

# Thinking tools

## A lesson plan on the sun

by Eric Frangenheim

What follows is a step-by-step account of a lesson I have presented on two occasions to Grades 2/3, the first time at Rutherglen Primary School in Northern Victoria, as part of their unit on 'The Sun', and the following occasion at Albury North Public School. The lesson was developed with Julia Bowers, Kylie Weekes and Tim Curtis at Rutherglen Primary, with the major focus being on the infusion of some of the cognitive and collaborative thinking skills which I had presented earlier at a public workshop at Wangaratta. Later, I added a PowerPoint™ presentation to offer more visual stimulation for the lesson at Albury North Primary School in July 2004.

Please note that the lesson is designed to ensure maximum student participation and minimal teacher talk to promote the notion that 'The best learning takes place when the teacher is quiet'. However, this depends on a useful question and/or activity, an appropriate thinking tool and a clear time frame (see page 4 of my book, *Reflections on classroom thinking strategies*).

The content part was generally provided by the teachers and I simply made suggestions as to the infusion of the thinking and group work tools. I offer the lesson plan warts and all and provide notes and observations.

This lesson has been taught in a 9.00 am to 1.00 pm session and involved and engaged nearly all the students for the duration. If you want to try the lesson in your classroom, feel free to email me if you have any queries. Good luck and enjoy! (ericf@rodineducation.com.au)

### START OF LESSON - OUTCOME - RAS ALERT

I always start with a RAS Alert. The Reticular Activating System (RAS) alerts the students to the expectations and direction for the lesson. In this way, students know what to look out for and also what to look forward to. Steven Covey in *Seven habits of highly effective people* talks about 'starting with the end in mind', and John Joseph of Focus Education in Adelaide frequently discusses the importance of preparing the brain for what to look out for in the lesson.

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### THE SUN: YEARS 2/3

#### SCIENCE/LITERACY LESSON

Draw a bow and arrow pointing to a bullseye in the top left-hand corner of the board to represent the goals for the lesson. Then write the title of the lesson and 'bullet point' the expected outcomes.

#### OUTCOMES:

- the importance of the sun—its impact on us
- research and discovery
- SunSmart
- small-group work
- terminology—keywords
- presentation
- self-confidence/success/affirmation
- recall/comprehension/decision making
- the sun and the seasons

Take one to two minutes to explain or ask for explanations from the class to clarify each expected outcome and all the language on the board, such as 'impact', 'recall', 'comprehension' etc.

## ACTIVITY 1

### *Gaining prior knowledge*

#### **KWL chart**

This is a three-column organiser using the headings K—what I know, W—what I want to know and L—what I have learnt about related matters.

#### **What I know (K)**

To prompt the students, show a picture of a bushfire and ask them what they know about this and the sun. (Answer: The sun can cause a bushfire by shining through glass and causing a flame.) The students are encouraged to list many additional facts about the sun. If any of these facts appear to be an opinion or vague; e.g. 'The sun is good for us', explain that this is opinion, not fact, and should go be listed in the next column—What I want to know.

#### **What I want to know (W)**

The students are then prompted by a picture showing different pitches and colours of roofs, and encouraged to ask questions; e.g. do certain colours and pitches of roofs create different temperatures inside? Again, encourage the students to list many other questions about the sun.

#### **What I have learnt (L)**

Here the students discuss and list related information; e.g. heat; as in a picture of a kettle, degrees of heat, heat and growth, embarrassment, love, the positive effect of warm words. Encourage the students to think as broadly as possible. The students are quite amazed at the amount of information they generate under these three headings, resulting in a strong sense of ownership over the lesson.

## ACTIVITY 2

### *Collecting data or notes on the sun*

#### **STEP 1:**

Read an article about the sun to the students.

#### **STEP 2:**

Students listen and 'slip write' any basic information they hear. (Each student receives 6 to 10 slips of paper.)

After students have completed this, place the slips of paper on the board with Blu-Tack® and ask several students to present a mini-lecture on 'The sun'.

## ACTIVITY 3

### *Terminology related to the sun*

#### **Silent card shuffle** (see Silent card shuffle pp.42 43)

Generate a list of words and their definitions which the students need to know, and type these into a table on an A4 sheet. Make eight copies of this sheet on cardboard, cut them up and place each set in an envelope. Give one envelope to each group of three or four students.

#### **Process for silent card shuffle**

##### **STEP 1**

Ask the students to match each word with a definition, without talking. Students are encouraged to think for themselves and change any card if they disagree.

##### **STEP 2**

Once a group has matched ALL the cards, they may talk, disagree and explain their ideas and make all necessary changes.

##### **STEP 3**

Students stand up, push in chairs and visit each of the other tables, discussing what they see. This gives them the other point of view. No cards may be touched. One option is to leave behind one explainer at each table.

##### **STEP 4**

Ask the students to return to their home tables, and make changes based on what the group has seen and agrees is a better match.

##### **STEP 5**

Then display the correct matchings and ask students to explain or support this correct version. This is a highly successful method of teaching through the discovery or indirect method. Note that the teacher only directs the process.

## ACTIVITY 4

### *Predicting and observing the effects of the sun on different materials*

Place several objects on a bench outside the classroom in the sun. These could include chocolate, metal spoon, margarine, wooden ruler, water in a black bottle, water in a clear bottle, ice, slice of tomato or fruit.

#### **STEP 1**

Students are to predict the effects of the sun on these objects over 90-minutes and complete a retrieval chart on their predictions.

#### **STEP 2**

Students are to revisit the objects at the end of the lesson to observe and note the changes on their retrieval chart, to compare with their predictions.

#### **Observation**

The students really do enjoy this, especially when asked to work in pairs and explain their predictions and observations to another pair. At Albury North Public School, in July, we had a setback. There was fog until 2.00 pm, so we could only predict and then discuss what was on their retrieval chart. (All teachers have learnt to cope with Murphy's Law!)

## ACTIVITY 5

### Observing and recalling

#### STEP 1.

Students observe and recall all that happened to Mr Bean at the sea. This is mainly an observing and listening activity to meet certain outcomes. I love Mr Bean films so I use the scenario where he changes into his swimming trunks in front of a blind man at the beach. This was used to set the scene about our love for the outdoors and the sun.

#### STEP 2.

Students to use a seesaw to note all the events (verbal). The seesaw activity asks pairs to take turns in speaking to each other, listing all the events in the 'Mr Bean at the beach' scenario they can remember. The teacher then asks for feedback.

#### STEP 3.

List all the positive and negative effects of the sun on living and non-living matter. In the 'noisy round robin' groups of four, use a T-chart to record their ideas of the positive and negative effects of the sun on living and non-living matter. After about 90 seconds, the T-charts are moved to the next table. One student must read the responses; then that group adds more ideas but may not repeat what has already been written. A few more swaps are made until a long list is created in both columns.

#### Add value to this activity by:

- asking each group to list the top three ideas in each column and report these to you to write on the board
- asking the students to attempt to classify as many of the responses as possible.

## ACTIVITY 6

### Ask students what is their favourite time of year

#### Decision-making matrix

Here we provide the first factor 'special days', and ask the students to offer as much data as possible. Then apply the scoring part, 1-5 (1 being a low value and 5 a higher value). Encourage students to think of other factors, or 'things', or 'depends on' to make this a considered piece of decision making. Students generate factors such as sports, foods, clothes, climate, family and school. Ask the students for the data, write this into each appropriate box and then apply the scoring. Amazingly, there is usually a high degree of consensus in the final decision.

## ACTIVITY 7

### Preparing for a short story 'Lost in the desert'

#### STEP 1:

Tell the students a basic story about a family on holiday whose four-wheel drive vehicle has broken down in the Outback. In the story, two parents and two children walk away in search of help. Vultures are flying around. The situation is desperate.

#### STEP 2

Use a Y-chart to write information about the scene, concentrating on the sun and heat and exhaustion. (Looks Like 'silly parents for leaving their car!')

#### STEP 3

Introduce the arrival of a ranger. Continue or start with a new Y-chart.

#### STEP 4

Introduce the arrival of a dangerous animal between the search party and the survivors. Create tension. Start a new Y-chart to describe the scene and a resolution.

#### STEP 5

Students use data from the Y-charts to create a story or a poem to describe 'Lost in the desert'. Play music.

#### STEP 6

Ask some students to read parts of or their entire story. This activity enables students to generate stories in excess of three pages in under 15 minutes. Scan the stories and read parts of or all of the exemplary work. The students are extremely proud of their creations.