

Prepare a portfolio (as though you were sharing with a mentor or student colleagues) which illustrates a critical reflection of progress made on the planning and implementation of three pedagogical principles.

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Link to the OneDrive notebook:	https://uowtsd-my.sharepoint.com/:o:/g/personal/1902994_student_uwtsd_ac_uk/EgEu9xS5BqhJslXxyEGspABLEime9UkdODYsLGw0TGo9w?e=4ayQIJ

CCR1: Literacy

Cysylltiadau ystyrlon â'r Cyfrifoldebau trawsgwricwlaidd	- Llythrennedd: Ymarfer sgiliau ymchwilio a sillafu gan ymchwilio ar y we; adnewyddu'r sgil o gymryd nodiadau effeithiol (18.11 a 19.11); - Cymhwysedd Digidol: Datblygu sgiliau ymchwilio ar y we gan ddefnyddio geiriau allweddol er mwyn dod o hyd i wybodaeth berthnasol ac addas.
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Fig. CCR1.1: A screenshot of one section of my lesson plan where I outlined the CCR (Literacy) connection for the lesson aims and objectives.

"Literacy: Practice research skills and spelling by researching on the internet; refreshing effective note-taking skills (18.11 and 19.11)"

National Literacy Framework:

(READING) Year 5: Response and Analysis -- "gather and organise information and ideas from different sources"

(READING) Year 5: Comprehension -- "identify and explore ideas and information that interest them." **AND** "show understanding of main ideas and significant details in texts, e.g. mindmapping showing hierarchy of ideas, flowchart identifying a process"

(READING) Year 6: Locating, selecting and using information -- "use internet searches carefully, deciding which sources to read and believe."

(WRITING) Year 5: Writing Accurately: Language -- "use appropriate vocabulary, including subject-specific words and phrases." **AND** "use language appropriate to writing, including standard forms of English"

(WRITING) Year 4: Organising ideas and information: Meaning, purposes, readers: "gather ideas to plan writing"

Fig. CCR1.2: A series of excerpts from the National Literacy Framework that connect with my integration of the Literacy CCR.

Year Group: 5 and 6

Group(s): Whole class lesson.

Area of Learning Experience (AoLE): Humanities (Thematic lesson).

Focus of the lesson: Using internet research to map record-breaking disastrous weather/natural disasters around the world.

Developing literacy across the curriculum is a vital aspect outlined in Donaldson's (2015) review. It, along with numeracy and digital competence, should, along with the Four Purposes, influence every lesson taught and should be integrated meaningfully and tactically. In my own planning, I referred to the National Literacy Framework (2013) frequently to ensure that I was giving the students the best opportunities to develop the skills they need to function in their later lives.

In this particular lesson on mapping record-breaking disastrous weather/natural disasters, the year 5/6 students were required to research set questions and paraphrase the information into their own understanding. Thus, developing several aspects of literacy was a smooth and meaningful process. Literacy and research integrate on several layers, for to research is to comprehend what needs to be researched. Research in literacy education suggests that developing literacy skills is most effective when reading (comprehension) is developed within contexts children find most engaging, i.e. what they want to learn or what interests them (Hall & Harding, 2003; Shanahan et al., 2010). Using this information, it was vital to plan a lesson that would engage the students' interests whilst covertly developing their literacy. To do this, I designed a lesson that required the students to *investigate*, and thus I aptly named the students 'Geographical Detectives', or 'Ditectifs Daearyddol'. This small detail in my implementation of literacy greatly enhanced the lesson and encouraged the students to engage with their 'detective' (research and reading) skills.

Several aspects of literacy were developed here (see Fig. CCR1.2), most of which are categorised under Reading. Developing Oracy and Writing (in accordance with the skills under the Framework) were not relevant to the aims and objectives of the lesson; however, if I were to repeat the lesson in my future career, developing the writing and oral skills through introducing a variety of sentence structures (writing) or conducting a whole-class discussion at the end of the lesson to evaluate their work and their contributions to the lesson (oracy) might enhance the lesson further and encourage the children to develop their confidence in their work and in themselves.

CCR2: Numeracy

Cysylltiadau ystyrlon
â'r Cyfrifoldebau
trawsgwricwlaidd

Llythrennedd: Ymarfer y termau 'soled', 'hylif' a 'nwy' ac
adnabod/dysgu geiriau penodol am y priodweddau wahanol.

Rhifedd: Dysgu am ddiagramau Venn a sut i'w ddefnyddio ar gyfer
ddidoli wybodaeth.

Fig. CCR2.1: A
screenshot of my
cross-curricular
responsibilities from a
'science' lesson I
prepared during my
final weeks in
PTE1B1.

"Numeracy: Learn about Venn Diagrams and how to use them to
sort information"

National Numeracy Framework 2008:

**Year 3/4: Using Data Skills -- "represent data using Venn and Carroll
diagrams"**

National Numeracy Framework 2022:

**Progression Step 2: Using Data Skills -- "represent data using Venn and
Carroll diagrams"**

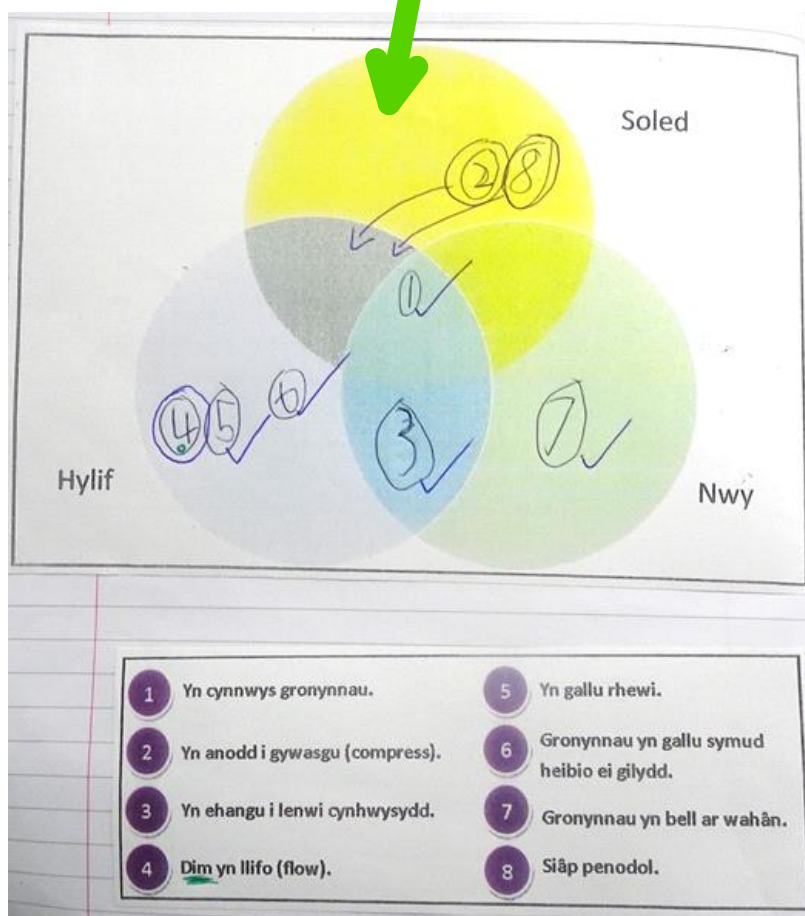


Fig. CCR2.2: An example of student work using the Venn diagram.

Year Group: 5 and 6

Group(s): Both year groups taught individually as separate lessons due to Christmas concert rehearsals.

Area of Learning Experience (AoLE): Science and Technology.

Focus of the lesson: Learning the properties of different states of matter and sorting them into a Venn diagram.

This lesson was a continuation of a previous lesson wherein I refreshed the students' memories on the different states of matter (solid, liquid and gas). The students, building on the knowledge gained from the previous lesson(s), were tasked with sorting the properties listed in the above picture into a Venn diagram that represented the differences and similarities between the states. A second task I designed would have encouraged them, depending on their level of ability, to explain the data represented in the diagram in a few sentences or bullet points; however, due to time constraints, this task was not possible and it was equally impossible to return to the task at a later date due to the constraining rehearsal schedule.

I felt that using Venn diagrams was appropriate for this type of lesson as it allowed the students to practice their sorting skills and refresh their understanding of the properties of solids, liquids and gasses, which will be essential for the scientific project they will conduct in my absence. Venn diagrams are mentioned in WAG's National Literacy and Numeracy Framework for both 2008 and 2022. However, under the 2008 framework, as noted above, the teaching of Venn diagrams falls under the Years 3 and 4 column. If the class had been of a higher ability, this lesson might not have been appropriate as they might not have been adequately challenged. However, due to the class's lower ability, my mentor and I agreed that Venn diagrams were appropriate to further their understanding of the lesson focus.

After researching the use of Venn diagrams cross-curricularly, I now realise that this Venn diagram, while originating in numerical purposes and outlined in the National Numeracy Framework, might not be an accurate representation of my application of numeracy across the curriculum. An article by Kimmins and Winters (2015) notes that Venn diagrams have contrasting definitions across different subject areas. They highlight that numerical Venn diagrams sort objects into categories while 'language arts' Venn diagrams sort *characteristics* into categories to compare and contrast different aspects (p.487). Knowing this after the fact, I realise that this Venn diagram falls under the second type of Venn diagram; however, in *explaining* Venn diagrams to the class (many of whom had forgotten how to use the diagrams or plainly claimed they had never learned about them), I used what Kimmins and Winters label the 'mathematical usage' of Venn diagrams. To enhance my explanation, I used two interactive websites that used shapes [\[1\]](#) [\[2\]](#) and numbers [\[3\]](#) to demonstrate the usage of these diagrams. While this activity did not occupy the main task, I used these examples for a considerable amount of time during the presentation to ensure that the students understood the core purpose of Venn diagrams. I believe these numerical examples, despite differing according to Kimmins and Wintere's, greatly aided the students in what is now understood as a non-numerical task.

I am disappointed that my application of Venn diagrams is not technically numerical, but in future, I will ensure that I understand the difference between numerical and non-numerical Venn diagrams and attempt to employ numeracy meaningfully and effectively across other Areas of Learning Experience, provided the opportunity.

CCR3: Digital Competence/Digital Literacy

Cysylltiadau ystyrion â'r Cyfrifoldebau trawsgwricwlaidd	- Llythrennedd: Ymarfer sgiliau ymchwilio a sillafu gan ymchwilio ar y we; adnewyddu'r sgil o gymryd nodiadau effeithiol (18.11 a 19.11): - Cymhwysedd Digidol: Datblygu sgiliau ymchwilio ar y we gan ddefnyddio geiriau allweddol er mwyn dod o hyd i wybodaeth berthnasol ac addas.
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Fig. CCR3.1: An extract from my lesson plan highlighting the development of Digital Competency within my lesson.

"Digital Competence: Developing internet research skills by using key words to discover relevant and appropriate information"



Fig. CCR3.2: An example of student work (collaborative task between 2-3 students).

Year Group(s): 5 and 6

Group(s): Whole class lesson.

Area of Learning Experience (AoLE): Humanities (Thematic lesson)

Focus of the lesson: Using internet research to map record-breaking disastrous weather/natural disasters around the world.

Digital Competence at my partner school was difficult to develop in full accordance with the WAG's 2008 and 2022 proposed framework due to the lack of ICT resources available to the students at once (i.e. no Chromebooks, overbalanced ratios of iPads to students per class (1:3)) and the lack of need to develop the skills in the lessons given to me by my mentor to teach. Regardless, I persevered and planned a thematic lesson within the Humanities that developed the students' research skills. In this lesson, the students were given a sheet of potential questions (see Fig. CCR3.3 below).

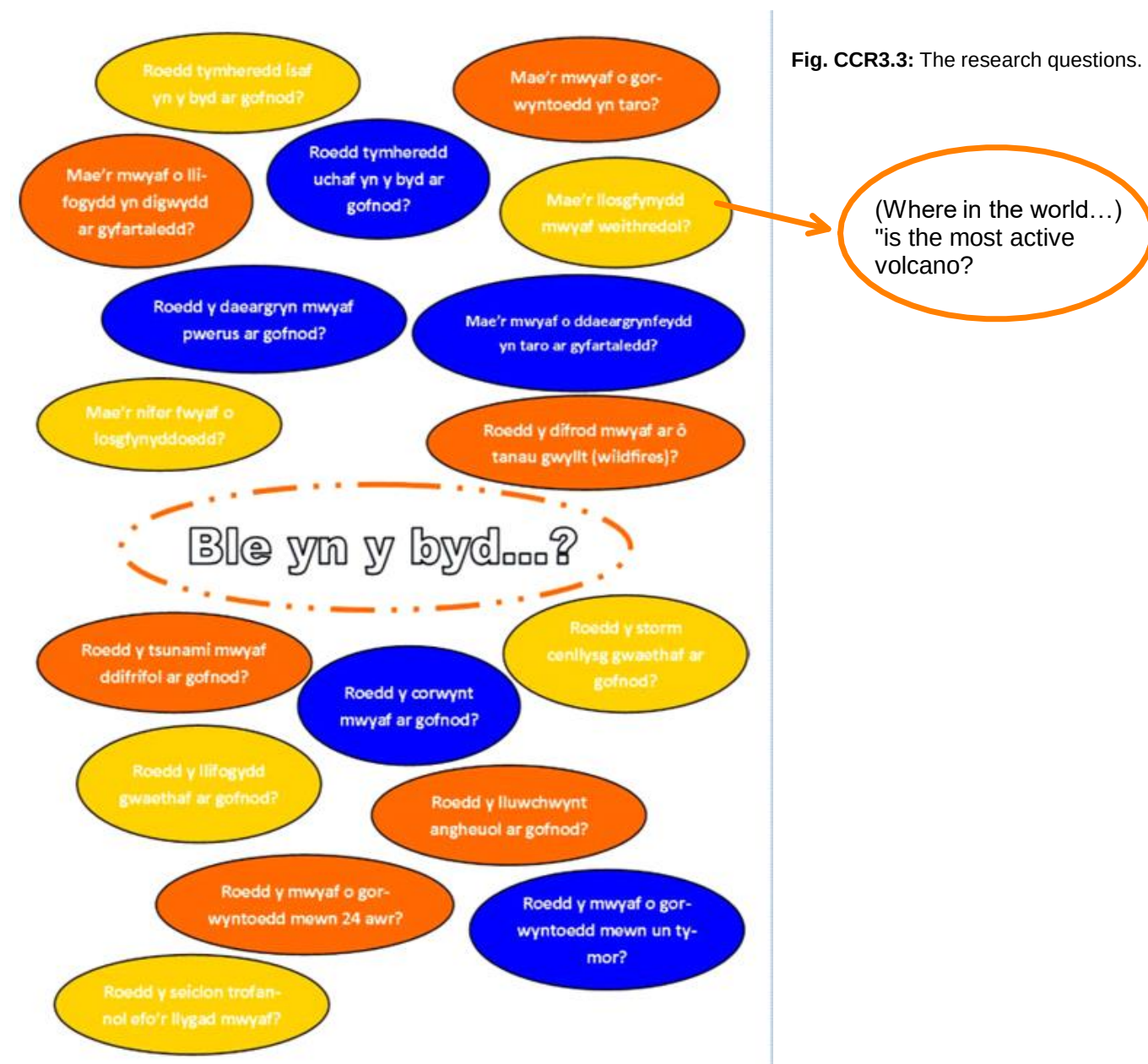


Fig. CCR3.3: The research questions.

Students were advised to work in groups of 2-3 and pick the 3-5 questions that most interested them (with the number of questions assigned to some groups depending on their ability). A series of translated key words was provided on the large interactive screen at the front of the class. The students developed their research skills and summarised their discovered facts into short sentences which they then mapped on the A3 blank maps provided.

Research is becoming a fundamental aspect of everyday life and it is important to ensure that students develop the skills necessary to conduct web-based research correctly (Hague and Payton, 2010; Karpati, 2011). Having consulted the 2008 Digital Competence Framework, I understand that this basic skill is located under the Year 3/4 columns, two years beneath my year 5/6 class's hypothetical levels. Regardless, due to

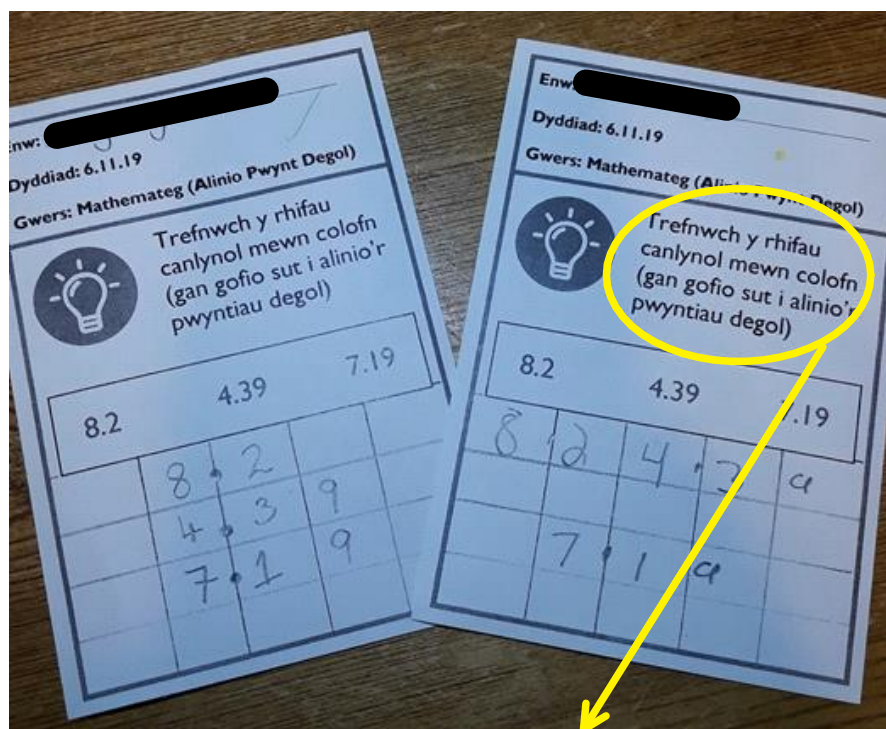
the nature of the task and the general ability of the whole class, the refreshment of basic research skills seemed appropriate during implementation.

I could have further developed the skill under the year 5 branch by asking them to consider the reliability of their sources and perhaps even cite at least once source, which is an aspect I will consider in my future practice, provided the plentiful availability of resources.

AFL1: Exit Tickets

STUDENT A

STUDENT B



(LEFT) Fig. AFL1.1: Images of the exit tickets used in the Mathematics lesson

Year Group: 5/6

Group(s):
Pentagon/Hecksagon (Low-Mid Ability)

Area of Learning Experience (AoLE):
Mathematics and Numeracy

Focus of the lesson:
Aligning the Decimal Point correctly.

"Arrange the following numbers in a column (remember how to align the decimal points")

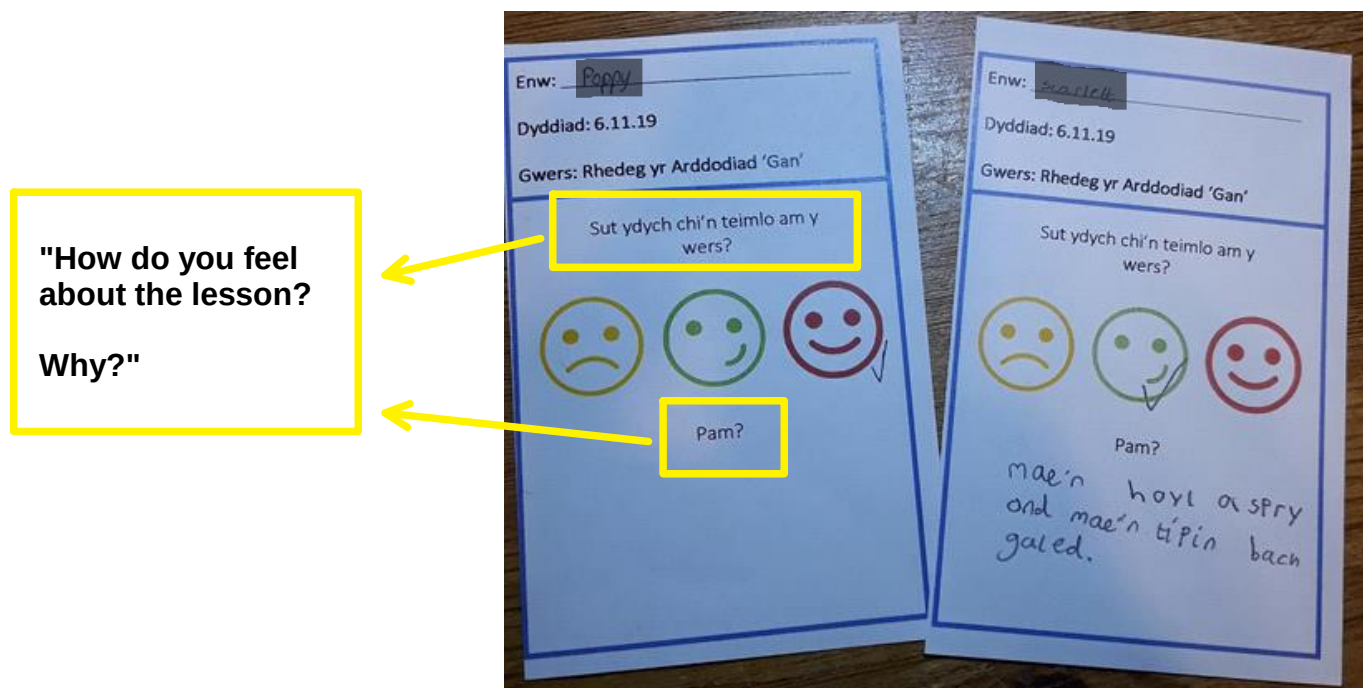
The focus of this lesson was ensuring that the lower ability groups understood the importance of correctly aligning the decimal points when writing numbers in columns for addition and subtraction. A professional discussion with the class teacher and scanning the groups' books revealed that the students in these groups did not understand that decimal numbers need to be organised correctly in columns so that the decimal points aligned correctly and that each number can be added to the number within its place value.

By the end of the lesson, the students demonstrated a general understanding of this importance, but I decided to generate an exit ticket to briefly test their newly learned knowledge. Exit tickets, notes Leigh (2012) are effective in providing the teacher with an understanding of how the students have interpreted the classwork. In the slip above, I asked the students to repeat the classwork in brief: arrange the decimals into a column correctly. Student A (left) did so correctly, while Student B (right) repeated the mistake they made during the body of the lesson. This ticket, therefore, informed me that this student needed to revise this skill at a later date.

However, some students neglected to return their exit tickets, or did so without completing them. Without this, it was difficult to interpret if they had completed the work independently or copied from another student (as one student admitted).

STUDENT C

STUDENT D



(ABOVE) Fig. AFL1.2: Images of the exit tickets used in the Focus Task.

Year Group: 5/6

Group(s): No specific groups. Students were sent to the group by the class teacher based on

Area of Learning Experience (AoLE): Language, Literacy and Communication (Focus Task) (Welsh language)

Focus of the lesson/task: Elongating the preposition 'Gan' in Welsh.

During this task, I sat with two small groups of students consecutively (3-4 in each group), during which I refreshed their knowledge of Welsh grammar, specifically elongating the preposition 'gan' ("rhedeg yr arddodiad"). The students in this class struggle with elongating this preposition correctly and knowing and refining this skill is essential to their work, especially in their year group, and so I was tasked by my mentor to prepare a small focus task on developing this aspect.

I decided to use exit tickets at the end of this task to gain feedback on their feelings towards the lesson. This exit ticket differs from AFL1.1. In this instance, the exit ticket informed me of the students' attitudes towards what they had learned rather than what they had learned from the specific aspect of the task; here the ticket offered quick and easy encouragement to students to reflect on their learning (Leigh, 2012; Marzano, 2012; Owen & Sarles, 2012). Refining this skill will be key throughout the year as some will be moving on to comprehensive school in 2020, and so I wanted to know if there was anything that could be improved if the lesson was taught again. While the first student ticked the smiling face confidently and didn't give specific feedback on the lesson, the second student ticked the uncertain face and gave honest feedback: **"It's very fun but a little difficult"**.

These exit tickets in AFL1.2 represent two different levels of ability within one year group (Year 5) and I feel they reflect the level of work they produced at the end of the task. This ticket was

informative as it helped me understand that Student D (right) found the work challenging and thus the topic would need to be revisited to ensure her further progress. However, as indicated by Student C's (left) slip, the ticket wasn't as effective for others as they did not provide an answer as to *why* they felt happy about the lesson. Because of this, I decided against using exit tickets again and moved onto other forms of assessment, such as closing plenary dialogue and quick-fire questions, as I felt these were more productive and informative, instantaneous and engaging, in collecting information.

Overall, if I were to use exit slips again, I think I will need to adapt them to ensure:

- a.** that the feedback I receive is useful in locating how I could adapt the lesson and teach it again to ensure understanding in all, not only the few; and
- b.** that the question asked by the exit ticket is simple to understand for some and more challenging for others, deploying some differentiation depending on the student and gradually increasing the challenge as the weeks progress.

AFL2 Example 2: Checklist and Success Criteria

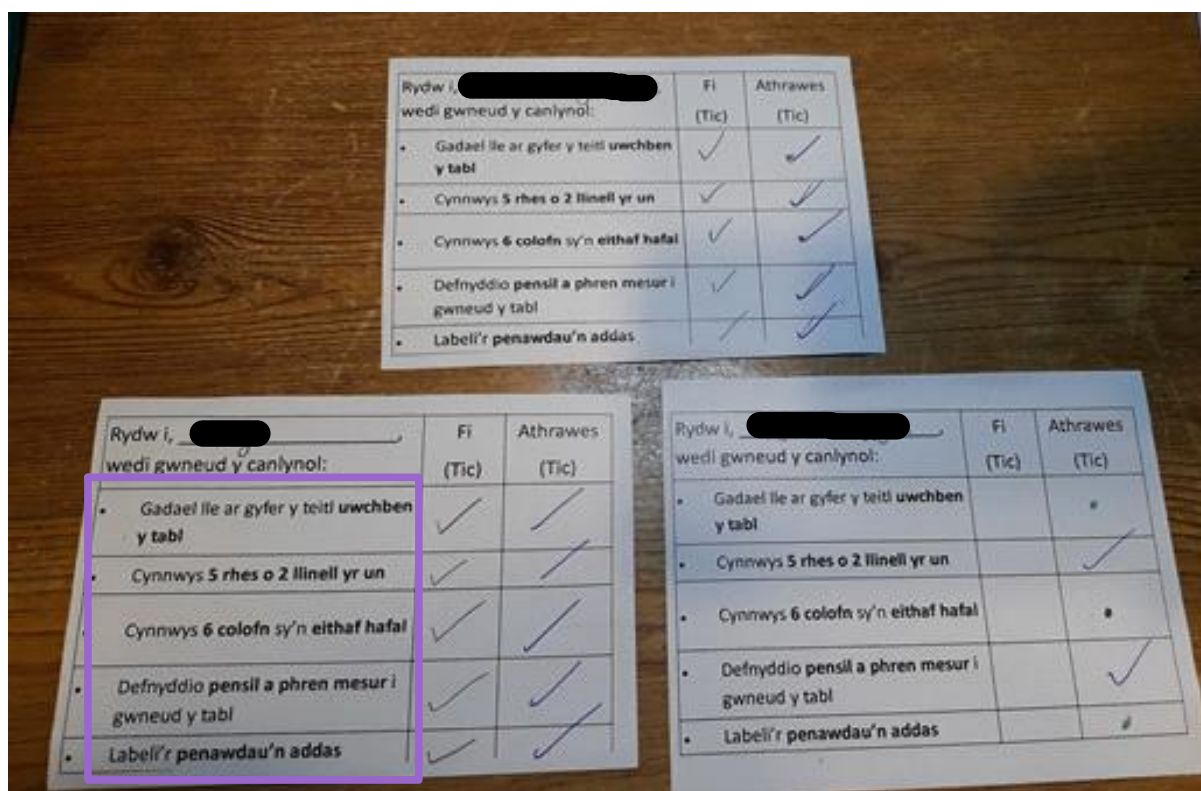


Fig. AFL2.1: Image of the checklist used in the Science and Technology lesson.

- Leave room for the title **above the table**
- Include **5 rows of 2 lines each**
- **Include 6 columns** that are **somewhat equal**
- Label the **headings** appropriately

Year: 5/6

Group(s): Whole class lesson.

Area of Learning Experience (AoLE): Science and Technology

Focus of the lesson/task: Designing data tables

This is the AfL technique I used in my first lesson during PTE1. I was assigned a 'science' lesson wherein I taught the students about data tables and how to design them. After their first task of labelling the features of a data table (data, cell, etc.), the children were tasked with designing their own table that would be appropriate for a data handling task that they were to complete with my mentor (pre-planned before my arrival). Their data table required several specific elements and thus I decided to design a checklist that outlined the basic requirements for their tables, or a 'success criteria' that was based on the presentation. The checklist was the cornerstone of the main task and I received this idea from another member of staff who was rolling out

checklists in his class to promote self-assessment and teacher feedback. I felt that a checklist was appropriate to use to ensure that all requirements were aptly met by the end of the lesson and that the students understood what was expected of their work.

Providing the students with the success criteria for the lesson was important in ensuring all features of the desired table were included and WAG (2010b) suggests that "the criteria must be transparent to learners" (p.27). Similarly, a study conducted by Siraj-Blatchford et al. (2011) suggests that students should be aware of and understand the objectives and share these ideals with the teacher, thus these goals must be clear to the student(s). I aimed to make the criteria transparent by discussing the demands of the table with them during the presentation, presenting them with a situation and opening a discussion with them where we unpacked the situation into the features needed to successfully design their table.

While the checklist carefully reflects the success criteria discussed in the presentation, WAG (2010b) also emphasises that the success criteria "is understood and used most effectively by learners when they have been involved in its construction" (p.27). I now realise that I could have enhanced the students' understanding of the requirements and avoided any confusion or rejection of the checklist had we constructed the criteria together and had displayed this co-constructed checklist at the front of the class for all to see, rather than providing individual checklists; or, I could have adapted the checklist from a method of self-assessment to self and peer assessment, becoming what Wiliam (2017) calls a 'pre-flight checklist', a method wherein accountability for an incomplete checklist falls on the student's 'work-buddy', a technique, Wiliam suggests, encourages the students to take their buddy roles seriously.

In the future, I will consider these alternative checklist methods to enhance the quality of formative assessment I am implementing.

AFL3: Questioning

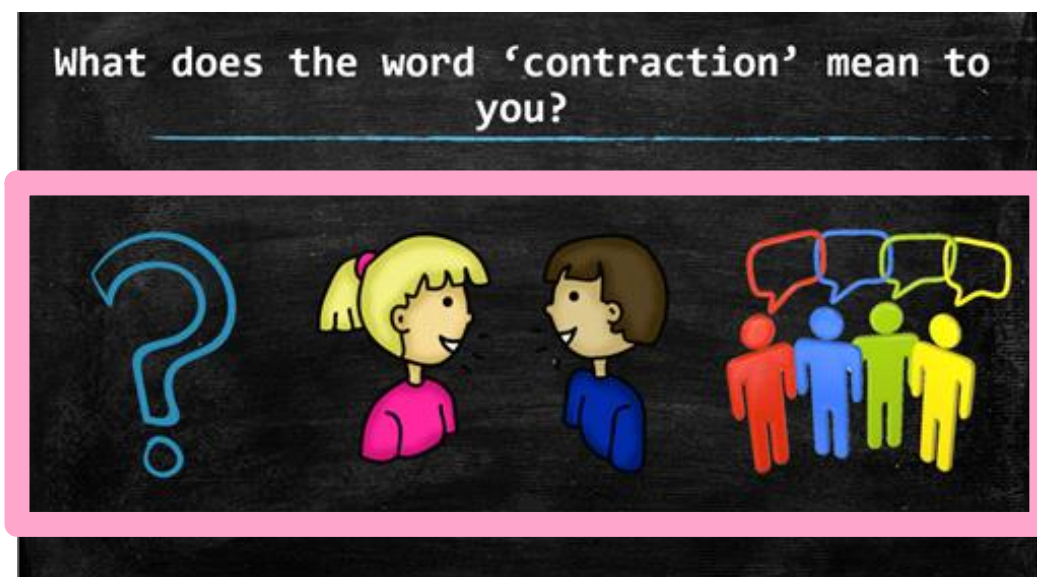


Fig. AFL3.1: A screenshot of my 'Contractions' PowerPoint wherein I encouraged the students to engage in the Think-Pair-Share technique to ponder the question on the slide.

Technique: Think-Pair-Share

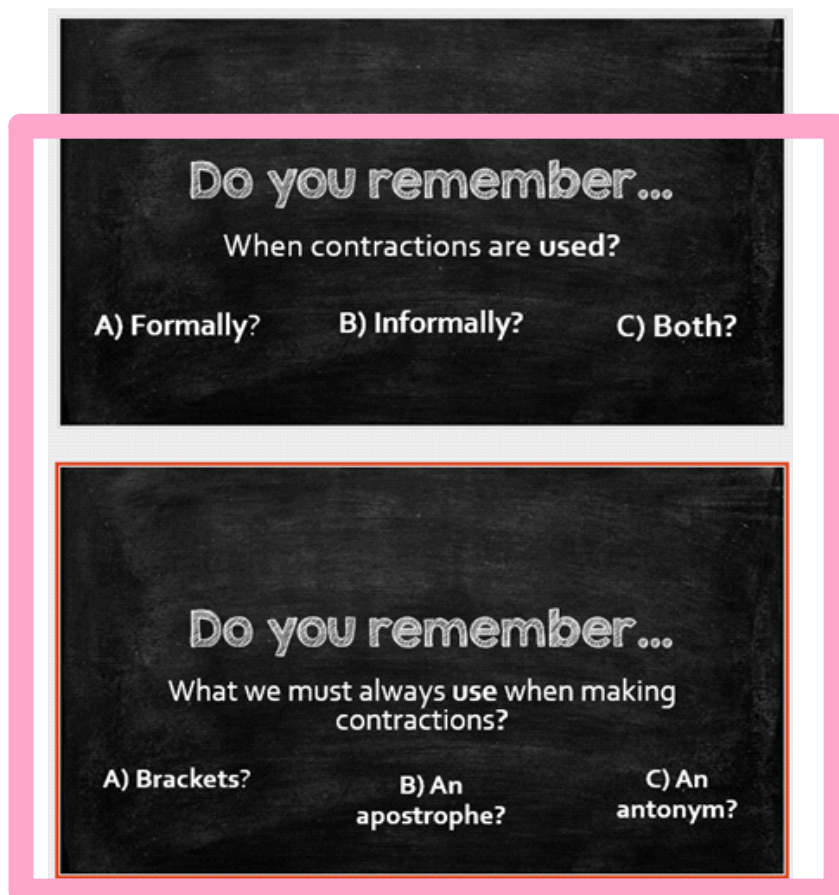
(RIGHT) Fig. AFL3.2: A screenshot of my 'Contractions' PowerPoint wherein I quizzed the students on the knowledge they learned in prior learning and during the presentation. The students answered via small white boards using the **Show Me** technique (Lemov, 2015).

Year Group(s): 5 and 6

Group(s): Whole class lesson.

Area of Learning Experience (AoLE): Language, Literacy and Communication (English)

Focus of the lesson/task:
Recognising and creating contractions.



Technique: Quiz

Asking the right questions is necessary in education. At the beginning of this lesson, I challenged the students to think about what the word 'contraction' meant (Fig. AFL3.1). For this short activity, I employed the 'think-pair-share' technique (William and Leahy, 2015, p.73-4). I learned of this technique during a university lecture early on in the module and decided it was effective for this activity as I felt that generating a discussion amongst the students would allow them to consider answers from a range

of perspectives and allowed me to address any common misconceptions within the students' learning, a characteristic of effective teaching according to Estyn (2014) and vital in improving student learning according to Engelmann and Huntoon (2011), thus transforming the lesson from a teacher-led lesson into an engaging, whole-class discussion.

In this lesson, it was also important that the students understand a) the correct form of language in which one should use contractions, and b) the type of punctuation used when making contractions, and I decided to target their understanding of this before and after the presentation and at the end of the lesson with a plenary quiz. All-Student Response systems are generally used to identify whether enough time has been spent on a topic (Wiliam and Leahy, 2015), and because this this lesson was designed to build on the students' prior learning (they had touched on contractions as a feature of informal language before the half-term break), using quizzes like this and Kahoot in later lessons were useful. Repeating these questions in an altered fashion at the end of the lesson allowed me to see if students had improved their knowledge of contractions and overall I am pleased with the progress they made.

While questioning in education should attempt to develop students' higher-order thinking skills, these questioning techniques were appropriate for the type of feedback I wanted in-action.

PSCCT1: Problem Solving

TASG

Gan ddefnyddio'r darn papur yma a
thâp gludiog yn unig, crëwch y
gadwyn bapur hiraf.

Mae gennych **20 munud**.

DIM OND Y DEUNYDDIAU YMA
SYDD GENNYCH.

Fig. PSCCT1.1: One of the posted tasks within the class.

"Using only this piece of paper and sticky tape, create the longest paper chain."

You have 20 minutes.

You only have these materials."



Fig. PSCCT1.2: A group of students engaging with the task.



Fig. PSCCT1.3: One group's finished product.

Year Group(s): 5 and 6

Group(s): Whole class 'workshop'.

Area of Learning Experience (AoLE): Science and Technology (STEM)

Focus of the lesson: STEM workshop with an 'engineering' focus.

Garton (2007) summarises a study that regards problem solving as a cognitive activity or task that encourages one to find a solution (p.4) and draws from their own 1993 piece regarding problem solving in two definitions: 1) as a child's general act of thinking and learning, and 2) a task (or more) that children are encouraged to solve. In this lesson, I used Garton's broad definition and designed a STEM 'workshop' that encouraged the year 5/6 students to work as groups to find solutions to specific STEM problems appropriate for students at primary level. I decided to use a STEM workshop to promote problem solving as a way of both expanding my own variety of teaching as well as ensuring that the demands of 21st century education, such as problem-based learning and creative problem-solving (Cooper and Heaverlo, 2013), are developed and enhanced.

After researching STEM in the primary classroom, I decided to select a variety of quick STEM tasks that could encourage the development of the students' problem-solving skills as well as their collaborative skills. These tasks were:

1. Creating the longest paper chain from paper and sticky tape;
2. Building the tallest tower from paper (only);
3. Designing a creative pipe system using paper and sticky tape;

4. Designing and creating the most creative 3D model of a hurricane using pipe cleaners and aluminium foil (which connected with the unit theme);

These activities had a positive impact on the students' engagement within the lesson and I witnessed an increased development in their collaborative skills as well as their problem-solving skills. Previously, the students showed indifference towards collaborative projects, with some outright refusing to work with one another. Siraj-Blatchford et al. (2011) define collaborative learning as the act of "sharing out roles, ideas and information" (p.51). This practice was essential during this workshop to encourage team building and communication amongst the students, overall improving their interpersonal skills, akin with Siraj-Blatchford et al.'s notion that collaborative learning improves "likelihood of [students] developing deep, long-lasting understanding" (p.51). The sowing of this development was evident when I engaged with the groups, with each group demonstrating passion and understanding whilst engaging with each other's ideas.

While my mentor and I agree that the workshop demonstrated an area of success within my placement, there were also some negative aspects. Some students became extremely passionate about the activities, which resulted in heated disagreements amongst certain students and accusations of "cheating" despite the rules established beforehand. I feel that, because of this, the workshop lost its focus and the students fixations shifted from problem solving and collaboration to competition against their peers. One aspect of the problem solving workshop could have included the solid establishment of rules created by the students. As Curwin (2013) suggests, the likelihood of students following the rules is increased when students play an active role in their construction.

Thus, while the workshop method was a success, it could have been improved by the co-construction of rules and expectations within the classroom.

PSCCT2: Creative Thinking

Cyfnod agoriadol (gyda chysylltiadau â dysgu blaenorol) 20 munud	• Synesthesia = Groeg, <i>syn</i> (cysylltu/casgliad) ac <i>psithesis</i> (canfyddiad/synhwyrau) => cysylltiad o synhwyrau sy'n rhyddhau mynegiad un o'r synhwyrau wrth ysgogi un arall; • Wassily Kandinsky, Melissa McCracken, Jack Coulter; • Llinell / lliw / tôn / patrwm / gwead / siâp (line / colour / tone / pattern / texture / shape) CÂN • Vivaldi – Storm (Offerynnol, Clasurol); Cwestiynau: • Pa fath o liwiau allwch chi weld wrth glywed ar y gan? • Pa fath o liw gallwch ddefnyddio i cyfleu (emosiwn)? • Sut caiff (emosiwn) ei gyfleu yn y gan?	• Disgyblion yn cymryd rhan lle'n briodol; • Disgyblion yn gwrandao ar y gerddoriaeth;	• Caneuon wedi'u lawr lwytho i ategu'r darn o gelf; • PPT gyda lluniau ar gyfer y gerddoriaeth;
Addysgu a Dysgu Craidd 30 munud	• Pr yn cyrchu o amgylch y dosbarth yn rhoi cymorth i'r disgyblion sydd angen mwy yn ystod yr ADC;	• Disgyblion yn gweithio'n annibynnol i greu darn o gelf yn seiliedig ar y darn o gerddoriaeth sy'n chwarae yn ystod y wers. • NEU Ddisgyblion yn gweithio fel parau i greu darn o gerddoriaeth fel ymateb personol i'r gerddoriaeth sy'n chwarae yn ystod y wers. Arddulliau: • Peintio gyda: ○ Dyfriliwiau;	• Adnoddau celf: ○ Papur; ○ Creonau; ○ Dyfriliwiau (+ dwr); ○ Paent? (+ dwr) ○ Beiros ffelt; ○ Pensiliau lliw; • Cerddoriaeth; • iPads (GarageBand);

(LEFT) Fig. PSCCT2.1: A screenshot of the lesson plan including some questions asked to the students.

"Questions:

- What types of colours can you see whilst listening to the music?
- What type of colour could you use to suggest (emotion)?
- How is (emotion) suggested in the song?"

Artist: Melissa McCracken

[Song here](#)
[Image here](#)

Artist: Jack Coulter

[Song here](#)
[Image here](#)

Song of the lesson: Vivaldi's 'Storm' from 'Summer' ([Song here](#))



(LEFT) Fig. PSCCT2.2: Students undertaking the creative task: creating art pieces based on Vivaldi's 'Storm' from 'Summer'

(RIGHT) Fig. PSCCT2.3: An example of student work.



Year Group(s): 5 and 6

Group(s): Whole class lesson.

Area of Learning Experience (AoLE): Expressive Arts (thematic link)

Focus of the lesson: Interpreting weather-related music through art.

Developing creativity through the Expressive Arts seemed like a natural choice. I decided to plan an arts lesson that provided the students the chance to express themselves creatively

whilst also connecting with the theme: disastrous weather. In this lesson, I presented the students with the idea of 'synesthesia', the phenomena of connecting more than one sense in a form of visual expression, such as art, and introduced artists, such as Melissa McCracken and Jack Coulter (see above), and Wassily Kandinsky, their art and the music they used (minus Kandinsky) to engage the students in a creative and thoughtful discussion that attempted to engage the students in abstract ideas within concrete experiences.

Connecting with the theme, I selected a classical piece of music that connected with a key type of weather that had been of focus to the students during the unit: storms (see Vivaldi's 'Storm' from 'Summer' above). Each student was allowed to begin the lesson by choosing a specific artistic station, including:

- Crayons;
- Watercolours;
- Brusho power paints;
- Poster paints;
- Pastels;
- Pencils and felts.

Students were allowed to rotate between mediums to create different textures and layers that expressed their personal interpretation of the music heard. This 'music appreciation' workshop was inspired by an Expressive Arts seminar I attended during the university instruction block (Williams, 2019a, 2019b). Connecting with this concrete experience personally allowed me to construct the lesson effectively and my research into the theory behind Kandinsky, McCracken and Coulter's processes helped me generate a discussion with the students about the ideas within their pieces and about the texture, tone and colours within (how they convey emotions, which colours could convey certain emotions, etc.).

However, it was important for me to remember that not all people, especially children, feel comfortable or confident enough to embrace their creative selves. Additionally, some students couldn't identify the connection between art and music used in the presentation, and the focus of the main activity connected to weather, i.e. one student opted to instead draw a character that was familiar to him because he did not understand the process of abstract expression and constructing personal meaning about the music. I should have researched further into art inspired by weather, regardless of musical connection, and perhaps search for music inspired by weather to encourage the children to draw their own connections and think creatively and critically about the pieces.

Overall, I need to ensure that all resources used in my presentations provide the students with the opportunity to enhance their creative thinking skills and develop their understanding of the core ideas prior to the main task.

PSCCT3: Critical Thinking

Cyfnod agoriadol (gyda chysylltiadau â dysgu blaenorol) 10 munud	SESIWN 1 - BP yn cyflwyno'r pwnc ffocws i'r holl ddosbarth gan dangos ffilm fer ('For the Birds', Pixar) ac yn gofyn cwestiynau trafod yn seiliedig ar yr hyn sy'n digwydd yn y ffilm; - BP yn annog i'r disgyblion rhestrï'r wahanol fathau o fwlio sydd ar nodiadau Post-It; SESIWN 2 - BP yn cyflwyno'r pwnc 'amrywiaeth' ac yn gofyn beth mae hyn yn ei feddwl i'r disgyblion; - BP yn gofyn i'r disgyblion i weithio mewn partneriaid/grwpiau o 3 er mwyn iddynt sylweddoli beth sy'n wahanol amdany'n nhw'n ffisegol; - BP yn cyflwyno'r syniad o 'unigolrwydd' ac yn gofyn i'r plant ystyried beth sy'n unigol amdany'n nhw; - BP yn gofyn am beth sy'n wneud bobl yn wahanol;	SESIWN 1: - Disgyblion yn trafod cynnwys y ffilm ac yn mynegi eu barn am yr hyn a welwyd; - Plant yn cynnig syniadau am y mathau o fwlio ac yn eu rhestrï ar y nodiadau Post-It; SESIWN 2: - Plant yn ystyried y cwestiwn ac yn cynnig atebion yn eu tro; - Plant yn adrodd nôl am beth maent yn weld yn wahanol am ei gilydd. - Disgyblion yn trafod beth sy'n wneud nhw'n unigol a bobl arall yn unigol; "Students discuss the film's contents and give their opinions on what they have seen"
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"BP presents the focus subject to the entire class by showing a short film ("For the Birds", Pixar") and asks discussion questions based on the film's events"

(ABOVE) Fig. PSCCT3.1: A screenshot of my introductions to the Anti-Bullying workshops.

Ystyriwch...



[Video here](#)

- Beth sy'n digwydd yn y fideo?
- Beth mae'r adar bach yn wneud? Beth mae'r aderyn mawr yn wneud?
- Beth ddylai wedi digwydd?
- Tybed, sut oedd yr aderyn mawr yn teimlo?
- Oedd yr adar bach yn bwlio, neu a oeddent yn bod yn gas yn unig?
- Beth yw'r gwahaniaeth? A oes wahaniaeth?

(ABOVE) Fig. PSCCT3.2: A slide from my PowerPoint presentation shown during the first workshop. Questions were designed and asked in relation to the animated short film 'For the Birds' by Pixar (2000).

"What is happening in the video?

- What are the little birds doing? What is the big bird doing?

What should have happened?
 How did the big bird feel?
 Were the little birds bullying, or were they only being mean?
 What is the difference? Is there a difference?"

Year Group(s): 5 and 6

Group(s): Whole class introduction; focus group main task.

Area of Learning Experience (AoLE): Health and Well-being

Focus of the lesson: Anti-Bullying Week (series of 'workshop-like' activities)

I had the fortune of preparing a series of 'workshops' for the class during Anti-Bullying Week (11.11.19-15.11.19), and during the introductory workshop I presented an animated short film to the class in which the theme of bullying is conveyed using animated birds. Following the video screening, I presented the students with a series of questions to discuss with one another and ponder individually before conducting a whole-class discussion wherein we engaged in a dialogue.

Having engaged with the students on several occasions during the induction week and my first week at school, and witnessing tense interactions between them on the schoolyard and in class, engaging with them in an anti-bullying discussion was vital in opening a sub-dialogue about the effects of bullying and recognising the signs. Mercer suggests that children should be involved in "thoughtful and reasoned dialogue" (2003, p.76), and thus I believe this strategy was effective in this lesson as it encouraged the students to begin a critical and meaningful discussion with myself and one another on a topic that was evident in their school lives. Engaging these students in critical discussions and expressing their opinions had previously proven difficult; they struggled with engaging in that crucial dialogue and resigned to giving 'yes/no' answers to move along with the conversation. However, I believe my approach -- in showing them a short film that engaged their interest -- improved the quality of discussion and encouraged students to discuss what they had seen within the context of the questions asked.

Despite the effectiveness of this presentation, I believe this could have been improved by developing the students' higher-order thinking skills, and I could have done this by adapting my questioning using Bloom's Taxonomy to increase their effectiveness and the quality of answers from, and thinking within the students. I will do this in my future practice.

Critical Reflection

Introduction

During my first placement, I spent time in mixed Year 5/6 class at a town-based school in the Neath Port Talbot Local Education Authority. Whilst on placement, I attempted to implement several of the pedagogical principles outlined by Donaldson (2015) in *Successful Futures*, wherein he recommends that educators develop twelve specific areas within their pedagogy that will define education in Wales (Donaldson, 2015, p.63-71). Of these principles, the three on which I have chosen to reflect are: **cross-curricular responsibilities; assessment for learning; and developing problem solving, creative and critical thinking in the classroom**. The following portfolio includes illustrative examples of my implementation of the principles above and a critical reflection of my progress during PTE1. I will evaluate and examine the strengths and weaknesses of my experiences, whilst also cross-referencing appropriate literature. Finally, I will outline recommendations for my future development.

The Literature

What is 'effective teaching'? While defining 'effectiveness' can be difficult (Ko and Sammons, 2013; Coe, 2014), researchers similarly agree that practices such as tracking student understanding (or assessing formatively), integrating instruction across the curriculum, and nurturing learning that promotes the wider skills, such as problem-solving and thinking, define the most effective teaching in twenty-first century education (Hattie, 2012; Husbands and Pearce, 2012; Ko and Sammons, 2013; Coe et al., 2014; Ko, 2016). Donaldson's suggestions and his contemporaries' conclusions suggests the necessary development and employment of specific skillsets and strategies within effective practice.

Cross-Curricular Responsibilities

'Cross-Curricular Responsibilities' (or CCRs) is an umbrella concept comprised of the core skills, literacy and numeracy, and the newer skill, digital competence (also understood as 'digital literacy' in wider research (see Karpati, 2011)) (Donaldson, 2015). Effective teachers, per Donaldson (2015) provide students with enough meaningful opportunity to develop competency across a wide variety of Areas of Learning and Experience (AoLEs) (WAG, 2019, p.7) and authentic, real-world contexts later in life. The advancement of these key skills has been a prioritisation within WAG's educational agenda in the last decade, owing partly to Wales's poor performance in the PISA tests since 2009, which resulted in the publication of the 2013 National Literacy and Numeracy Framework (LNF) (Dauncey, 2013; WAG, 2013a). The LNF, instrumental to planning, has since underpinned the education of literacy and numeracy in compulsory education (Dauncey, 2013; WAG, 2013b) and ensure that students acquire specific interdisciplinary skills required to function in the world. Furthermore, as a bilingual nation, Welsh language and literacy are priorities outlined by WAG in developing the 2022 curriculum (WAG, 2019) and are equally outlined alongside English within the LNF. Donaldson highlights a commitment to Welsh language development in his findings and one of his Four Purposes, the 'ambitious, capable learners', highlights the necessity that learners in schools of both mediums, English and Welsh, become proficient and effective communicators in both languages (2015, p.29).

Literacy and numeracy are essential in the development of economy (Poulson et al., 2001, p.272), and studies by Wray et al. (2000), Kaya (2014), Askew et al. (1997), and Muir (2006)

evaluating the qualities of effective teachers of literacy and numeracy agree that the effective teaching of core skills such as these must integrate several different aspects, such as effective use of questioning, the teacher's subject knowledge, and meaning assessment techniques. Wray et al.'s (2000) study interestingly suggests that effective teaching may also be measured by the quantity of instruction, finding that the increased amount of opportunity provided to students to practice their literacy skills contributed to the effectiveness of the teachers' literacy instruction and the students' literacy learning. These views attributing quantity to effectiveness might be transferred to Donaldson's desire for the cross-curricular instruction of literacy and numeracy; embedding these skills across the curriculum ensures that students are given every opportunity to practice and refine those skills within their time in compulsory education.

Digital Competence, or digital literacy (Hague and Payton, 2010; Karpati, 2011) developed in response to the rapid emergence and advancement of digital technologies (Drake and Reid, 2018). Due to continuous growth in the availability and complexity of technologies, UNESCO categorises digital literacy as a "*gate skill*", one that is demanded by employers in the 21st century workforce and culture of today (Karpati, 2011, p.1; Malta Department of eLearning, 2015) and thus this '21st century competency' must characterise developments in education (Drake and Reid, 2018). Incoming students have been raised in a digital world. Thus, it is the responsibility of practitioners to ensure that the digital generation uses their global accessibility carefully and competently (Karpati, 2011).

In 2008, the WAG published the Digital Competence Framework (DCF), which, sharing the LNF's format, acts as a guide for on how digital literacy may be developed in the classroom. The effective education of the digital generation will comprise of ensuring that competencies such as those outlined by the DCF, including online safety, digital media and production, are nurtured; an increase in connectivity demands that students be educated in its proper use rather than its preliminary access (OECD, 2018). Effective teachers of digital literacy must encourage the active development of students in creating meaning (Proust and James, in Hague and Payton, 2010) and facilitate their journey of making creative and ethical in a fast-paced technological world (Hague and Payton, 2010; Karpati, 2011).

Assessment for Learning

Black and Wiliam's (1998) seminal research 'Inside the Black Box' separated assessment into two memorable categories: *formative* assessment and *summative* assessment. According to Wiliam and Leahy (2015), the term *formative assessment*, or 'assessment for learning' (Broadfoot et al., 1999), has existed for over half a century but has been understood by many in varying ways. Hall and Burke (2004), for example, identify formative assessment as that which guides learning along the appropriate path tailored to the learner's specific needs (p.28), while Wragg (2003) reinforces it as a low-stakes cycle of instantaneous feedback that develops student learning on a personal level. Outlined by Donaldson (2015) and his contemporaries (Hattie, 2012; Ko and Sammons, 2013; Coe, 2014; Ko, 2016) as a principle of effective teaching, wider research has also identified formative assessment at the heart of effective education and curriculum (van den Akker, 2003; Wragg, 2003; Butt, 2010; Estyn, 2014; Higgins, 2014).

Black and Wiliam (1998) compile several key areas of effective formative assessment, including: quality of classroom dialogue, or questioning; comment-only marking, or verbal feedback; clarifying and sharing explicit expectations with the students, or sharing the success criteria beforehand; and promoting peer assessment and self-assessment within the classroom to engage the students in the improvement of their own learning, facilitating, therefore, the students' active roles in their own education (Black & Wiliam, 2009; Wiliam, 2010; Black and Wiliam, 2012). Effective practice should employ a variety of meaningful strategies that reach across these areas and provide clear and constructive feedback that ensure learners further their own personal and academic development, i.e. improving their

self-efficacy.

Siraj and Taggart (2014) note that shared objectives are just one of many aspects within pedagogy that one might use to define 'effectiveness'. These 'good teachers' shared their objectives and expectations with students to ensure understanding and intervened where understanding lacked. Similarly, Dunn (2017) suggests sharing learning objectives as one aspect of becoming an 'outstanding' teacher, noting that learning objectives and success criteria are vital elements of the learning process that encourages 'students' active role in their learning (p.41). A study conducted by Miller and Lavin (2007) exploring the impact of formative assessment techniques on children's self-esteem and views of themselves as learners found that the teachers' employment of a range of formative assessment techniques in the classroom, such as sharing success criteria and traffic lighting, raised the self-esteem, motivation and outcomes of students in primary education (p.25).

Problem Solving, Creative and Critical Thinking

Robinson (1987) and Hattie (2012) identify the development thinking skills in children as critical in education was necessary in producing a generation of innovative thinkers prepared to function within and process the world. Critical thinking and problem solving are entwined, and Snyder and Snyder (2008) suggest that critical thinking actively contributes to the problem-solving process. On creativity, Barnes (2018) characterises it as a *"defining human capability"* (p.18), that is vital within the development of problem solving and critical thinking (Falconer et al., 2018). WAG (2019) prioritises the development these skills in their reform and global evidence suggests an emerging demand for the development of these skills, categorised, much like digital competency, as "21st century capabilities", or "learning and innovation skills" (Fadel, 2008). In countries such as Canada, Australia, Singapore, New Zealand and Finland – countries reported in the top 20 performing countries since the 2009 PISA rankings (NFER & Arad Research, 2013) – these skills are embedded within the curriculum and are organised under the umbrella-term *"the 6Cs: communication, character, critical thinking, creativity, citizenship, collaboration"* (Drake and Reid, 2018).

The Teaching Schools Council (TSC) identifies the *"ongoing deliberate practice"* of developing these skills across the school curriculum as demonstrative of "mastery teaching" (2016, p.21), which can be achieved through the development of higher-order thinking skills (Wegerif, 2002; Tienken et al., 2010) and critical evaluation skills using questioning techniques that incorporate vocabulary from Bloom's Taxonomy, which separates lower-order thinking (remembering) from higher-order processes (evaluating and creating) (Anderson et al., 2001). Furthermore, effective instruction contributes to higher learning by implementing innovative approaches and regularly reinforcing a wide variety of strategies, such as problem-based learning, in integrating these skills, ultimately increasing students' ability to: consider alternative viewpoints, including their peers'; and working collaboratively to achieve a common goal. Furthermore, studies cited in Snyder and Snyder (2008) (Gurses, et. al, 2007; Nokes et al., 2007) suggest that heuristic teaching methods (or inquiry-based learning), wherein students solve problems through experimentation and evaluation, are also engaging strategies in developing wider skills and improve student outcomes.

Reflections

Cross-Curricular Responsibilities

At the beginning of PTE, I lead a focus task based on elongating the preposition 'gan' in Welsh (see AFL1.2). However, while AFL1.2 notes the students' struggle with Welsh

literacy, I, admittedly, struggle with the rules of Welsh grammar and this, despite my research, poorly affected my ability to teach it accurately and fluidly. Wray et al. (2000) and Kaya (2014) emphasise the impact of subject knowledge on effective literacy instruction, and overall, I feel that had I researched wider and enhanced my subject knowledge, the quality of instruction and learning would have increased. I need to revise my bilingual literacy skills to fulfil this enhancement in future practice.

Likewise, integrating numeracy was also difficult. While I taught mathematics frequently, there weren't enough opportunities to develop numeracy across the curriculum (see Appendix 1). Of my experience, I have but two possible examples of cross-curricular numeracy: creating and using data tables, and Venn Diagrams (see CCR2), both from the LNF's data handling strand. However, these data tables went unused due to scheduling conflicts and, as CCR2 illustrates, my implementation of data handling via Venn Diagrams was not numerical. This mistake further emphasises Wray et al. (2000) and Askew et al.'s (1997) conclusions: subject knowledge is vital. I need to increase my own understanding of the cross-curricular skills and subject knowledge in general to ensure that my cross-curricular integration is accurate and allows the students to experience these skills across the curriculum.

Despite my difficulties, towards the end of my experience I was afforded the opportunity to plan a cross-curricular thematic lesson: a Humanities session that blended Geography and History (see examples CCR1 and CCR3) wherein I was able to develop both literacy and digital competence through research and information collation; and, as noted in CCR1, I turned to the WAG's frameworks for guidance on the skills I could develop (see CCR1.2). An effective practice report by Estyn (2019) highlights this link between planning and the LNF and DCF as an element of good practice in ensuring that students develop the skills specific to their year groups, but due to the students' general low ability, many weren't operating at the expected level; thus, I aimed to keep the development of the cross-curricular skills as simple as possible so that all children could collaborate in mixed-ability groups. However, I could have separated the higher-ability students into their own groups and, to develop Digital Competency further, I could have introduced them to the importance of citing the sources they used and judging their reliability (Hague and Payton, 2010; Kapari, 2011) and this is something I need to consider at the planning stage in my future experience.

While I am disappointed with my implementation of cross-curricular learning, I also acknowledge that had I engaged with wider research, I might have bettered my understanding of how to develop these skills my lessons.

Assessment for Learning

A problem I encountered at the start was over-planning my use of AfL strategies. I set my expectations too high and based the quality of my teaching on the number of strategies I used. Jimaa (2011) emphasises that the quality of techniques reflects better practice, and my mentor and I agreed that using quality techniques to ensure an enhanced quality of feedback would improve my teaching; thus, I decreased the amount of techniques and focused on those which would prove most effective for my class, such as the 'thumbs' technique, the 'Show Me' technique (Lemov, 2015) using whiteboards, and quizzing during the presentation (see AfL3) and in the concluding plenary, all of which I had observed in my mentor's practice.

While I implemented familiar techniques, I also experimented with others, such as exit tickets (see AFL1). However, I didn't find these to be very effective. In the maths lesson (AFL1.1) some found the ticket question challenging; and in the focus task (AFL1.2) some neglected to explain their feelings towards the task. As a result, I could not gather enough

information regarding what I needed to adapt to improve their understanding. Implementing new strategies was difficult and I benched the tickets to accommodate more familiar techniques; however, I feel that had I been more consistent with exit tickets, the students would have familiarised themselves with the concept and the quality and quantity of feedback would have improved. Furthermore, as noted in AFL1, I need to ensure that the exit tickets are simple enough to understand and, as Wiliam and Leahy (2015) suggest, that the ticket method matches the topic so that the feedback I receive is more significant.

In my first lesson, creating data tables, I aimed to include AfL techniques at key transitional points, such as: at the end of the presentation with the 'thumbs' technique; at the end of the first task with the 'traffic light' system (WAG, 2010); and during the second task using the checklists that summarised the success criteria for the students' own data tables (see Fig. AFL2.1). While having received success criteria during lessons with my mentor before, they had not received it via checklist, and this confused them slightly. The study by Miller and Lavin (2007) highlighted sharing success criteria as one of the most effective teaching strategies and I believe this was a very effective strategy while working with this class. Following this, I attempted to share the criteria as often as possible to ensure a high standard of work. However, I neglected to involve the students in creating the success criteria, which, paired with the checklist, impaired their understanding of the requirements and the task.

Questioning was a technique I feel could have been better researched across my experience. As noted in AFL3, I used questioning techniques in several ways that attempted to engage with the students' thinking skills and aid their understanding of the topic. However, I also employed secondary questioning techniques -- the "cold calling" technique (Lemov, 2015) and the "phone a friend" technique (WAG, 2010a), both of which I felt were effective in gathering information on the students' progress in-action. However, while these techniques were effective, I could have also employed techniques such as the "basketball" or "pose, pause, pounce, bounce" techniques (Gest, 2013) to build upon student answers and develop with them workable definitions of unfamiliar concepts. I feel this could have been a much more effective way of, for example, defining 'contractions', as I feel my explanations were too advanced for them.

Overall, I feel that my implementation of assessment for learning techniques could have been more effective and meaningful had I researched them further.

Problem Solving, Creative and Critical Thinking

During my second week, which was 'Anti-Bullying Week', I designed a week-long series of sessions surrounding the topic of 'anti-bullying'; half focused on bullying, and the other on diversity. Both lessons involved a whole-class dialogue between me and the students. In the first session, we engaged with: a short, animated film with a bullying theme (see PSCCT3), and in session 2 we engaged in a discussion about discrimination. While I attempted to develop questions that encouraged them to critically evaluate their answers, my mentor suggested that I need adapt my questions to target a deeper and more ambitious level of thinking, using models such as Bloom's Taxonomy for guidance. As Tienken et al. (2010) suggest, lower-order questions do not engage the students' deeper thinking, thus my questions need to be more challenging and I need to research Bloom's Taxonomy further to encourage this deeper reflection.

Later, I designed a STEM workshop (see PSCCT1) wherein the students' problem-solving skills, creativity and critical thinking were developed simultaneously as they aimed to collaboratively learn and work within a restricted time limit. Embedding these skills across a STEM workshop seemed natural due to the inquisitive nature of these 21st century skills; however, comments made by my mentor suggest that these 'challenges' were, much like my

questions, not challenging enough. I need to ensure that any activities I plan around problem solving are appropriate for the ages of my students to ensure they have access to higher-level work that accesses higher-order thinking; as Baharin et al. (2018) stress, integrating higher-order thinking at all stages of STEM, using Bloom's Taxonomy as a model for development.

As I progressed, I was prompted by my mentor to design more creative lessons related to the unit theme so that I might gain experience in teaching across variety of subjects and skills. I designed an art lesson that inspired the students to think creatively and critically in relation to a piece of music (see PSCCT2). It worked well in developing the students' creativity as they experimented independently with shapes and colours and reasoned why certain colours could reflect moods and narratives during the presentation. However, again, this workshop did not develop the students' higher-order thinking, and as noted in above, this is something on which I need to build via wider reading and experimentation.

Overall, while my implementation of these skills showed promise, there is still room for improvement. In future, I believe I could enhance the students' skills in various ways and consulting various literatures for ideas on how to do so effectively, and revising my questions against Bloom's Taxonomy, will promote higher-order and intense thinking.

Recommendations

- **R1: Engage with wider research into effective teaching and learning, and all pedagogical principles.**
- **R2: Use meaningful and effective formative assessment techniques.**
- **R3: Enhance my subject knowledge to improve the students' further development.**

Overall, my target for PTE2 and beyond is engaging with research. Estyn (2014, 2017, 2018a, 2018b) emphasise engaging in research as vital in effective practice. During my placement, my research into effective practice, subject knowledge, the CCRs and AfL techniques was weak. Had I engaged with wider reading, the quality of these elements of teaching and learning would have been more effective. I aim to develop my targets further by:

1. Engaging in a wider variety of research so that I do not become dependent on a limited source number of sources, such as the WAG and Black and/or Wiliam;
2. Consulting literature, internet research, online courses and subject audits to enhance my subject and skills knowledge.

References

Askew, M., Brown, M., Rhodes, V., Wiliam, D., & Johnson, D. (1997). *Effective Teachers of Numeracy: Report of a study carried out for the Teacher Training Agency*. London: King's College, University of London. [PDF] Available at:

<http://musicmathsmagic.com/page4/files/EffectiveTeachersofNumeracy.pdf>

(Accessed: 23 December 2019)

Baharin, N., Kamarudin, N., & Manaf, U.K.A. (2018) 'Integrating STEM Education Approach in Enhancing Higher Order Thinking Skills', *International Journal of Academic Research in Business and Social Sciences*, 8(7), pp.810–822. DOI:

<http://dx.doi.org/10.6007/IJARBS/v8-i7/4421>

Barnes, J. (2018) *Applying Cross-Curricular Approaches Creatively*. Abingdon: Routledge.

Black, P., & Wiliam, D. (1998) 'Inside the Black Box: Raising Standards Through Classroom Assessment', *Phi Delta Kappa*, 92(1), pp.81-90. Available at:

<https://www.rdc.udel.edu/wp-content/uploads/2015/04/InsideBlackBox.pdf> (Accessed: 19 December 2019)

Black, P., & Wiliam, D. (2009) 'Developing the theory of formative assessment', *Educational Assessment, Evaluation and Accountability*, 1(1), pp.5-31. Available at:

https://kclpure.kcl.ac.uk/portal/files/9119063/Black2009_Developing_the_theory_of_formative_assessment.pdf

Black, P., & Wiliam, D. (2012) 'Developing a Theory of Formative Assessment', in Gardner, J. (ed.) *Assessment and Learning*. London: SAGE Publications.

Broadfoot, P.M., Daugherty, R., Gardner, J., Gipps, C.V., Harlen, W., James, M., & Stobart, G. (1999) *Assessment for learning: Beyond the black box*. Cambridge, UK: University of Cambridge School of Education.

Butt, G. (2010) *Making Assessment Work*. New York, NY: Continuum.

Coe, R., Aloisi, C., Higgins, S., Elliot Major, L. (2014) *What Makes Great Teaching? Review of the Underpinning Research*. Durham: Centre for Evaluation and Monitoring/The Sutton Trust. Available at:

<https://www.suttontrust.com/wp-content/uploads/2014/10/What-Makes-Great-Teaching-REPORT.pdf> (Accessed: 20 December 2019)

Cooper, R., & Heavenlo, C. (2013) 'Problem Solving And Creativity And Design: What Influence Do They Have On Girls' Interest In STEM Subject Areas?', *American Journal of Engineering Education*, 4(1), pp.27-38. Available at:

<https://pdfs.semanticscholar.org/2bf0/a1e1eaa1f37f58f9c8618189ddc8e80ecba8.pdf>

Curwin, R.L. (2013) *Affirmative Classroom Management: How do I develop effective rules and consequences in my school?* (ASCD Arias). Alexandria, VA: ASCD.

Dauncey, M. (2013) *Literacy and Numeracy in Wales*. [PDF] Available at:

<https://www.assembly.wales/Research%20Documents/Literacy%20and%20Numeracy%20in%20Wales%20-%20Research%20>

[20paper-03062013-246762/13-039-English.pdf](#) (Accessed: 19 December 2019)

Donaldson, G. (2015) *Successful Futures: Independent review of curriculum and assessment arrangements in Wales*. Caerdydd: Llywodraeth Cenedlaethol Cymru.

Dunn, D. (2017) *How to Be an Outstanding Primary School Teacher*. London: Bloomsbury Publishing.

Engelmann, C.A., & Huntoon, J.E. (2011) 'Improving Student Learning by Addressing Misconceptions', *EOS, Transactions, American Geophysical Union*, 92(50), pp.465-66. DOI: <https://doi.org/10.1029/2011EO500001>

Estyn. (2014) *Numeracy in key stages 2 and 3: an interim report* [PDF] Available at: <https://www.estyn.gov.wales/thematic-reports/numeracy-key-stages-2-and-3-interim-report-november-2014> (Accessed: 21 December 2019)

Estyn. (2017) *Summary of findings from our national thematic reviews for 2017* [PDF] Available at: <https://www.estyn.gov.wales/sites/www.estyn.gov.wales/files/documents/Compendium%202017%20Eng.pdf> (Accessed: 21 December 2019)

Estyn. (2018a) *Improving Teaching*. [PDF] Available at: <https://www.estyn.gov.wales/sites/www.estyn.gov.wales/files/documents/Improving%20teaching.pdf> (Accessed: 20 December 2019)

Estyn. (2018b) *Summary of findings from our national thematic reviews 2018* [PDF] Available at: <https://www.estyn.gov.wales/sites/www.estyn.gov.wales/files/documents/Compendium%202018%20Eng.pdf> (Accessed: 21 December 2019)

Estyn. (2019) *Developing pupils' skills across the curriculum* [Website] Available at: <https://www.estyn.gov.wales/effective-practice/developing-pupils%E2%80%99-skills-across-curriculum> (Accessed: 27 December 2019)

Fadel, C. (2008) '21st Century Skills: How can you prepare students for the new Global Economy?' [PowerPoint presentation] *OECD: Partnership for 21st Century Skills*. Available at: <https://www.oecd.org/site/educeri21st/40756908.pdf> (Accessed: 20 December 2019)

Falconer, E. G., Cropley, D. H., and Dollard, M. F. (2018). An Exploration of Creativity in Primary School Children, *International Journal of Creativity and Problem Solving*, 28(2), pp. 7-25.

Garton, A.F. (2007) *Exploring Cognitive Development: The Child as Problem Solver*. Hoboken: Wiley-Blackwell.

Gest, G. (2013) *Effective Questioning and Classroom Talk* [PDF] Available at: http://www.nsead.org/downloads/Effective_Questioning&Talk.pdf (Accessed: 27 December 2019)

Hague, C., & Payton, S. (2010) *Digital literacy across the curriculum: a Futurelab handbook*. [PDF] Available at: <https://www.nfer.ac.uk/publications/futl06/futl06.pdf> (Accessed: 21 December 2019)

Hall, K., & Burke, W.M. (2004) *Making formative assessment work*. Maidenhead: Open University Press.

Hall, K., & Harding, A. (2003). *A systematic review of effective literacy teaching in the 4 to 14 age range of mainstream schooling*. [PDF] Available at: <https://eppi.ioe.ac.uk/cms/Portals/0/PDF%20reviews%20and%20summaries/English/2003review.pdf?ver=2006-03-02-125227-003> (Accessed: 20 December 2019)

Hattie, J. (2012) *Visible Learning for Teachers: Maximising Impact on Learning*. Abingdon: Taylor & Francis.

Higgins, S. (2014) 'Formative Assessment and Feedback to Learners', in Slavin, R. (ed.) *Proven Programs in Education: Classroom Management and Assessment*, pp.11-15. London: SAGE Publications.

Husbands, C. & Pearce, J. (2012) *What makes great pedagogy? Nine claims from research* [PDF] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/329746/what-makes-great-pedagogy-nine-claims-from-research.pdf (Accessed: 20 December 2019)

Jimaa, S. (2011) 'The impact of assessment on students learning', *Procedia - Social and Behavioral Sciences*, 28, pp.718-721. DOI: <https://doi.org/10.1016/j.sbspro.2011.11.133>

Karpati, A. (2011) *Digital Literacy in Education (UNESCO Policy Brief)* [PDF] Available at: https://iite.unesco.org/files/policy_briefs/pdf/en/digital_literacy.pdf (Accessed: 23 December 2019).

Kaya, M. (2014) 'The Qualities of Effective Literacy Teachers: The Dynamics of Effective Teachers' Beliefs, Their Practices and Students' Responses', *Journal of Education and Human Development*, 3(3), pp.41-57. DOI: 10.15640/jehd.v3n3a4

Kimmins, D.L. & Winters, J.J. (2015) 'Caution: Venn Diagrams Ahead!', *Teaching Children Mathematics*, 21(8), pp. 484-93. Available at: <https://www.nctm.org/Publications/teaching-children-mathematics/2015/Vol21/Issue8/tcm2015-04-484a/> (Accessed: 20 December 2019)

Ko, J., & Sammons, P. (2013) *Effective Teaching: A Review of Research and Evidence*. Reading: CfBT Education Trust. Available at: <https://files.eric.ed.gov/fulltext/ED546794.pdf> (Accessed: 20 December 2019)

Leigh, S.R. (2012) 'The Classroom is Alive with the Sound of Thinking: The Power of the Exit Slip', *International Journal of Teaching and Learning in Higher Education*, 24(2), pp.189-196. Available at: <https://files.eric.ed.gov/fulltext/EJ996265.pdf>

Lemov, D. (2015) *Teach Like a Champion 2.0: 62 Techniques That Put Students on the Path to College*. San Francisco: Josey Bass (Wiley).

Malta Department of eLearning (2015) *Digital Literacy: 21st Century Competences for Our Age: The Building Blocks of Digital Literacy From Enhancement to Transformation* [PDF] Available at:

<https://education.gov.mt/en/elearning/Documents/Green%20Paper%20Digital%20Literacy%20v6.pdf> (Accessed: 21 December 2019)

Marzano, R. (2012). 'Art and science of teaching: The many uses of exit tickets', *Educational Leadership*, 70(2), 80-81. Retrieved from <http://www.ascd.org/publications/educational-leadership.aspx> (Accessed: 18 December 2019)

Mercer, N. (2003) 'The educational value of "dialogic talk" in whole class dialogue', *New Perspectives on Spoken English in the Classroom: Discussion Papers*, pp.73-6. London: QCA. Available at: https://dera.ioe.ac.uk/6062/1/6111_new_perspec_in_spoken_eng_class_room.pdf (Accessed: 20 December 2019)

Miller, D., & Lavin, F. (2007) 'But now I feel I want to give it a try': formative assessment, self-esteem and a sense of competence, *Curriculum Journal*, 18(1), pp.3-25. DOI: <http://dx.doi.org/10.1080/09585170701292109>

Muir, T. (2006) *What does Effective Teaching for Numeracy Look Like? The Design of an Observation Schedule* [Research paper] Available at: https://www.researchgate.net/publication/255616170_What_does_Effective_Teaching_for_Numeracy_Look_Like_The_Design_of_an_Observation_Schedule (Accessed: 23 December 2019)

NFER & Arad Research. (2013) A Rapid Evidence Assessment on the Impact of Curriculum and Assessment Arrangements within High Performing Countries [PDF] Available at: <https://gov.wales/sites/default/files/statistics-and-research/2018-12/131022-rapid-evidence-assessment-impact-curriculum-assessment-arrangements-high-performing-countries-en.pdf> (Accessed: 22 December 2019)

OECD. (2018) *A Brave New World: Technology and Education (Trends Shaping Education Spotlight 15)* [PDF] Available at: <https://www.oecd.org/education/ceri/Spotlight-15-A-Brave-New-World-Technology-and-Education.pdf> (Accessed: 21 December 2019)

Owen, D., & Sarles, P. (2012). 'Exit tickets: The reflective ticket to understanding', *Library Media Connection*, 31(3), 20-23. Retrieved from https://www.researchgate.net/publication/263260699_EXIT_TICKETS_THE_REFLECTIVE_TICKET_TO_UNDERSTANDING (Accessed: 18 December 2019)

Poulson, L. et al. (2001) 'The theoretical beliefs of effective teachers of literacy in primary schools: an exploratory study of orientations to reading and writing', *Research Papers in Education*, 16(1), pp.271-292. DOI: 10.1080/02671520110058697

Robinson, I.S. (1987). *A program to incorporate high-order thinking skills into teaching and learning for grades K-3*. Fort Lauderdale, FL: Nova University.

Shanahan, T., Callison, K., Carriere, C., Duke, N. K., Pearson, P. D., Schatschneider, C. & Torgesen, J. (2010). *Improving reading comprehension in kindergarten through 3rd grade: A practice guide (NCEE 2010-4038)*. [PDF] Available at: <https://files.eric.ed.gov/fulltext/ED512029.pdf> (Accessed: 20 December 2019)

Siraj-Blatchford, I. et al. (2011) *Effective Primary Pedagogical Strategies in English*

and Mathematics in Key Stage 2: A study of Year 5 classroom practice from the EPPSE 3-16 longitudinal study [PDF] Available at: https://dera.ioe.ac.uk/3876/1/3876_DFE-RR129.pdf (Accessed: 20 December 2019)

Siraj, I. & Taggart, B. (2014) *Exploring Effective Pedagogy in Primary Schools: Evidence from Research*. [PDF] Available at: <https://www.pearson.com/content/dam/one-dot-com/one-dot-com/global/Files/about-pearson/innovation/open-ideas/ExploringEffectivePedagogy.pdf> (Accessed: 20 December 2019)

Snyder, L.G., & Snyder, M.J. (2008) 'Teaching Critical Thinking and Problem Solving Skills', *The Delta Pi Epsilon Journal*, L(2), pp.90-99. Available at: <http://reforma.fen.uchile.cl/Papers/Teaching%20Critical%20Thinking%20Skills%20and%20problem%20solving%20skills%20-%20Gueldenzoph,%20Snyder.pdf>

Teaching Schools Council (TSC). (2016) *Effective Primary Teaching Practice 2016*. [PDF] Available at: <https://tscouncil.org.uk/wp-content/uploads/2016/12/Effective-primary-teaching-practice-2016-report-web.pdf> (Accessed: 19 December 2019)

Tienken, C. H., Goldberg, S., & DiRocco, D. (2010). 'Questioning the questions', *Education Digest: Essential Readings Condensed for Quick Review*, 75(9), pp.28-32. Available at: https://www.researchgate.net/publication/275323468_Questioning_the_Questions

van den Akker, J. (2003) 'Curriculum Perspectives: An Introduction', in van den Akker, J., Kuiper, W., & Hameyer, U. (eds.) *Curriculum Landscapes and Trends*, pp.1-10. Dordrecht: Kluwer Academic Publishers.

Wegerif, R. (2002) *Literature Review in Thinking Skills, Technology and Learning* [PDF] Available at: <https://www.nfer.ac.uk/media/1838/futl75.pdf> (Accessed: 23 December 2019)

Welsh Assembly Government (WAG). (2010a) *How to developing thinking and assessment for learning in the classroom*. [PDF] Available at <https://hwb.gov.wales/curriculum-for-wales-2008/assessment/how-to-develop-thinking-and-assessment-for-learning-in-the-classroom/> (Accessed: 18 December 2019)

Welsh Assembly Government (WAG). (2010b) *Why develop thinking and assessment for learning in the classroom?* [PDF] Available at: <https://hwb.gov.wales/storage/2d2b99cd-5431-421e-ac8b-8608fe0edf05/why-develop-thinking-and-assessment-for-learning-in-the-classroom.pdf> (Accessed: 20 December 2019)

Welsh Assembly Government (WAG). (2013a) *Programme for International Student Assessment (PISA): Quick Guide: November 2013* [PDF] Available at: [https://www.assembly.wales/Research%20Documents/Programme%20for%20International%20Student%20Assessment%20\(PISA\)%20-%20Quick%20guide-21112013-251963/gg13-0010-English.pdf](https://www.assembly.wales/Research%20Documents/Programme%20for%20International%20Student%20Assessment%20(PISA)%20-%20Quick%20guide-21112013-251963/gg13-0010-English.pdf) (Accessed: 21 December 2019)

Welsh Assembly Government (WAG). (2013b) *National Literacy and Numeracy Framework: To support schools in introducing the National Literacy and Numeracy Framework* [PDF] Available at: <https://hwb.gov.wales/storage/64812b0e-3d20-4d10-94e8-68221e47a38d/to-support->

[schools-in-introducing-the-national-literacy-and-numeracy-framework.pdf](#) (Accessed: 21 December 2019)

Welsh Assembly Government (WAG). (2019) *Draft Statutory Guidance: A guide to Curriculum for Wales 2022*. [PDF] Available at: <https://hwb.gov.wales/storage/f8f9760c-64a1-48ea-80fd-db130ad9050b/a-guide-to-curriculum-for-wales-2022.pdf> (Accessed: 21 December 2019)

Wiliam, D. (2006) *Assessment for Learning: why, what and how* [Transcript] Available at: https://dylanwiliam.org/Dylan_Wiliams_website/Papers_files/Cambridge%20AfL%20keynote.doc (Accessed: 21 December 2019)

Wiliam, D. (2010) 'The role of formative assessment in effective learning environments', in Dumont, H., Istance, D., Benavides, F. (eds.) *The Nature of Learning: Using Research to Inspire Practice*, pp.135-59. OECD Publishing. DOI: <https://dx.doi.org/10.1787/9789264086487-8-en>

Wiliam, D. (2017) *Embedded Formative Assessment : (Strategies for Classroom Assessment That Drives Student Engagement and Learning)*. Bloomington, IN: Solution Tree.

Wiliam, D. & Leahy, S. (2015) *Embedding Formative Assessment: Practical Techniques for K-12 Classrooms*. West Palm Beach, FL: Learning Sciences International.

Williams, I.E. (2019a) 'Expressive Arts in the Foundation Phase' [PowerPoint Presentation] *University of Wales, Trinity Saint David*. Available at: https://uowtsd-my.sharepoint.com/:f/g/personal/1902994_student_uwtsd_ac_uk/EqUCXE82j5RNjwyLZdp9vFgBOtH9EyCS05mUsC_FdQbfaq?e=s3kBWD

Williams, I.E. (2019b) 'Expressive Arts in Key Stage 2' [PowerPoint Presentation] *University of Wales, Trinity Saint David*. Available at: https://uowtsd-my.sharepoint.com/:f/g/personal/1902994_student_uwtsd_ac_uk/EqUCXE82j5RNjwyLZdp9vFgBOtH9EyCS05mUsC_FdQbfaq?e=s3kBWD

Wragg, E.C. (2003) *Assessment and Learning in the Primary School*. Abingdon: Taylor & Francis.

Wray, D., Medwell, J., Fox, R., & Poulson, L. (2000) 'The Teaching Practices of Effective Teachers of Literacy', *Educational Review*, 52(1), pp.75-84. Available at: https://www.researchgate.net/publication/233191890_The_Teaching_Practices_of_Effective_Teachers_of_Literacy

Appendix 1: Context

Context

My experiences in PTE1 Block 1 (PTE1B1) were restricted by several obstacles, such as:

1. The unit's focus shifted the students' creation of their first piece of assessed written work, **marginalising opportunities for cross-curricular integration**;
2. The Year 5/6 unit continues to **separate the subjects** (see Appendix 2), **reducing opportunities to develop the wider skills**;
3. Many of the lessons provided to me were focused on **developing literacy and numeracy within the specific subjects** (see Appendix 2);
4. My **quantity of teaching experiences was decreased** by biweekly unit **planning days**, school visitors, and later, the **Christmas concert rehearsal schedule**, which impeded my ability to plan and teach a wide variety of lessons (see Appendix 2).

Appendix 2: Timetables

Copy of the general 5/6 unit timetable.



Amserlen --
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https://uowtsd-my.sharepoint.com/:b:/g/personal/1902994_student_uwtsd_ac_uk/EbjDKAbrbhlCv1q2ZDJA1UBZRWexKgVEbYWPIigp5HFTA?e=gGAjYw

Copies of my weekly timetables.



04.11-08.11

https://uowtsd-my.sharepoint.com/:w:/g/personal/1902994_student_uwtsd_ac_uk/EQxYRoyWmX9AlF2ZdvlOTvABH11pLWL3gPSPZY3WfmXxdg?e=JdiFop



11.11-15.11

https://uowtsd-my.sharepoint.com/:w:/g/personal/1902994_student_uwtsd_ac_uk/EeHM-7kUFjBLoBw8ZqMitbMBtgz01X8LGLdKe31zVWmJkQ?e=8ODeUR



18.11-22.11

https://uowtsd-my.sharepoint.com/:w:/g/personal/1902994_student_uwtsd_ac_uk/EbSv18FV0uFEpmfy0uPa8WgBEkJZQYArRytRI5BaT4prmA?e=MRBqPy



25.11-29.11

https://uowtsd-my.sharepoint.com/:w:/g/personal/1902994_student_uwtsd_ac_uk/EXF2rL_vcoxFil1VrmuP9D0BYla87CIXN5OmWZgFzq7-ow?e=LOuCit



02.12-06.12

https://uowtsd-my.sharepoint.com/:w:/g/personal/1902994_student_uwtsd_ac_uk/EbiWtEQqW2RAvYFhtQVtx2ABhvZuUSQRCcpq2NNBVMYpCg?e=Xk9XtY