

Activity 14: Shade provision by hats

Aims

- To improve students' awareness of the safety reasons behind hat design.
- To increase knowledge of hat function.

Assessment outcomes D&T 4.1, 4.2; H&PE 4.6; S&E 4.5, 4.11

Reference fact sheets Fact sheet 8: Hats
Fact sheet 9: Sun protection from clothing

Worksheet Worksheet 14: Shade provision by hats

Requirements

A variety of hats

A pump pack of sunscreen

Butcher's paper

Teacher guidelines

- 1 Distribute Worksheet 14: Shade provision by hats.
- 2 Stimulate student discussion about the openness and size of different fibres and fabrics using the examples below.

Straw open weave
poor protection

Canvas closer weave
better protection

- 3 Discuss questions 1–3 either in small groups or as a class and review student answers.
- 4 Complete the activity, ensuring that students use sunscreen (if appropriate) before going outside.

Worksheet 14: Shade provision by hats

Working in pairs, choose one of the hats for this activity.

Stand outside in the sun with the hat on and your back to the sun and draw around the shadow of your partner's head including the hat, on a piece of butcher's paper.

Cut out the shape of the shadow and take indoors.

Compare the sizes of all the shadows to decide which hat provides the best protection from the sun. It may be necessary to calculate the area of the shadow. (This can be done by drawing a 5 cm x 5 cm grid and calculating the small shapes at the edges by subdividing them into rectangles and triangles.)

1 Which hat provides the greatest area of shade?

2 Do all the hats provide shade that blocks the sun completely?

3 Compare the shade provided by a broad brimmed hat and a baseball cap. What connection can you make between the width of the brim and the amount of protection provided?



4 Is the hat that offers the most sun protection one that you would wear? Why or why not?

5 Why do you think The Cancer Council South Australia recommends wearing a broad brimmed hat with a brim that is at least 7.5 cm wide?

Worksheet 14: Shade provision by hats (cont.)

6 What fabric or fibre would you construct a SunSmart hat from and why?

7 What do you consider to be the most important factor in the design of a SunSmart hat?

8 Would you consider wearing the hats that offer the best sun protection all the time?

9 In which situations would or wouldn't you wear such a hat? Explain.

10 What constitutes a fashionable SunSmart hat?

11 Design a hat for school and one for the beach or leisure that satisfies fashion and sun safety.



Fact sheet 8: Hat guidelines for schools

accounting for around 80% of all new cancers diagnosed each year¹.

The major cause of skin cancer is over exposure to the ultraviolet radiation (UVR) from the sun over many years, particularly during childhood and adolescence². Even if exposure does not cause obvious sunburn, damage still occurs and accumulates over the years. It is never too late to start protecting your skin.

Skin protection is important in South Australia particularly from August to May.

Why hats?

Common sites of skin damage and skin cancer are the neck, ears, temples, lips, face and nose. These areas are constantly exposed to the elements and therefore, generally receive more UVR than other body parts.

Wearing a hat is one strategy that is recommended by The Cancer Council South Australia to protect the face, back of the neck and ears.

Hats should always be used in combination with other forms of sun protection practices such as:

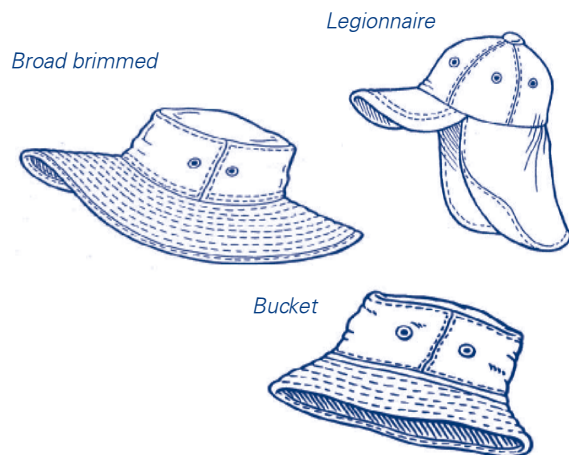
- seeking shade where possible between 10 am and 3 pm, particularly from August to May
- wearing protective clothing - lightweight shirts with collars and long sleeves, long pants or skirts
- applying SPF 30+ broad spectrum, water-resistant sunscreen and reapplying regularly (every two hours).

Which type of hat?

The Cancer Council recommends wearing a hat that provides good shade to the face, back of the neck and ears when outdoors.

Broad brimmed hats should have a brim at least 7.5 cms wide. A broad brimmed hat that provides good shade can considerably reduce the exposure of UVR to the face.

Bucket or surfie style hats should have a deep crown and sit low on the head. The angled brim should be at least 6 cm and provide the face, neck and ears with good protection from the sun.



Legionnaire style hats should have a flap that covers the neck and meets the sides of the front peak to provide protection to the side of the face.

Baseball caps and sun visors are NOT recommended as they leave the ears and back of the neck exposed.

Ventilation should also be a consideration if the hat is to be used during physical activity or warmer weather.

Stylish, fashionable hats that meet The Cancer Council requirements are now widely available.

UVR and temperature

In South Australia, the UVR levels are highest from August to May.

UVR cannot be seen or felt and the intensity of such radiation is not related to air temperature³.

People often get sunburnt on a cooler day because they tend to stay out in the direct sun for longer, rather than seeking shade or covering up as on a hot day⁴.

References

- 1 Australian Institute of Health and Welfare & Australasian Association of Cancer Registries 2000. Cancer in Australia 1998.
- 2 R Marks, D Jolley, S Leats, P Foley. "The role of childhood exposure to sunlight in the development of solar keratoses and non-melanocytic skin cancer." Medical Journal of Australia, 152 (1990), 62-65.
- 3 D Hill, JM Elwood & DR English (Eds.) Cancer Prevention - Cancer Causes. Prevention of Skin Cancer. Kluwer Academic Publishers, 2004.
- 4 R Marks and D Hill. Melanoma Control, Prevention and Early Detection, Australian Cancer Society, 1992.

Fact sheet 9: Sun protection from clothing

Wearing clothing that covers most of the body, a broad brimmed hat, applying a SPF 30+ sunscreen and seeking shade are the best ways to protect your skin against the harsh Australian sun and reduce the risk of skin cancer.

The following information is provided to enable you to make an informed choice when choosing appropriate clothing to protect against the sun's ultraviolet rays.

The design of the garment is the most important factor. It should cover as much of the skin as possible. Shirts/blouses with collars and long sleeves and long trousers/skirts offer the best protection. However in some circumstances, elbow-length sleeves and knee-length shorts may be more appropriate and offer an acceptable compromise.

Testing of different fabrics by the Australian Radiation Laboratory in 1992 showed that approximately two thirds of cotton and cotton-polyester fabrics offered 95% protection against ultraviolet radiation. The tests showed that the tightness of the weave of the fabric was the factor which most affected the amount of ultraviolet radiation transmitted. Colour was also a factor with dark colours giving more protection than light colours.

In 1996 an Australian Standard (AS/NZ 4399:1996 Sun protective clothing - evaluation and classification) was published to provide information to consumers on the relative capability of fabrics and clothing to protect the skin against solar ultraviolet radiation.

This information is provided in the form of a labelling system which uses the term Ultraviolet Protection Factor (UPF) to rate the sun protectiveness of fabrics and clothing. The Standard regulates the sun protective claims that manufacturers can make about their products.

The UPF rating is based on a test that measures the amount of ultraviolet radiation that passes through fabrics or clothing. Unlike the test

method used to rate sunscreens that uses volunteers and measures the amount of transmission of ultraviolet radiation by human skin reactions, the testing of fabrics and clothing is done using machines.

The test method of this Standard relates to unstretched, dry fabrics and clothing. The UPF rating of a garment could be lower when it is stretched or wet.

The UPF rating only relates to the fabric that garments are made of. The rating does not cover the design of the garment which can affect its sun protectiveness. Fabrics and clothing will only provide protection to the skin areas they cover.

When choosing a garment for sun protection, the important considerations are:

- the design (in terms of the amount of skin coverage)
- the closeness of the weave
- comfort (while dark colours offer more protection, they also absorb heat and tend to be less comfortable to wear in hot weather).

Fabrics and clothing which do not carry a UPF rating do not necessarily offer less protection than those that have been tested. Buying fabric or clothing which has been rated does take the "guess work" out of assessing the sun protectiveness offered by the weave. However you will still need to consider the design and comfort factors.

UPF classification system

UVR protection	% UVR transmission	UPF ratings
Good	6.7 – 4.2	15, 20
Very good	4.1 – 2.6	25, 30, 35
Excellent	<2.5	40, 45, 50, 50+