Safe snorkelling workbook

Section objectives

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Section 1: Equipment

A. List advice you could get when buying equipment

B. List types of snorkelling equipment you can buy including masks, snorkels, fins, PPE, underwater cameras, spear fishing gear and for each:
   1. Describe how each piece helps you snorkel.
   2. Distinguish between types and materials used in each.
   3. List advantages and disadvantages of each item purchased.
   4. Describe equipment care and maintenance of each item.

C. Evaluate shark deterrent devices

D. Experiment with snorkelling PPE materials to determine equipment care

Section 2: Skills

A. Describe how to fit a mask. snorkel and fins

B. Discuss water entries and exits

C. Describe finning and diving techniques

D. Describe clearing your snorkel, mask and preventing fogging up

E. Describe how to ditch a weigh belt

F. Identify safety signals

G. Discuss rescue methods

H. Design a snorkelling certificate incorporating:
   1. Fitness distance swim, underwater swim and treading water
   2. Fitting a mask, snorkel and fins
   3. Water entries and exits
   4. Finning the length of a pool
   5. Duck dive, clearing your snorkel and ears
   6. Clearing a mask and how to stop it fogging up
   7. Safety signals
   8. Drills used in rescue methods

Section 3: Personal health risks

A. Define and give examples of a:
   1. Health risk
   2. Hazard
   3 Preventative measure

B. Use a table to determine a risk level

C. Explain the importance of situation awareness

D. Describe hazards and preventative measures associated with:
   1. Skin trauma, including:
      a. Sunburn
      b. Melanoma
   2. Heat gain, including:
      a. Hyperthermia
      b. Cramps
      c. Heat exhaustion
      d. Heat stroke
   3. Heat loss, including:
      a. Shivering
      b.Sudden temperature change
      c. Hypothermia
   4. Cramps

5. Eye trauma
6. Ear trauma, including:
   a. Outer ear infections
   b. Middle ear infections
   c. Blocked ears
   d. Ear buds and pods
7. Ear barotrauma
8. Sinus barotrauma
9. Seasickness
10. Underlying health conditions including:
    a. Diabetes
    b. Asthma and allergies
    c. Epilepsy
    d. Nervousness
11. Drowning, including
    a. Panic
    b. Saltwater mist
12. Stupidity, including:
    a. Definition
    b. Hyperventilation
    c. Shallow water blackout
    d. Not signing forms

Section 4: Environmental hazards

A. Define and give examples of an environmental:
   1. Risk
   2. Hazard
   3. Preventative measure

B. Explain how a risk level can change, using a snorkelling platform as an example.

C. Describe hazards and preventative measures associated with:
   1. Boat operators
   2. Weather, including:
      a. Waves
      b. Wind
      c. Rain
   3. Heat
   4. Turbidity
   5. Currents (strength and direction)
   6. Entry and exit points
   7. Deep water and free diving
   8. Sound
   9. Dangerous marine creatures, including:
      a. Sharks
      b. Coral, oysters and barnacles
      c. Stingrays
      d. Sea urchins
      e. Bristle worms
      f. Blue-ringed octopus
      g. Cone snails
      h. Stonefish
      i. Scorpion fish
      j. Bluebottle
      k. Box jelly and Irukandj
      l. Fire weed and stinging hydroid

Section 5: Emergency planning

A. Evaluate snorkel trip planning by:
   1. Determining a group's ability to use equipment.
   2. Inspecting proposed site entry/exit hazards.
   3. Establishing emergency communication site locations.
   4. Determining group member underlying medical conditions.
   5. Interpreting weather maps and tide charts for alternative sites.
   6. Preparing a water entry safety brief.

B. Snorkelling first aid
   1. Describe how to stop and treat bleeding, including:
      a. Coral cuts
      b. Body lacerations
      c. Bites from fish
      d. Bleeding from the ear and nose
   2. Distinguish between the treatment of tropical and non-tropical stings.

C. Describe emergency procedures including:
   1. DRSABCD
      a. Danger
      b. Response
      c. Send for help now
      d. Airway
      e. Breathing
      f. Compression
      g. Defibrillation (if available)
   2. When to stop CPR.
   3. Use of personal defibrillators.
   4. How to control shock.

D. Demonstrate:
   1. CPR to the recognised standard
   2. The recovery position.

E. Search applicable government web sites for safety guidelines, for example:
   1. National guidelines: www. australianaas.org.au
   2. WA Education: www.education.wa.edu.au
   3. NSW Education: https://app.education.nsw.gov.au
   4. Queensland worksafe: www.worksafe.qld.gov.au

Section 6: Snorkelling science

A. Vision underwater
   1. Complete a diagram to illustrate how the human eye functions.
   2. Explain why marine life appears bigger underwater when using a mask.
   3. Describe how the penetration of light frequencies changes with depth.
   4. Compare how a mask focuses an image on the retina of the human eye with and without a mask.

B. Respiration and SWB
   1. Define shallow water blackout.
   2. Explain SWB given graphs comparing oxygen and carbon dioxide levels of dives with normal breathing and hyperventilation.

C. Buoyancy and snorkelling
   1. Explain why we float.
   2. Discuss the difference between positive, neutral and negative buoyancy.

D. Archimedes Principle
   1. Recall Archimedes Principle and state the formula for calculating density.
   2. Explain how you would predict if a object would float or sink.
   3. Calculate the mass of water displaced by a snorkeller and the mass of a weight belt using a formula for density.
   4. Estimate the apparent mass of an object when placed in water.

E. Effects of pressure
   1. Define pressure.
   2. Discuss the effect pressure has on our bodies when we dive underwater.

F. Boyle's Law
   1. Define Boyle's law.
   2. Describe an experiment used to prove it.
   3. Discuss the relationship between pressure and volume when we dive underwater.