

Overview

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

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Link to OneDrive: https://uowtsd-my.sharepoint.com/:o:/g/personal/1905646_student_uwtsd_ac_uk/Eq20Xfi01IpKkiGpXC0SCJ4Bn4rLNiAzl93hdauprsfUZQ?e=gygimx

Assessment for Learning

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1. Evidence of marking

Work out the n^{th} term then work out the 10th, 50th and 100th term

Sequence	Rule	10 th term	50 th term	100 th term
a) 3, 5, 7, 9, 11, 13, ...	$2n + 1$	21	101	201
b) 4, 7, 10, 13, 16, ...	$3n + 1$	31	151	301
c) 6, 11, 16, 21, 26, ...	$5n + 1$	51	251	501
d) 9, 19, 29, 39, 49, ...	$10n + 1$	99	499	999
e) 2, 7, 12, 17, 22, ...	$5n + 3$	47	247	497
f) 12, 20, 28, 36, 44, ...	$8n + 4$	84	404	804
g) 19, 29, 39, 49, 59, ...	$10n + 9$	109	509	1009
h) 7, 10, 13, 16, 19, ...	$3n + 4$	34	154	304
i) 14, 20, 26, 32, 38, ...	$6n + 8$	68	308	608
j) 55, 60, 65, 70, 75, ...	$5n + 11$	61	261	511
k) 8, 17, 26, 35, 44, ...	$9n - 1$	89	449	989
l) -2, 0, 2, 4, 6, ...	$2n - 4$	16	96	996
m) 12, 9, 6, 3, 0, ...	$-3n + 12$	-32	-159	-309
n) 14, 27, 40, 53, 66, ...	$13n + 1$	131	651	1301
o) 51, 41, 31, 21, 11, ...	$-10n + 41$	-138	-538	-1038
p) 12, 9, 6, 3, 0, ...	$-3n + 12$	-36	-156	-306

we need 12

Extension

Sequence	Rule	10 th term	20 th term	50 th term
1) $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \dots$				

Bendisely!
Great effort
here

In this example I have marked a worksheet given to my Year 8 set 2 class. The lesson focus was generating a sequence from the n^{th} term. In this case I marked each box rather than row by row as I noticed that the pupil in question had some difficulties in some parts of the worksheet, Q.H box 3 and Q.L box 4. I also included certain comments and hints as I want to push this pupil as they are showing good promise. At the end of the worksheet I gave the pupil praise and a positive comment.

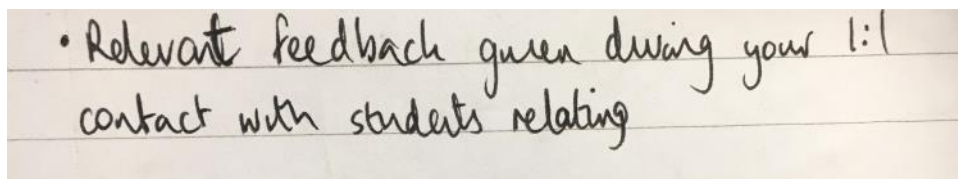
2. Learning journal comment on marking

1050: You stated that you are going through the answers. Didn't you mark as you went around ?? - I did but couldn't mark all pieces of work due to the number of questions throughout the lesson. Thinking of writing '3 before me' or similar on board.

In this example I have received a comment on my marking. The black writing is the teacher comment and the blue is my own comment on the marking. This was also in my Year 8 set 2 class. The class teacher had previously made known to me that I should try and mark throughout the lesson so this was something that I have tried to implement in my lessons. The reason that this comment is coming across more negative is that I couldn't mark the books of every child in the class personally due to the number

of questions that came up throughout the lesson. Something I want to try and implement is the '3 before me' system or similar as this would free up my time for marking of work.

3. Learning journal comment on feedback



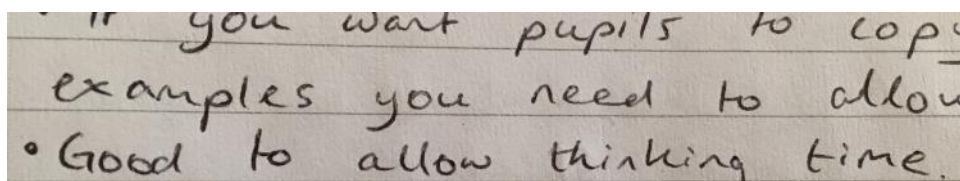
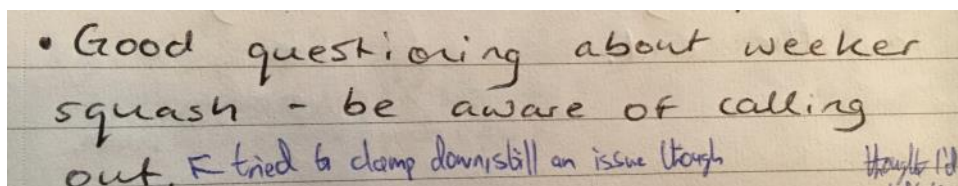
This example is also from my Year 8 Set 2 teacher. In this they are complementing me on the feedback I was giving pupils during my 1:1 contact where I marked their work and gave them praise and comments to aid them in the rest of their work. I feel this was successful because each piece of feedback I gave was tailored to the pupil specifically and made it far more personal so they responded to it better.

4. Evidence in lesson plan

Teaching & Core Learning	To explain all 4 examples and get them to copy down the first two. Use the 2nd two as a point of class discussion to draw on names and test understanding. To hand out worksheet while they're copying down examples and give out glue sticks. To circulate and mark work.
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This example is from a lesson plan for my Year 8 Set 2 class. Building on from the points that the class teacher has made in my learning journal I have taken the feedback as a way of moving forward and improving my pedagogy.

5. Learning journal comments on questioning



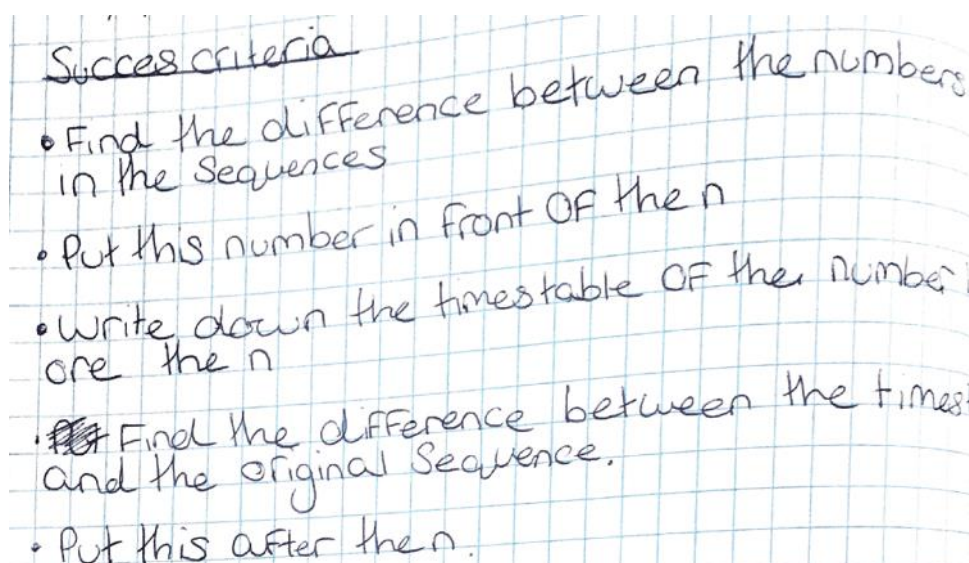
Both are examples from a lesson with my Year 7 set 1 class. In the first comment the topic we were studying was ratio and this comment is praising me on making it more real-world by using the topic of squash to explain the differing values. I feel I did this explanation well however some pupils did call out answers when I tried to bounce the question around the class. In the second comment I am being praised on the use of thinking time which enabled far more students to answer my question.

Cross Curricular Responsibilities

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1. Literacy in pupils books



This is the book of one of my Year 8 pupils. I have found in maths that writing a success criteria is a very efficient way for pupils to remember the steps for things. It is something that I picked up from my mentor and is something I have tried to incorporate into all of my lessons. This pupil has effectively copied down the example although they have spelt the word success wrong. The success criteria worked very well as the pupils always had something to turn back to if they were unsure.

2. Evidence in lesson plan for oracy and literacy

Teaching & Core Learning	Start with 'Is this a good question?' as a discussion point, how can this be improved is something I want them to think about. Go through "Why we use questionnaires", read this slide out and get them to write this down. 'What makes a good questionnaire', there is a lot to write down for this so I will need to ensure that they are on task
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This was taken from a lesson plan for my Year 8 class on questionnaires. As there are things to look out for which make a bad questionnaire it was appropriate to get the pupils to write all this information down. Additionally I wanted to use this as a time to work on their oracy skills as this topic could provide discussion points. The discussion point worked really well as it prepared pupils for what was coming up next as well as a tool for me to assess their prior knowledge.

3. Evidence in lesson plan for literacy

Plenary	Wordy plenary question to test misconception. "explain why ... is wrong" Ensure pupils are packed away for dismissal.
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This was taken from a lesson plan for my Year 7 Set 1 class on ratio. This was a really good topic to encourage pupils with worded questions as there are real world examples. This question also formed a discussion point in the lesson as it allowed the class to give different inputs and enabled me to address the possible common misconception in this topic.

Sets tasks and selects resources that build on previous knowledge

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1. Evidence of pupils using prior knowledge

4/12/19

LO: To be able to find the n^{th} term.

APK:-

- 1, 3, 5, 7, 9, 11, 13 = +2 is the rule. ✓
- 6, 14, 22, 30, 38, 46 = +8 is the rule. ✓
- 5, -2, -9, -16, -23, -30 = -7 is the rule. ✓

A) $2n + 3 = 5, 7, 9, 11, 13$ ✓

B) $1 - 2n = -1, -3, -5, -7, -9$ ✓

Success Criteria

- Find the difference between the numbers in the sequence.
- Put this number in front of the n .
- Write down the times table of the number before the n .
- Find the difference between the times tables and the original sequence.
- Put this after the n .

Example: 3, 5, 7, 9, 11, $\rightarrow 2n + 1$

2 4 6 8 $\rightarrow +1$
3 5 7 9

2 6 10 14 18 $\rightarrow +2$
4 8 12 16 20
8

5/12/19

LO: To be able to generate a sequence using the n^{th} term.

APK:-

- 2, 4, 6, 8, 10, 12, 14 = add $2n$ ✓ $\begin{matrix} 2 & 4 & 6 & 8 & 10 \\ 1 & 2 & 3 & 4 & 5 \end{matrix} \rightarrow +1$
- 3, 5, 7, 9, 11, 13 = add $2n + 1$ ✓
- 1, 3, 5, 7, 9, 11 = add $2n + 1$ ✓
- 7, 12, 17, 22, 27, 32, 36 = add $5n + 2$ ✓
- 4, 1, -2, -5, -8, -11, -14 = take $-3n + 7$ ✓

X Tables

This second example is also taken from my learning journal but for my Year 8 class. In this lesson I made it known to the pupils why I used the APK I did and how it relates to what they were doing in the task. This went down very well with the pupils as I believe it reassured them that they could already do the basics needed for the main task.

3. Evidence in lesson plan

Opening phase (with links to prior learning)	Get class settled. Put starter on the board, starter on types of chart to refresh memory. Go over answers.
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This is an example from a lesson plan for a lesson on frequency polygons for my Year 8 class. As they were moving onto more graphical work I wanted to use a starter that would point them in the right direction for what I wanted them to think about. This went down well as they were able to name almost all of the types of charts on the board.

Critical Reflection

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In this essay, I will conduct a literature review on three pedagogical principles from Donaldson's curriculum (2015), which will then lead into a reflection on teaching practice and provide the basis for an outline of next steps for professional development. This self-reflective model of teaching is important for teachers because it enables them to begin a learning journey so that they can better their professional practice. Additionally, this self-reflective model has the aim to not only improve professional standards, but to also "*sustain excellent practice*" (Welsh Government, 2018). As a professional on a professional teaching experience, this essay is the beginning of my learning journey and will advise my future practice.

Firstly, the area in which I will start this review is, "*good teaching and learning means employing assessment for learning principles*" (Donaldson, 2015). It is agreed upon that assessment for learning plays an important role in aiding pupil learning (Black et al. 2007; Costa et al. 2018; Donaldson, 2015; Wiliam, 2018). As outlined by Black et al. (2007), there are four main areas: questioning, feedback by marking, peer and self-assessment, and formative use of summative assessments. It can be noted from Black et al. (2007) that teachers do not leave enough time between asking a question and answering it themselves; the average wait time was found to be only 0.9 seconds before this occurred. Teachers not giving pupils ample thinking time and also answering their own questions have been noted as bad practice because it does not allow the pupils an opportunity to develop their own answers, which improves their problem solving skills. From the research undertaken, it was found that increasing wait time improved the quality of the answers given by pupils and enabled the teachers to gain a better insight into pupil understanding. Furthermore, the quality of the questions asked is of importance (Korkmaz, Ö and Yesil, R, 2010; Black et al. 2007). Open-ended questions encourage more thoughtful answers from pupils which, in turn, aids their learning. Despite what is promoted by Black et al. (2007), teachers in Malaysia still provide the correct answer to the asked question most of the time (Costa et al. 2018) and it is suggested that students are scared of coming forward with their misconceptions "*for fear of losing the respect of their teacher and peers*". This also goes against what Donaldson (2015) promotes because in his curriculum, pupils' well-being is vitally important and so this phenomenon should be avoided. Black et al. (2007) also mentions that the use of feedback by marking plays an important role in assessment for learning. The comments that teachers make in written feedback are crucial as this is what the pupils see first-hand; they need to outline what the pupil has done well and what needs to be done to improve so that their next steps can be made clear (Black et al. 2007; Donaldson, 2015). On the contrary, Wiliam (2018) explains that feedback can actually be destructive to the pupil in question because it can cause undesirable behaviour responses in pupils. For example, feedback centred around pupils exceeding set goals can result in pupils exerting less effort to reach goals, whereas feedback centred around pupils falling short of set goals can result in reduced aspiration because pupils have decided the goal is too hard. Both types of feedback can result in pupils ignoring feedback. This emphasises the importance of knowing your pupils because a teacher can anticipate how their pupils will individually react to feedback and, therefore, tailor their feedback to best fit the individual, which helps eliminate the risks associated with giving feedback and also matches up to what Donaldson (2015) says about the importance of knowing your pupils. Additionally, peer-assessment has been found to be of much benefit to the pupils for multiple reasons: it "*improves the motivation of students to work more carefully*"; the language of peer discussion is more accessible; group feedback carries more weight to the teacher which promotes student voice; and it frees the teacher enabling them to create helpful interventions after reflecting on the peer-marking taking place (Black et al. 2007). It is also important for pupils to be able to self-assess as without it, it can be troublesome for pupils to reach their learning aspirations with a lack of understanding of how to reach their destination. This is critical for pupils in taking responsibility for their own work as with the ability to self-assess, they will be able to put into place clear plans of how to achieve their goals (Donaldson, 2015). According to Black et al. (2007), formative use of summative assessments plays an instrumental role in assessment for learning through using "*the aftermath of tests as an opportunity for formative work*", where teachers may review which questions were answered poorly

by the majority of pupils and then focus on correcting the learning associated with the questions. Consequently, this helps ensure the process of learning is the main focus rather than "*claiming a few extra marks*" (Black et al. 2007), which aligns with Donaldson's (2015) view that assessment should align with "*the purposes of learning*". Self and peer-assessment can also be used as tools to further pupil understanding after summative assessments through pupils answering questions they have created themselves and peer marking them. In this way, pupils can "*understand the assessment process*" and are clearly informed of what they need to do to succeed. Moreover, this will help pupils come to the realisation that tests can be used as a means of improving their learning in the future (Black et al. 2007), which exemplifies the benefits of the formative use of summative assessments.

Secondly, I will discuss, "*good teaching and learning regularly reinforces Cross-Curriculum Responsibilities, including literacy, numeracy and digital competence, and provides opportunities to practice them*" (Donaldson 2015). Literacy is a skill that all pupils will need to enable them to access the current curriculum, so there is no surprise that it was highlighted by Donaldson (2015) as an area that needs improvement. In a paper about the Literacy Boost development program in Sweden (Kirsten, 2019), it has been suggested that incorporating a thematic approach makes the study of literacy more relevant because the pupils can understand why they need it for the subject that they are studying. Although this approach is from a program in Sweden, it marries up with what Donaldson (2015) says about the need to study things thematically. Numeracy, however, is an area that has been found by Drake and Racknor (2011) to be more difficult to incorporate than literacy. They also noted that those who managed to incorporate numeracy did so in a real world context. This finding also agrees with Donaldson's (2015) pedagogical principle on authentic contexts for learning, even though this study was based on a school in Canada, which is important because it further solidifies the importance of what Donaldson (2015) has set out to implement in Wales. Digital competency is an area that Higgins, Katsipataki and Xiao (2012) have found positively benefits learners. The conclusion was arrived at after studying research evidence spanning 40 years making it highly credible. However, they also noted that the diversity in the nature of implementation has made it incredibly difficult to isolate what exactly makes a positive impact on learning and what does not. They go on to further suggest that studying how successful schools incorporate the use of digital technology might shed some light on what makes a positive impact. Furthermore, Dole, Geiger and Goos (2015) confirm the positive effect of digital tools on the study of numeracy. This further supports what Donaldson (2015) says about the benefits of cross-curricular opportunities through integrating ICT skills with numeracy. In the study by Dole, Geiger and Goos (2015), the teacher incorporated the use of digital tools and numeracy into their physical education lessons to much success. The students were interested, involved and understood that they could apply what they had learned in other real world situations. Additionally, this concurs with what Drake and Racknor (2011) say about the relevance of real world context. This is the way in which the curriculum is heading and it is encouraging to see that it has worked successfully in other studies prior.

Thirdly, the final topic that will be explored is, "*good teaching and learning sets tasks and selects resources that build on previous knowledge and experience and engage interest*" (Donaldson, 2015). The paper published by Rosenshine (2012) suggests that beginning a lesson with content studied previously helps to reduce the cognitive workload on pupils. By starting with previous content that will be necessary later in the lesson, it reduces the cognitive workload for pupils to recall this prior information whilst they are currently studying new material that is taxing enough already. However, calling on prior knowledge can in itself cause cognitive conflict for pupils if a teacher assumes pupils possess specific knowledge. Pupils come from a varying degree of backgrounds that have influenced and shaped the way in which they think and perceive things. It has been noted that trying to eliminate a pupil's pre-existing way of thinking can be difficult and is not always successful (Sobral and Teixeira, 2010; Ambrose, 2010). To combat this, educators need to know what their pupils know so that appropriate instruction can be given to fill any gaps and facilitate the removal of any misconceptions. A further risk is that the use of unsuitable prior knowledge may reduce the pupils' investment in later tasks (Berthold et al. 2015). This can occur when pupils have high levels of prior knowledge and the "*extraneous load*" of completing a seemingly unimportant task demotivates them. On the other hand, Berthold et al. (2015) suggests that prompts might actually be beneficial for pupils with less prior knowledge, which agrees with Rosenshine (2012). This shows that educators need to be aware of the needs of their pupils, they need to set their tasks according to the abilities of their pupils and also choose tasks that are appropriate to help eliminate any previous

misconceptions pupils may have. The importance of knowing your pupils is one of the fundamental aspects of Donaldson's (2015) curriculum and building on previous knowledge is an area in which it is critical.

Similarly to the literature review, I will continue in the same fashion for my conclusions and begin with discussing the point, "*good teaching and learning means employing assessment for learning principles*" (Donaldson, 2015). I personally believe that I have implemented this principle well as I have addressed three out of the four points raised by Black et al (2007). Questioning is an area that I have been improving on. At the beginning of my placement, I used more closed questions which required simplistic "yes/no" answers, but I am now using more open-ended questions that facilitate room for discussion in order to encourage higher order thinking, as shown in my 'Assessment for Learning' tab. Furthermore, by looking at my 'Assessment for Learning' tab, I have taken on what Black et al. (2007) have said on the topic of wait time and have incorporated this into my lessons effectively to give all pupils sufficient time to think about and formulate an answer. Whilst in school, I have been told by my mentor to put answers up on the board or verbally speak them so the students have constantly been in a state of self-assessment by having the opportunity to mark their own answers. However, this type of self-assessment is not quite what has been outlined in the literature review. Although my pupils know how to mark their own work, not all of them do this effectively. Some are not at the stage where they know what is needed to improve and how to put a plan in place. On the other hand, peer-assessment is not a technique that I have implemented yet, but after completing the literature review, I would like to try putting it into practice in the future because Black et al (2007) suggests it is beneficial. Feedback by marking is an area that I feel I am doing strongly in. After my first encounter with one of my class teachers, they made known to me the importance of marking on-the-go. They mentioned that a powerful result of this is that live feedback can be provided. Since then, I have attempted to incorporate this into all of my lessons. By looking at my 'Assessment for Learning' tab, it is clear that I have not only marked a pupil's work, but have also provided guidance on what their next steps should be in both written and verbal formats, given them praise for their work ethic, and tailored my comments to the pupil. Knowing the pupil well meant that I could predict what type of feedback they would most likely engage with, which ensured they took it on board. This is what Donaldson (2015) and Black et al (2007) agree on, so this is a technique that I am pleased about implementing. Furthermore, I have also eradicated the potential for negativity to come out of these comments and in doing so removed the possibility of what Wiliam (2018) mentions. The formative use of summative tests is an area that I have no experience in as of yet because I have not been in a position to administer a summative assessment. Although I have been unable to do so, the discoveries from my literature review have encouraged me to incorporate the formative use of summative assessments into my future practice.

Secondly, I will address the point that, "*good teaching and learning regularly reinforces Cross-Curriculum Responsibilities, including literacy, numeracy and digital competence, and provides opportunities to practice them*" (Donaldson 2015). Being a teacher of mathematics, the literacy side can sometimes prove quite difficult to implement, depending on the topic being studied. Fortunately, mathematics has put more of an emphasis on the need for literacy in GCSE papers in recent years. Worded questions occur far more frequently, as well as the need for a higher quality of written communication when answering questions. When teaching, I have managed to successfully implement literacy in all of my lessons in the form of a success criteria, as seen in my 'Cross-Curricular Responsibilities' tab. This was suggested to me by my mentor and has proved to be of the utmost importance because pupils can refer back to it during the lesson as a step-by-step guide. Furthermore, it ensures that pupils practice their literacy in a more real life context, which is advised by Drake and Racknor (2011). Currently, I believe that I am addressing literacy quite well, although I believe that it is an area for improvement. The school that I am currently in has a marking policy that encompasses literacy errors which I would like to explore more in depth in order to mark as effectively as possible, and ensure that the high expectations of SPAG are met. Fortunately, I need not worry about the implementation of numeracy because it is the nature of my subject and, thus, I will not discuss this. On the contrary, digital competency is an area that I have found very difficult to implement. Although I understand that digital tools can prove useful in mathematics, as it has been shown by Dole, Geiger and Goos (2015), I have yet to teach a topic that would enable my use of them, which is a problem presented by Higgins, Katsipatakis and Xiao (2012). This is an area that I am keen to research so that I can make my future lessons more enjoyable, and to also give them real life

context.

Finally, I will explore the area of, "*good teaching and learning sets tasks and selects resources that build on previous knowledge and experience and engage interest*" (Donaldson, 2015). My 'Sets Tasks' tab visibly demonstrates that my lesson starters are good, thought out and appropriate to the tasks that the pupils will be completing during the lesson. This is in line with what Rosenshine (2012) suggests and out of the three areas discussed, this is my strongest area. I consistently plan my starters so that they use skills that are later used in the lesson to reduce the pupils' cognitive load when they reach the main task. Although I get my starters right most of the time, I do occasionally fall into the problem suggested by Sobral and Teixeira (2010), and also by Ambrose (2010). One such occasion was when I failed to know the pupils' prior knowledge on inequalities, which hindered a lesson on frequency diagrams. Salvaging the lesson proved to be an incredibly difficult task and I only did so with the help of the class teacher. This was a steep learning curve, but it is a danger that I am always aware of going into my lessons now. Unless I know that I have taught them the content, I will not assume any prior knowledge. Moreover, I have used prompts in my lessons to encourage my pupils and this has proved effective due to the lack of prior knowledge that they possess, as stated by Berthold et al. (2015). However, sometimes this can be a hinderance because I have fallen into the trap of over prompting my pupils on occasion and not allowing them to struggle, which builds resilience.

To conclude, I will propose recommendations for my own professional development by drawing upon the conclusions from the aforementioned sections. Firstly, I am going to aim to begin implementing peer-assessment with the hope of improving pupils' ability to self-assess in the future. Additionally, I would like to use summative assessments so that I can use the results formatively. I already have an idea of how to implement this, which I am excited to do. Furthermore, I will endeavour to learn the school marking policy so that I can provide the best literacy help that I am capable of. Finally, I am aiming to find a lesson in which I can make use of digital tools to provide more real world examples of how numeracy is used. I will use these recommendations to shape my future practice, enabling my teaching quality to be as high as possible.

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