

A Portfolio which Illustrates a Critical Reflection of Progress Made on Planning and Implementation of Three Pedagogical Principles.

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Link to OneNote notebook: https://uowtsd-my.sharepoint.com/:o:/g/personal/1904932_student_uwtsd_ac_uk/EgTSDgmZ8QtDmJEUy2yB9gUBQlCN23HzfSypnZjOlwib7Q?e=h34Kdr

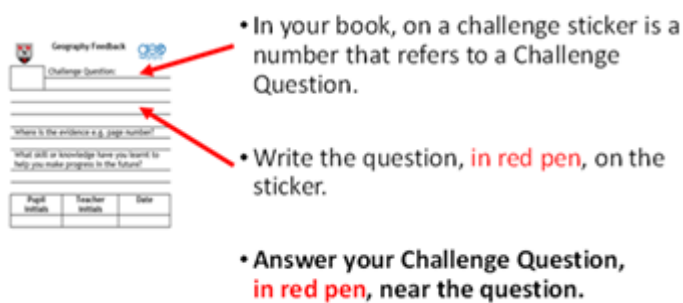
Pedagogical Principle: Good teaching and learning means employing assessment for learning principles

01 January 2020 21:53

Illustrative Example 1: Challenge Questions

'Challenge Questions' are one method of formative assessment I have used with my classes. The assessment policy of my placement school specifies that instead of deep marking whole exercise books, books are briefly assessed, and a challenge question is set for each pupil that the answer is then deep marked. Challenge questions are set during topics and after an end of topic assessment to challenge and develop pupils' learning further. Questions usually reflect an aspect of the learning that pupils did not complete to as high a standard as the teacher thinks is possible for them. After assessing the learning of the class, teachers recap concepts, or address misconceptions, and pupils get an opportunity to improve an important area of their work that they might not have fully comprehended in the previous lesson to the best of their ability. Pupils answer these questions during 'Directed Independent Reflection Time' commonly known as 'DIRT' lessons. Pupils are familiar with this tool of assessing learning as it is used throughout different faculties in the school.

Challenge Questions



- In your book, on a challenge sticker is a number that refers to a Challenge Question.
- Write the question, **in red pen**, on the sticker.
- Answer your Challenge Question, **in red pen**, near the question.

PowerPoint Slide explaining the logistics of answering a Challenge Question.

In my opinion, this is a very successful method of Assessment for Learning. Teachers do not spend too long marking pupil notes, but spend longer assessing the learning of individual pupils, and tailor their following lessons to deal with errors they assess have arisen. Pupils almost always develop their learning and understanding of work as shown in the following images of pupils' work.

As Hattie and Timperley (2007) suggest, feedback about specific tasks is best given immediately after the task has been completed. This is to correct errors and misconceptions as soon as possible to ensure that errors are not embedded and carried forward to future tasks.

Geography Feedback

Challenge Question: 4

What is the mean average temperature at the Halley and Amundsen-Scott bases?

Where is the evidence e.g. page number?

What skill or knowledge have you learnt to help you make progress in the future?

Pupil Initials	Teacher Initials	Date
GC	AS	12/1/19

Halley = $-4.3 + -9.9 + -16.4 + -20.2 + -24.2 + -26.7 + -28.2 + -26.2 + -19.5 + -11.7 + -5.2 = -222.2$
 $-222.2 \div 12 = -18.5$ Halley mean average = -18.5
 Amundsen-Scott = $-29.1 + -40.7 + -54.1 + -57.2 + -58 + 58.4 + -59.5 + -59.7 + -59.3 + -51.8 + 38.4 + -27.9 = -593.4$
 $-593.4 \div 12 = -49.4$ Amundsen-Scott mean average

From assessing the learning in the pupil's book, it was clear that the pupil had not attempted the numeracy aspect of the previous lesson. After a short recap at the beginning of the DIRT lesson, the pupil was confident in completing the numeracy focussed Challenge Question.

Geography Feedback

Challenge Question: 3

Explain why there are differences in the climates of the Antarctic Research Stations.

Where is the evidence e.g. page number?

What skill or knowledge have you learnt to help you make progress in the future?

Pupil Initials	Teacher Initials	Date
AS	AS	12/1/19

Challenge Question

There are differences between the seasons because of the sea-ice variability. This means that the research is done in the day and that means that because the sea keeps the climate and the temperature even so some climates are a little warmer than others. Also, the stations are different because in Antarctica there are different height differences, so some climates would be colder and other than clear climates. Therefore, the climates would also be different because of the compass directions (N.S.E.W). That means that Antarctica is closest to the north pole should be slightly colder.

From assessing the learning in the pupil's book, it was clear that the pupil had only written one reason for the difference in climates between the Antarctic Research Stations. The pupil completed the three reasons learned in class for the climatic differences after being set the Challenge Question.

Room for Improvement

Towards the beginning of my PTE1 I received feedback that my choice of Challenge Questions did not challenge the more able students as much as I possibly could have, as they did not need to reassess their learning. It was advised that I assess which pupils would benefit the most from being stretched further and set open-ended opinion-based questions to further their understanding of the topic. I immediately put this advice into practice and have witnessed the stronger pupils more engaged in DIRT lessons.

From previous lessons and built on some knowledge too.

Nearly all pupils built on their learning and understanding using the challenge questions they were set which showed progress.

Pupils confidently asked important, interesting geographical questions which showed their interest in the topic being studied.

I do not want to bore stronger pupils in this class by not challenging them enough. I should set them open-ended questions as challenge questions that will really push them to their full ability to keep them as engaged as the weaker-mid level pupils in the class.

Reflections from early lesson in PTE1

→ let them work out the answer for themselves to the challenge questions. The more able kids need to be left alone to sort think for themselves.

Feedback from Mentor.

1. Can you predict how climatic change might affect the climate of these research stations? 2. Describe the differences between the climates at the different research stations. 3. Explain why there are differences in the climates at the research stations. 4. What is the mean average temperature at Halley and Amundsen Scott bases?	Following advice, I set Question 1 to more-able pupils who did not have work to correct. This allowed them to be challenged as it was not work covered in the previous lessons, and encouraged them to work more independently. PowerPoint slide with Challenge Questions
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Additionally, regarding DIRT lessons, it was noted by experienced teachers that at times I provide too much support to pupils, however at other times more support is required from me. My classes are mixed ability, so it is a personal target of mine to better assess the learning of my pupils and tailor my guidance according to the individuals I am delivering the DIRT lesson to.

Illustrative Example 2 – Peer Assessment

Peer assessment is an additional method of Assessment for Learning that I use. Pupils exchange work with another pupil and assess their peers' work in purple pen by using success criteria I have given. I then ask for feedback from pupils to get a representative sample of pupils' learning. Peer assessment is commonly disputed amongst academics but lauded by Panadero & Alqassab (2019) and Reinholz (2016).

One lesson where I used peer assessment as a tool for Assessment for Learning was in a year 8 mixed-ability lesson. Year 8 were at the very beginning of their topic studying the continent of 'Antarctica'. One task was to write a postcard home from Antarctica to describe the continent as thoroughly as possible to develop the vocabulary of pupils.

Before writing their postcards, as a class, pupils devised success criteria for writing a postcard. Once written, the postcards were then peer assessed (using purple pens) using the success criteria shown on the board. Pupils were instructed to write a comment expressing, 'What Went Well' (WWW) and a comment suggesting 'Even Better If' (EBI).

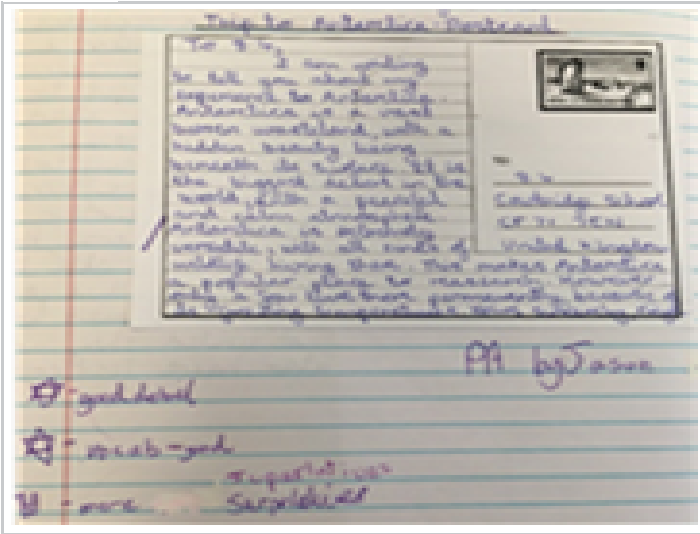
	PowerPoint slide used with little detail or instructions about how to correctly Peer Assess work.
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The rationale for using peer assessment in this task was to encourage pupils to plan their work using the success criteria, and to allow pupils to envision how it might be possible for them to improve their work.

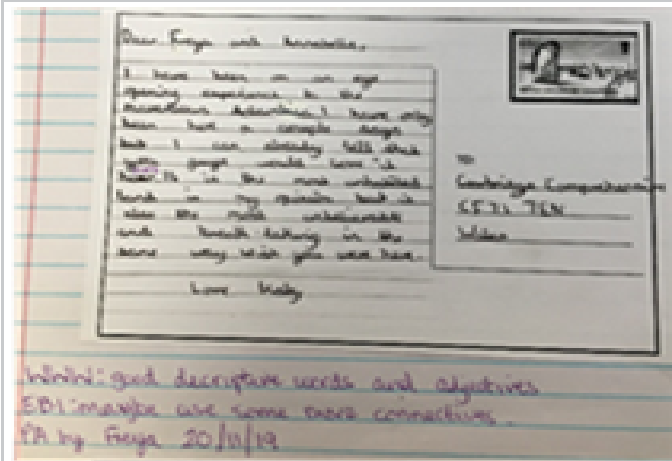
Pupils were familiar with peer assessing work in my placement school, and so once the task was explained, pupils found the task straightforward. However, during feedback it was clear that the quality with which the peer assessment was completed varied greatly between students.

This was one of my very first lessons as a student teacher, and I was not aware how important it is to have the instructions displayed on the board as well as to communicate instructions verbally. During this task my instructions were mostly verbal, leading to inconsistency, as some pupils used the 'two stars and a wish' method and some using the 'WWW/EBI' method to peer assess work.

Furthermore, whilst some pupils peer assessed with detailed notes using the success criteria, this was not true for all pupils, as shown in the images attached.



Pupil work where they had not listened to instructions and so used the 'two stars and a wish' method to peer assess work.



Improved lesson's pupil work, where WWW/EBI is used, and the success criteria was used to peer assess the work.

When I taught this lesson to another class I was able to improve my instructions of the peer assessment by ensuring my instructions were displayed on the board and being more specific about the peer assessment technique. I instructed pupils to use the WWW/EBI method of peer assessing, and specifically instructed that pupils write one comment about the vocabulary used, and ensured pupils used the success criteria. This led to much more successful peer assessment with more consistent pupil feedback.

Later in term I used peer assessment as a tool for Assessment for Learning in a Year 7 mixed ability lesson. Peer assessment was used in this particular lesson to stretch pupils further, by requiring pupils to review their work and improve their original attempt at answering the question through the help of their peers.

I have learned from previous lessons the importance of specific, logistical instructions displayed on the board, which has since led to successful peer assessment sections of the lesson. This is shown in the images below of pupil work, personal reflections, and feedback from the subject teacher. Pupils were clear of my expectations in terms of the peer assessment, and pupils also improved their original work through comments suggested by their peers.

11:50-12:00 10 mins	Instruct class to swap books and peer assess each other's work (timer set for 5 mins for pupils to complete task).	Class to peer assess their work using guidelines on the board.	Purple pens.
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Lesson Plan image

Task – Peer Assessment

1. Swap your book with another pupil.

2. Using a purple pen, peer assess their task.

→ Write 'What Went Well' / what you thought was good about their work

→ Write 'Even Better If' / What they could improve

Do they mention:

→ The town's name

→ Where in Wales is the town

→ Transport links

→ Job opportunities

→ Facilities (healthcare, education etc)

→ Relief (shape of the land)

3. Swap books back

5 minutes

End

Improved instructions on PowerPoint slide to support pupils with their peer assessment.

Aspartely town in wales is called cardigan because of extreme climate, poor communication

WdW: M spoke about a town

EBI: You mentioned transport link, where in wales

Aspartely town in wales on the east side called cardigan because of fewer transport links, less job opportunities, extreme climate and poor communication.

Pupil initials	Teacher initials	Date
		20/01/20

Evaluation of Pupil Learning	
Evidence of Learning (including attitude to learning over time))	The true or false starter to recap previous knowledge worked well. All pupils were engaged in the active starter and proved that their knowledge and understanding of previous lessons was excellent. The peer assessment worked well to check pupils' understanding and ensured that the work was completed to the best of their ability. There was excellent feedback from pupils from the tasks which showed that the majority of the class accomplished what was asked of them and that their knowledge and understanding from the previous lesson had improved.
Next Steps for	Some pupils did not complete the homework set in the previous

+ Good use of peer assessment

Illustrative Example 3 – Mini Whiteboards

Another Assessment for Learning tool that I use is to give mini-whiteboards to each pupil so that I can see answers and feedback immediately. I used mini-whiteboards to assess learning in a Year 7 mixed-ability lesson with a quick drilling technique to help pupils remember the difference between two new geographical terms; 'sparsely' and 'densely'. As I displayed images of places which were either densely or sparsely populated, pupils wrote on their mini-whiteboards the term they believed described the image.

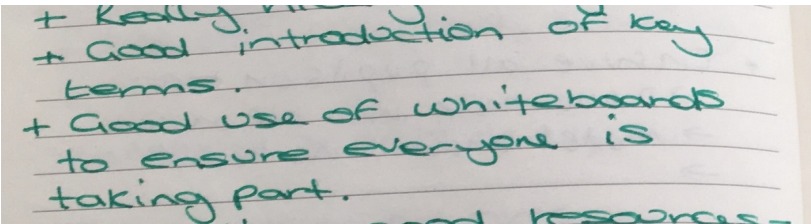
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Task - On your mini whiteboards, answer whether each image is densely or sparsely populated.  Densely populated or sparsely populated?	PowerPoint slide of the task
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The mini-whiteboards were very successful during this lesson as an Assessment for Learning technique as all pupils were actively engaged, and I was able to assess quickly when pupils had learned the difference between the two terms and so was able to move on with the lesson. It would have been difficult to assess all pupils' learning of the two terms in such a short time any other way.

Feedback from the lesson from the class teacher, and my reflections following the lesson suggested that the mini-whiteboards were a productive use of time in the lesson, as shown in the images below.



Evaluation of Pupil Learning	
Evidence of Learning (including attitude to learning over time))	There was a positive beginning to the lesson. Pupils began the lesson promptly and with an excellent attitude to learning. The assessment of learning worked well with the mini whiteboards as everyone had to take part and think about the task.

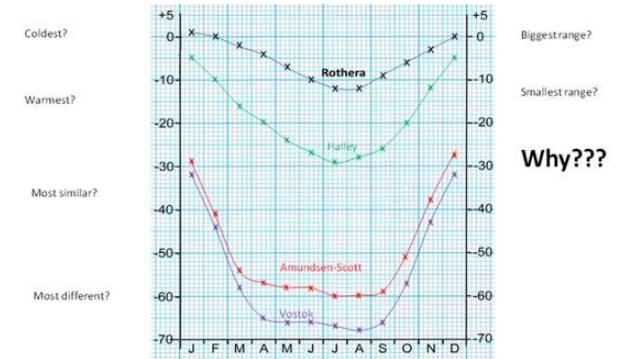
I do not often use this technique for Assessment of Learning in my class as I can never be confident that pupils are not simply copying answers. It is difficult to assess understanding of a concept with this AFL technique, so I tend to only use it for rote learning activities such as in this example.

Pedagogical Principle: Good teaching and learning regularly reinforces Cross-Curriculum Responsibilities, including literacy, numeracy and digital competence, and provides opportunities to practice them.

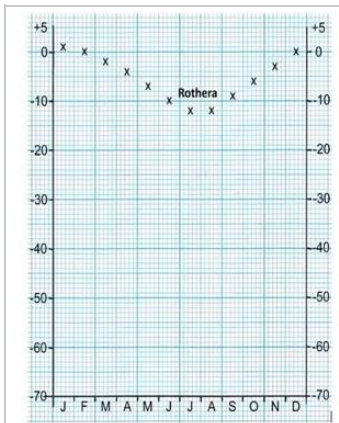
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Illustrative Example 1 - Numeracy.

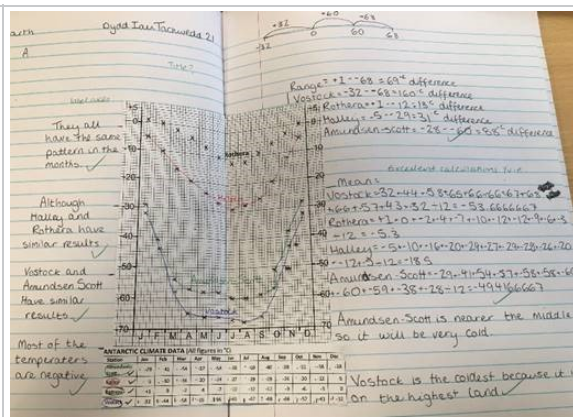
During a Year 8 lesson, numeracy was a key theme as the objectives were to plot a graph of the temperatures at different Antarctic Research Stations and analyse the graph to deduct similarities and differences between their climates. This was in line with the Numeracy Framework for Year 8 which showed that pupils are expected to interpret graphs and use the mean and range to compare data sets. The rationale for this lesson was to use the data in a later lesson to deduct why there were such differences. Plotting graphs is a key skill in geography lessons that enable us to discover trends and relationships between data. The graphs also helped pupils visualise the extreme climates of the Research Stations.

Stick your graph in the middle of a double page in your exercise book. Label the axes. Annotate your graph to answer these questions: Describe the climates of these places. What are the similarities between them? What are the differences between them? Can you put numbers on these? Range? Mean? Why are the climates of these places so different? 	PowerPoint slide showing the task of the lesson.
 Coldest? Warmest? Most similar? Most different? Biggest range? Smallest range? Why???	PowerPoint slide showing what the graph should look like by the end of the lesson for weaker pupils.

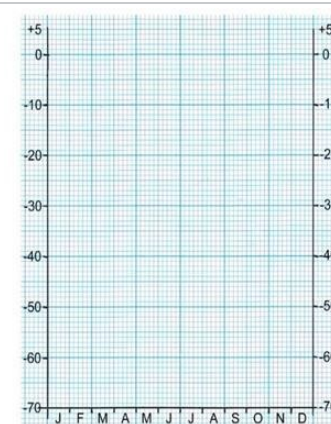
I delivered this lesson to two different Year 8 classes. The three differentiated worksheets for the mixed ability pupils worked well for both classes, helping some of them complete high-quality work. The only problem was when pupils chose the worksheet with more/less support than they required.



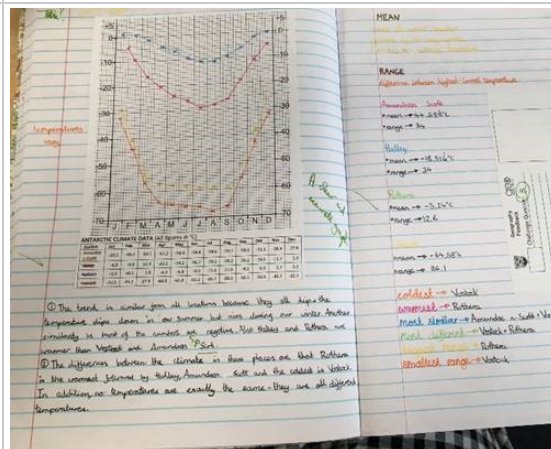
Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Amundsen-Scott	-29	-41	-54	-57	-58	-58	-60	-60	-59	-51	-38	-28
Melby	-5	-20	-26	-20	-24	-27	-29	-28	-26	-20	-12	-5
Rothera	+1	0	-2	-4	-7	-10	-12	-12	-9	-6	-3	0
Vostok	-52	-44	-58	-65	-66	-66	-67	-68	-66	-57	-43	-32



- Graph with most support -
- One Research Station fully plotted
 - whole numbers given as temperature data.



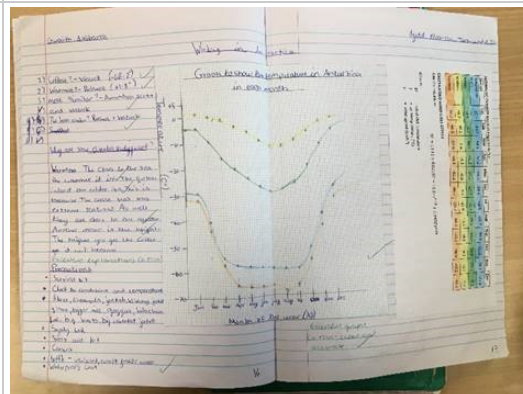
Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Amundsen-Scott	-29	-41	-54	-57	-58	-58	-60	-60	-59	-51	-38	-28
Melby	-5	-20	-26	-20	-24	-27	-29	-28	-26	-20	-12	-5
Rothera	+1	0	-2	-4	-7	-10	-12	-12	-9	-6	-3	0
Vostok	-52	-44	-58	-65	-66	-66	-67	-68	-66	-57	-43	-32



- Medium support -
- No points plotted
 - temperature data given with decimals.

Least support -

- Graph paper given for pupils to draw their own scale and axes
- Temperature figures the same as the medium support worksheet.
- Extra wind-chill equation attached should they complete the analysis of their graph (includes BIDMAS).



After delivering the lesson to the first class, and feeling they lacked confidence in their work, I improved my explanation to the second class. Firstly, I broke down the instructions into smaller tasks to keep pupils at similar paces. Secondly, as the class were of lower-ability than the previous class, I modelled how to plot the first few points on the graph and how to complete the range. This gave pupils the confidence they needed to produce high-quality work, and pupils did not ask me as often to assess their work throughout the lesson. The work of Rosenshine (2010, 2012) and Creemers & Kyriakides (2006) both promote modelling worked examples as effective methods to maximise the impact of teaching.

In future lessons, I will reiterate the learning objectives of the lesson, as there were a few questions as to why we were doing so much mathematics in the lesson. It is important that pupils learn to see numeracy as a key part of geography lessons, and not a different distinct subject.

Illustrative Example 2 – Numeracy

Lesson Powerpoint - Working out the Area of Antarctica

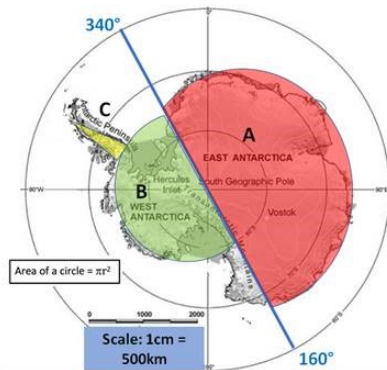
During a Year 8 lesson numeracy was a central theme of the lesson, as the main objective was to discover how much bigger in size Antarctica was compared to Wales. The rationale for this lesson was to make the abstract concept of the vast size of Antarctica more comprehensible to pupils.

To do this, pupils drew a line on a bearing, and split the continent's shape into 2 semi-circles and a triangle. Pupils then worked out the area of the semi-circles and the triangle to work out the area of Antarctica. Pupils also needed to convert their measurements using the scale provided. From the Numeracy Framework I was able to see that pupils should be familiar with angles, compound shapes, and the area of triangles but would not be learning the area of circles until Year 9.

A planning aspect of the lesson that worked well was that I liaised with the maths department to find out whether compound shapes had been taught as it was on the Numeracy Framework for Year 8. Last year the concept had been taught, but this year it had not, therefore a brief explanation of compound shapes and how to work out area of circles was added to the PowerPoint and displayed throughout.

Next

- From this line draw a semi-circle over East Antarctica,
- and a semi-circle over West Antarctica.
- Draw a triangle to approximate the area of the Antarctic Peninsula.

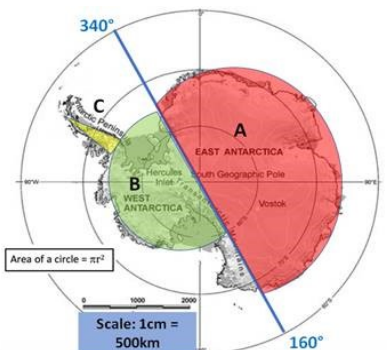


First, measure the radius of semi-circle A (East Antarctica).

The radius is a straight line from the centre of the semi-circle to the edge of the semi-circle.

Then measure the radius of semi-circle B (West Antarctica).

Then, convert the cm into km.

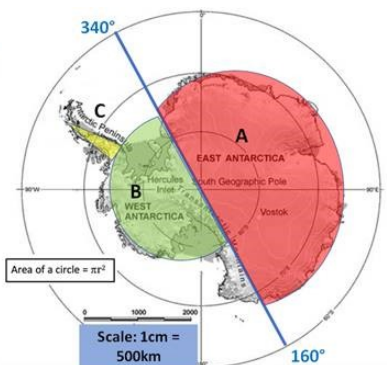


We then use this radius to work out the area of our semi-circles.

Area of a semi circle =

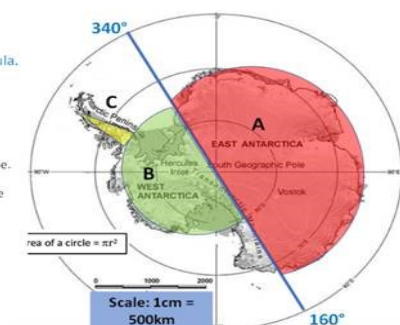
$$\frac{3.14 \times \text{radius}^2}{2}$$

Area of A =



Next calculate the area of the triangle for the Antarctic Peninsula.

1. Measure the height of the triangle (from the base to the top).
2. Measure the base of the triangle.
3. Convert the cm to km using the scale.
4. Multiply the height and width of the triangle.
5. Divide your answer by 2.
6. This will give you the area of the triangle for the Antarctic Peninsula.



Another positive aspect of the planning were the 3 differentiated worksheets to help the wide range of abilities in the class. The three differentiated sheets are shown in the images below with increasing levels of guidance. Pupils chose their own worksheet and it was made clear that they could change their selected worksheet if they wished.

Most support
(ALN)

Area of a circle = πr^2

1cm = 500km

	radius (km)	radius ² (km)	AREA ($\pi r^2 \div 2$) (km ²)
A East Antarctica	*	*	*
B West Antarctica	*	*	*
C Antarctic Peninsula	*	*	*
TOTAL	*	*	*

Medium Support

Area of semi-circle = $\frac{\pi r^2}{2}$

1cm = 500km

	radius (km)	radius ² (km)	AREA (km ²)
A East Antarctica	*	*	*
B West Antarctica	*	*	*
C Antarctic Peninsula	*	*	*
TOTAL	*	*	*

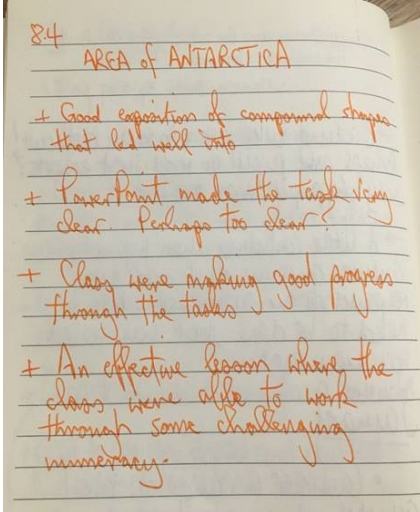
Least Support
(MAT)

Area of a circle = πr^2

	radius (km)	radius ² (km)	AREA (km ²)
A East Antarctica	*	*	*
B West Antarctica	*	*	*
C Antarctic Peninsula	*	*	*
TOTAL	*	*	*

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All pupils completed the numeracy task to a high standard which was a success as shown in the images above of pupil work and the feedback from a mentor.

Feedback from mentor	Future Improvement -
	Although the lesson worked well, the main drawback of the lesson was related to the fact that pupils of mixed ability were scattered around the class, so my instructions were not suitable for all pupils at all times. The feedback that I received was that I gave the more-able students too much guidance in the lesson as they heard the support I was giving to less-able students. However, these pupils that finished the work ahead of time were given additional 'stretch' questions to further develop their numerical skills and deepen their understanding of the topic. If I were to deliver this lesson again, I would ensure that pupils working on the same differentiated worksheets sat together, so that I am able to deliver an appropriate level of guidance to respective pupils easier.

Illustrative Example 3 – Literacy

A recent Year 10 lesson of mine provided ample opportunity for pupils to practice their literacy skills. A debate role-play provided pupils with an engaging, memorable way to revise the 'Weather Systems' topic they had just completed and linked to several of the points in the Literacy Framework for Year 10. Pupils oracy skills were used to present a convincing point of view, exploring "contentious issues through sustained role play." Furthermore, pupils listened and responded to the ideas of others in "thoughtful and considerate ways, seeking clarification through appropriate questioning".

To debate whether "Hurricane Michael and other hurricanes were not caused by climate change", pupils were organised into groups of 5 and assigned a role to debate.

Today's Lesson – Debate

"Hurricane Michael and other hurricanes were not caused by climate change."
Discuss.

You will be split up into 4 groups.

15 minutes to formulate your argument in your groups.

Decide roles - Spokespeople to debate, Researcher, Someone in charge of asking questions, Script writer.

Debate:

1. Each group has 1 minute to present their argument
2. Each other group must ask 1 question to the team that has presented their argument.
3. Next group has 1 minute to present their argument
4. Each other group must ask 1 question to the team that has presented their argument.
5. Repeat.

Rules

- 1) Everyone must be respectfully silent to whoever is speaking, whether you agree or not. Hear them out. I will chair the debate.
- 2) Everyone must say something, whether that is a question, an answer, or present their argument.

At the end of the debate, we will collate our arguments.

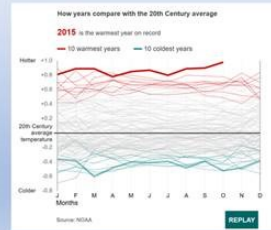
Next Lesson
Write up the debate.
Take notes today during the debate to help you next lesson.

Resources for Meteorologist

Hurricane Michael was the strongest hurricane ever to hit Florida panhandle.

Hint →

How do average global temperatures impact hurricane formation?



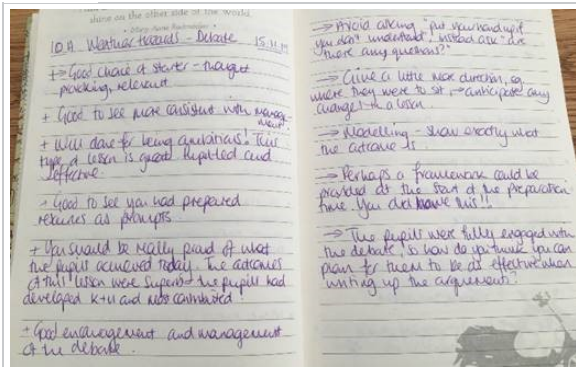
Water temperatures in the far northern Gulf of Mexico were 3 to 5 degrees Fahrenheit higher than normal for this time of year. Instead of water temperatures being near 80, they were in the mid-80s as Michael moved over the Gulf and approached the Florida coast.

A satellite loop of Hurricane Michael shows the storm core becoming better organized and intensifying as it approached the northern Gulf Coast. That's not a common sight, especially late in the hurricane season.

The biggest and most damaging hurricanes are now three times more frequent than they were 100 years ago, say researchers.

Not all pupils contributed to the spoken presentation, however, these pupils contributed to the collation of evidence to support their group's argument. On the other hand, pupils who usually find difficulty in writing, exhibited excellent presenting and reasoning skills which is a benefit Roberts (2013) has noted of role-play.

Estyn (2017) also highlight the importance of providing opportunities for pupils to practice their literacy through "role-play,... collaborative group work and debate".



Feedback from this lesson from the class teacher was positive as shown in the image. Pupils were fully engaged and pupils developed knowledge and understanding, and used the opportunity to question, speculate, reason and reflect on the views of others. Pupils were respectful of other pupils' debates despite not agreeing which showed maturity and that they were taking the task seriously.

There were a lot of questions and hesitation before the class began forming their arguments, even though a framework was given to help. If I were to deliver the lesson again, I would show a worked through, modelled example of what their debate could look like, maybe from a role that was not one that pupils would be debating, to give pupils a clearer example of what their argument could look like.

Pedagogical Principle: Good teaching and learning.
sets tasks and selects resources that build on previous
knowledge and experience and engage interest.

01 January 2020 23:19

Illustrative Example 1: Starter Tasks Recapping Previous Lessons' Learning

One way in which pupils build on previous knowledge and engage interest in my lessons is by setting quick quizzes as starter tasks to recap previous lessons. The importance of recalling information for long-term memory is well documented by Esner (2019), Rosenshine (2012) and Roediger and Butler (2011). Once this knowledge is recapped, new information is then delivered in the answers, building on previous themes.

Gwaith Dosbarth

A Journey Across Antarctica

Dydd Mercher, 4 Rhagfyr



True or False?

- Antarctica is the coldest continent on Earth.
- Antarctica is a desert.
- Antarctica's summer is during the UK's winter.
- Antarctica is unaffected by climate change.
- Antarctica has days of continuous daylight (polar summer), and days of continuous darkness (polar winter).
- The only time to travel to Antarctica is in the polar summer.

True or false questions on a PowerPoint as a starter activity that recap key points of the previous lesson.

In this example, I used a true or false starter based on facts pupils learned the previous lesson about climatic conditions in Antarctica to assess their memory of important 'threshold concepts', a term first coined by Meyer & Land (2003).

This worked well, as pupils had an engaging activity to complete as soon as they entered the classroom, and I was able to link the answers to the lesson's objectives to build on their knowledge and understanding of Antarctica's climatic conditions.

8.4 TRAVELLING ACROSS ANTARCTICA

+ Good starter questions

+ Well organised start to the lesson

4/12 Travelling across Antarctica 8.1

+ starter allowed recap of previous learning

+ learning objectives made clear

Teacher Feedback

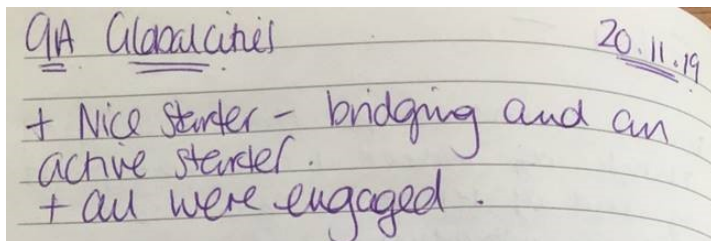
Gwaith Dosbarth	Population Density	Dydd Iau, 5 Rhagfyr
True or False? 1. Towns that have a very harsh, extreme climate tend to be sparsely populated. 2. Towns that have lots of varied job opportunities tend to be sparsely populated. 3. Towns with plenty of facilities such as schools and hospitals tend to be densely populated. 4. Towns with a mountainous relief tend to be densely populated.		

This is an example similar to the one above, where Year 7 pupils completed a true or false quiz as a starter activity to recap knowledge they learned in the previous lesson. This worked well to bridge the gap between the two lessons, as we were moving from regional to global variations, therefore the knowledge they gained from the previous lesson was built upon in this lesson. All pupils were engaged in this activity as hand signals were used to demonstrate true or false answers as a class.

Starter – what am I describing?  • Get into pairs. • One partner will be sat facing the back of the class, so they can't see the words on the board. • The other person from each pair is going to describe the key words which are on the board from last lesson to their partner. • The partner will have 1 minute to work out the word being described.	Active task that recapped previous knowledge to ascertain that pupils were confident with key words from the previous lesson and ready to build on their knowledge to put the key words into context with examples.
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Another starter activity that worked well was a task where Year 9 pupils worked in pairs to describe key words from the previous lesson to their partner. After an introduction to the words in the previous lesson, these words were then put into context using examples in this lesson, building and developing their knowledge and understanding.

It was pleasing to witness some pupils turn this activity into a competition to finish first, as pupils were trying their best to articulate using their previous lesson's knowledge to describe the key words.

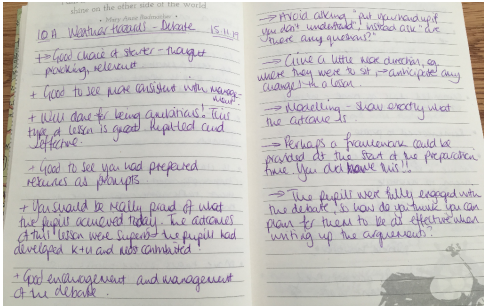


Feedback from teacher.

Starter activities of this type that have not been as helpful involve those where only a couple of pupils are called upon for questioning to feedback answers. This usually leads to pupils becoming disengaged quickly and not listening to the feedback. This has compelled me to attempt to have whole class participation in starter activities for maximum benefit.

Illustrative Example 2: Debate Task at the End of a Topic to Revise Work Studied

A debate role-play lesson with a Year 10 class provided pupils with an interesting, memorable way to revise the 'Weather Systems' topic they had just completed. Pupils applied theoretical knowledge they had previously learned through the topic to argue sophisticated points of view to a case-study. There is a growing body of research championed by Shakelford et al (2019) that indicates participation in debates is associated with higher attainment levels and 'higher social, civic, and school engagement' (Anderson & Mezuk, 2015).

Today's Lesson – Debate "Hurricane Michael and other hurricanes were not caused by climate change." Discuss. You will be split up into 4 groups. 15 minutes to formulate your argument in your groups. Decide roles - Spokespeople to debate, Researcher, Someone in charge of asking questions, Script writer. Debate: 1. Each group has 1 minute to present their argument. 2. Each other group must ask 1 question to the team that has presented their argument. 3. Next group has 1 minute to present their argument. 4. Each other group must ask 1 question to the team that has presented their argument. 5. Repeat.	
Quote to be debated and task breakdown.	Controversial video of President Trump discussing topic to be debated to stimulate discussion.
Rules 1) Everyone must be respectfully silent to whoever is speaking, whether you agree or not. Hear them out. I will chair the debate. 2) Everyone must say something, whether that is a question, an answer, or present their argument. At the end of the debate, we will collate our arguments. Next Lesson Write up the debate. Take notes today during the debate to help you next lesson.	Resources for Meteorologist Hurricane Michael was the strongest hurricane ever to hit Florida panhandle. Hint → How do average global temperatures impact hurricane formation? Water temperatures in the far northern Gulf of Mexico were 3 to 5 degrees Fahrenheit higher than normal for this time of year. Instead of water temperatures being near 80, they were in the mid 80s as Michael moved over the Gulf and approached the Florida coast. A satellite loop of Hurricane Michael shows the storm core becoming better organized and intensifying as it approached the northern Gulf Coast. That's not a common sight, especially late in the hurricane season. The biggest and most damaging hurricanes are now three times more frequent than they were 100 years ago, say researchers.
	Positive feedback from teacher regarding the engagement and understanding of pupils.

The lesson was mostly successful. A thought-provoking video of President Trump stimulated the class from the beginning into an engaging discussion, and the engagement continued throughout. I feel that the change in pace from the usual lesson helped pupils remember key points individuals delivered, and helped pupils develop deeper knowledge and understanding of how information inter-linked.

There were a lot of questions and hesitation before the class began forming their arguments. If I were to deliver the lesson again, I would show a worked through, modelled example of what their debate could look like, maybe from a role that was not one that pupils would be debating, to give pupils a clearer example of what their argument could look like. In addition, not every pupil made notes of other teams' arguments which proved troublesome in the following lesson. In future, I would provide frameworks to make note-taking more enticing for pupils.

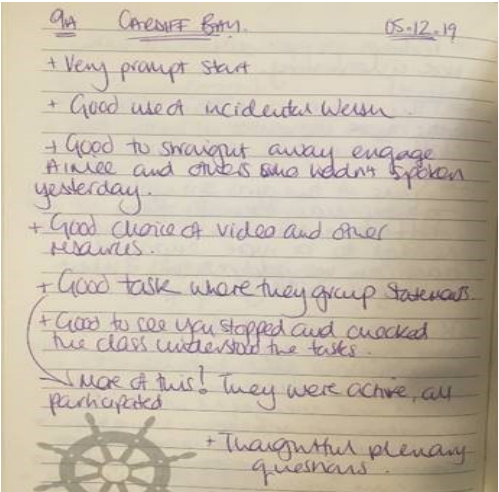
Illustrative Example 3: Redevelopment of A Familiar Area – Advantages and Disadvantages

A recent Year 9 lesson called upon pupils to use their previous knowledge and experience from outside and inside the classroom to produce their best work. The objective of the lesson was to determine whether the redevelopment of Cardiff Bay was a success or a failure.

What does this image make you think?  How long ago was the photo taken? Who lives there? What jobs are there? Does it look clean? How many people visit this place? What activities can be done here?	This image of an area familiar to pupils was on the board as a short starter activity for the class. Pupils shared their answers and were surprised at how recent the photograph was taken (1991) as most pupils suggested the 1960-70s. Their surprise caused them to become engaged in the lesson from the beginning.
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Learning Objectives (focus on Learning- use accessible vocabulary): The pupils will learn: - How the poverty in Butetown was addressed by the Government. - The successes and failures of the redevelopment of Cardiff Bay in addressing the poverty.		Image of the lesson plan, which showed the discussion as a large part of the lesson.
Success Criteria (clearly linked to each Learning Objective and related to the process and/or product of learning) Pupils to describe in their booklets how the government had attempted to deal with the problem of poverty in Bute Town. Pupils to draw to 2 mind-maps showing the successes and failures of the Cardiff Bay Redevelopment. Pupils to colour code positive and negative effects of the Cardiff Bay Redevelopment from statements given. Pupils to watch a video of a Butetown resident explaining the segregation he feels. Pupils to answer in booklets - How successful do you think the redevelopment	Assessment of Pupils' Learning Evidence (What have the learners to say/write/do/produce – to demonstrate learning) Pupils to describe in their booklets how the government had attempted to deal with the problem of poverty in Bute Town. Pupils to discuss <u>ideas</u> , and draw to 2 mind-maps showing the successes and failures of the Cardiff Bay Redevelopment. Pupils to colour code positive and negative effects of the Cardiff Bay Redevelopment from statements given. Pupils to answer in booklets - How	

Pupils' previous knowledge and experiences of Cardiff Bay were used during a class discussion where views were shared on different aspects of the project. I was sure to ask the opinion of pupils who are usually more reserved and encouraged a classroom atmosphere where there were no right or wrong answers. Pupils thrived in this atmosphere, as their individual hobbies and interests were discussed as part of the learning. An example of this was a usually disengaged pupil sharing his experience of a Champions' League Final event in Cardiff Bay. We were able to suggest reasons as a class as to why the event may have been held in Cardiff and whether the redevelopment contributed.



Positive feedback from class teacher.



The boundaries that segregate Butetown from the regeneration.

[The Segregation of Butetown residents](#)

Many students were unaware of the segregation of Butetown residents from the regeneration, thus this was an area where pupils' knowledge was built upon. The stories of real residents were shown through video clips, an idea supported by Esner (2019) to engage the class. Pupils engaged well in this lesson, which called for me to deliver more pupil-led lessons rather than teacher-led lessons in future.

One shortcoming of this lesson was that although pupils were actively engaged in the discussion, the amount written of the discussion was less than I would have hoped for. In future, I would write key points mentioned on the board so that pupils can make sure that they have recorded all important points as the discussion is flowing.

Critical Reflection

Monday, December 9, 2019 10:45 AM

The focus of this writing is a critical reflection of the progress I have made on the planning and implementation of three pedagogical principles of Donaldson's Successful Futures Review (2015) during my first Professional Teaching Experience of my PGCE training. PTE1 occurred in a secondary school in South Wales with approximately 1400 pupils on roll. The three pedagogical principles that I critically reflect upon are: good teaching and learning means employing assessment for learning principles; good teaching and learning regularly reinforces Cross-Curriculum Responsibilities, including literacy, numeracy and digital competence, and provides opportunities to practice them; and good teaching and learning sets tasks and selects resources that build on previous knowledge and experience and engage interest. With reference to literature, areas for my development are then identified.

Clear pedagogical principles are stated in the new curriculum to guide and inspire teachers to design learning activities that "relate directly to the curriculum purposes" (Donaldson, 2015). The review does not give detailed prescriptions of teaching methods, but advocates for the "growth of teachers as reflective practitioners" that take into consideration the implications of their pedagogical methods and how they relate to the curriculum purposes. The approach of the principles is comparable to that of the Welsh Government's 2007 Report "Teaching and Learning Research Project's Principles into practice: A teacher's guide to research evidence on teaching and learning". Additional work that guided the design of the principles includes Donaldson's Report reviewing teacher education in Scotland (2011), Elmore's Report on School Reform (2004), and several studies by the OECD (2005, 2008, 2013).

As described by Hattie and Yates (2014), "the process of teaching is providing ways of moving from the starting position to the success criteria" of knowing and applying new knowledge. This idea of teaching as a process is linked to that of cognitive load theory, where we only have a limited amount of working memory, and once the limit is reached learning is shallow. This is supported by academics Reder et al. (2016), Willingham (2009) and Sweller (2016). Further studies believe that recalling prior learning, and building on this knowledge gradually, not only helps understanding, but supports working and long-term memory too. It is believed that providing short-term, achievable goals to pupils will increase pupils' self-efficacy. Research including that of Schunk & DiBenedetto (2014) suggests that this will create pupils that will "work harder, persist longer, show greater interest in learning, and achieve at higher levels".

The focus of the first principle under consideration Assessment for Learning, (AfL), has been criticised for its contrasting definitions (Andrade, Bennet and Cizek, 2019) (Bennett, 2011), however its main characteristics are agreed as assessing learner understanding to provide feedback to maximise teaching effectiveness (Dixson & Worrell, 2016), (Black et al., 2010). Numerous academics such as Black and William (1998) and Nyquist (2003) have advocated the effectiveness of AfL, however others including Herman et al (2010) dispute its validity due to research "deriving from untraceable, flawed, dated, or unpublished sources" (Bennett, 2011).

Nevertheless, it is agreed between these academics that assessment should be valid, reliable, manageable and meaningful (Welsh Government, 2010). Successful Futures (2015) further add that assessment should focus on progression, and a wide repertoire of techniques should be used including those that include engage students in their own assessment.

On one hand, Downes (2013), Sandeen (2013) and Sanchez-Vera and Prendes-Espinosa (2015) have referred to peer-assessment as "the blind leading the blind" and that it creates "charlatans" where students believe mistakes are correct, leading to lower levels of reliability. Conversely, others suggest that providing clear success criteria for pupils to use during self or peer-assessment enables pupils to visualise how to improve performance which increases pupils' responsibility, motivation, and the metacognitive skills of learning management (Brown, 2015; Wanner & Palmer, 2018; Panadero, Jonsson & Botella, 2017). As Lopez-Pastor & Sicilia-Camacho (2017) suggest, further research is needed on the effects, difficulties, and ethics of AfL to address the challenges of conflicting advice.

The second principle under consideration refers to the Cross-Curriculum Responsibilities of literacy, numeracy and digital competence. The case for treating these in a cross-curricular way is now widely accepted as they are the foundations for all learning and are particularly essential for geographers.

As Roberts expressed, literacy and numeracy "skills are developed not as ends in themselves but in relevant, purposeful contexts" (2013: 95). Regarding digital competency, Brown et al (2018) have highlighted the use of GIS in schools to give a greater understanding of the world to students. Several academics including Vogotsky (2012) have attached great importance to the role of language in learning through questioning and expressing thoughts. Kirsten's (2019) work on cross-curricular work claimed that improved teaching of literacy across disciplines enhanced not only literacy, but also content learning.

Mathematics is scattered through geography textbooks with concepts such as the Richter Scale, temperature and population, as numbers provide perspective and depth to topics. Geography teachers

can reinforce the understanding of percentages, ratio, probability and graph work by using tangible, useful examples to give authentic contexts to numbers.

In contrast, Berliner (1988) points out that teachers are less effective teaching information they are less familiar with. The better we know a subject, the better we can tailor our explanations to consider likely misconceptions. Misconceptions are “often very specific to each topic” (Enser, 2019: 82) and awareness of these comes with experience. This leads to the argument that literacy, numeracy and digital competence responsibilities should lie with the respective disciplines. Roberts (2013) further points out the contradiction between how climate graphs are drawn in maths and geography, likely confusing pupils. However, through preparation and dialogue between departments we can remedy these weaknesses and help pupils to see advantages of links between subjects.

Pupil engagement and building on prior knowledge is the focus of the final principle under consideration. Harackiewicz et al (2016) and Renninger & Hidi (2016) proclaim that “interest is a powerful motivational process that energises learning... and is essential for academic success”. Although the literature expressing ‘choice’ as an important factor for student engagement is growing, such as Patall et al (2013) and Høgheim & Reber, (2015), the use of vivid real-life stories and analogies has long been known as powerful tools of engagement and memory (Willingham, 2009; Hattie & Yates, 2014). Social context is particularly powerful when linked with familiar experiences (Enser, 2019) although Wentzel & Miele (2016) argue that social contexts can also stifle learning.

Theoretically, “having prior knowledge provides impetus for wanting to acquire even more knowledge” (Hattie & Yates, 2014: 8). A perceived bridgeable knowledge gap will serve as motivation to learn more, though a perceived “knowledge chasm” will render pupils demotivated. As Myatt (2018) explains, “the curriculum should tell a story” (Enser, 2019: 115), with links being made between topics. Constructivist and cognitive load theories support this, as Reder et al (2016) and Sweller (2016) believe that new information is easier to learn when linked to familiar information, as less working memory is required.

Recalling previous information with pupils, especially “threshold concepts” (Mayer & Land, 2003) supports long-term memory retention according to Rosenshine (2012) and Roediger and Butler (2011), and ensures pupils remember information in enough detail to apply it to new concepts. Enser (2019) questions whether the same places should be recalled as case-studies however, as this may lead to shallow understanding of few places globally. By revisiting and linking concepts, case-studies, and cross-curricular principles, students learn to approach topics “as a geographer, and develop a conceptual understanding of the whole” (Enser, 2019: 79) rather than a series of small, unconnected, fragmented parts.

I implemented the first pedagogical principle concerning AfL in three ways shown in my portfolio, though setting ‘Challenge Questions’ after briefly assessing pupil books, peer assessment and feedback, and through whole-class mini-whiteboard assessment. These techniques successfully provided an “insight into the effectiveness of learning” as articulated in the principle endorsed by Black and Wiliam (1998), therefore I was able to adapt my teaching to meet students’ needs. These methods were easy to plan and execute as pupils used the techniques throughout the school.

In my opinion, Challenge Questions were a successful method of AfL. Instead of spending time marking pupil notes, I was able to devote more time to assessing the learning of key ideas and setting Challenge Questions that reflected misunderstandings of individuals. With this knowledge, I tailored my lessons to remedy errors I assessed had arisen, by recapping or reteaching concepts differently. This ensured errors were not embedded and carried forward to future tasks (Hattie and Timperley, 2007).

Peer collaboration and feedback is endorsed in the principle as a ‘safe’ method of AfL where there is a “shared language for discussing progress and improvement” (Donaldson, 2015). My initial attempts at peer assessment worked poorly, as pupils were inconsistent with their method and detail due to my inadequate instructions, so feedback was not representative of the whole class’s learning. After improving my instructions by displaying them throughout the task and being more specific, pupils were clearer of my expectations, and able to confidently use success criteria to assess work and write focussed comments to their peers. Devising success criteria as a class facilitated validity and reliability (AERA, APA, & NCME, 2014), and helped pupils assess strengths and flaws of an answer. Feedback from pupils during peer assessment has improved considerably and is now a useful AfL technique.

Both Challenge Questions and peer assessment encouraged progression as they provided learners with “guidance on next steps” to help “learners raise standards and nurture ambition” (Donaldson, 2015). Pupils enjoyed opportunities to improve their work through further guidance, a notion of the pedagogical principle.

The mini-whiteboards were a successful AfL technique as I was able to assess the learning of the whole class quickly so was able to immediately adapt the lesson as I assessed learning. However, I could never be certain of understanding of a concept, and that pupils were not simply copying answers. Consequently, I only used this technique for rote learning activities such as in the portfolio example.

Although there are aspects of this pedagogical principle that I have implemented well, there are areas where I could improve. Although I am consistent in attempting to assess the learning of pupils through various methods, at times I provide too much or too little support to pupils. A target of mine is to better assess the learning of pupils during class, and tailor my guidance according to the individuals I am delivering information to. In future I may I group abilities for certain tasks to ensure my level of support

is suitable. Furthermore, none of these AfL methods allow me to give tailored feedback to individual pupils. To improve this, I could find time to sit with each pupil to talk through their geography work individually as supported by Enser (2019). So far, I have not experienced any limitations to implementing this pedagogical principle as there are several different methods of AfL that can be applied to different contexts.

Geography lessons allow “natural and authentic” of cross-curriculum responsibilities, the second pedagogical principle under reflection, and the Welsh Government Frameworks helped identify the skills pupils were developing in other subjects.

Numeracy was a key theme throughout Year 8’s Antarctica topic, as opportunities were provided to plot and analyse temperature graphs and calculate the area of Antarctica using compound shapes. Pupils successfully completed the numeracy tasks to a high standard as shown in the portfolio. Pupils were able to deduct similarities and differences between climates at different locations and find reasons for these trends in the following lesson. The graphs helped pupils visualise the extreme climates at the Research Stations. Numeracy also helped make the abstract concept of the vast size of Antarctica more comprehensible to pupils by comparing its size with that of Wales.

Differently to maths lessons, there was a wide range of abilities in my geography class, therefore differentiated worksheets were designed to assist this. Some pupils chose the worksheet with more or less support than they required, although that was sensitively rectified. The main obstacle of the lesson was that pupils of mixed ability were scattered around the class, so my instructions were not always suitable for all pupils. If I were to deliver this lesson again, I would sit pupils working on the same worksheets together, so I would be able to deliver an appropriate level of guidance to respective pupils.

Improvements I made through PTE1 whilst delivering numeracy lessons included breaking down the instructions into smaller tasks to keep pupils at similar paces and modelling how to complete certain tasks. Rosenshine (2010, 2012) and Creemers & Kyriakides (2006) both promote modelling to maximise the impact of teaching.

As shown in my portfolio, a role-play debate lesson provided abundant opportunities for pupils to practice skills linked to the Literacy Framework ideas for Year 10. Estyn (2017) highlight the importance of providing opportunities for pupils to practice their literacy through “role-play,... collaborative group work and debate”. Pupils oracy skills were used to present a convincing point of view, exploring “contentious issues through sustained role play”. Furthermore, pupils listened and responded to the ideas of others in “thoughtful and considerate ways, seeking clarification through appropriate questioning”. Pupils developed knowledge and understanding by questioning, speculating, reasoning and reflecting on the views of others, and were respectful of other pupils’ debates. Not all pupils contributed to the spoken presentation, however these pupils contributed to the collation of evidence to support their group’s argument. In contrast, pupils who usually found difficulty in writing, exhibited excellent presenting and reasoning skills which is a benefit Roberts (2013) has noted of role-play.

Planning this lesson was difficult early in PTE1 as I did not know their previous literacy levels. There were several questions and hesitation before teams began forming their arguments despite a framework being provided. Plenty of encouragement and guidance through Socratic questioning enabled pupils to produce excellent work. In future, working through a modelled example of a similar role’s argument would be beneficial.

Although I am pleased with my implementation of literacy and numeracy in my practice, embedding digital competence is an area I aim to improve. Geography allows ample opportunities to include digital competence, such as research, data handling and modelling, however the unavailability of resources including Wi-Fi made this difficult to implement even when it was carefully planned.

The third pedagogical principle that I implemented was that ‘good teaching and learning sets tasks and selects resources that build on previous knowledge and experience and engage interest’ (Donaldson, 2015). One way in which I implemented this principle was by setting quizzes as starter activities to recap previous lessons’ learning, before building on the knowledge in my delivery of the answers, usually linking the answers to the lessons’ objectives. This was shown in my portfolio examples of ‘True or False’ starters and my ‘Describe the Key Word’ starter. These worked well as pupils could see links from previous lessons and were focussed and engaged on the topic immediately from entering the classroom. I also effectively implemented the pedagogical principle by setting tasks that required pupils to use their previous knowledge and experience to critically evaluate new case-studies such as my portfolio examples of the climate change debate and the Cardiff Bay redevelopment discussion. Characteristics of learning progression were exhibited in both lessons as pupils demonstrated “a capacity to engage with ideas and issues in greater depth” (Donaldson, 2015), than their previous knowledge would have facilitated.

Pupil-led lessons such as the debate lesson and Cardiff Bay discussion lesson were challenging to plan at the beginning of PTE1 as it was difficult to know how much previous knowledge and experience pupils had and so how much support would be required to develop their knowledge further. This contributed to the learning not being as effective as it could have been under different circumstances. Opening these lessons with thought-provoking resources such as the controversial video of President Trump, and the old photograph of Cardiff Bay, stimulated the class into discussion instantly. This was helpful to

assess the previous knowledge of pupils, so I was able to bridge the gap between previous knowledge and the current lesson.

Research including Clifford et al (2016) support using real-life case studies, such as the video of Butetown residents and Hurricane Michael data, to help “bring the geography to life” (Enser, 2019) to engage pupils, and help pupils recall the information later. Pupils thrived when they were able to use their individual experiences to support their knowledge in lessons, such as in the Cardiff Bay discussion. Not only were pupils engaged in these lessons, but they also produced exceptional work which called for me to deliver more pupil-led lessons rather than teacher-led lessons in future.

Although I am pleased with my implementation of this pedagogical principle, I feel there are still areas where I could improve. Starter activities that recall previous learning that have not been as constructive involve those where only a couple of pupils are called upon to feedback answers. This usually led to pupils becoming disengaged and not listening to the feedback that links the prior learning to the new information of the lesson. This has compelled me to use whole class participation in starter activities for maximum benefit. The main shortcoming of both the debate and discussion lessons involved pupils not recording as much information as I had wished. In future, I would provide writing frameworks and make notes on the board to encourage easy notetaking, to ensure that new knowledge is learned in depth. On closer inspection of the pedagogical principle, there is one component that I did not implement effectively. The principle expresses that there should not be a “one-size-fits-all approach to learning” and “significant freedom” for pupils to “approach learning in their own particular way”. All pupils in my class complete the same tasks with only variations of ability taken into consideration, rather than interests. I could improve my implementation of this pedagogical principle by offering more choice within tasks for pupils, although this would be extremely difficult to implement in practice, particularly given the range of pupils’ interests, timeframes, and that pupils must achieve the same learning objectives.

On reflection, I believe the three pedagogical principles interrelate closely. Most learning involves building on prior knowledge to aid understanding and help working memory capacities. Literacy, numeracy and digital competency are scattered throughout lessons to develop multifaceted understanding. Teachers use AfL throughout lessons in different forms to identify whether pupils are ready to begin building on existing knowledge. AfL is also used to learn which tasks and resources will be most effective in building their knowledge and in engaging the interest of pupils. As shown in my portfolio, the debate task exemplified two pedagogical principles. However, other tasks shown in my portfolio only used one principle and could have been used for another principle. For example, both numeracy tasks could have been used as examples of building on previous knowledge to show how lessons are planned so pupils can see how one task relates to the next.

Overall, I feel my implementation of the three pedagogical principles was mostly successful as schemes of work at my placement school offered plenty of opportunities to facilitate the principles. One key area that I need to develop is to better modify my teaching after assessing the learning of pupils. Secondly, I will provide further opportunities for pupils to practice their digital competency by using the school’s ICT suite more frequently. On reflection, most of my practice reflected theories as the level of success and value I found of activities was similar to studies. Whole class feedback worked far better than targeted questioning (Pereira, 2017), and delivering success criteria significantly improved peer assessment (Brown, 2015). In future, keeping up to date with research and progressions with the new curriculum will help further improve my practice.

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