

Overview

Student Name: Natalia John

Student Number: 1905645

Assignment title: A portfolio which illustrates a critical reflection of progress made on the planning and implementation of three pedagogical principles.

Pathway: Secondary PGCE

One Drive link: https://uowtsd-my.sharepoint.com/:o:/g/personal/1905645_student_uwtsd_ac_uk/ElqkB7KEMzpKk8CPdqK6MFwBbKuRqluFAC33KcUBJ1itIQ?e=DdJJ17

Pedagogic Principle 1

Good teaching and learning means employing assessment for learning principles.

Homework

Rhodri is a red blood cell. Write a story describing Rhodri's journey around the body.

Success criteria:

- Path of blood described correctly
- Parts of the heart named correctly
- Blood vessels named correctly
- State if the blood is oxygenated or deoxygenated

Hello, my name is Rhodri. I am a red blood cell and my job is _____. I start my day in the right atrium. I leave the right atrium and travel to _____. From here I ...



Homework to test the understanding of the pupils in my year 8 class (Set 2). By writing the path of the blood in story form it was a good way to test their understanding.

To finish the lesson I had set a writing task of the correct path in their books so that they had enough information.

Whilst marking I could see those who didn't quite understand and I set further questions for them to answer.

Plenary	Ensure all have completed the final task, share answers with class. Set homework: path of the red blood cell.	Pupils to make a make a note of the correct path in their books and to stick in the worksheet.	Books
---------	---	--	-------

Quick fire!

Work in groups of 4

The team that answers all the questions first wins!



Example of a quick fire game with my year 8 class (Set 2).

I found this type of activity useful as the pupils seemed to engage and enjoy it.

I do question if it was the best method for assessing though as it was hard to keep complete control.

Chemical substances called _____ help break down food in our mouths.

When it reaches the _____ all food has all been broken down.

_____ is where you absorb the nutrients from the food and it goes into the blood stream.

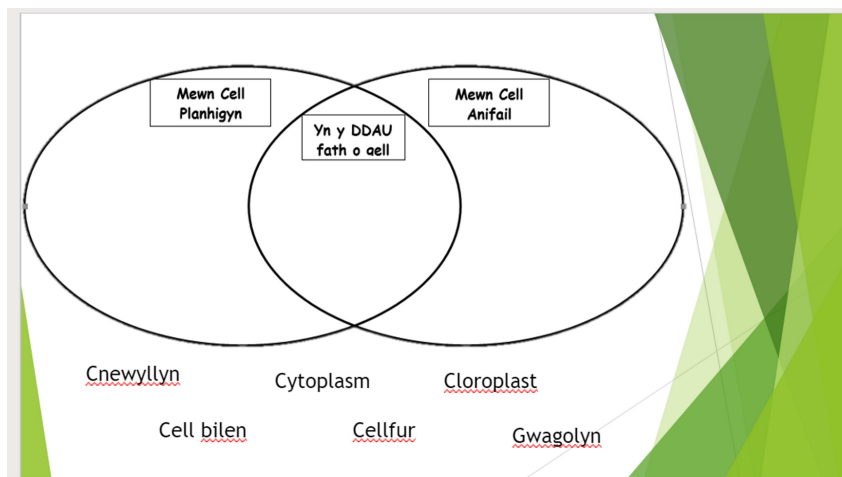
The questions that were used.

The _____ is like a washing machine where food that you've eaten is mixed with digestive juices.

When we swallow our food it travels from our mouth to our stomachs via the _____

Solid waste left moving in the large intestine is excreted through the _____

Teaching & Core Learning	Part 1: Discuss digestive system. Part 2: Detective work. Part 3: Quick-fire round of questions. Groups of four.	Part 1: Pupils to engage with questioning. Part 2: Pupils must walk around the room to read the posters and fill in the worksheet and diagram. Part 3: Using their notes to answer, first team to complete all questions wins.	Books, powerpoint, Printouts: Digestion diagram, worksheet & questions. HS = Bags must be tucked away under the table.
--------------------------	---	--	---



This was an easy method to see if my year 7 pupils understood what they had just learnt and a way for them to process the information correctly.

By providing learning support around the room I could see if the pupils understood the concept of what animal and plant cells have in common. From this I could either provide further explanation or move on.

In this case I could move on to the next topic.

Sesiwn Gloi	Pwysleisio ar y ffaith bod y rhannau'r dwy celloedd yn tebyg.	Disgyblion i greu diagram Venn i ddangos hyn.	Pwynt pwer a llyfrau.
-------------	---	---	-----------------------

Pedagogic Principle 2

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

Examples of numeracy

If your heart beats at an average rate of **70 times per minute**, workout how many heartbeats are there...

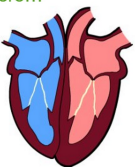
...in one hour?
 $70 \times 60 = \mathbf{4,200}$

...in one day?
 $4,200 \times 24 = \mathbf{100,800}$

...in one year?
 $100,800 \times 365 = \mathbf{36,792,000}$

...in 70 years?
 $36,792,000 \times 70 = \mathbf{2,575,440,000}$

Extension Task: How many songs can you think of that have the word "heart" in the title?



Year 8 (Set 2)

This was a good task for developing numeracy and problem solving skills. Reflecting on the lesson, I would use it as a plenary as it hindered the flow of the lesson as some of the pupils needed more assistance than others.

Teaching & Core Learning	Part 1: Show the video and explain the worksheet. Part 2: Discuss the role of the heart while referring to previous lessons and provide learning assistance with second task. Part 3: Briefly explain the path of the blood, give pupils 2 minutes to remember and then set next task.	1. Pupils to watch video and fill out the questions on the worksheet, to be shared with the class. Then prepare books for lesson. 2. In pairs, pupils to work out the number of heartbeats and share with class. 3. Pupils to sort cards into the correct order.	Print outs; Heart (Video) worksheet. Path of the blood sort cards.
--------------------------	--	--	--

Measuring your pulse

When you exercise, your heart rate increases to deliver more oxygen to the cells in your body. Now we are going to look at this effect using heart monitors.

Activity	Pulse Rate (bpm)									Mean for Increase
	Resting			After Activity			Increase			
	1	2	3	1	2	3	1	2	3	
Sitting										
Walking										
Jogging										

Year 8 (Set 2)

This was an effective task and all students were able to complete it. Some of the heart rate monitors I used were not fully functional but this was fixed when average results were shared.

I developed this further in the next lesson by having the pupils create a graph, I let them decide what graph (Bar/scatter/etc) to use and questioned them further when they selected the wrong one.

Teaching & Core Learning	Part 1: Discuss heart rate. Part 2: Measure pulse and construct table. Part 3: Heart dissection.	1. Pupils to think of an answer to the question above and discuss with class. 2. Pupils measure their heart rate and fill in the table, calculating correct values. 3. Pupils to observe the heart dissection.	Books, powerpoint.
--------------------------	--	--	--------------------

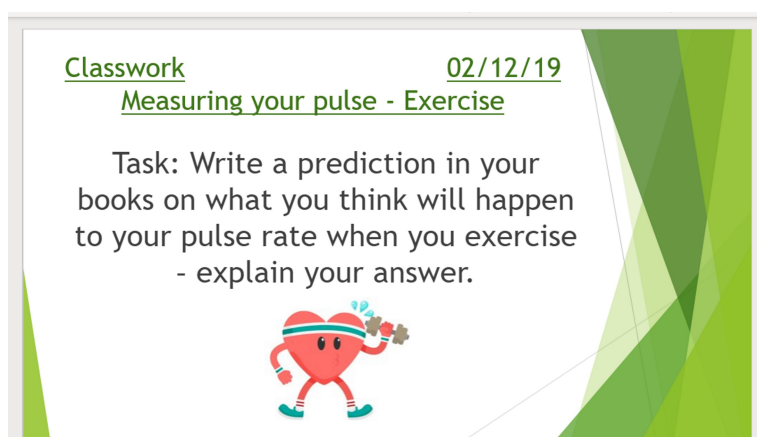
Examples of Literacy



Year 7

I found this was the most effective way of ending a lesson and ended up using it quite a lot. Pupils were enthusiastic and picked up on the important key words from the lesson, improving their literacy skills.

Plenary	Ensure all have completed the drawing and worksheet correctly.	Discuss practice as a class, showing drawings and complete a 'tweet' summarising the lesson.	Books
---------	--	--	-------



Year 8 (Set 2)

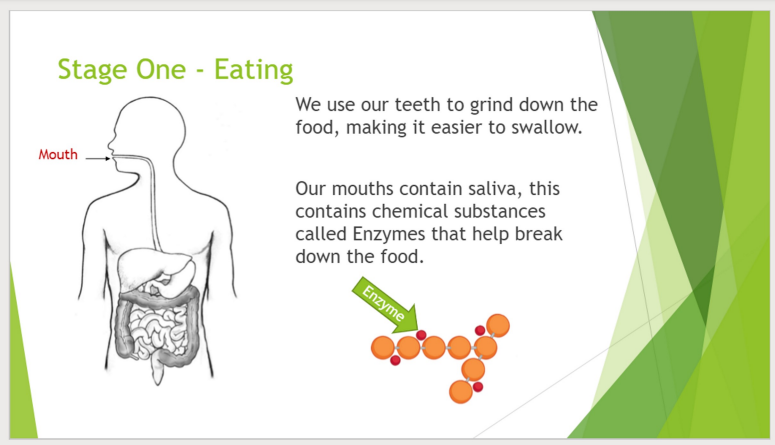
This was effective as pupils had to think independently and apply previous knowledge of what they learnt in lessons leading up to it.

It was also a good way for the pupils to assess their findings at the end of the lesson and compare it to what they first predicted.

Opening phase (with links to prior learning)	Ensure pupils start to focus on the lesson.	Starter task – Make a prediction in your books on what you think is going to happen to your heart rate with exercise and why?	Books, Powerpoint
---	---	---	-------------------

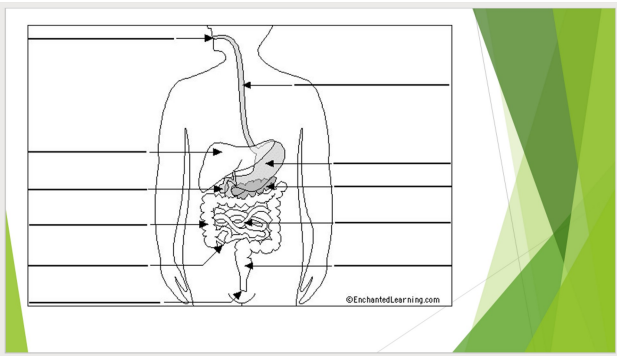
Pedagogic Principle 3

Good teaching and learning means employing a blend of approaches including those that promote problem solving, creative and critical thinking.



Year 8 (Set 2)

An example of one of the information pages I had scattered around the room.



Worksheet 1: that pupils had to fill using the information pages.

PART	FUNCTION
Mouth	
	The tube that our food travels down to our stomachs.
	Produces insulin and important enzymes to break down food.
Stomach	
	Filters the blood.
Gallbladder	
Small intestine	
	2 theories: Acts as a storehouse for good bacteria or it's a left over organ humans don't use anymore.
	Temporary storage site for faeces.
Anus	

Worksheet 2: pupils had to read the information and put into a condensed sentence.

Teaching & Core Learning	Part 1: Discuss digestive system. Part 2: Detective work. Part 3: Quick-fire round of questions. Groups of four.	Part 1: Pupils to engage with questioning. Part 2: Pupils must walk around the room to read the posters and fill in the worksheet and diagram. Part 3: Using their notes to answer, first team to complete all questions wins.	Books, powerpoint, Printouts: Digestion diagram, worksheet & questions. HS = Bags must be tucked away under the table.
--------------------------	---	--	---

Quick fire!

Work in groups of 4

The team that answers all the questions first wins!



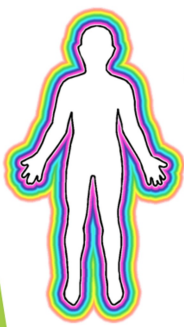
Year 8 (Set 2)

It was a good way to get them to use the key words, I also ensured that the spelling was correct as they had not long had the information given to them.

The only problem I had was that it was a bit hard to keep control of the class because of the excitement, as a consequence of this I found it hard to keep track of the questions

Chemical substances called _____ help break down food in our mouths.	When it reaches the _____ all food has all been broken down.	_____ is where you absorb the nutrients from the food and it goes into the blood stream.
The _____ is like a washing machine where food that you've eaten is mixed with digestive juices.	When we swallow our food it travels from our mouth to our stomachs via the _____	Solid waste left moving in the large intestine is excreted through the _____

Teaching & Core Learning	Part 1: Discuss digestive system. Part 2: Detective work. Part 3: Quick-fire round of questions. Groups of four.	Part 1: Pupils to engage with questioning. Part 2: Pupils must walk around the room to read the posters and fill in the worksheet and diagram. Part 3: Using their notes to answer, first team to complete all questions wins.	Books, powerpoint, Printouts: Digestion diagram, worksheet & questions. HS = Bags must be tucked away under the table.



Ble mae organau y corff dynol?

Mae angen un ohonoch i wisgo ffedog ac mae angen i'ch partner benderfynu ble ar eich corff mae'r organau yma:

calon, ysgyfaint, afu, stumog, aren, coludd

Fydd angen i'ch partner labelu ar y ffedog lleoliad pob organ.

Year 7

This is an example of the students learning from each other following a demonstration and discussion by myself.

I then had pupils peer-assess by sharing with the class and questioning further.

Addysgu a Dysgu Craidd	Rhan 1: Ffedog organau - Gofyn y disgyblion am yr enwau, a beth maen nhw yn meddwl yw'r swydd. Disgyblion yn gweithio mewn paruau i ddarlunio'r organau. Rhan 2: Dangos fideo byr ynglŷn â'r organau pwysig a'u swyddogaeth.	Rhan 1: Disgyblion yn labeli lle mae'r organau yn y corff ac yn rhoi marc allan o 6 i'w gilydd. Rhannu'r marciau efo'r dosbarth. Rhan 2: Disgyblion i greu tabl a dadansoddi'r wybodaeth a gwelwn yn y fideo. 5 funud i rannu atebion efo'i gilydd ac wedyn y dosbarth.	Ffedog organau, ffedog gwyn, fideo: BBC bitesize, llyfrau.

Critical Reflection

Context of Professional teaching Experience and focus of the writing

It is well known among teachers that pupils will be the main driving force behind the new curriculum and the importance that new learning experiences will have on their personal growth and development to become confident and successful individuals (Welsh Government, 2015). It should be noted that Donaldson's work on the pedagogical principles isn't a guide on what teaching approaches should be taken to achieve this, but to help teachers, new and old, gain a better understanding of how their decisions in the classroom can affect their pupils. To elaborate on this, how they can tailor their teaching of a subject to best suit their pupils' needs (Donaldson, 2015). My professional teaching experience has allowed me to try different approaches and test their effectiveness in the classroom. The focus of this writing will be to connect what I have experienced with literature in order to gain a better understanding of effective teaching and learning.

Literature Review

In 2015, Donaldson explains that the success of the new curriculum will depend on what happens in the classroom. Applying the 12 pedagogic principles will provide relevant connections to the four curriculum purposes and create a successful learning environment. Previous work by the Welsh Government (2010) made connections to several fundamental learning principles for the development of pedagogy in Wales. Some of these principles were; Skills and knowledge must be transferred both within the school and in the wider world; Challenge and interest can lead to motivation; and that all participation is valued. Donaldson refers to these principles in his report and states that overall approach is like that of his 12 pedagogical principles. So, how and why is it so important for Teachers to engage with these 12 principles?

The General Teaching Council for Scotland (2019) states that Teachers need to engage with professional learning to 'stimulate their thinking and professional knowledge to ensure that their practice is critically informed and current'. In 2007, OECD summarized that initial education cannot provide the knowledge and skills required for the role and that professional development needs to be continuous. The ambitions for the new curriculum can only be realized by effective teaching and learning which must be developed by continually developing as a Teacher. Impact Wales (2018) has provided support for this by simplifying methods of implementing that which was put forward by Donaldson in his report. With regards to pedagogy, it describes that the best way to implement the 12 pedagogical principles is to think of their use in the classroom as a cycle. First you identify your pupil's greatest needs. Secondly, these needs must be matched with the most appropriate pedagogical approach. The third and final stage of the cycle will be to assess the impact of the teaching approach through measuring the pupils' progress. The teaching approach can then be developed and repeated as necessary as the needs of the pupil's change. This proves the importance of having these principles in place as they provide a successful platform to help teachers improve their understanding and implementation of effective teaching practice.

A report conducted by OCED (2005) compared teaching policies in 25 different countries around the world over the course of 2 years, 2002-2004. The United Kingdom was one of the 25 countries included in this study. They found that student learning is influenced by many factors, some of which were directly related to a teacher's skills, knowledge, attitudes and practice. The report went on to draw three broad conclusions on the variation in student learning. The first was what students brought to school, this including their abilities, attitudes and factors relating to family and surrounding community. The second was that factors to do with teachers and teaching also had an effect, such as pay and school policy. Which ties into the last and most prominent conclusion, teacher quality. Research has shown that although there is a positive relationship between teacher quality and student performance, there was a point of agreement among the various studies in each country that there are some teacher characteristics that are harder to measure but can be vital to student learning. These included creating effective learning environments, the ability to convey

ideas in clear and convincing ways and to be enthusiastic and creative. These characteristics provide substantial evidence on how important effective teaching and learning is and is reflected in the principles outlined by Donaldson (2015), for example 'Good teaching means employing a blend of approaches including those that promote problem solving, creative and critical thinking'.

Hobbiss (2018) argued that there is a problem with assuming that the theory of learning favours a pedagogical approach. Teachers are encouraged to design learning environments where students, using constructivist pedagogy, learn for themselves with little to no guidance. This places the onus on the individual student to build their own understanding of the world. He believes that this leap from learning theory to pedagogy is not justified and can be counterproductive. In addition to this, an article by Macleod and Golby (2003) suggests that due to result of external pressures on teachers which push them to standardised teaching. For example, the pressures on them to improve literacy and numeracy which militate against teachers' own ideas on the quality of learning and hinders the ability to reflect deeply enough on their teaching approaches to have meaningful transformative experiences. Although this has improved since 2003, there is a danger that teachers who have been in the profession for some time will be unable to change the habits of routine they have become accustomed too which will affect their teaching and thus their students learning.

The 3 pedagogical principles under consideration are; Good teaching and learning means employing assessment for learning principles; Good teaching regularly reinforces cross-curricular responsibilities; and Good teaching and learning means employing a blend of approaches including those that promote problem solving, creative and critical thinking. Each of these principles have equal importance on creating a successful learning environment but they each provide something important that is required in order to develop learners with regards to the 4 purposes of the new curriculum.

Good teaching and learning means employing assessment for learning principles.

Assessment for learning provides practitioners with an insight to the effectiveness of teaching methods, having this information allows us to give meaningful feedback to pupils and adapt our teaching to meet the needs of each pupil individually (Donaldson, 2015). Black and Wiliam (1998) noted that the giving of marks has overshadowed the giving of useful advice, and thus the learning function. If not used correctly, pupils will not see the benefit of assessment and will believe that they cannot improve. To create the correct culture, Black and Wiliam suggest that Teachers are clear in what they want the student to achieve, how it will be assessed and to ensure that they give appropriate feedback to facilitate pupil development. They must also ensure that they don't compare pupils in their class according to their ability.

Good teaching regularly reinforces cross-curricular responsibilities.

Cross-Curriculum Responsibilities include Literacy, numeracy and digital competence. Donaldson (2015) describes that the main challenge for implementing these responsibilities will be to ensure they their application is more authentic rather than becoming just an add-on. This is apparent when implementing digital technologies in the classroom as they can be costly and have not yet been proven to be as efficient when compared to more traditional classroom learning contexts (Cambridge Assessment International Education 2017). The use of a wide range of techniques that are appropriate will help pupils develop multiple skills for multiple learning objectives (Smith 2016). As stated previously, these responsibilities can be an added pressure on Teachers and requires careful planning to ensure it is appropriate for the lesson.

Effective practice of this being implemented in schools can be seen in multiple Estyn reports. Ty'n y Wern primary school (Estyn, 2016) provided various projects which gave pupils opportunities to develop their literacy, numeracy and ICT skills. The curriculum was broad and balanced with many stimulating learning experiences, all to support pupil progression. The report stated that it was a highly effective practice that let pupils use and apply these core skills in purposeful ways. Another report by Estyn (2015) on Haberdasher's Monmouth School for Girls found that introducing cross-curricular skills-based activities programme developed pupils' core learning skills as well as allowing them to become more independent learners. Pupils would successfully transfer and apply skills in different settings. One example of this was the implementation of the 'learning to learn' for key stage 3 year 7 pupils to help with the transition from primary to secondary, by helping them to

develop their Literacy and Numeracy skills.

Good teaching and learning means employing a blend of approaches including those that promote problem solving, creative and critical thinking.

In order to successfully implement this principle, Teachers must provide challenging and meaningful tasks that allow pupils to develop their ability to critically evaluate information, make connections and be able to transfer their skills to new situations to solve complex problems in a creative way (Donaldson, 2015). These skills not only prepare pupils for real life but also develops their skills to perform tasks in the classroom to a higher level. Padgett (2012) states that the key features of creative and critical thinkers show awareness in what they are questioning, they are actively open minded and can provide original opinions. He goes on to explain that a teacher must have awareness of these features in their own pupils and to constantly evaluate what is working for both the learner and the teacher.

An article by Guido (2016) discusses the many advantages of providing problem-based learning. These include the development of long-term knowledge retention where Teachers can reinforce the understanding of a subject, and the ability to use a diversity of instruction types to improve critical thinking. The disadvantages of these types of tasks are related to the individual, for example, some pupils may feel disengaged and discouraged if they do not understand or they lack the prerequisite knowledge because they missed previous lessons. These factors must be accounted for when lesson planning.

Conclusions about progress

Good teaching and learning means employing assessment for learning principles.

I felt that I used varied methods of assessment successfully. The homework task that I set on 'The path of the blood' allowed me to test whether the learning was effective or not. Most pupils displayed adequate knowledge relating to the subject. In order to give appropriate feedback, I used the method implemented by the science department at my placement school, which was to give 2 positive points and one further question. Using this I was able to give pupils who had answered well an extra prompt to read further and for pupils who struggled I was able to question them on the structure to improve their understanding of the subject. Also, as seen in the example, I gave the students success criteria, so they knew what they had to do in order to complete the task well. The successful pupils were the ones who followed the success criteria (Black and Williams, 1998).

In the second example I used a game called 'Quick fire' to assess what the pupils had learnt in the lesson. Pupils had to work as a team to produce answers to 6 different questions, the first team to complete all 6 would win. Pupils seemed to enjoy this task, but I found it difficult to keep track of their development as there was too much excitement. I do believe that I can further develop the idea into a whole class effective method of assessment, that is to see whether there is enough understanding of a certain subject before moving on. Although it is not the best method for assessment as it is difficult to see individual development, it still coincides with one of Donaldson's (2015) principles of 'Good teaching and learning sets tasks and resources that build on previous knowledge and experience and engage interest.'

For my year 7 class I set a simple task of sorting the information they just learnt on cell parts into 3 different categories: plant cell, animal cell or present in both. By providing learning assistance, I was able to assess the understanding that each pupil had individually, this was an effective method of providing instant and informative feedback to them on how they could improve (Black and Williams, 1998). I could either question them to prompt them to build on their knowledge or I could take a step back and explain the concept to them in a way that is appropriate to that individual.

Good teaching regularly reinforces cross-curricular responsibilities.

Overall, I found that the techniques I used helped develop multiple skills such as Literacy and Numeracy as discussed by Smith (2016). But I did find it difficult to incorporate digital competency in my lessons effectively. In the first example the pupils had to complete a task relating to the average heartbeats in a human lifetime. Although all did develop their numeracy

skills, I found that it not as effective as it could have been as some pupils found the task difficult and were not able to complete it in time. To further develop the idea, I will improve my lesson planning to allow more time to complete the task so that I can provide further learning assistance for those pupils. I found that setting tasks with creating tables and graphs were more suited to my year 8 class as more pupils were able to complete the tasks and to develop their Literacy and Numeracy skills successfully.

Another task I set for pupils was to create a 'tweet' summarising the lesson whilst 'hash tagging' the key words. This was an effective way of improving Literacy at the end of the lesson, I could also use it to assess what the pupils had learnt from that lesson. The last example was a task I set for the pupils to write a prediction on what they thought happens to their pulse rate when they exercise. It was an effective starter task as the pupils had to recall previous knowledge. By comparing this prediction to their findings, they further developed their critical thinking skills. I found that it was effective to use a range of interesting tasks for pupils to improve their skills, by keeping them engaged they were readily completing the tasks and enjoying doing so. This is further evidenced by the effective practices of the school's reports published by Estyn (2015, 2016).

Good teaching and learning means employing a blend of approaches including those that promote problem solving, creative and critical thinking.

The first example was a task I set for my year 8 pupils to do some of their own detective work, I had placed information sheets around the room, and they had to fill in missing information in two work sheets. I found that the students really enjoyed this, and it was an effective way to develop their problem solving and critical thinking skills as they had to find the information independently (Guido, 2016). The second example of using 'quick-fire' was a way for pupils to develop their critical thinking skills as there was a time-constraint on providing the answers. I also ensured that the spelling was correct for each answer for pupils to develop their Literacy skills. The last example allowed the pupils to develop their creative and critical thinking skills by applying what they'd learnt previously (Padget, 2012). This was also an example of the students learning from each other following a demonstration and discussion by myself using peer-assessment.

To conclude, I found that all 3 of Donaldson's pedagogical principles under consideration interrelate in some way. An example of this was when the pupils had to create a 'tweet', improving their literacy skills and giving me the ability to assess what they had learnt in the lesson. In truth, in order to be a successful teacher, one must be able to successfully implement and blend all 12 of the pedagogical principles across their teaching. By doing this they can ensure that their pupils receive a well-rounded and enjoyable education.

Recommendations for further development

For further professional development, I will continue to develop my ideas and teaching approaches whilst referring to all 12 pedagogical principles. I can do this by continually reflecting on the successes or failures of the approaches I've used and how to develop them for my pupils. I will also do more to incorporate digital competence into my lessons in order to reinforce Cross-Curriculum Responsibilities to help pupils develop multiple skills for multiple learning objectives (Smith 2016). I can do this by researching effective methods of digital media in a classroom setting. As stated previously by the General teaching Council for Scotland (2019), teachers need to engage with professional learning to 'stimulate their thinking and professional knowledge to ensure that their practice is critically informed and current' thus I must continually develop my effective learning practices to better myself as a Teacher.

References

- Black, P. and Wiliam, D. (1998). *Inside the black box*. London: School of Education, King's College London.
- Cambridge Assessment International Education (2017). *Digital technologies in the classroom*. Available at: <https://www.cambridgeinternational.org/Images/271191-digital-technologies-in-the-classroom.pdf> (Accessed: 01/01/20)
- Donaldson, G. (2015). *Successful Futures: Independent Review of Curriculum and Assessment Arrangements in Wales*. The Welsh Government: Cardiff.
- Estyn. (2015). *Improving pupils' skills across the curriculum*. Available at: <https://www.estyn.gov.wales/effective-practice/improving-pupils%E2%80%99skills-across-curriculum> (Accessed 01/01/19)
- Estyn. (2016). *Cross-Curricular themes that develop key skills*. Estyn. Available at <https://www.estyn.gov.wales/effective-practice/cross-curricular-themes-develop-pupils%E2%80%99key-skills> (Accessed 01/01/19)
- Guido, M. (2016). *5 Advantages and Disadvantages of Problem-Based Learning*. Available at: <https://www.prodigygame.com/blog/advantages-disadvantages-problem-based-learning/> (Accessed: 01/01/2020)
- Hattie, J. (2009). *Visible learning: A Synthesis of Over 800 Meta-analyses relating to Achievement*. Routledge: London, New York.
- Hobbiss, M. (2018). *Constructivism is a theory of learning, not a theory of pedagogy: Neuroscience explains why this is important*. Available at: <https://npjsciencecommunity.nature.com/users/33200-mike-hobbiss/posts/41828-constructivism-is-a-theory-of-learning-not-a-theory-of-pedagogy-neuroscience-explains-why-this-is-important> (Accessed 29/12/19)
- Impact Wales (2018). *Donaldson's 12 pedagogical principles and what you should do with them*. Available at: <https://www.impact.wales/wp-content/uploads/2018/01/12-Pedagogical-Principles-1.pdf> (Accessed 28/12/19)
- Macleod, F. Golby, M. (2003). *Theories of Learning and Pedagogy: issues for teacher development*. Teacher Development, Volume 7, Number 3, 2003.
- OCED (2014), *Improving Schools in Wales: An OECD Perspective*. OECD Publishing: Paris. Available at: <http://www.oecd.org/education/improving-schools-in-Wales.pdf> (Accessed 29/12/19)
- OECD (2005), *Teachers Matter Education and Training Policy: Attracting, Developing and retaining effective teachers*, OECD Publishing: Paris. Available at: <https://www.oecd.org/education/school/34990905.pdf> (Accessed 29/12/19)
- OECD (2007), *Improving the quality of teacher education*. OECD Publishing: Paris.
- OECD (2008), *Innovating to Learn, Learning to Innovate*. OECD Publishing: Paris. Available at: <https://doi.org/10.1787/9789264047983-en>. (Accessed 29/12/19)
- Padget, S. (2012). *Creativity and Critical thinking for teachers in training*. Routledge: London.
- Savage, J. (2011). *Cross-Curricular teaching and learning in the secondary school*. Routledge: London, New York.
- Smith, F. (2016). *Cross-Curricular Teaching Advantages & Disadvantages*. Available at: <https://study.com/academy/lesson/cross-curricular-teaching-advantages-disadvantages.html> (Accessed 01/01/19)

The General Teaching Council for Scotland (2019). *What is professional learning?* Available at: <https://www.gtcs.org.uk/professional-update/what-is-professional-learning.aspx> (Accessed 29/12/19)

Welsh Government (2015). *Successful futures*. Available at: <https://gov.wales/sites/default/files/publications/2018-03/successful-futures-a-summary-of-professor-graham-donaldsons-report.pdf> (Accessed 23/12/19)

Welsh Government. (2010). *Why develop thinking and assessment for learning in the classroom?* Available at: <https://hwb.gov.wales/storage/2d2b99cd-5431-421e-ac8b-8608fe0edf05/why-develop-thinking-and-assessment-for-learning-in-the-classroom.pdf> (Accessed 29/12/19)