Safety in Schools Week
June 8th to 12th 2009

AGENCY ACTIVITY

Agency **The Cancer Council Western Australia**

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Activity Title **SunSmart Sundial**

Activity Outcomes

Learning Area	Link to K-10 Syllabus	Outcome
Health and Physical Education	**Middle Childhood (4-7)** **Context**: SAFETY **Topic**: Effects of the sun • Skin cancer • Ageing **Topic**: Sun Safety • Weather conditions	Knowledge and Understanding • Good health practices promote good health • Behaviours and situations that can be identified as potentially harmful, risky or hazardous Interpersonal Skills • How to make clear, reasoned statements about views, needs and emotions Self-management Skills • Strategies to deal with a problem • How to use protective behaviours & minimise harm
Science	**Middle Childhood (4-7)** **Context:** Earth and Beyond **Topic:** Relationship between the Earth, our Solar System and the Universe	The features of the sky • Our closest star is the sun The effects of the movement of the earth through space • The position of the sun at different times of the year • How solar cycles affect us • The effect of the tilt of the Earth on its axis

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Phases of Development Middle Childhood (4-7)

Resources Required

- Sunny area with a level, flat surface.
- Stick 750 – 1000mm in length. (Cricket stump or broom handle size is ideal)
- Large flower pot. Only used to support stick if it can not be supported any other way.
- Clock or watch with second hand.
- Chalk, paint or markers (eg milk bottle tops) as appropriate.

Approximate Time Required

Day 1
10 mins to set up initially.
1 min every hour between 9 am and 4 pm.
Day 2
10 mins on day two to mark out and consider the SunSmart zone

Procedure

Day one.

1. Locate a suitable area. (One with all day sun exposure and a hard, level, flat surface)
2. If required, fill the flower pot with soil and place it in the centre of your area.
3. Push the stick (called a gnomon) into the soil in the flower pot and ensure that it is as vertical as possible. Alternatively, just push your gnomon into the ground.The gnomon should now be casting a shadow.
4. Using the clock to monitor the time, come back and mark the end of the gnomon's shadow precisely on the hour, every hour.
5. Place markers every hour between 9am and 3pm.

Day two.

Using an appropriate marker such as the blackboard ruler and chalk, or string lines, have children draw lines connecting the hour marks and the base of the gnomon. Then, using a different colour of chalk, shade in the area of the sundial that represents the SunSmart hours. (10am to 3pm)

Reflection / Discussion / Activity ideas:

- What is the area of your sundial? (The chalk lines will show a group of 6 or 7 triangles sitting next to each other. To find the area of a triangle, multiply the base by the height, and then divide by 2. Remember that the base and height measurements must be perpendicular to each other. Just work out each triangle's area and add them all together)
- Calculate the fraction or percentage of the sundial area is covered by the SunSmart hours 10am to 3pm? (Answers will vary, but all will show that the majority of the school day occurs in the SunSmart period.)
- Why are the shadows cast by the gnomon each hour different lengths? (As the earth turns under the sun, the angle of the sun's rays changes. This causes a change in the length of the shadow.)
- If you do this activity in the summer time and then again in the winter time, your sundial hour markers will be in a different place. Why is this?
  (Because the Earth is tilted on its axis at 23.5 degrees, the sun appears higher in the sky in summer time than it does in winter. This changes the sun's angle to the

gnomon and causes the shadows to change.)

- Why do we need to be SunSmart in some hours and not in others? (Between 10am and 3pm, the sun is highest in the sky and is shining almost straight down. Therefore the sunlight passes through less atmosphere and is more intense because of this. This intense sunlight (UV radiation) can cause skin damage, sunburn and increase the risk of skin cancer.)
- We need to be SunSmart in the middle of the day, even when it does not feel hot. Why is this? (The ultraviolet radiation that causes sun burn does not carry heat energy. Therefore, we can not see of feel uv radiation. Because of this our skin can be damaged and burn without ever feeling hot.)

Visit the Sundial several times on day two and use it to estimate the time.

Community Links

How could the school involve the local community in Safety in Schools Week?

The school could work with the local community to raise funds for shade at the school.
The school could work with the local council to construct a permanent SunSmart sundial in the local community.
The students could prepare a powerpoint presentation about their sunsmart sundial and deliver it to community groups such as senior citizens or other schools.

How could the school involve parents and seniors in Safety in School Week?

Students could conduct this activity at home with parents and grand parents.
Students could visit www.generationsunsmart.org.au with their parents and complete the student activities together.

Policy and Procedures

Are you aware of the School's written Health and Safety Policy? If not: -

- Check with administration
- Refer to the Department of Education and Training's Risk Management Policy and Occupational Safety and Health Policy
- Visit the schools section of the Cancer Council WA's website for a sample sun protection policy. **www.cancerwa.asn.au/prevention/sunsmart/schools**
- Visit the Kidsafe WA website for guidelines **www.kidsafe.com.au**

Do you have SunSmart procedures in place?

- Do all students wear broad brimmed, legionnaire or bucket hats when outside?
- Does the school have a written sun protection policy?
- Does the school have adequate shade for use at break times?

Other Resources Available

Teachers can get FREE RESOURCES at www.generationsunsmart.org.au . The website offers online information and professional development for primary and secondary teachers as well as school nurses.

Complete the brief online modules and receive

- A Kidskin sun safety education resource (your choice of early, middle or upper primary) or one of the secondary resources Tattoo and Real Stories.
- Stickers and posters
- A certificate for your professional portfolio.

Also available:

- A range of DVDs for loan or purchase
- The SunSmart Schools Program – free sun safety resources and policy and guideline documents. If you answered yes to all the questions regarding SunSmart procedures above, your school may be eligible to join the SunSmart Schools Program.