

Year 8 Assessing, planning, teaching and reflecting

In order to establish a baseline of the class's knowledge at the start of the Earth's resources topic I implemented a 20 question multiple choice question test (Appendix A- Lesson Plan 1). The test covered the major components of the topic alongside some aspects of topics previously covered in year 7. The results of the pre-test indicated a number of areas where students had a good knowledge base and areas where students lacked understanding. Table 1 indicates the areas that students did not achieve well in. Many students lacked knowledge in definitions of terms including grey water, geothermal, nuclear, biosphere, resources and non-renewable (Appendix A- Student Samples Pre-Test).

Table 1: Year 8 results on each question of the pre and post-test for Earth Resources

Test Question	Pre-Test % correct		Post-test % correct
1	100		100
2	94.73684211		80
3	78.94736842		70
4	21.05263158	Grey Water	65
5	84.21052632		90
6	63.15789474		60
7	78.94736842		60
8	47.36842105	Geothermal	50
9	57.89473684		60
10	36.84210526	Nuclear	40
11	15.78947368	Graph	40
12	36.84210526	Not clearing	45
13	31.57894737	rainforest	30
14	68.42105263		80
15	26.31578947	Biosphere	40
16	47.36842105	Resource	80
17	84.21052632		95
18	15.78947368	Table Reading Identify non-	25
19	31.57894737	renewable	10
20	36.84210526	water cycle	35
Average	52.89473684		

the assessment of students and how the teaching strategies used impacted on student learning.

As a result the first lesson after the post-test was spent focusing a few of these definitions that they would need for the topic. Lesson Plan 2 (Appendix A- Lesson Plan 2) focused on defining resource, renewable, non-renewable, made, natural and providing examples of each these. After students received definitions they were directed to use a sorting activity to put the items into their correct category. For example sort oil, gas, trees, paper, etc. into renewable or non-renewable and then into made or natural. This gave students the opportunity to apply their knowledge of the definitions that they had learnt throughout the lesson. After students has an opportunity to sort them into categories. I asked students to provide the answers during which time I was able to formatively assess their understanding of the definitions. The final activity of the lesson was to assess their understanding through the use of a 'head or tail' style game (Wiliam & Leahy, 2015). Students would have to answer a series of questions on their own about the definitions and examples that they had learnt during the lesson. Using the heads or tails technique it gave me an opportunity to assess each student based on their answers to the game. Majority of the students were able to successfully apply the definitions during the activity.

the informal assessment of students and how the teaching strategies used impacted on student learning.

Some of this improved understanding is reflected in their performance in the post-topic test (Appendix A- Lesson Plan 3). Table 1 indicated that there was significant improvement as a class in their ability to define a resource. In the pre-test 47% of the class answer the question correctly but in the post-test this rose to 80% (Appendix A- Post-Test Student Samples). The direct and explicit instruction used throughout the lesson appears to have been an effective strategy for teaching this class the concepts. As a result of this improvement in learning I would strongly consider using the same strategies in the future to teach definitions.

It is important to reflect on what worked well and what was not useful for student learning

Whilst there was significant improvement in their understanding of the definitions of resource there was a significant decline in their ability to identify a non-renewable resource. Question 19 asked students to identify a non-renewable resource from the following: Wood, Paper, Aluminium and Ethanol. It is a difficult question for many of the students due to the presence of ethanol as an option. When returning papers to students a number were under the impression that ethanol was from oil, which they correctly understood was non-renewable. As a result of this feedback from students I came to realised that throughout the teaching and learning cycle I may not have been explicit enough in explaining the difference between renewable and non-renewable resources.

The pre-test indicated that students lacked an understanding of renewable and nuclear energy as a result I decided to give the students a research activity in order to give them a chance to develop and understanding of the topics. Students were given two lessons to work through the task (unfortunately due to access to computers these lessons had to split by almost a

week). A number of the students completed the work to a high standard and understood the topics well but a number of students also struggled with understanding the information (Appendix A- Student Samples Renewable and Nuclear Energy). This can be evidenced by the quality of their answers. As a result I decided at the start of the next lesson to recover the material in the worksheet and give students an opportunity to correct any misunderstanding they may have. This appears to have been an ineffective method of teaching this topic. There was only a small increase in understanding in the post-test. Question 10 on nuclear energy improved by less than 4%. As a result it is clear that student did not understand the information that they were gathering. During the revision week before their exam I have had an opportunity to recover this material and have completed a quick 10 set of questions to check their understanding of multiple topics. This indicates that student have developed a more clear understanding of both nuclear energy and renewable energy questions, as evidence by 15/ 18 students in the class of he class 9/10 on the quiz

[REDACTED]

After teaching the lesson and looking at student responses I adapted my teaching plan based on the needs of students and provided more information on renewable resources

Reflection

On having completed this assessment cycled I can see a number of ways I can improve in the future. It would have been more beneficial to find areas those students misunderstood earlier in the topic rather than waiting til the post-test to identify areas that need improvement. This would give me an opportunity to rectify any misunderstanding immediately rather than waiting until revision.

It can also be difficult to ensure all students have received the content as many students (12 out of 22) in this class have attendances below 75%. In order to work with the low attendance it may be necessary to ensure that a student has an opportunity to develop an understanding of lessons they have missed. This could be achieved by not only giving students the work they missed but giving them a few questions on the material they have missed to ensure they have read and understood the missed content.

References

William, D., & Leahy, S. (2015). *Embedding formative assessment: Practical techniques for F-12 classrooms*. Hawker Brownlow Education.

Post-test Student Samples

The post-test samples from the three students all show some improvement in understanding. The sample from student 1 only has a small amount of improvement required until they will answer all questions correctly but it is also useful to ensure that a quiz had some challenging questions in order to determine the differences between students. The sample from student 2 show a small increase in performance (10/20 to 11/20). I would have hoped for a slightly larger increase for this student as in class they are often able to answer the questions with a high degree of knowledge. Student three has made the most significant improvement between the pre and post-test with an improvement of 5 marks. While their overall mark remains 10/20 I am very pleased with the progress this student is making with their studies. It is also not indicated in the formative assessments performed informally in class. Student three is often unwilling to participate and it is difficult to maintain their interest. As a result I am hoping that by demonstrating the improvement that they have made with minimal effort will encourage them to apply themselves and feel confident in their ability to achieve.

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YEAR 8

EARTH'S RESOURCES POST-TEST

Questions 1-20 are multiple choice questions. Choose the best answer and indicate your choice on the sheet.

1. Water disappearing from a bowl left out in the sun is an example of:
A transpiration. C evaporation. ✓
B condensation. D respiration.
2. Condensation is:
 A water changing state from vapour into liquid. ✓
B water changing state from liquid into water vapour.
C water freezing to ice.
D ice melting to water.
3. When water seeps into the soil and rocks, it is called:
 A groundwater. C rain. ✓
B surface run-off. D blackwater.
4. Greywater is:
A water in drains.
B water used by older people. ✓
C water from sewerage systems.
 D water used in showers, baths, washing machines and laundry tubs.
5. Oil is a non-renewable resource because:
A once it is removed from the ground it can be replaced. ✓
 B once it is removed from the ground it cannot be replaced.
C it cannot be bought as new.
D it can be bought as new.
6. Which of the following lists of resources are all renewable energy resources?
A Solar, wind, hydroelectricity and oil C Solar, wind, hydroelectricity and biomass
B Coal, oil, gas and uranium D Solar, wind, hydroelectricity and gas ✓
7. An example of a non-renewable energy resource is:
A solar. C coal. ✓
B biomass. D wind. ✓

8. Geothermal energy is:

- A energy generated from the heat in the sun.
- B energy generated from heat stored in rocks. ✓
- C energy generated from the movement of water.
- D energy generated from the fermentation of sugar cane.

9. Electricity generated from the energy in falling water from dams is called:

- A hydroelectricity.
- B solar electricity.
- C wind power.
- D geothermal electricity. ✓

10. Nuclear energy is:

- A the only alternative to coal, oil and gas.
- B used in Australia.
- C renewable energy.
- D non-renewable energy. ✓

11. Look at the table. What is the best way to present this information?

- A A line graph
- B A bar graph ✓
- C A pie chart
- D A venn diagram

Water use	Litres (l)
Dishwasher (one cycle)	12-50
Five minute shower	62.5
Two minute shower	25
Running tap for 1 minute	15
Cleaning teeth with tap running	30
One load in washing machine	120
Garden hose running for 1 hour	1000
Toilet half-flush	3
Toilet full flush	11

12. Which of the following is not a reason to recycle paper?

- A to save money
- B to increase carbon emissions
- C to save water x B
- D to save space

13. Which of the following is a reason to clear rainforests?

- A Rainforests provide materials for medicines.
- B Rainforests provide shelter for humans and other animals.
- C Rainforests take up room that could be used for commercial use. x C
- D Rainforests provide one-fifth of the earth's oxygen.

14. Which of the following steps is not essential to purifying water?

- A adding chocolate to the water
- B filtering the water
- C chlorinating the water
- D fluoridating the water ✓

15. What is the biosphere?

- A All the rocks on the Earth's surface including the mantle
- B The gases that surround the Earth's surface
- C All the water on or near the Earth's surface
- D All the living organisms on the Earth's surface ✓

16. What is a resource?

- A Anything that is used by humans to meet their needs or the needs of living things.
- B Oil, gas and water.
- C A man-made product that human use. ✓
- D A product that is naturally occurring on the earth.

17. Which of the following resources does not come from trees?

- A fibres
- B building materials
- C plastics
- D food ✓

18. Look at the table. The years of iron ore remaining was the same in 2008 as it was in 2002. This is most likely because:

- A it was too expensive to mine iron ore between 2002 and 2008.
- B iron ore was mined but more iron ore was discovered.
- C no iron ore was mined between 2002 and 2008 because it was no longer required for products. ✓
- D both A and B.

Resource	Years of mineral remaining		
	1997	2002	2008
black coal	190	115	90
copper	40	35	85
iron ore	105	70	70
nickel	55	105	130

19. Which of the following is a non-renewable resource?

- A wood
- B aluminium
- C paper
- D ethanol x B

20. Which of the following is not a step in the water cycle?

- A water evaporating to form water vapour in the atmosphere.
- B water condensing to form water vapour in the air.
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3. When water seeps into the soil and rocks, it is called:
A groundwater.
B surface run-off.
C rain.
D blackwater. x A ✓

4. Greywater is:
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B Coal, oil, gas and uranium
C Solar, wind, hydroelectricity and biomass ✓
D Solar, wind, hydroelectricity and gas ✓

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