

BEACH
WATER SKILLS FOR LIFE

TESTING MATERIALS FOR FLOATATION

MODULE

10



SUPPORTED BY



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TESTING MATERIALS FOR FLOATATION

DESCRIPTION

Staying afloat in the water can take a lot of energy for people especially for a lengthy time period. Anyone ending up in the water unintentionally can also create panic and confusion. This module aims to help students learn about non traditional floatation devices, including regular household items and how to use them as floatation aides if necessary.

ACHIEVEMENT OBJECTIVES

Level 3

Personal Health and Physical Development

Safety and Risk Management: Students will identify risk and their causes and describe safe practice to manage these.

Movement Concepts and Motor Skills

Science and Technology: Students will participate in and describe how their body responds to regular and vigorous physical activity in a range of environments i.e. Hypothermia.

Healthy Communities and Environment

Rights, responsibilities, and law: Students will research and describe current health and safety guidelines and practices in their school and take action to enhance their effectiveness (i.e. water safety rules, how to recognise a rip or hypothermia).

Level 4

Personal Health and Physical Development

Safety and Risk Management: Students will access and use information to make and action safe choices in a range of contexts

Movement Concepts and Motor Skills

Science and Technology: Students will experience and demonstrate how science, technology, and the environment influence the selection and use of equipment in a variety of settings. ie tides, waves, wetsuits, life jackets

Healthy Communities and Environment

Rights, responsibilities, and law: Students will specify individual responsibility and take collective action for the care and safety of other people in their school and in the wider community

Level 3 & 4 Science

MODULE 10 LEVEL3/4

Nature of Science

Investigating in Science

Build on prior experiences, working together to share and examine their own and others' knowledge.

Ask questions, find evidence, explore simple models, and carry out appropriate investigations to develop simple explanations.

Physical world

Explore, describe, and represent patterns and trends for everyday examples of physical phenomena, such as movement, forces, electricity and magnetism, light, sound, waves, and heat.

Level 3 Technology

Technological Practice

Planning for practice: Undertake planning to identify the key stages and resources required to develop an outcome. Revisit planning to include reviews of progress and identify implications for subsequent decision making.

Brief development: Describe the nature of an intended outcome, explaining how it addresses the need or opportunity. Describe the key attributes that enable development and evaluation of an outcome.

Outcome development and evaluation: investigate a context to develop ideas for potential outcomes. Trial and evaluate these against key attributes to select and develop an outcome to address the need or opportunity. Evaluate this outcome against the key attributes and how it addresses the need or opportunity.

Technological Knowledge

Technological modelling: Understand that different forms of functional modelling are used to inform decision making in the development of technological possibilities and that prototypes can be used to evaluate the fitness of technological outcomes for further development.

Technological products: Understand the relationship between the materials used and their performance properties in technological products.

Nature of Technology

Characteristics of technological outcomes: Understand that technological outcomes are recognisable as fit for purpose by the relationship between their physical and functional natures.

Technological Practice

Planning for practice: Undertake planning that includes reviewing the effectiveness of past actions and resourcing, exploring implications for future actions and accessing of resources, and consideration of stakeholder feedback, to enable the development of an outcome.

Brief development: Justify the nature of an intended outcome in relation to the need or opportunity. Describe the key attributes identified in stakeholder feedback, which will inform the development of an outcome and its evaluation.

Outcome development and evaluation: Investigate a context to develop ideas for feasible outcomes. Undertake functional modelling that takes account of stakeholder feedback in order to select and develop the outcome that best addresses the key attributes. Incorporating stakeholder feedback, evaluate the outcome's fitness for purpose in terms of how well it addresses the need or opportunity.

Technological Knowledge

Technological modelling: Understand how different forms of functional modelling are used to explore possibilities and to justify decision making and how prototyping can be used to justify refinement of technological outcomes.

Technological products: Understand that materials can be formed, manipulated, and/or transformed to enhance the fitness for purpose of a technological product.

Nature of Technology

Characteristics of technological outcomes: Understand that technological outcomes can be interpreted in terms of how they might be used and by whom and that each has a proper function as well as possible alternative functions.

LEARNING INTENTION

- NZ stories where floatation devices and survival methods were used
- Survival methods in the water
- Predict, test and evaluate the use of everyday objects and materials as floatation aids
- Understand and demonstrate the 'help' signal
- Responding to the 'help' signal

SUCCESS CRITERIA

Students can

- Practice survival methods in the water
- Work within a group to predict, test and evaluate the suitability of regular items as floatation aids
- Write a statement saying which items they'd grab if they were at the beach to help someone float
- Demonstrate the help signal and provide others with a floatation aid

KEY COMPETENCIES

Participating and Contributing:

- Participate in group and independent tasks
- Contribute ideas to group and class discussions

Managing Self:

- Manage time and behaviour effectively in group activities
- Listen carefully to and follow instructions in a range of environments (i.e. pool, classroom, beach)

Thinking:

- Think about which items will be useful to rescue someone needing help in the water

Using language, text and symbols:

- Read, comprehend and evaluate New Zealand survival stories
- Research and record scientific concepts and personal observations

Relating to others:

- Be respectful of other group members' ideas
- Actively listen to other group members

RESOURCES

NZ survival stories (digital or printed copies), True or False activity sheet containing statements and room for explanations, group topic book to record work, materials for creating floatation devices (to be collected by the students), items that float and sink for use on the pool (Chilly bins, plastic bottles, balls, ropes/skipping ropes),

ASSESSMENT ACTIVITIES

- Demonstrate survival floating using personal buoyancy
- Demonstrate and respond to the 'help' signal
- Determine what objects sink and float and why
- Design and create a floatation device that will keep at least 4 people afloat

LESSON

1**Tuning In**

Class Discussion: introduce the topic of testing materials for floatation to the students. Ask the students: What do you know about floatation? Do you think knowing about floatation is important for going fishing/swimming? Why? What everyday objects do you know of float/sink? What objects that you know of help us to float in the water?

Activity:**Reading/Comprehension Questions**

Ask students to read one of the articles below and answer the following questions about it:

[Saved by Sea Rubbish](#) or [Sailor rescued after 14 hours in remote Pacific had 'a lot go right for him'](#)

[Tinnie sinks, trio cling to chilly bin](#)

[Fishermen left clinging to chilly bin saved in second water rescue near Thames in a week](#)

[Rob Hewitt survives three nights lost at sea in Wellington](#)

- How did the people/person end up needing to be rescued?
- What helped them to survive while they awaited rescuers?
- What could they have done to prevent ending up stranded at sea?
- What skills do you think are important to have if you get stranded at sea?
- What happens to our bodies if we are in the water for too long?



LESSON

2
to
3**Finding Out/ Sorting Out****Activity: True or False?**

Split the students into groups of 4. Give the students the following statements to investigate:

- Heavy objects always sink
- Big objects always sink
- All rocks sink
- All wood floats
- Air trapped inside things help them float

Ask students to identify whether each statement is true or false and provide evidence to justify their answer. Allow students to investigate by physically testing and researching online. Once students have finished allow them to share their findings with the class.

Class Discussion: Discuss the articles read in the previous lesson and how everyday objects can be used as emergency floatation aids.

Pose the inquiry question: What everyday objects can we use to create a floatation device that will keep all group members afloat?

Discuss the inquiry question in more detail and how students can use the knowledge gained in the True or False activity to assist them with their inquiries. **Ask the students** to form groups of 4-6 to conduct an inquiry into this question. Make sure students know that the materials they use must be low cost or free. **Ask the students** to develop a plan that identifies the key stages and materials they will use to make their floatation device. Co-construct a brief with the whole class so everyone is clear on what the intended outcome is and what key attributes their floatation device must have. Students may want to identify their own key attributes specific to their creation. Students may record their research and project ideas in a group modelling book.

Example of the brief:

The floatation device will be able to keep at least four people afloat in a large body of water e.g. pool, beach, lake. It will be easy to transport and be sturdy enough to stay together as one item.

Researching & Collecting Relevant Information

Students to organise their own way of collecting and sorting information taking into account the following:

- Tools we will use to research
- People we can ask for help
- Where we will keep our research (group modelling book)
- Possible ways we will present our research (take photographs, record observations)
- Are we sure the chosen materials are fit for purpose?
- What materials are we going to use and where will we source them?

Activity: Concept Drawing/Prototype

Once students have finished researching, they will develop a concept drawing of what they think their final product could look like. Students will also create a prototype of what they would like their end creation to look like - this will be a smaller scale of what the original will be. This will better prepare them for the next phase of the inquiry.



LESSON

**5
to
7****Going Further**

Students create their final floatation device using the materials they have collected. Once completed, allow students to test their floatation devices in the school pool or at the beach. Students must make observations and evaluate the effectiveness of their floatation device and reflect on how it can be improved.

Activity: The 'Help' Signal/

Model to students how to do the help signal. Students will buddy up and practice the help signal and provide assistance using a floatation device or another object they can help with.

Objects provided by the teacher:

Items that float or that can be used to help someone to safety: Chilly bins, plastic bottles, balls, ropes/skipping ropes. Also provide items that sink to get students to stop and think about the items they choose to provide help. [Water safety for children](#) Modules: Stationary surface, floatation and orientation, and Recognising and Assisting Someone in Trouble

Activity: Survival Floating

Review Rob Hewitt's survival story and discuss the importance of personal buoyancy when a floatation device is not available. Watch the Personal Buoyancy video and teach the floating skills located on the water skills website.



Water Safety for Children



LESSON

8 Making Conclusions

As a class, discuss the overall learning that has occurred as a result of the module. Ask students to write a formal evaluation about their floatation device. Make sure they include whether they think their floatation device was fit for purpose and why. Also ask them to add a statement about what everyday objects they could to help someone float at the beach.

Add students evaluations to group modelling books.

Taking Action

Put new skills into **practice** in a real life context when required.

Teach a buddy class survival skills.

Make a **presentation** explaining floating and sinking to teach other students.

