

Overview

Friday 10 April 2020 00:38

Assignment Title: Title: A portfolio which illustrate a critical reflection of progress made on planning and implementation of three pedogeological principles

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Pathway: PGCE Secondary Mathematics

Link to OneNote assignment: https://uwtsd-my.sharepoint.com/personal/1903726_student_uwtsd_ac_uk/_layouts/15/Doc.aspx?sourcedoc={8bbc8b06-9f87-4211-9eef-52e6013fcea}&action=edit&wd=target%28Overview.one%7C8f7fd091-9d62-4f81-badf-90d1042a75c7%2FOverview%7Ccc423c87-ee34-4f43-82d8-0aa54ca3307b%2F%29

Good teaching and learning means employing assessment for learning principles

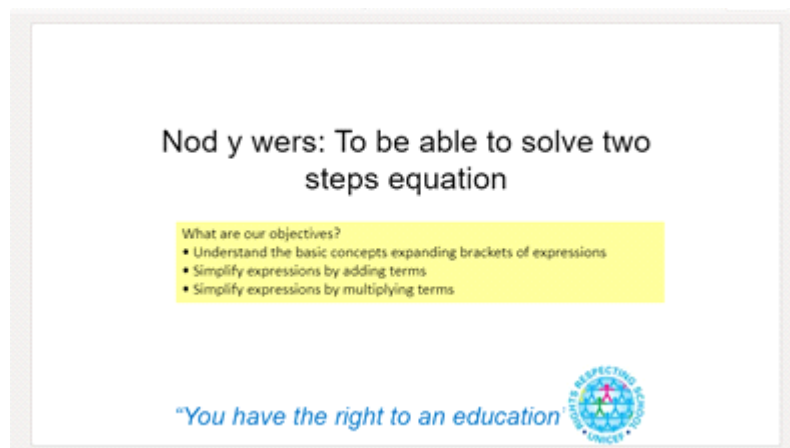
Thursday, April 9, 2020 11:46 PM

Principle 1: Good teaching and learning means employing assessment for learning principles”

For the pedagogical principle, I have chosen several evidences that obtained during my PTE1.

1- Sharing the lesson main objective (Nod y wers) and success criteria.

The lesson delivered by using PowerPoint, picture below showed how the lesson objective shared with the students at the start of each lesson.



- This evidence shows the success criteria part that been prepared by the teacher.

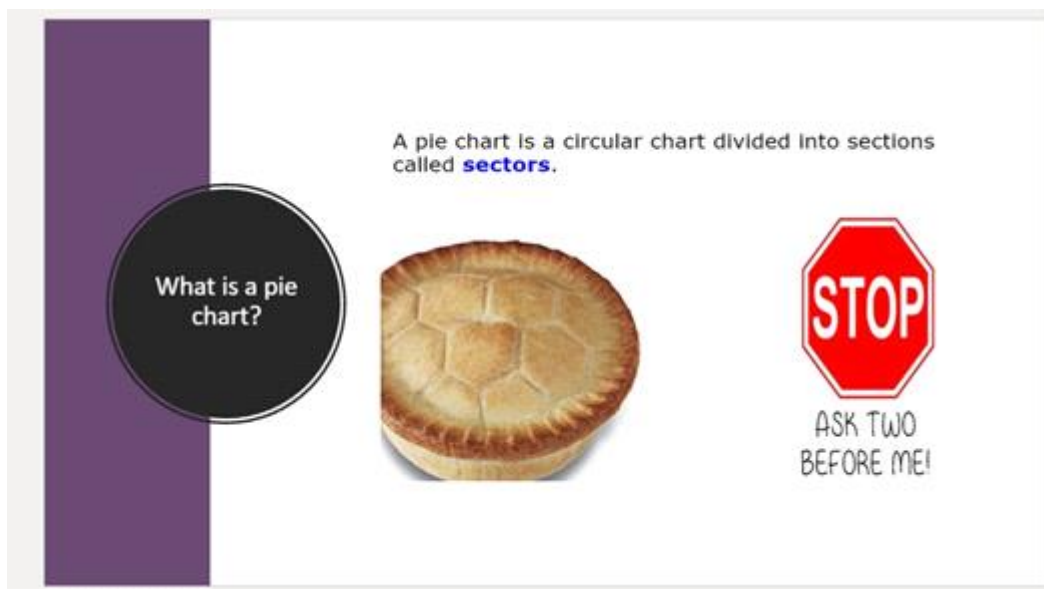
Success Criteria (clearly linked to each Learning Objective and related to the process and/or product of learning)	Assessment of Pupils' Learning Evidence (What have the learners to say/write/do/produce – to demonstrate learning)
• The students must write up: title, date, and do the starter. • Share the objectives of the lesson. • Several worked examples about finding out the nth term of many sequences.	• Ask questions on what the objectives are. • Bounce questions of understanding from one student to the other.

Success Criteria (clearly linked to each Learning Objective and related to the process and/or product of learning)	Assessment of Pupils' Learning Evidence (What have the learners to say/write/do/produce – to demonstrate learning)
• The students must write up: title, date, and do the starter. • Share the objectives of the lesson. • Several worked examples about rounding whole numbers to the nearest 10,100, and 1000. • Exercise to do by the students.	• Ask questions on what the objectives are. • Using random names strategy. • Use Bronze, Silver, and gold task use to differentiate student abilities. • Mini whiteboard for plenary to assess students understanding.

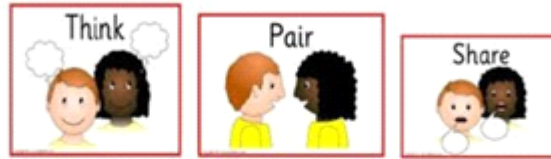
Section Break

2- Questioning Strategies

- Several techniques used for questioning the learners. The two pictures below show part of my lesson plan, where I list the variety of questioning strategies that I used within the lessons. For example: the bouncing a soft ball or teddy bear for assessing pupils' understanding about a specific topic, questioning pupils by name rather than relying on students raising their hands to ensure that they're paying attention. The picture below shows the employment of this strategy.
- The other techniques used is "Think-pair-share or Ask two before me) strategy has been applied so that pupils can be more engaged with the peers, build confidence, and develop learners' thinking. The two pictures below shows the strategy implementation within a lesson.



Why use a questionnaire?



1. Questionnaires are often used to obtain information from a group of people.
2. We use them because questions can be targeted to get the information you need.
3. They can also be done in several ways;



By post or email



By phone



Face to face

3- RAG System and Teacher Feedbacks

- RAG rating system is used by some schools as strategy that allows the teachers to check the student's academic profile to know the performance of student in all the subjects. The RAG system is shown by the colours red, amber and green in the subdivisions as a traffic light system. This strategy used at the end of each lesson as a plenary. The students are not only assessing their understanding by choosing one of the colour systems, they have to do one question that relates to each colour. This can help the teacher when she/he will mark the students' books. The images below show how is RAG system used during delivering the lesson.

Have you met the learning aim?

Go back and traffic light the lesson aim

R *I have not met the aim*

A *I have nearly met the aim*

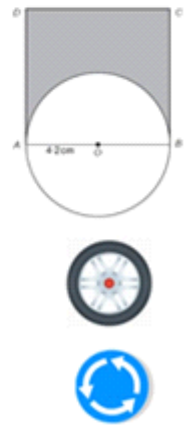
G *I have met the aim*

Plenary

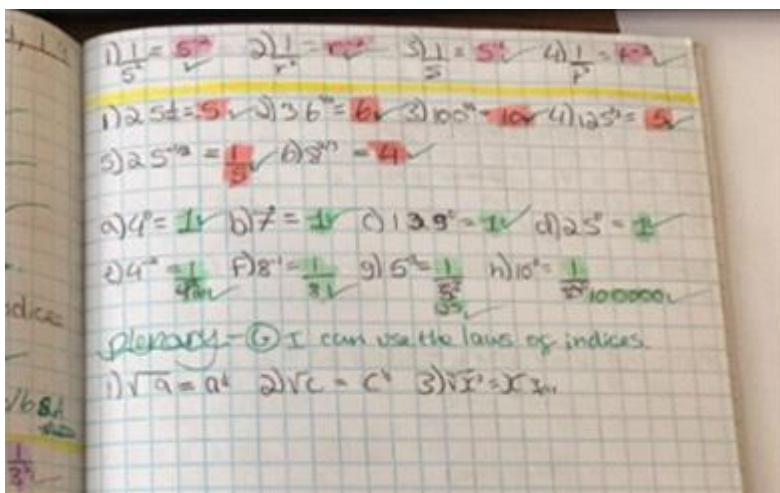
G What is the area of shaded region?

A What is the radius of the tyre if it has an area of 188cm^2 ? Round the answer to the nearest whole number

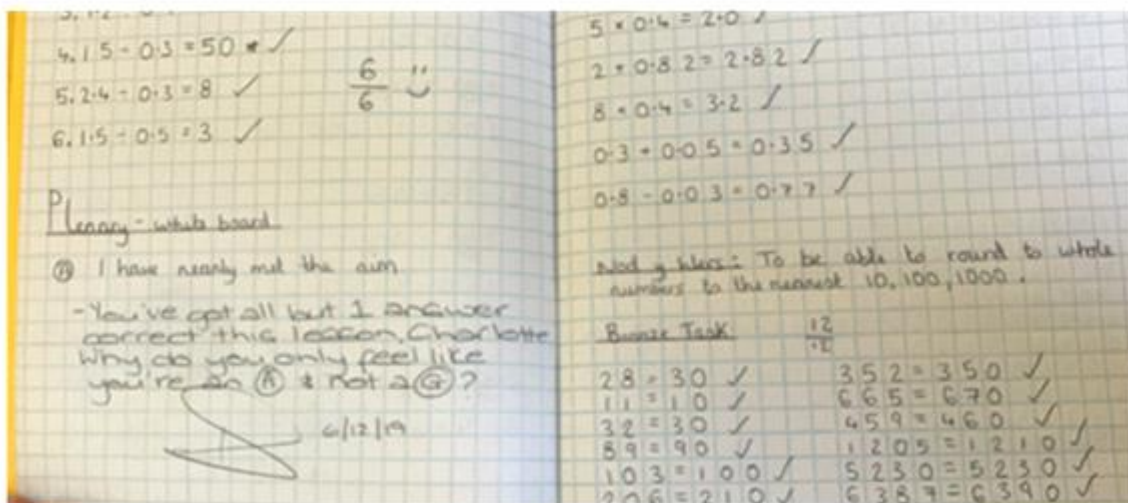
R What is the area of road sign of radius 20cm ?



- Here are some examples showing students' use of RAG system. This is pieces of evidence from student's book showing the use of RAG for plenary accompanied with question. This will encourage students to assess their level of understanding of the lesson.



- The picture below shows the teacher's comments on marking books. The RAG rating system helps me in following up with this learner and give her a feedback about how she can improve her performance.



- The picture below shows the learner's improved performance as I set out few questions to do for her. The MyMaths results shows the effectiveness of using the RAG system

The screenshot shows the MyMaths.co.uk interface. The left sidebar has a 'Filter by...' section with options like 'Selected Dates', 'Level', 'Type of Task', 'Library', 'Revision and assessment', 'Statistics GCSE', 'KSCE', 'A level', 'Further Maths resources', and 'Archive'. The main area displays a table of tasks for a student named Charlotte Grace Hughes.

Level	Topic	Task name	Tries	Start date	Last tried	Rating	%	Q1	Q2	Q3	Q4	Feedback
5	K53: Four fig...	Measuring angles	1	13/12/2019	13/12/2019	0.5	0%	25%	-	-	-	Enter feedback
5	lower	Multiply decimals by whole numbers	1	29/11/2019	29/11/2019	0.5	92%	50%	-	-	-	Enter feedback
5	K53: Four fig...	Multiply decimals by whole numbers	1	29/11/2019	29/11/2019	0.5	92%	50%	-	-	-	Enter feedback
5	K53: Six fig...	Multiply decimals by whole numbers	1	29/11/2019	29/11/2019	0.5	92%	50%	-	-	-	Enter feedback
5	K53: Five fig...	Multiply decimals by whole numbers	1	29/11/2019	29/11/2019	0.5	92%	50%	-	-	-	Enter feedback
6	Shape	Area of a parallelogram	1	20/11/2019	20/11/2019	50	100%	0%	-	-	-	Enter feedback
6	K53: Six fig...	Area of a parallelogram	1	20/11/2019	20/11/2019	50	100%	0%	-	-	-	Enter feedback
6	K53: Five fig...	Area of a parallelogram	1	20/11/2019	20/11/2019	50	100%	0%	-	-	-	Enter feedback
6	Shape	Area of a triangle	1	20/11/2019	20/11/2019	50	40%	33%	-	-	-	Enter feedback
6	K53: Six fig...	Area of a triangle	1	20/11/2019	20/11/2019	50	40%	33%	-	-	-	Enter feedback

4. Peers and Self-assessment

The Low Stake Quiz (LSQ) starts with set up one page at the back of the book. The topics then will be shared with the students. The LSQ used as a daily review to help learners to transfer the maths and numeracy skills from short to long term memory. The pictures below show the application of the LSQ. LSQ includes peer assessment and self-assessment.

Answers

Workings

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

Topic list

- 1) Standard form
- 2) Indices
- 3) Area of 2D shapes
- 4) Area of compound shapes

"You have the right to an education"



Question 1

Put the following number into standard form:

3,500,000

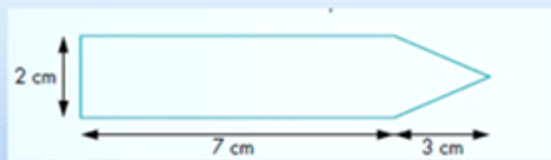
Question 2

Write this number out in full:

6.981×10^3

Question 10

Find the area of the compound shape below:



- 10 questions then will be given to the students with various time limits.

Year 8

Quiz
SOLUTIONS
(peer assess)

- Answers will be shared for peer assessment. This can help in improving the positive competency within the learners.

Question 1

Put the following number into standard form:

3,500,000

Answer: 3.5×10^6

Question 10

Find the area of the compound shape below:



Answer:

$$A = 2 \times 7$$

$$= 14 \text{ cm}^2$$

$$B = \frac{1}{2} \times 2 \times 3$$

$$= 3 \text{ cm}^2$$

$$\text{Total area} = 14 + 3$$

$$= 17 \text{ cm}^2$$

- The picture below shows the self-assessment that helps the learners to set out their own goals for their independent learning or revision.

Self assessment

I got $\frac{\square}{10}$.

I can:

1. *(Find 2 things you did well)*
- 2.

My target moving forward:

Give yourself 1 target from a question you got incorrect.

If you got everything correct, your target can be to "keep up this high level of work"

Q1 - Q3 Standard form

Q4 - Q6 Indices

Q7 - Q8 Area of 2D shapes

Q9 - Q10 Area of compound shapes

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

Thursday, April 9, 2020 11:47 PM

Principle 2: Good teaching and learning regularly reinforces Cross-Curriculum Responsibilities, including literacy, numeracy and digital competence, and provides opportunities to practice them"

For this principle I used three different examples showing the cross-curriculum responsibilities including literacy, numeracy, and digital competence within the Mathematics Department.

1. The picture below shows the use of literacy within a math lesson. I share with the students the main objective of the lesson as well as what key words will be used in this lesson. All this must be written down in their books.

Nod y wers: To be able to calculate with standard form

What are our objectives?

- Write a number in standard form
- Write a number from standard form
- Multiply with standard form
- Divide with standard form

What are our key words this lesson?

- Indices
- Standard form
- Number
- Integer

"You have the right to an education"



2. Problem solving question for plenary. The picture shows an example of problem-solving question for year 7. I usually ask two learners to read out the question before I share the answer.

Plenary

 A smoothie calls for $\frac{4}{6}$ of a peach, $\frac{1}{2}$ of a banana, and $\frac{2}{6}$ of a kiwi. How much fruits will be in the smoothie?

 Hannah used $1\frac{1}{3}$ cups of sugar and $2\frac{1}{3}$ cups of flour for her desert. How many cups did she use altogether?

Plenary

Sarah needed $\frac{1}{3}$ cup of flour to make 1 apple pie. If she made 9 apple pies, how many cups of flour would Sarah need?



3. Use of Welsh

The two pictures below show the use of Welsh within a lesson. In relation to the first picture (Gwaith Dosbarth, Nod y wers, and the date) must be in Welsh as a school policy.

Gwaith Dosbarth Dydd Sadwen, 7 Rhagfyr 2019

Nod Y Wers: To be able to divide fraction of the same denominator

How we will get there:

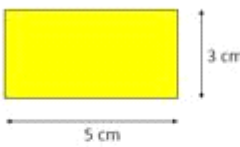
- Divide the **amount** by the denominator.
- Multiply your answer by the numerator.

"You have the right to an education"



4. The picture below shows that I used Welsh as an achievement answer during an activity at the end of the lesson.

What is the area of this rectangle?



5 cm 3 cm

✓ Da iawn



a: 15 cm² b: 24 cm²

c: 32 cm² d: 48 cm²

5. Functional projects

I have been asked to review the plan of a Functional Projects for key stage 3. I viewed the previous year project and added some comments on how to make it more eager, enjoyable, and encouraging group work.

For example, a year 8 functional project were students are asked to create a poster about the world statistics. The poster will be about comparing different countries of their choice. They will need to collect 3 different data to compare, for example population, hair colours, age etc.

Functional Skills: World Statistics
Ystadegau Byd



present data on world statistics

How will we get there?

- Choose 5 countries to compare.
- Chose 3 pieces of data to compare from these 5 countries.
- Copy the information for each of the 3 pieces of data into a table to be included in the poster.
- Display the 3 pieces of data using different graphs.
- Create a poster.

6. The following picture is about last year's Year 8 functional project outcome (poster). I have been asked to review them and feedback on how to make them more enjoyable and cover cross Curricular responsibilities (Literacy, numeracy, and ICT).



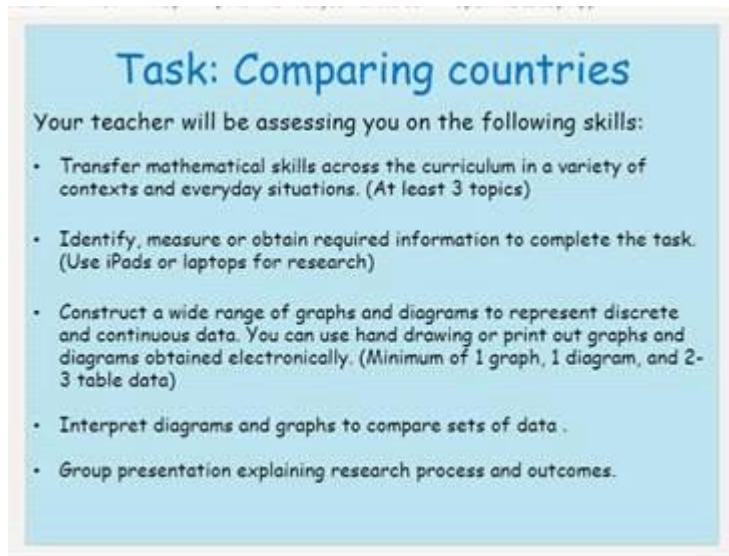
The posters display student work on world statistics. One poster includes a table of population data:

Country	Population
USA	281,421,000
Japan	127,814,000
France	64,380,000

Another poster shows a bar graph titled 'Population' comparing the USA and Japan. The graph shows the USA has a significantly higher population than Japan.

Handwritten notes on the posters include: 'In this table, it shows that Brazil speaks the most languages and Japan and France speaks one.' and 'In this graph, it shows that USA has the most population and Japan has the least.'

7. This is the feedback I provided after reviewing last year functional project outcomes. The comments I added include more integration of literacy, cooperation, and leadership skills. This will be obtained by the final presentation. Also, the use of iPads and laptops will help to speed up the research process, in addition to the developing of learners' ICT skill. Moreover, I asked to use the topics that the learners already covered in class. This will help the learners to revisit the topics and make use of them within the functional project. I believe delivering the functional project helps the students to develop their organisation and leadership skills, in addition to numeracy, literacy and ICT skills.

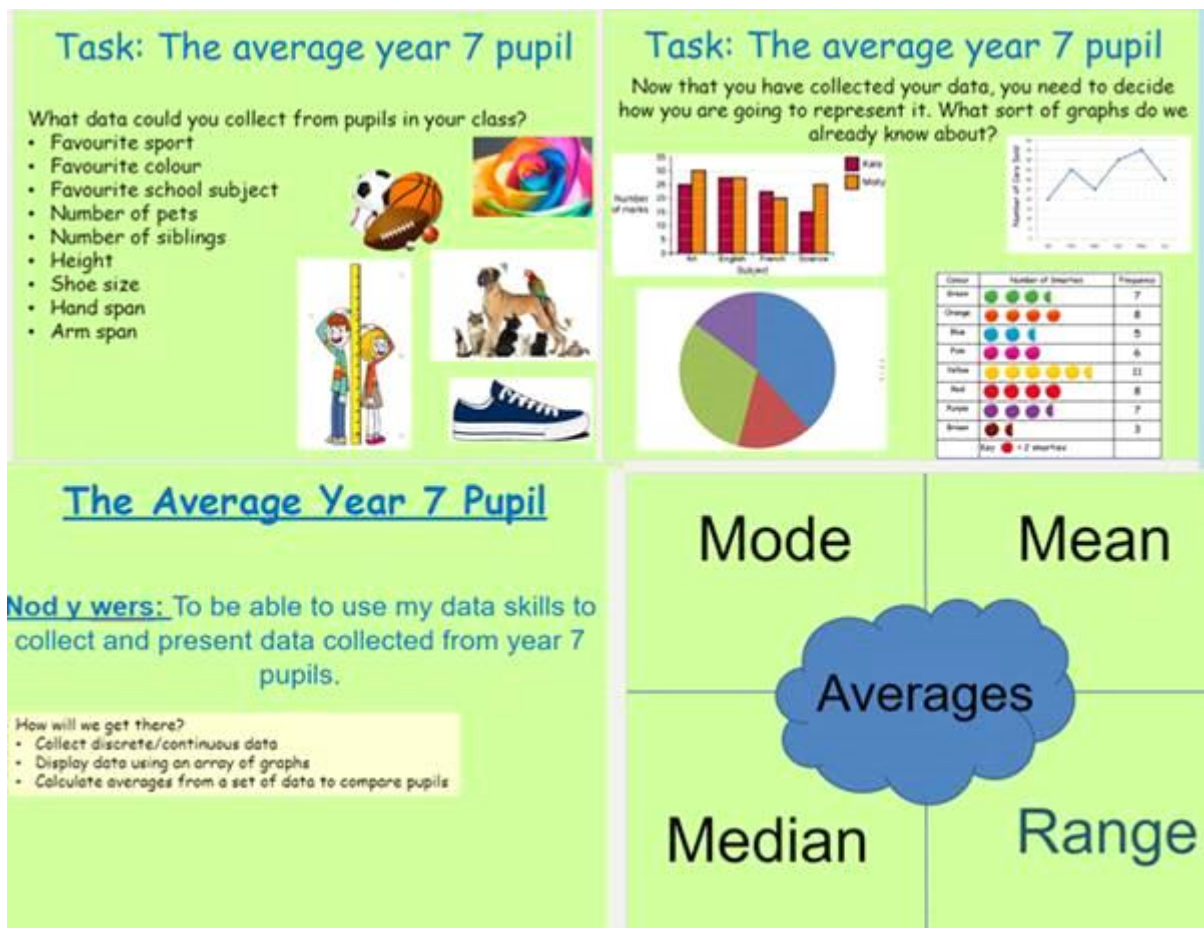


Task: Comparing countries

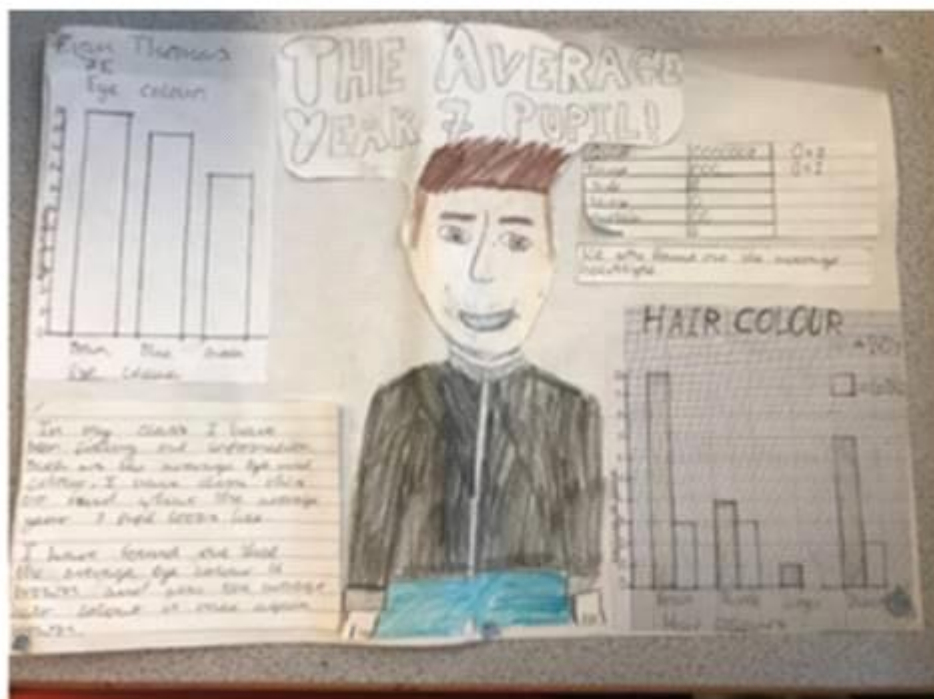
Your teacher will be assessing you on the following skills:

- Transfer mathematical skills across the curriculum in a variety of contexts and everyday situations. (At least 3 topics)
- Identify, measure or obtain required information to complete the task. (Use iPads or laptops for research)
- Construct a wide range of graphs and diagrams to represent discrete and continuous data. You can use hand drawing or print out graphs and diagrams obtained electronically. (Minimum of 1 graph, 1 diagram, and 2-3 table data)
- Interpret diagrams and graphs to compare sets of data.
- Group presentation explaining research process and outcomes.

8. Year 7 project was about creating a poster about averages using collecting data skills.



9. Similar to year 8, I reviewed year's Year 7 functional project. I made a few changes to this year's project instructions. The picture below shows the outcomes poster from last year.



10. The following picture shows my updates about Year 7's functional project. To employ

more literacy within the project I have asked them to write a group report about the process of creating the final poster with the consideration to some points that must be included. The new instruction integrated more numeracy, literacy and ICT skills.

Year 7 Report

Write a group report about how you create your poster. The report must include:

- Group (Names) as well as the following points:
 1. Group can transfer mathematical skills across the curriculum in a variety of contexts and everyday situations. (Use of previous delivered topics)
 2. Group can construct frequency tables for sets of data, grouped where appropriate, in equal class intervals.
 3. Group can collect data through designing a questionnaire.
 4. Group can construct a wide range of graphs and diagrams to represent data. (Excell can be used for creating graphs and tables)

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

Thursday, April 9, 2020 11:47 PM

Principle 3: Good teaching and learning sets tasks and select resources that build on previous knowledge and experience and engage interest

1. For this principle, two main examples will be explained with evidence about set tasks and select resources that build on previous knowledge and experience and engage interest. I used previous lesson starter for recap skills or warm up questions before starting the new lesson

Starter – Expanding Brackets

Ddyd Llun, 18 Tachwedd 2019

 <u>Red</u>	 <u>Amber</u>	 <u>Green</u>
1. $5(t+2)$	1. $2(8b+2)$	1. $2(8b+2)$
2. $6(k+1)$	2. $3(2j+4)$	2. $3(2j+4)$
3. $8(r-20)$	3. $7(2a-2)$	3. $7a(2a-2)$
4. $-3(u-2)$	4. $-3n(2n-8+6b)$	4. $-3b(2n-8+6b)$
5. $7(12-z)$	5. $2(8h+p-n)$	5. $2p(8h+p-n)$
	6. $Y^3(1-y)$	6. $2y(3z-4t+g)$
		7. $2tz(3t+4)$
		8. $4t^2(t+1)$

Starter – Algebra Recap

Questions

<u>Ddyd Mercher, 27 Tachwedd 2019</u>		
$x + y = 4$ $3x - 2y = 7$ $x=3$ $y=1$	$3a + 2b = 13$ $a - 2b = 3$ $a=4$ $b=9$	$-2a + 2b = 18$ $6a - b = 16$ $a=5$ $b=14$
$5a + 2b = 47$ $2a - b = 8$ $a=7$ $b=6$	$x - y = 2$ $2x + 5y = 18$ $x=4$ $y=2$	$2x + y = 9$ $3x - y = 1$ $x=2$ $y=5$

Plenary

11. (a) Write down 7168.8 correct to 3 significant figures.

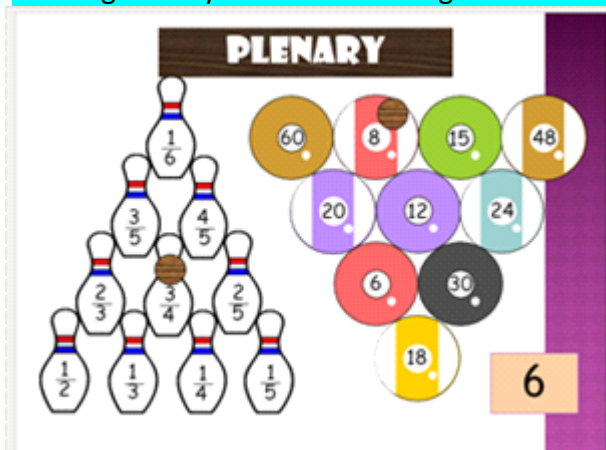
[1]

(b) Write down 0.04136 correct to 2 significant figures.

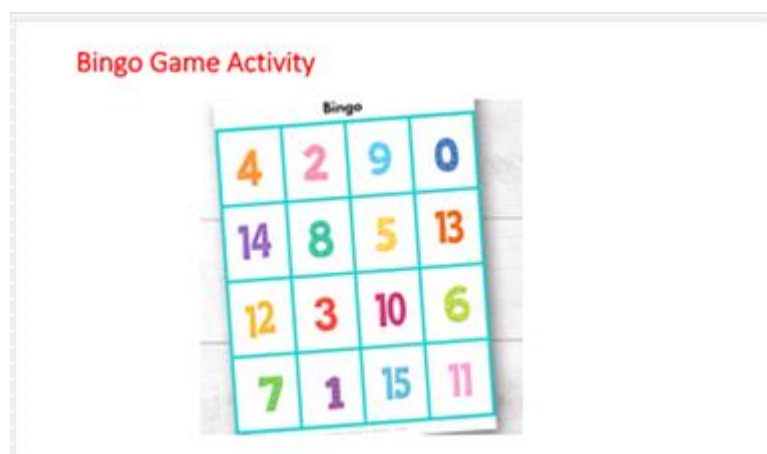
[1]

2. Here are some examples of Mathematics activities used as a plenary to encourage to encourage engagement and make maths an interesting. This is an examples of visual resources used with animated PowerPoint slides.

Bowling activity used in delivering a fraction lesson



Bingo activity used to improve the skill of math times tables



Right or Wrong? Used with delivering negative numbers lesson

Right or Wrong?

Is $4 + -1 = 3$?

That's right!



3. Here is an example showing differentiation in using questions for starter. The teacher can ask the students about how many boxes they can manage to solve. Differentiation can help in improving the interests of the underachiever and build a rapport with the learners in need of help.

Starter – Expanding Brackets

Ddyd Llun, 18 Tachwedd 2019

 **Red**

1. $5(t + 2)$
2. $6(k + 1)$
3. $8(r - 20)$
4. $-3(u - 2)$
5. $7(12 - z)$

 **Amber**

1. $2(8b + 2)$
2. $3(2j + 4)$
3. $7(2a - 2)$
4. $-3n(2n - 8 + 6b)$
5. $2(8h + p - n)$
6. $Y^3(1 - y)$

 **Green**

1. $2(8b + 2)$
2. $3(2j + 4)$
3. $7a(2a - 2)$
4. $-3b(2n - 8 + 6b)$
5. $2p(8h + p - n)$
6. $2y(3z - 4t + g)$
7. $2tz(3t + 4)$
8. $4t^2(t + 1)$

Critical reflection of progress made on the planning and implementation of three pedagogical principles

This report critically reflects on the planning and implementation of three pedagogical principles by Donaldson in (2015) for the new curriculum in Wales. The report uses my practical teaching of Mathematics in my school placement to examine these principles. Reflection on these principles was applied by using the Gibb's model of reflection as suggested by Gibbs in (1988). Although there were other models that I could have used, I felt that Gibbs' model separates the teacher's feelings from understanding a particular experience and was therefore best suited to my teaching and reflection.

The first principle is "Good teaching and learning means employing assessment for learning principles"

Pedagogy is a method and practice of teaching, including teaching style and theories. The pedagogy is the technique of how the teacher delivers the content to the class by using different techniques (Brownell and Tanner, 2012). There is a different perspective of the pedagogies in the teaching system. When a teacher plans a lesson, he or she goes through the different teaching techniques according to their experience and the context they teach. Choosing the appropriate pedagogy depends upon the audience that it is for differs in terms of age and academic disciplines.

Generally, assessment was defined by Beattie (1997) as an activity that includes measuring and evaluating teaching quality of teachers, and learners' outcomes. The concept of assessment has been changed by many researchers and educators such as Hattie (2003) who showed how assessment for learning (AFL) supports learning making understanding and knowledge as 'more visible'.

"Visible Learning means an enhanced role for teachers as they become evaluators of their own teaching. Visible Teaching and Learning occurs when teachers see learning through the eyes of students and help them become their own teachers" (Hattie, 2012).

During my school placement, I have adopted AFL strategies throughout my lessons as it is highly recommended by the Welsh government, especially the new view of the curriculum 2022 supported by Donaldson's four principles (2015).

In Successful Future by Donaldson, (2015), he recommends that pedagogy and assessment are linked together; this relationship is referred to as 'Assessment for Learning'. In my school placement, the maths department highly values this technique. Our school views Assessment for Learning as a formative assessment tool used to create a better understanding of learners, and also improve learning outcomes in the classroom. It involves observing the learners, identifying evidence of learning, and then analysing and evaluating the outcomes in order to decide on what action needed.

As a teacher this technique also helps when planning each future lesson. In this context, William, (2018) argued that Assessment for Learning focuses on intention rather than the action, by having a clear understanding of the purposes of assessment and our role in planning and assessing. By using AFL in class, this reinforces the process of learning by setting achievable goals and objectives.

There are three main elements to Assessment for Learning, first is the utilisation of the method in the school, which includes sharing the learning goals with pupils, so that they can identify the standards they are aiming for. Whilst researching the validity of the utilisation, I came across a research done by the National Council for Curriculum and Assessment

(NCCA) – Ireland in 2015. The research highlights the importance of sharing the learning objective or in other words, the success criteria with the learners. Also, sharing the learning objective provides the learners with tools they need to take more responsibility for their own learning and achieve greater learning independence, we need to communicate to them” (NCCA, 2018).

I apply this technique within my school by providing the students with the main aim of the lesson, the steps on how to achieve the objectives, and by allowing for learners’ discussion before I begin. I believe this technique helps the learners to be a self-motivated and have a sense of purpose.

A second element to Assessment for Learning that is the quality of questioning and discussion. This principle may help the learners improve their critical thinking skills (Estyn, 2018) while the teacher can observe and record pupils’ responses to plan the further step of learning (Assessment Reform Group, 2002). Moreover, Donaldson, (2015) recommended that written questioning techniques can be used to test pupils’ understanding which can direct them to the next step of learning.

The third main element of assessment for learning is constructive feedback. Constructivism is a strong theme in the education system, where learners construct their own understanding and knowledge of the world throughout experiences. Its effectiveness is judged when the results are evaluated by observing the reforms in the children’s performance. Constructive feedback specifically helps develop students’ capability to monitor, evaluate and regulate their own learning (Nicol, 2003). Feedback is described by Hattie (1999) as “the most powerful single moderator that enhances achievement” and it is a technique in which the student is forced to thought shower ideas and produce something new, rather than rote memorisation (Bada and Olusegun, 2015).

During my teaching practice, I have adopted the main elements of assessment for learning. Including the method recommended by Creemers and Kyriakides (2006) which allows pupils to think and respond by raising different types of questions. Furthermore, I adopt a variety of questioning techniques. Including questioning pupils by name rather than relying on students raising their hands to ensure that understand and are attending to the lesson. Another questioning technique could be to throw around a soft toy, so pupils have to catch it and answer the relevant question that. Another technique that I have used is to have pupils 'think-pair-share' or ask 'two before me' so they gain confidence before having to speak aloud, well as increasing the engagement and cooperation with their peers. An additional technique that I have used is to question a pupil then ask them to choose someone in the class and perhaps alternate boy followed by girl and so on.

I personally have observed that effective questioning has a positive impact by helping improve pupils’ critical thinking skills and raising their self-esteem. This has been achieved when I utilised a pupil’s correct answer to build an idea based on it, so that pupils can feel that they contribute to class discussions (Estyn, 2018). Although I found this application useful, I also think there are some important caveats; if questioning concentrates on competition or comparison between pupils, some student cases would focus on praise or getting teacher attention. This issue is argued by (Black and Wiliam, 1998) who state that “negative outcomes such as an obsessive focus on competition and the attendant fear of failure on the part of low achievers”. However, if one student responded with a wrong answer or even struggled to know the right answer, I would then identify the area that I need to re-explain to make the question clearer and make sure the student understood it.

Therefore, formative assessment may help low attainment pupils to achieve better results if it concentrates on specific problems with their work and providing them with a clear understanding on identifying where their weakness is and how to correct it (OECD, 2003).

The mathematics department at my placement school has developed a system for self-assessment and feedback to be utilised at the end of each lesson delivered. The self-assessment system is called RAG (red, amber, and green). This system is made up of a traffic light and each light represents the level of student understanding. For example, R represents students who are not able to meet the learning aim (Nod y wers shared at the start of the lesson), A represents that the student has a partial understanding, while G represents that the student is able to meet the learning aim. The RAG system is adapted as a quick tool to assess students' understanding, differentiate a student's ability or set, and finally helps the teachers to improve or revisit a particular topic. This is one method for self-evaluation and reflection on a pupil's own work, so that pupils take responsibility for what they learn (Donaldson, 2015).

I have applied this method through each lesson I taught during my PTE1 practice. For all KS3 classes with different abilities, within the RAG system there is also a question that relates to each level. This helps them to revisit their areas for development after assessing their own understanding. These questions are varied, some are problem solving questions which are also used to integrate literacy in Mathematic or other GCSE subjects. These questions are designed to push the students to a higher level and familiarise the students with exam type questions.

In relation to book marking, the evidence I used showed that the student self-assessed her understanding of the topic. Following the student's self-assessment, an after-class discussion between myself and the student occurred. This included the setting of homework. On questioning, the student felt that she had marked herself as an A, because she had taken a long time on some questions. As a teacher, I reflected on the fact that each learner progresses at different pace and style. I explained to the student about how to go from A to G, and I gave her additional questions at MyMaths to complete. The result was that this student went on to achieve a G in this topic. This technique showed the effectiveness of using the self-assessment followed by the teacher constructive feedback as the student result progressed significantly.

Donaldson (2015) recommended that Assessment for Learning be recorded, as this may enable teachers to keep track of learning for each pupil, as well as enabling the school to monitor, review and develop their future development plans.

Another evidence that matches this principle as applied to my placement school is peer-assessment. Through my PTE1 experience, within the Mathematics department the Low Stake Quiz was used as a daily review to for the students to see the topics that they need to improve upon, rather than the teacher telling them directly. During the quiz, the students attempted ten questions and once finished, they swapped books to review the quiz as a class. Finally, they would self-assess their work. I have encouraged this approach during my lessons, and I found this method effective and helpful as a daily review. This is supported by Rosenshine (2012), who states that "daily review is an important component of instruction. Review can help us strengthen the connections among the material we have learned." This helps me realise that a daily review can help consolidate student learning and minimise student mistakes, as well as a technique that helps the learners to transfer the numeracy and the mathematics skill from short term to long term memory.

Additionally, to meet the National Curriculum requirements to implement both formative and summative assessment styles, my placement school set a GCSE mock exam. Although mock exams seem to be result-driven, the mock exam in my school plays both a formative and a summative assessment. The assessment of and feedback from this mock exam is essential in supporting students to work towards a clear target for moving forward with more confidence for the final exam.

The second principle is: **‘Good teaching and learning regularly reinforces Cross-Curriculum Responsibilities, including literacy, numeracy and digital competence, and provides opportunities to practice them’.**

Donaldson’s review (2015) recommended the inclusion of literacy, numeracy and digital competence in a flexible way, suitable to the needs of individual learners as Cross Curriculum Responsibility for all teachers and educators, as these skills are essential for pupils to participate effectively in the present day. Priorities have already been set for literacy and numeracy within the new Welsh curriculum through the National Literacy and Numeracy Framework (LNF) and the Digital Competence Framework (DCF). These frameworks were revised in 2019 to check their reliability with the progression set out in the Curriculum for Wales 2022 guidance.

In order to achieve this, the mathematics department aimed to integrate literacy, numeracy, and digital competence throughout the scheme of work. Generally, in relation to literacy, the department usually allocates the starter of my lessons to literacy by providing pupils with the main aim of the lesson and how we will get there for a specific topic. Also, for a plenary, problem-solving questions or worded problems are sometimes used. During the plenary I used to ask the student to read the question before asking them to do it. Also, to link questions to relevant topics/ news that pupils are generally interested in. E.g. football, celebrities, Fortnite, etc. The use of literacy within a lesson can enhance students’ critical thinking and analysing skills. As this is a mathematics lesson, the mathematics and data analysing skills are a fundamental part of the lesson. It is essential that the children are given opportunities to continue to practise their numeracy to increase the depth of their understanding of numbers as with literacy, to fortify their skills and to apply these in different circumstances.

The other element to Cross-Curriculum which is also commonly implemented for learning and teaching at the school is Digital Competence, as recommended by Welsh Government, (2013). My lesson is normally delivered on PowerPoint with any extra explanations on the whiteboard, so ICT is applicable. The online homework is also done on MyMaths, which is a collaborative maths learning tool that provides complete curriculum coverage from Key Stage 1 to A Level. The website is owned and operated by Oxford University Press, who developed the site in 2011.

“MyMaths is currently used in over 80% of secondary schools in the UK as “MyMaths offers a wealth of resources that will help you deliver your teaching in the classroom and develop your students’ confidence and fluency in maths”. (MyMaths, n.d.). The students will have some lessons during the term to go the library and do the online homework either on computers or a laptop in addition to the homework that will be set on MyMaths by the teacher to do at home.

The school I did my first placement at required the pupils to use the Welsh language, and the school provides a wide variety of opportunities for pupils to develop their understanding of Welsh history and culture (Estyn, 2018). During my lessons, I employ Welsh in greetings and praise and set up my PowerPoint lesson with the aim of Welsh, for example sharing the objectives as (Nod y wers) and the date in Welsh as a school policy.

Moreover, to integrate the cross curricular responsibilities, the school will be off timetable from teaching the main curriculum and integrate a couple of weeks a year especially for key stage 3 to do different projects. The school’s aim throughout this week (called Future Week) is to maximise ‘the common integrity’ between and across learning areas, as recommended by Donaldson (2015) and by the Welsh government. The main purpose of this is to integrate literacy, numeracy and digital competency within the curriculum. I took part in school

activity week; I was involved in the year 9's project. The project was "Project Runaway", where the students were asked to design fashionable clothes using recycled material. The main objectives of this project are recycling materials and a sustainable environment. Every day students attend several taught lessons, workshops, and other activities that are related to the project main objectives. I volunteered to deliver the numeracy test on that day. The test includes analysis data. I was involved in picking up litter around the school, using this data to then plot a bar and pie chart. The numeracy test also included peers and self-assessment. Also, the students have to do a final presentation of their design with the aid of the computer to research and finally each group took part on the final presentation. This activity proves with the aid of ICT, the students were able to prepare a presentation and then deliver it. I can see that Future Week as successful week to implement 'Cross-Curriculum Responsibilities' in general, as it is set to make engagement and cooperation between the areas of learning, while there has been an emphasis on Literacy, Numeracy, and Digital Competence.

Furthermore, in my placement school, I have been asked to review the plan of Functional Projects for key stage 3. This project is integrated within the mathematics department to enforce the cross curricular responsibilities. I view previous year projects and added some comments on how to make it more interesting and encouraging group work. For example, a year 8 functional project where students are asked to create a poster about the world statistics. The poster will be about compare different countries of their choice, they will need to collect 3 different data to compare, for example population, hair colours, age etc. The project includes collecting the 3 different data, copying the information for each of the 3 pieces of data into a table and including it in the final post, displaying data using different graphs, and creating a poster. I conclude after delivering the functional project that this helps the students to develop their organisation, leadership, and oracy skills.

The literacy has been incorporated in Year 8 project, through a task which involves research to create a poster based on the statistical data to compare different countries. This task has provided pupils with more engagement to explore the topic in depth through research and reading in connection with personal identity and self-expression, as well as enhancing their ability to convert understanding of information into meaningful sentences, texts or paragraphs that can be used or revisit for communication and record (Donaldson, 2015).

Additionally, Literacy helps pupils in developing thinking skills across the curriculum, which is one of the fundamentals that is emphasised by the National Curriculum set by Welsh government (2008); it can also enable learners to gain deep understanding of the topics as well as being critical about evidence.

The third aspect principle is: **'Good teaching and learning sets tasks and selects resources that build on previous knowledge and experience and engage interest'**.

Good teaching leads to better performance and improved achievements of the children. The National Curriculum (2008) was set out to build on skills, knowledge and understanding in logical progression between learning stages (Welsh Government, 2008). The learning and development processes are described by Cantor et al., (2018) as the "development of the brain is an experience-dependent process". Any child development is improved by several connections such as their family, community, and classroom contexts. These results show that children have individual needs that also require differentiated instruction and support to enable ideal growth in competence, confidence, and motivation.

The main element that guarantees that any teacher can meet all learners' needs is the ability to provide a positive and secure environment. This can be done by preparing a high

quality, well planned lesson, and rewarding achievement at all levels.

During my PTE1 practice, I have adopted several strategies when planning and delivering my lessons. For instance, at the beginning of each lesson, a recap or warm up questions were given from a previous lesson as I believe it can help the learners to make the connections among the delivered material. This strategy, suggested by Rosenshine, (2012) states that “The review of previous learning can help us recall words, concepts, and procedure effortlessly and automatically when we need this material to solve a problem or to understand new material”. During the starter process, I usually give the students 5-8 questions from a previous lesson or a maths skill that needs to be revised. Additionally, I would ask a few recap questions to assess students' understanding of the topic. This strategy is also recommended by Rosenshine, (2012) who state, “Questioning allows a teacher to determine how well the material has been learned and whether there is a need for additional instruction”.

In relation to rewarding achievement at all levels, through my teaching practice I discovered it to be an effective method in gaining students' confidence, supporting learners' wellbeing and increasing students' engagement. For example, even if the student answers incorrectly I use supportive statements to encourage my student to rethink about the question in order to reach the right conclusion. Without this a student who gives the wrong answer might never engage again. This method is highlighted by Warner (2016), who states, “challenges which encourage risk without unduly punishing failure so they may experience the pleasure of resiliency and be enthused about trying again.”

This is in harmony with Pianta, La Paro and Hamre, (2008) who suggested that pupils' engagement can be maximised through this technique.

As I previously mentioned, providing a positive and safe environment helps in promoting high level engagement. I adopt several strategies in my classroom that help in encouraging a high level of collaboration, engagement and social skills. To increase the engagement of social skills I used several strategies. This includes, the use of a plenary as it allows the teacher to evaluate the whole class's results at once (Ní Chróinín, 2018).

I use a plenary with one or two questions that are linked to real-life examples. As an example of a plenary, If I was teaching Time topics, I would use a problem-solving question with a real time scenario, or If I was teaching Fractions, I would use currency.

Within my teaching I also find the use of class activities highly effective. This seems even more effective when teaching a lower ability class. Successful activity includes maths bingo, right or wrong, Maths cross words etc. This strategy supports the understanding, wellbeing, and learning outcomes. Yang (2015) argued in her book that “When educators fail to appreciate the importance of students' emotions, they fail to appreciate a critical force in students' learning,”.

Another method that I have found to be effective in my teaching is the use of visual resources and animated slides to engage pupils in their learning as independent and ambitious learners. For example, prior to teaching the lesson on Pythagoras Theorem, I present a YouTube video entitled Pythagorean Water Demo and with pre-prepared questions I am able to draw out student's discussion. I use questions such as “Can you see any relationship between the three sides of that triangle?”. My aim as a teacher is rather than telling them what Pythagoras theorem is, they are encouraged to engage with each other to reach the correct conclusion themselves.

Conclusion

The report uses my experiences during teaching placements to critically reflect on the progress made in planning and implementing assessment, cross-curricular learning and progression using tasks and resources. I feel that within my current teaching, I have understood and engaged with each of these pedagogical principles. During this assignment my in-depth research, particularly into three of the 12-principles recommended by Donaldson (2015), has enabled me to understand more fully what is required to be an effective teacher. It has had a profound effect on me as a teacher and reflective practitioner, enabling me to think more carefully about the effect my lessons will have on learners. In turn, this knowledge will enhance all aspects of my teaching when planning and delivering lessons; from the questioning techniques I select to the plenaries that I adapt more effectively. All of this will help my learners to be ambitious, capable, and independent learners.

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Thursday, April 9, 2020 11:51 PM

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