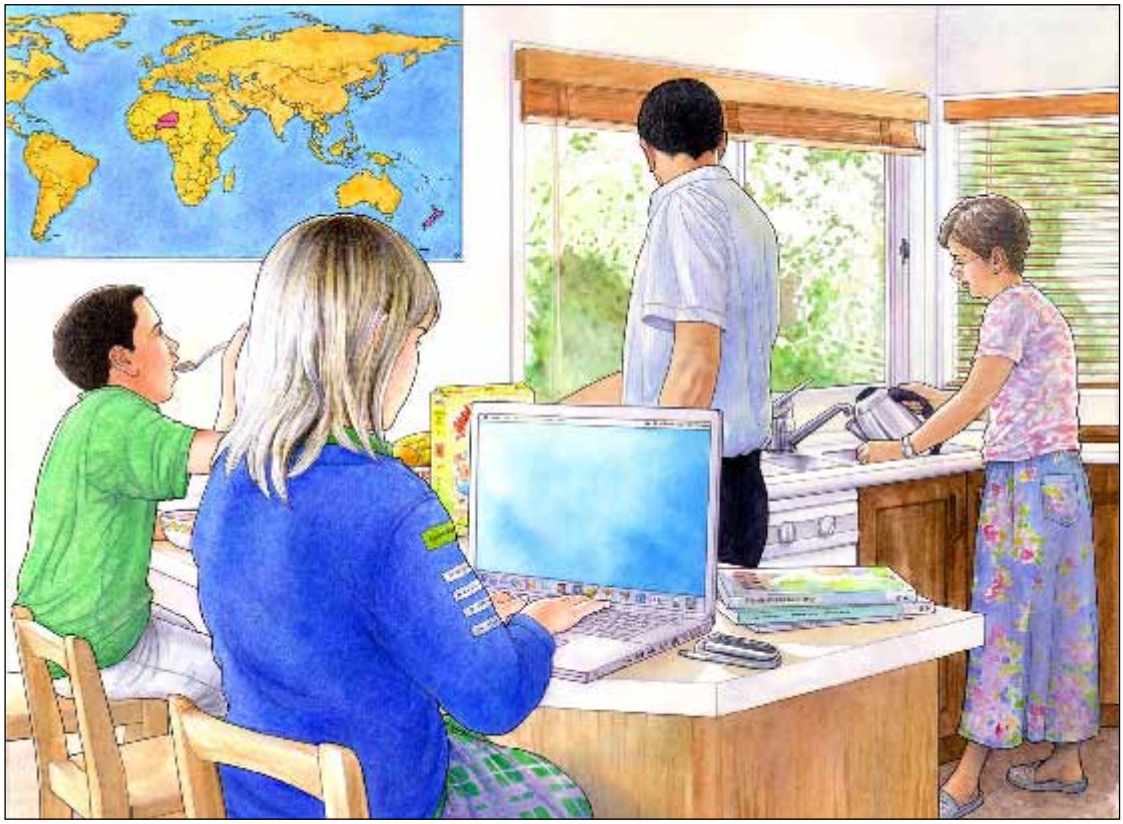
Not a Drop to Drink!

Skilful Prediction

Scenario

Many New Zealanders take our safe and reliable water supply for granted. Taking things for granted can be difficult and costly when something suddenly goes wrong. When a resource like water becomes scarce our view of it changes. Using your knowledge of skilful prediction how would your view of water change if the taps failed?



Exploratory Environment

PROBLEM-BASED LEARNING UNIT PLAN – SOCIAL STUDIES

Title: **Not a Drop to Drink!** **Weeks**: 5

Achievement Objective Focus – Understand how people participate individually and collectively in response to community challenges e.g. depletion of resources.

Thinking Skills Focus - Skilful Prediction

Scenario
Many New Zealanders take our safe and reliable water supply for granted. Taking things for granted can be difficult and costly when something suddenly goes wrong. When a resource like water becomes scarce our view of it changes. Using your knowledge of skilful prediction how would your view of water change if the taps failed?

Learning Experiences	Learning Outcomes Students should be able to:	Organisational Notes
1 **Authenticating the Learning** Introduce the scenario and its problem making links to the focus achievement objective. **Awakening Prior Knowledge** What do we already know about this problem? ☑ brainstorming ☑ discussion ☑ mindmapping **Strengthening Prior Knowledge** ☑ front loading activities - DVD Fresh Water - BBC, DVD Water For All - World Vision.	• Explain the scenario. • Explain why it is important to solve the problem. • Relate their present understanding of the scenario and its problem.	• Organise a data projector. • Book a computer pod. • Familiarise self with the CD: Not a Drop to Drink. • Familiarise yourself with skilful prediction by reading Chapter 14 - Prediction in 'Infusing the Teaching of Critical and Creative Thinking into Content Instruction - A Lesson Design Handbook for the Elementary Grades' Robert J. Swartz and Sandra Parks, The Critical Thinking Co. ISBN 0-89455-481-6 • Familiarise self with graphic organiser. • Familiarise self with DVD Fresh Water BBC. • Familiarise self with DVD Water For All, World Vision.
2 **Constructing Relevant Questions** Clarifying the problem found in the scenario.	• List the key questions they need to do and understand.	
3 **Planning the Research** Developing a plan of action.	• Explain the plan of action.	
4 **Discovering Relevant Information** Locating and selecting. ☐ teleconference ☐ fax exchange ☐ e-mail exchange ☑ bookmarked www sites ☐ intranet site ☑ school library books ☑ National Library books ☐ magazines ☑ DVDs, videos ☑ Internet search ☐ articles, magazines ☐ school journals ☐ visitor ☐ EOTC experience ☐ pictures, posters ☑ interviews, surveys ☐ found objects ☐ software, CD ROMs ☑ thinking tools ☐ demonstration ☑ Quest ☑ Teacher directed activities – graphic organiser	• Explain the steps in skilful prediction and describe the difference between skilful and unskilful prediction. • Identify peoples' use of water. • Identify the difficulties of finding a regular supply of safe drinking water. • Predict the effects of a shortage of water.	
5 **Constructing the Knowledge** Forming and applying. ☐ Teacher directed activities	• Decide and justify how our view of water would change.	**Assessment Task/s** • Assess the student's response on the basis of their decision and the quality of reasoning provided (see Assessment Rubric).
6 **New Insights and Understandings** Presenting and evaluating.	• Present their solution to scenario. • Explain how their solution supports their new insights, understandings and how it relates to the scenario.	

Unit Evaluation Implications for next unit

Introduction

This unit investigates the values people hold around the resource of fresh drinking water. It looks in depth at the way its value can change depending on its scarcity. The students are being asked to use skilful prediction to investigate how their views would change if an essential resource like water suddenly became scarce.

1 Authenticating the Learning

Initiate a whole class discussion to introduce the scenario and its problem making links to the achievement objective focus. Talk together about why water is so important and how we take things for granted.

Brainstorm and mindmap their present knowledge. What do we already know about the problem?

View the DVD 'Fresh Water' from the BBC and 'Water For All' from World Vision.

2 Constructing Relevant Questions

As you discuss the scenario begin the question formation and planning the research.

During an interactive discussion between the teacher and class these essential research questions need to be drawn out for investigation:

What is skilful prediction?
How do we use water?
What is our present view of water?
Do we take water for granted?
Where could we get safe drinking water?
How easy is it to get safe drinking water?
How do we make water safe to drink?
How important is safe drinking water?
What happens if the water is not safe to drink?
Where and how would we get a reliable supply?
How would our lives change?

3 Planning the Research

Discuss with your class and agree on a timetable with checkpoints. Also decide on the concluding performance.

4 Discovering Relevant Information

Introduce the thinking skill of prediction and discuss.
Construct with your class the thinking steps for skilful prediction.
Begin the discovering relevant information phase by modelling notetaking from some newspaper articles and video interviews using the graphic organiser.

Discuss with your class why skilful prediction is needed.

'What will the weather be like next week? What will the economy be like next year? Will global warming occur? Will global warming happen in my lifetime? These are all direct questions about trends or general conditions in the future. To answer them well we have to make predictions.'

'The most common problem about predicting is that sometimes we do not take time to think about what might happen in the future. We do not ask questions like, "What might it be like tomorrow?" or "What might happen as a result of what's going on today?" If we do not ask such questions, we may experience situations that we do not expect and may not like.'

'Even when we do consider what might happen in the future, we may develop unrealistic expectations that result in unnecessarily costly disappointments. Often we let our hopes or fears lead us to anticipate opportunities, rewards. or difficulties that we do not have a good reason to expect. I may go to a movie theatre early because I'm worried that I won't be able to get a ticket. If I have no good reason to think the movie is popular, I may unnecessarily cut my meal short and rush to the theatre to find that few other people are interested in the movie. We take a risk in making hasty predictions that are **no more than guesses** about what is going to happen.'

Robert J. Swartz and Sandra Parks

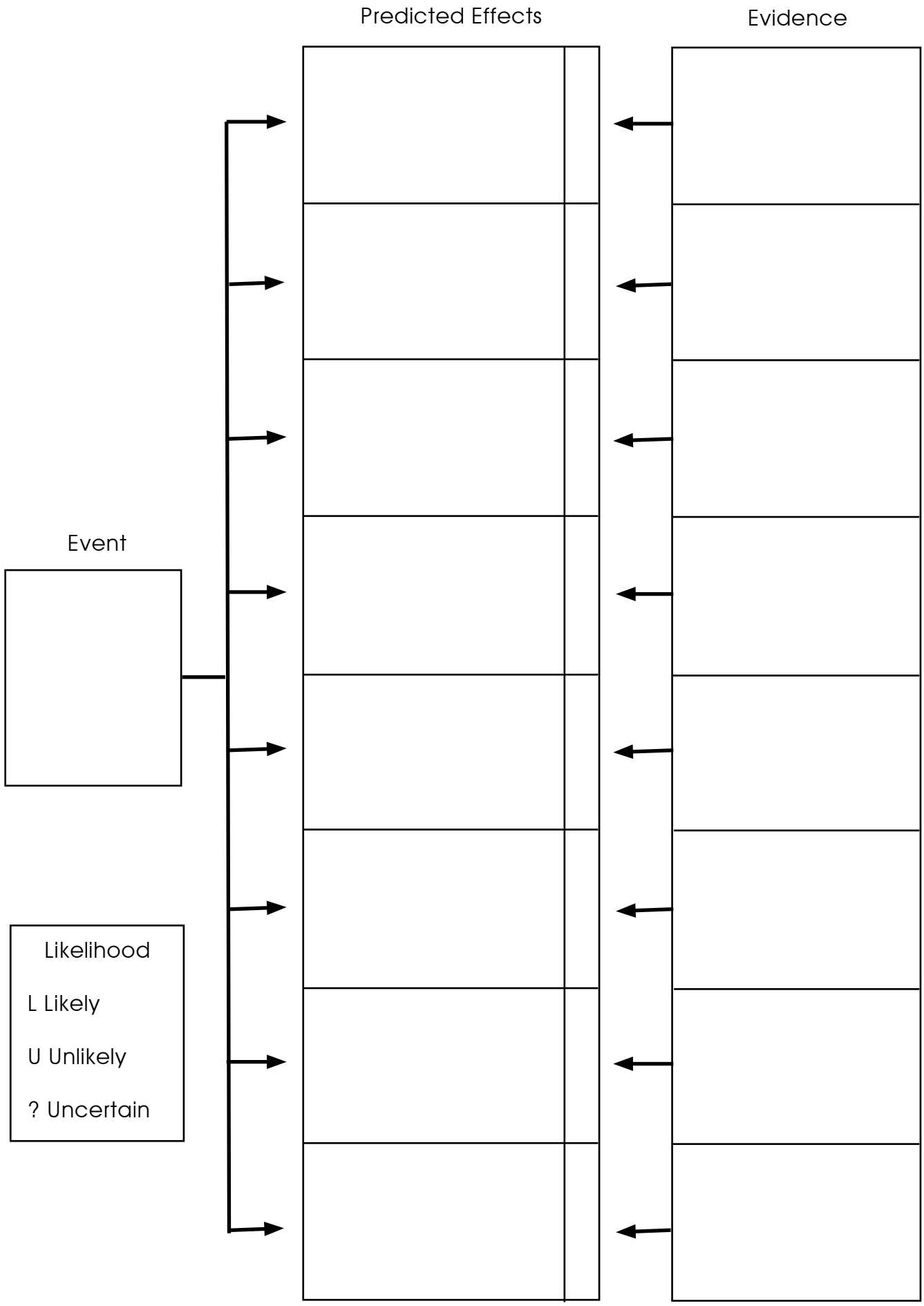
Develop with your class the thinking steps for skilful prediction.

Skilful Prediction

1. What might happen?
2. What evidence might you get that would indicate that this prediction is likely?
3. What evidence is available that is relevant to whether the prediction is likely?
4. Based on the evidence, is the prediction likely, unlikely, or uncertain?

For more detail read Chapter 14 - Prediction in 'Infusing the Teaching of Critical and Creative Thinking into Content Instruction - A Lesson Design Handbook for the Elementary Grades' Robert J. Swartz and Sandra Parks, The Critical Thinking Co. ISBN 0-89455-481-6

Skilful Prediction



5 Constructing Knowledge

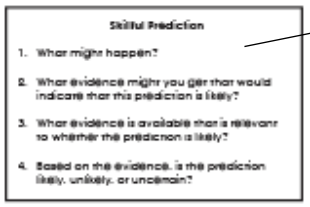
Have your students reflect on the Thinking Steps and the notes on their graphic organiser.

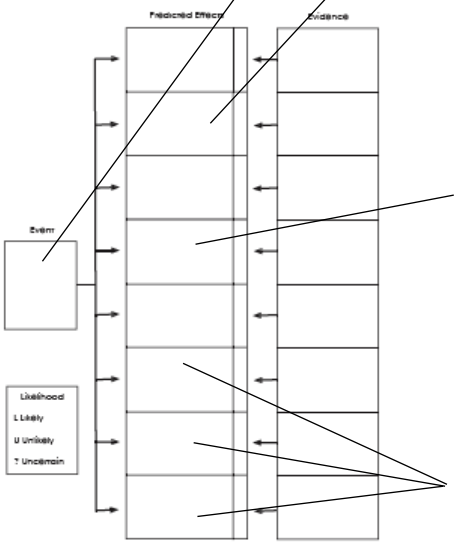
6 New Insights and Understandings

Have your students write up their careful explanation of their new insights and understandings.

Integrating Skilful Prediction into an Explanation

Use the template below to guide you in deciding what to write in your explanation. Your explanation must make it clear to the reader which predicted effects and their evidence you are using that has made your view on water change.





Before writing have you gone through the 'Skilful Thinking Steps'?

Title
- Give your explanation a title.

Introduction
- Describe the context of the explanation. This is where you make a link to the scenario.
- Tell your reader what you will be explaining.

Paragraph 1
- Choose a predicted effect that has helped to change your view on water.
- Describe the predicted effect and whether it was likely or unlikely.
- Describe the evidence which made the event likely or unlikely.
- Explain what the change in your view of water was as a result of making a skilful prediction of this event.

Paragraph 2
- Choose another predicted effect that has helped to change your view on water.
- Describe the predicted effect and whether it was likely or unlikely.
- Describe the evidence which made the event likely or unlikely.
- Explain what the change in your view of water was as a result of making a skilful prediction of this event.

Paragraphs 3, 4 & 5*
- Choose another 3 predicted effects that have helped to change your views on water.
- Describe the predicted effects and whether they were likely or unlikely.
- Describe the evidence which made the events likely or unlikely.
- Explain what the changes in your view of water were as a result of making skilful predictions of these events.

Conclusion
- Here you will write a brief summary of how your views of water changed as a result of making skilful predictions.

* To achieve an 'Above Expectations' you will be aiming to write 5 paragraphs in total.

Now add your:

New Insights and Understandings.
- Use the Ladder of Metacognition to comment on your ability to make a skilful prediction.
- What have you learnt about why people's views about a resource and their uses of it may change over time and the different values people may attach to a resource?

Additional Scaffolding Suggestions

- Use a data projector to introduce the exploratory environment of the 'kitchen.'
- Book a computer pod as this Quest suits research in collaborative groups of two with access to their own computer.
- Use the Activities Section to add interesting breaks in the research phase. The activities help make real life connections to the difficulty of finding safe drinking water. It's not as easy as your students may think!
- Do not allow any e-mail, fax or phone calls to be made until teacher contact has been made with the expert involved. Set it up for success.
- Remember an expert does not have to be seen in adult terms. It could be another staff member, family friend, parent, grandparent - any knowledgeable adult who has the time to reply.
- If using the Water related web sites, remember to check the FAQs before sending e-mails.
- To help your students apply the thinking skill taught in the lessons to other situations there needs to be transfer activities. The transfer activities should occur soon after the Quest has been completed.

Homework after the Quest

How would you use skilful prediction to decide whether a currently-endangered species, such as the kiwi, is likely to become extinct.

For more detail see Chapter 14, Pages 438 - 439 - Prediction in 'Infusing the Teaching of Critical and Creative Thinking into Content Instruction - A Lesson Design Handbook for the Elementary Grades' Robert J. Swartz and Sandra Parks, The Critical Thinking Co. ISBN 0-89455-481-6

ASSESSMENT TASK – SOCIAL STUDIES – YEAR 7 AND YEAR 8
RESOURCES AND ECONOMIC ACTIVITIES
NOT A DROP TO DRINK

Key Achievement Objective: Understand how people participate individually and collectively in response to community challenges e.g. depletion of resources.

The scenario is: Many New Zealanders take our safe and reliable water supply for granted. Taking things for granted can be difficult and costly when something suddenly goes wrong. When a resource like water becomes scarce our view of it changes. Using your knowledge of skilful prediction how would your view of water change if the taps failed?

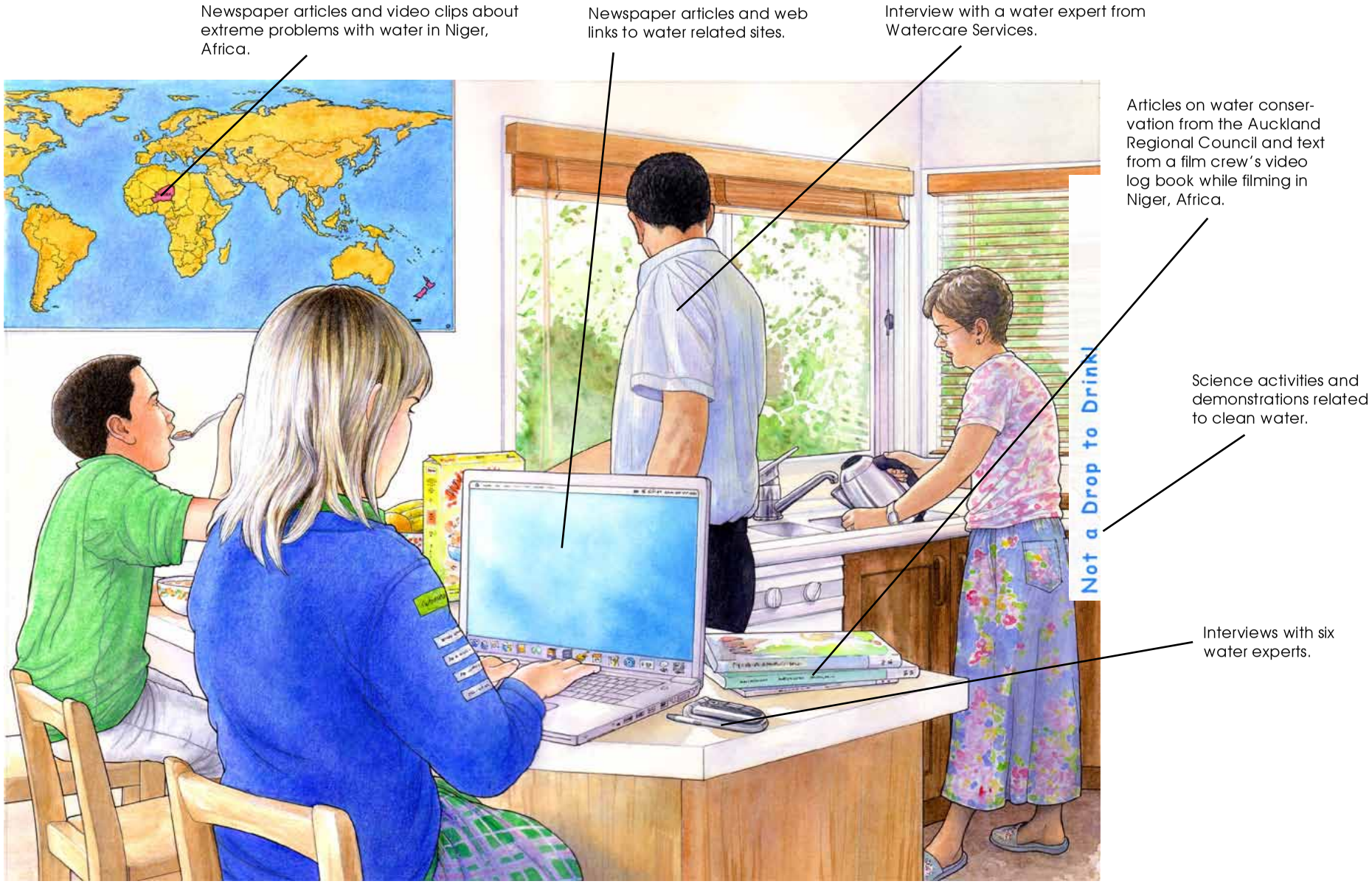
NOT A DROP TO DRINK!	BELOW EXPECTATIONS	WITHIN EXPECTATIONS	ABOVE EXPECTATIONS	Effort A B C
	Gave **only 1 or 2** pieces of evidence to backup their prediction. Their evidence was not clearly explained or relevant. No reference was made to the likelyhood of their prediction occuring.	Gave **3 – 4** pieces of evidence to backup their prediction. Their evidence was explained and was generally relevant. They referred to the likelyhood of their prediction occuring.	Gave **5 or more** pieces of evidence to backup their prediction. Their evidence was explained in detail and was highly relevant. They clearly explained the likelyhood of their prediction occuring.	
Student Evaluation				
Teacher Evaluation				

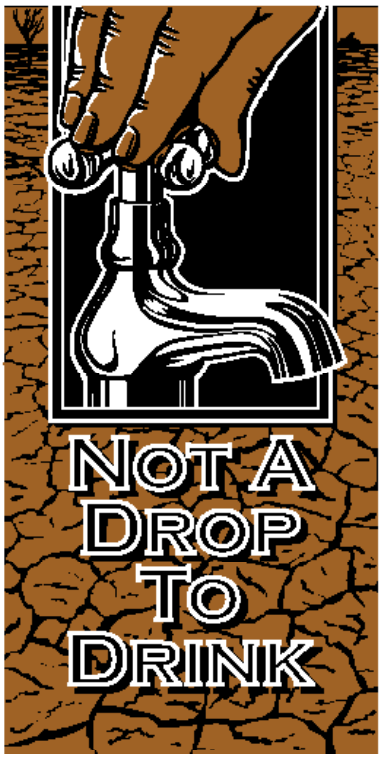
OUR NEW INSIGHTS AND UNDERSTANDINGS

What did you learn from 'Not a Drop to Drink' and from using skilful prediction?

TEACHER FEEDBACK

Exploratory Environment





Flag design

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