Communicating heat risk for local areas
Duration: 60-90 minutes
Learning Objectives:

- Understand what is meant by heat vulnerability
- Learn how the local area's risk compared to other areas
- Work collaboratively to think about potential solutions

Materials Needed:

- Computers
- Paper
- Textas and pens
- Reference The Climate, Heat and Resilience Project by Powerhouse for more information

Heat Vulnerability map exercises

1. Pair off into groups of 2-3
2. Use the Heat Vulnerability Map to explore your area
   a. Write down the exposure, sensitivity and adaptive capacity of your region

   b. Meanwhile, teach a bit about the definitions of each term and what that means for your region : [Map Glossary – heatvulnerability]
   c. Look at the data dictionary to think through different communities at risk from high heat.
3. Have each group look up their own local government and one other local government
   a. Compare the exposure, sensitivity and adaptive capacity between the regions
   b. Write down which communities should be targeted to prepare for high heat (ie elderly)
4. Develop messages for the area
   a. In the groups develop some messages and communication that could be shared out during a heatwave, targeting some of the at-risk groups
   b. Use the paper and Textas to draw messages and signs about heatwave preparedness.