

THE OIR METHOD

A sharing of our experience

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OUTLINE

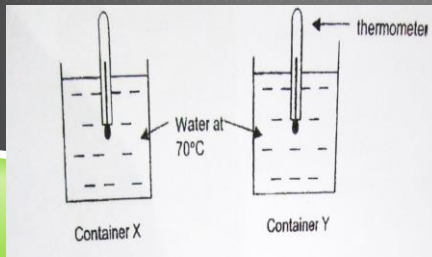
- ▶ Background
- ▶ How it was taught
- ▶ Observations
- ▶ Suggestions

BACKGROUND

- ▶ In search of a way to train pupils to improve the quality of their answers in 'explanatory' type questions.
- ▶ 2013 trial
 - ▶ involves 4 P4 classes: 3 at level, 1 above level
 - ▶ Methodology used in the teaching of topic of heat.
 - ▶ Duration of one term.

ISSUES

Alan set up an experiment shown below to see the changes in temperature of water in 2 containers, X and Y. He filled the 2 containers with water at 70°C and left them in a room. He recorded the temperature of the water every 10 minutes. The table below shows the results Alan had recorded. Explain the results for the water in Container X.



Time (minutes)	Temperature of water in Container X (°C)	Temperature of water in Container Y (°C)
0	70	70
10	50	60
20	40	50
30	30	40
40	30	30
50	30	30

COMMON “ANSWERS”

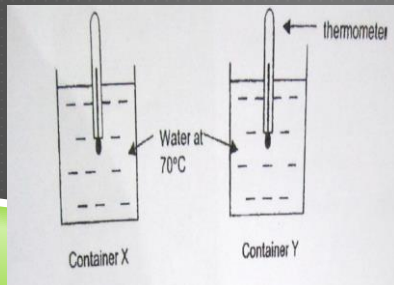
- ▶ Container X loses more heat.
 - ▶ Container X is made of metal.
- } Incomplete content
- ▶ Good conductors of heat loses more heat.
- } Sweeping statements

WHAT IS THE OIR?

- ▶ Observation – Inference – Reason
- ▶ A way for pupils to ‘break down’ the analysis of the question.
- ▶ ‘Scaffolding’ sentence starters
 - ▶ (I): This shows that...
 - ▶ (O): This is because.....

LET'S RELOOK

- ▶ The temperature of Container X is falling faster than that of Container Y. **This shows** that Container X has lost more heat. **This is because** the material of Container C is a better heat conductor.



Time (minutes)	Temperature of water in Container X (°C)	Temperature of water in Container Y (°C)
0	70	70
10	50	60
20	40	50
30	30	40
40	30	30
50	30	30


TEACHING THE OIR

- ▶ Modified existing IBL activity sheets by CPDD to incorporate the OIR thinking/writing structure.
- ▶ Using the OIR thinking structure during discussions.
- ▶ Allow the use of the OIR sentence starters in the presentation of answers.

Modified

Name _____

Ball and ring experiment



- Place the ball through the ring.
Can the ball go through the ring? _____
- Heat the ball over the flame for one minute. Predict what will happen when the teacher try to place the ball through the ring.
I predict that _____
- My explanation:** I think this because _____
- Observation:** What can I see? _____
- Inference:** What can I infer about the ball from what I see? _____
- Reason:** What caused what I see to happen? _____
- Scientific explanation:** Explain what happened.
[Combine what you wrote for parts 3 to 5]
_____ [Observation]
This shows that _____ [Inference]
This is because _____ [Reason/Cause]

Original


WS-1

What's The Matter?


Scientist _____

(a) Metal ball and ring experiment

- Put the metal ball through the metal ring.



- Remove the metal ball from the metal ring. Heat the metal ball over the Bunsen burner for some time.



- Observe what will happen to the metal ball when it is now placed over the metal ring.

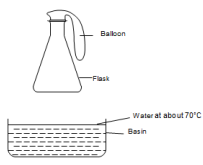
Observations:

Explanations:

Modified

Balloon experiment

Set up the experiment as shown below.

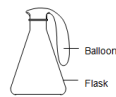


- Predict what will happen to the balloon when you place the set-up in a basin of hot water.
I predict that _____
- My explanation:** I think this because _____
- Observation:** What can I see? _____
- Inference:** What can I infer about the air in the flask from what I see? _____
- Reason:** What caused what I see to happen? _____
- Scientific explanation:** Explain what happened.
[Combine what you wrote for parts 3 to 5]
_____ [Observation]
This shows that _____ [Inference]
This is due to _____ [Reason/Cause]

Original

(b) Balloon experiment

- Set up the experiment as shown below.



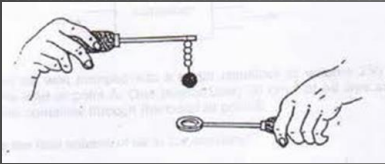
- Observe what will happen to the balloon when you place the set-up in a basin of hot water.

Observations:

Explanations:

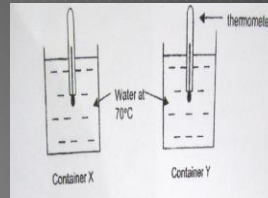
MAIN CHALLENGES IN TEACHING

- ▶ Difficult to distinguish between inference and reason.
 - ▶ Inference – context-specific



Pupil: This shows that heat causes expansion....

Suggestion: How is this related to the size of the ball?



Pupil: This shows metal is a good conductor of heat.

Suggestion: How is this related to the cooling of the water?

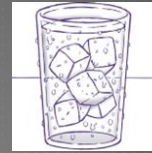
OBSERVATIONS

- ▶ Pupils who can grasp the OIR method generally performed better in their explanation type questions. The first beneficiaries tend to be the above-level pupils.
- ▶ Amongst at-level pupils, they are more consistent in using the method orally rather than in writing.
 - ▶ Many pupils even said they 'liked' the questioning technique 'this shows that... this is because'.
 - ▶ This suggests that with pupils can be encouraged use it in writing with more intensive exposure.

OBSERVATIONS

- ▶ OIR provides a easy to follow teaching tool for teachers method to train pupils to break down their thoughts.
- ▶ Correct teaching of concepts is still key.

There are water droplets on the outside of the glass. This shows that water has leaked out of the glass. This is because the glass tiny cracks.



Why are there water droplets on the outside of the glass?

SUGGESTIONS

- ▶ To get pupils to get used to the structure of OIR thinking, saturate usage as much as possible in all applicable explanatory type questions.
- ▶ To train pupils to use the method consistently, there may be a need to extensively modify worksheets and (perhaps even) practice papers and tests.

