

Appendices

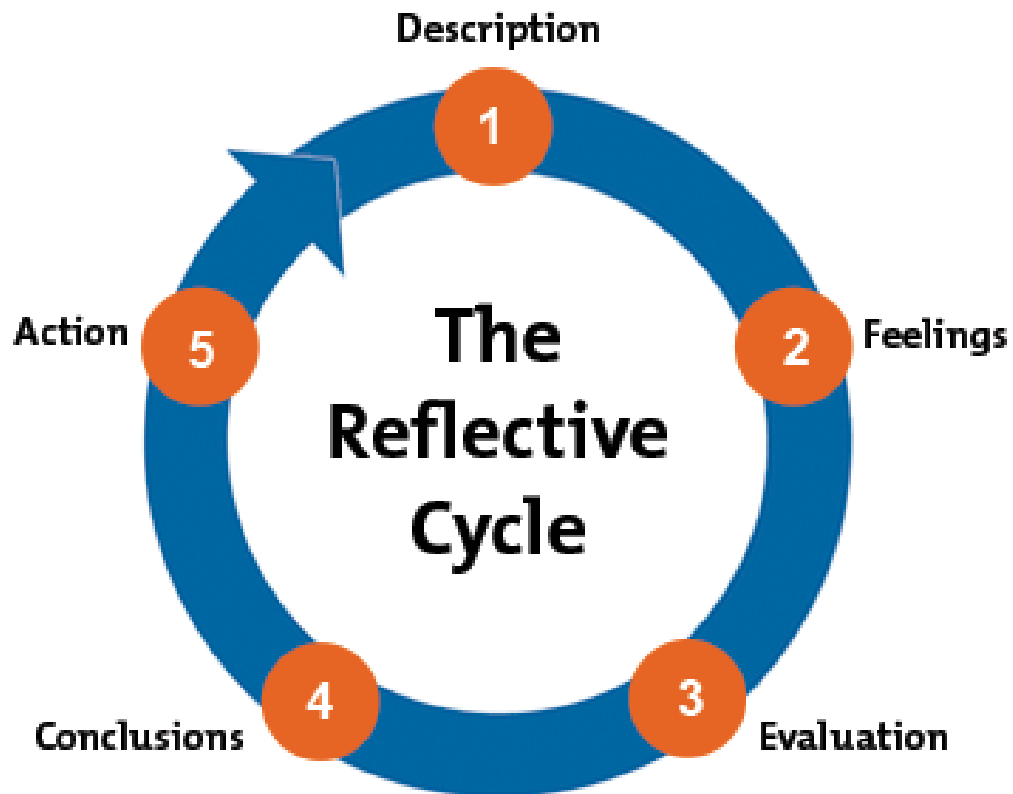
Appendix 1 - Lesson Plan (Showing the action research in the starter)

Time	Activities/Methodology/Key Concepts (Teacher's Role – including key teaching points and key questions)	Pupil Tasks (Pupils' role -including differentiation strategies, engagement in formative assessment and homework)	Resources (Including Health and Safety requirement)
Opening phase (with links to prior learning) 10 minutes on carpet	Tell the children, no hands up today, we are using the lollipop sticks, so pay attention because I might choose your stick! Write the word 'Zog' on the IWB. Use a lollipop stick (Case Pupil) to choose someone to read it. Consolidate this by sounding out and blending as whole class. Who has heard of Zog? Thumbs up if you have? Thumbs down if you haven't? Thumbs sideways if you can't remember. Show the children the book, and ask, what do you think the book is about (lollipop stick). Ask that same child, which dragon do you think is Zog? Ask, do you know any other stories with a dragon in it? (Lollipop stick) Read the blurb on the back of the Zog book. What do we know about dragons? (Lollipop stick x2 – 1 case pupil) What do we know about princesses? (Lollipop stick x2 1 case pupil) Ask, what kinds of things would a dragon need to learn in dragon school? Discuss this question in learning partners, then choose a lollipop stick for a child to feedback one idea from their pair. Repeat this 2 or 3 times (depending on responses - 1/2 case pupils)	Children to respond to the questions, no hands up approach Children to show thumbs up/thumbs down Children to talk with their learning partners to discuss things a dragon might learn in dragon school	IWB Zog book Lollipop Sticks

Appendix 2 – Interview questions

1. Did you enjoy the lesson?
2. Has your current classroom teacher (name) used lollipop sticks in class before or have you used them in another class?
3. What did you think of the lollipop sticks in the lesson today?
4. Do you like being asked questions by the teacher in class? Why/why not?
5. Do you prefer lollipop sticks or (name other questioning strategy)?
6. Do you want your stick to be chosen? And if it is chosen, how do you feel?
7. How do you feel if you know the answer, but your name doesn't get chosen?
8. Do you think when the teacher uses the lollipop sticks that it makes you pay more attention to the questions?
9. What would make the lollipop sticks even better for next time?

Appendix 3 – Gibbs' Reflective Cycle



Appendix 4 – Observation Schedule Lesson Study 1 (Leuven Scale of Involvement)

Lesson Starter Timetable – Tick-list												
Tick if observed	Child 1				Child 2				Child 3			
	0 mins (Are they engaged at the start?)	3 mins	6 mins	9 mins	0 mins (Are they engaged at the start?)	3 mins	6 mins	9 mins	0 mins (Are they engaged at the start?)	3 mins	6 mins	9 mins
1) Low Activity												
2) A Frequently Interrupted Activity				✓							✓	
3) Mainly Continuous Activity			✓				✓		✓			
4) Continuous Activity with Intense Moments								✓		✓		
5) Sustained Intense Activity	✓	✓			✓	✓						✓

Appendix 5 - Observation Schedule Lesson Study 1 (Observation notes)

Lesson Study 1 – E. Dyer teaching Reception, H. Jones as non-participant observer

Child 1 = higher ability

Child 2 = medium ability

Child 3 = lower ability

(At 0 mins) Initially, child 1 + child 2 are engaged, looking at teacher. Child 3 is fiddling with labels on cupboard. Child 1 + 2 very focused when teacher starts using lollipop sticks.

Child 2 appears pleased (smiling) when stick is chosen and is able to immediately answer the question.

(At 3 mins) When shown the 'Zog' book, all three children are engaged and looking at the book. Child 1 and child 2 continue to look and listen to the teacher while she reads the synopsis from the back of the book. Child 3 shows some signs of engagement but continues to play with the cupboard.

Child 1 appears happy when his stick is chosen (smiling), and gives an extended answer.

Teacher pulls the same stick out twice in a row which results in laughter from most of the class and child 1 does not immediately re-engage but continues giggling with student next to him.

(At 6 mins) Child 3 is distracted and playing with display so when asked a question, he is caught off guard and needs prompts to help him answer the question. He appeared uncomfortable (shrugs shoulders, nods instead of speaking). Child 1 starts to play with display and fidget and is no longer looking at the teacher. Child 2 is not continuously looking at teacher, as she is distracted by student next to her.

Possibly due to age of class and disruption from children having to go and read with parent volunteer, distraction is high despite use of sticks.

Other children who aren't in this study are eager to answer and start to put hands up instead of waiting for lollipop sticks.

(At 9 mins) Child 3 is very engaged during the talking with learning partners, and when his name is chosen to give an answer, he is confident in answering. Child 2 gives the same response as someone else (was she engaged and listening to her peers, but had the same answer, or was she not engaged and didn't realise what the previous student had said?) Child 1 has low level of engagement at this point and is moving around a lot and fiddling with shoe.

Conclusion

- Child 1 + 2 eager and want to answer questions and were looking for their names to be called out.
- However, child 1 became more and more distracted as time went on (could this be due to age and because they were sitting on carpet, rather than due to the strategy?)
- Child 3 wasn't very bothered and didn't pay attention, though has some intense moments when name was pulled out, particularly following talking in learning partners.

- Realised after name was pulled out once, children became increasingly distracted, despite the sticks being replaced each time, therefore I feel this distraction is related to age rather than the strategy.

Non-participant observation

- In order to observe in an unobtrusive manner, I was sat near the pupils so that I could properly observe them while they were sat on the carpet, but to the side so that I was not constantly in their line of view. The children were not told that they were being observed. These choices allowed me to minimise the risk of the Hawthorne Effect on my observations.
- Difficult as I was previously placed in this class so children were naturally distracted by my presence.
- There were lots of adults in the room (class teacher, TA, BA student, PGCE student, parent volunteer and myself).

Appendix 6 – Lesson Study 1 (Interview Notes)

Lesson Study 1 - Interview

1. Did you enjoy the lesson?
All enjoyed the lesson
2. Has your current classroom teacher (name) used lollipop sticks in class before? Have any of your other teachers used lollipop sticks in class before? (Specifically, did ***** use them when you were in nursery?)
(1) Yes, every day at the start of the day for Helpwr Heddiw and sometimes use it at other times of the day.
All say lollipop sticks weren't used by the nursery teacher.
3. What did you think of the lollipop sticks in the lesson today?
(In order to make this question more accessible for this age range, we changed the wording to 'Do you like using the lollipop sticks?')
(1) I like being Helpwr Heddiw and choosing a stick to ask someone sut wyt ti?
(2) It's fun because you don't know who's stick it will be.
(3) It's exciting.
4. Do you like being asked questions by the teacher in class? Why/why not?
All answer yes.
(2) Sometimes I like it because I like to say my answer.
5. Do you prefer lollipop sticks or putting our hands up?
(1) Hands up
(2) Both
(3) Lollipop sticks
(1) Sometimes I feel so sad when I know the answer but my lollipop stick isn't chosen.
6. Do you want your stick to be chosen? And if it is chosen, how do you feel?
All answer yes.
(1) It's exciting to say the answer
(2) Happy because I was picked
(3) I didn't know what to say but I just said I don't know and it doesn't matter
7. How do you feel if you know the answer but your name doesn't get chosen?
(Answered in Q6)

We omitted the following questions for the children in lesson study 1, as we felt they were complicated questions beyond their understanding.

8. Do you think when the teacher uses the lollipop sticks that it makes you pay more attention to the questions?
9. What would make the lollipop sticks even better for next time?

Appendix 7 – Lesson Study 1 (Gibbs' Reflective Cycle)

Lesson Study 1 (discussed as research partners, written by E. Dyer)**Description**

Reception class of 25 pupils (observing 3 children – one higher ability, one middle ability and one lower ability), 5 adults present in the room (classroom teacher, TA, BA student, and E. Dyer as teacher and H. Jones carrying out the observations). In addition, there is a parent volunteer who is assisting with reading outside of the classroom who comes into the classroom every few minutes to get a child to read with.

It is the first session of the day. The lesson is an LLC lesson, and it is a hook lesson to introduce the book 'Zog' by Julia Donaldson, as part of the class topic of dragons and castles.

The starter, where we are carrying out the research of 'How does the use of lollipop sticks as an AFL strategy affect the level of engagement in primary school pupils?', involves asking questions relating to the book and engaging the children's prior experience and knowledge of dragons and princesses in stories.

The way that we decided to employ the lollipop stick strategy was to pick a lollipop stick, and put it back into the pot immediately. The children were aware that I was replacing the stick each time, and that there was a chance their name could be picked again. I asked the question, and then chose the stick. This would give the children a chance to think of answer, prior to me choosing who to ask.

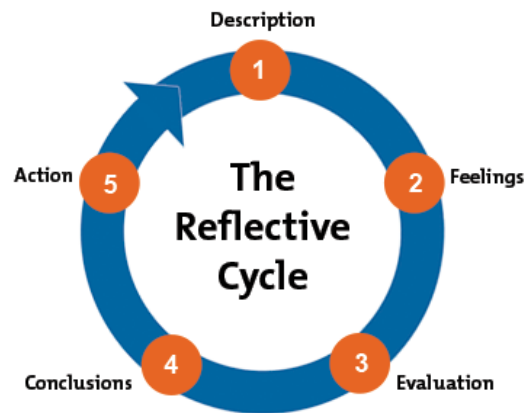
In order to ensure that I would choose the children that we had chosen to observe, I marked the top of their three lollipop sticks with a small coloured mark. This meant that I was able to decide when I would choose a stick of one of the participants, but it retained the randomness insofar as that I wasn't sure which of the 3 pupils I was choosing.

1. Feelings

In my role as teacher, I felt that the children were, on the whole, engaged in the starter task, as it was a topic that interested them. Some of the children knew the story of 'Zog' and were able to recall information, and relate their experiences of other stories with dragons and princesses. However, both I and my research partner agreed that there was a lot of distraction, possibly due to age of class and disruption from children having to go and read with parent volunteer.

However, when I could see that some children were getting distracted or fidgety, I felt that the lollipop sticks were a hindrance. Usually, I would ask the distracted child a question to re-engage them in the class discussion. However, I was restricted by the lollipop sticks.

I know that many of the pupils enjoy the lollipop stick strategy, as I have observed previously. Therefore many of the children find it exciting waiting to see whose stick gets picked, and also being able to recognise their name written on the stick.

2. Evaluation

The classroom teacher uses the lollipop stick strategy at the start of each day during 'Helpwr Heddiw', so the children are familiar with the device. Therefore, there was no distraction of it being a novelty.

Because I was replacing the stick immediately, sometimes asking the same question to different pupils, the same stick did come out twice in a row. Although the children find it amusing when this happens, it is a waste of time and can be a distraction when they laugh at it (as seen with Child 1, who following that incident was more disengaged).

A lot of the pupils continued to put hands up, even though I had explained there was to be no-hands-up. Therefore, it may be necessary to make this clearer to the pupils.

In the final question, where I asked them 'what might a dragon learn in dragon school?', a few of the pupils repeated the same answer – was this because they hadn't listened to the previous answer and didn't realise, or did they just want to say their answer regardless? Or, was it the way I asked the question? Instead of asking, 'what did you and your partner think of?', I could have asked 'did you and your partner think of a different thing that dragons might learn?' This might have eliminated repeated answers.

Child 1 – engaged at start, but then loses engagement as the starter went on, especially following the distracting incident of picking the same name out twice.

Child 2 – varying levels of engagement throughout the starter.

Child 3 – varying level of engagement throughout the starter, but very engaged at the end when they were talking in learning partners prior to lollipop stick.

3. Conclusions

It is difficult to measure the effect of the strategy in pupils of this age, as so many things can affect their levels of engagement. For example, the engagement levels of Child 2 and Child 3 were extremely varying. However, we can certainly identify some direct effects that the strategy had on the pupils.

For example, the effect choosing the wrong stick had on child 1 (being a distraction and leading to his disengagement)

And in the final question, where I asked them 'what might a dragon learn in dragon school?', I asked the children to talk with their learning partner. I then chose the lollipop sticks of child 2 and child 3 in the study. Child 3 had struggled to answer a question I had asked previously, but for this question, he was able to confidently give an answer. This made me wonder whether he felt more confident due to having discussed with his partner.

4. Action

We have decided to alter the way that we use the strategy for the next lesson study. Hollie will not replace the stick immediately, so the children in the class will know that there is no chance of their name being picked again. However, she will replace the sticks at intervals and will announce this to the children saying 'all sticks back in the pot'. We will look to evaluate if this has any effect on the engagement of the children.

Appendix 8 – Observation Schedule Lesson Study 2 (Leuven Scale of Involvement)

Lesson Starter Timetable – Tick-list												
Tick if observed	Child 4				Child 5				Child 6			
	0 mins (Are they engaged at the start?)	3 mins	6 mins	9 mins	0 mins (Are they engaged at the start?)	3 mins	6 mins	9 mins	0 mins (Are they engaged at the start?)	3 mins	6 mins	9 mins
1) Low Activity										✓		
2) A Frequently Interrupted Activity									✓			
3) Mainly Continuous Activity								✓				
4) Continuous Activity with Intense Moments							✓				✓	✓
5) Sustained Intense Activity	✓	✓	✓	✓	✓	✓						

Appendix 9 - Observation Schedule Lesson Study 2 (Observation notes)

Lesson Study 2 – H. Jones teaching Year 6. E. Dyer as non-participant observer

Child 1 = higher ability

Child 2 = medium ability

Child 3 = lower ability

(At 0 mins) Child 4 + Child 5 are paying attention, looking at and listening to teacher. Child 6 is not looking at teacher - she is talking to neighbour.

When teacher picks up lollipop sticks to choose one, Child 4 + Child 5 are watching carefully whose name comes out. Both are quick to respond to the questions when their sticks are chosen.

Lollipop sticks replaced in pot, teachers begins reading extract which pupils are following in the book or listening.

(At 3 mins) Child 4 is engaged by reading along. Child 5 is not reading along, however she appears to be listening to the teacher reading. Child 6 is not following the reading (there is a book available), she is distracted by other students on her table.

When others in the class (those not being observed) are picked using the lollipop stick and they give their answers, Child 5 puts her hand up to answer (she is reminded that it is no-hands-up) – shows engagement as she is listening to others' responses.

(At 6 minutes) Child 6 appears surprised when stick is chosen and is not ready to answer, but she does give an answer (hesitantly). Immediately after this, she listens to her peers' responses, and doesn't get distracted by the other students on table who continue talking. When her stick gets chosen, Child 5 is ready to answer her question. However, she appears to lose engagement by flicking through her exercise book – could be that she has lost interest now that no chance of her stick being chosen?

Lollipop sticks replaced in pot, continued reading.

Child 6 appears to be listening to the reading, however she does react to something someone on her table says, but then turns away to continue listening to the reading.

(At 9 minutes) Child 5 appears distracted as she is drawing on her hand/on a piece of a paper, but she does answer her question quickly when asked. Child 4 is reading along and gives an extended and developed answer.

Child 4 also puts his hand up when others are picked as he is engaged by listening and reacting to his peers' responses.

Conclusion

- Child 4 remained engaged throughout the starter by listening and looking at teacher, by reading along and by answering questions and reacting to his peers' and responses.
- Child 4 and 5 continued to listen even after their sticks were chosen because they were reacting to their peers' responses (and before they were replaced back in pot, so even though there was no chance of their stick being chosen again, they remained engaged).
- Child 5 appeared to lose engagement as the starter went on, however she was able to answer question when her stick was chosen. Perhaps, because she wasn't being chosen when she put her hand up, she was losing motivation? Or, do the outward actions not accurately display the level of learning?

- Initially, Child 6 was not engaged as she was not ready to answer the question when her stick was chosen. However, immediately after this, her engagement improved massively while her peers were answering and teacher was talking (so perhaps she realised her stick had been replaced and she might be chosen again? Or she may have been embarrassed that she was caught off guard when her stick was chosen?)

Non-participant observation

In order to observe in an unobtrusive manner, I was sat removed from the pupils in the corner of the room. None of the pupils in the class were told that they were being observed. This allowed me to minimise the risk of the Hawthorne Effect on my observations.

Appendix 10 – Lesson Study 2 (Interview Notes)

Lesson Study 2 - Interview

1. Did you enjoy the lesson?
(4) Yes, I enjoyed the lesson and was able to get on with work quietly
(5) Yes, I enjoyed the lesson because I like literacy and it seemed calmer in the starter as everyone was paying attention to whose name was getting picked out
(6) Yes, I enjoyed
2. Has your current classroom teacher (name) used lollipop sticks in class before or have you used them in another class?
All answered similar- they don't use lollipop sticks in this class, but have done lower down the school previously
(4) Yes, I remember using them in year 3 and 4 I way preferred it because I feel it is more fair them the online randomizer
(5) We don't use lollipop sticks in this class, but we used to use them in younger classes
(6) We use something similar which is DOJO randomizer, it's just on the computer instead but does the same thing
3. What did you think of the lollipop sticks in the lesson today?
(4) Doesn't matter if people make a mistake.
(5) It was a nice change as we use the DOJO randomizer every day and sometimes it gets boring and predictable.
(6) I like that the teacher is in control of whose name comes out, I wish we could use the lollipop sticks more often.
4. Do you like being asked questions by the teacher in class? Why/why not?
(6) Sometimes, not as much in Maths because need thinking time and I am not very good at maths
(5) Answering gives you a chance to show what you know, but it depends on the lesson, today I wanted to be asked a question because I'm good at literacy, in maths I don't like being asked because I struggle with most of the questions.
(4) I always get excited when my name is chosen, but only if we get given thinking time. I prefer it when the teacher asks the question before choosing a name so we get a chance to think.
5. Do you prefer lollipop sticks or dojo randomizer?
All three answer lollipop sticks.
(6) Lollipop sticks stops people from shouting out
(5) Randomizer might choose the same name so it's not as fair
(4) Sometimes the randomizer repeats the same name, but because you put the lollipop stick to the side after a name was chosen it meant that person couldn't answer again. I prefer it because it gives everyone a fairer chance.
6. Do you want your stick to be chosen? And if it is chosen, how do you feel?
(5) If I know the answer yes, but if I don't, I sometimes hope it doesn't get picked. Today I felt happy because I know all the answers.
(6) I don't mind because even if I don't always know the answer, it doesn't matter it's just about trying. Miss doesn't make you feel stupid if you don't know it, she helps us or picks someone else to help.
7. How do you feel if you know the answer, but your name doesn't get chosen?
(5) I sometimes feel disheartened because I like to show the teacher that I know, but everyone must have a fair chance

(4) I feel like it's pointless trying to think of the answer because my name never gets chosen this way

8. Do you think when the teacher uses the lollipop sticks that it makes you pay more attention to the questions?

(5) Yes because it makes you more prepared and ready. You try harder to think of your answer.

(6) Yes, definitely because sometimes when we use hands-up, I know that if I don't put my hand up, I won't get picked so I don't pay as much attention then, this makes me listen and learn more

(4) Yes because there is a good chance that your name will get chosen, but sometimes if my name has already been chosen, I know it won't be again so then I still can become distracted

9. What would make the lollipop sticks even better for next time?

(6) Thinking time

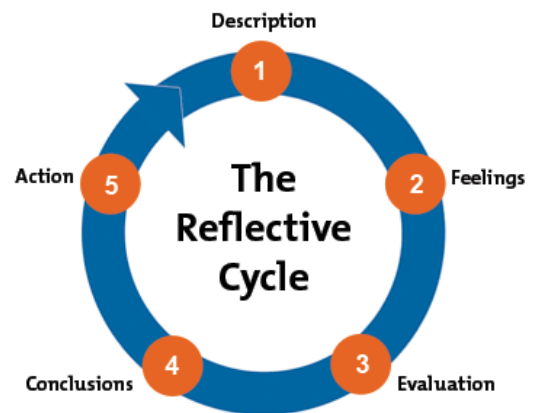
(4) Group discussion or learning partners – sometimes

(5) Making sure nobody shouts out

Appendix 11 – Lesson Study 2 (Gibbs' Reflective Cycle)

Lesson Study 2 (discussed as research partners, written by H. Jones)**1. Description**

Year 6 class of 27 pupils (observing 3 children – one higher ability, one middle ability and one lower ability. Initially, 2 adults present in the room (H. Jones as teacher and E. Dyer carrying out the observations). A few minutes into the lesson, the classroom teacher and TA enter the room. T remains for the whole session, while classroom teacher leaves and re-enters room several times.



It is the second session of the day, immediately after break time. The lesson is an LLC lesson based around the book 'Eye of the Wolf' by Daniel Pennac.

The starter, where we are carrying out the research of 'How does the use of lollipop sticks as an AFL strategy affect the level of engagement in primary school pupils?', involves recall questioning of the story so far, followed by reading a passage and stopping throughout to discuss the passage.

The way that we decided to employ the lollipop stick strategy was to pick a lollipop stick, and leave it out of the pot, clearly putting it down on the table for the children to see. After asking several recall question about the story so far, I announced 'all sticks back in pot', and began to read the excerpt. I then stopped and asked some more questions, again leaving the sticks out each time. I repeated this again. For each question, I asked the question, and then chose the stick. This would give the children a chance to think of answer, prior to me choosing who to ask. In order to ensure that I would choose the children that we had chosen to observe, I marked the top of their three lollipop sticks with a small coloured mark. This meant that I was able to decide when I would choose a stick of one of the participants, but it retained the randomness insofar as that I wasn't sure which of the 3 pupils I was choosing.

2. Feelings

In my role as teacher, I felt that the class as a whole were more engaged in the questioning and discussion than usual. One of the reasons for this may have been that the lollipop stick strategy is not one used by their classroom teacher (though from interviews we now that their previous teachers have used them). Therefore, it may have been an interesting and novel tool for them.

Whereas the computer randomizer is totally random, I had some control in choosing the lollipop sticks as I had marked those of the participants. I felt that at the point where Child 6's lollipop stick was chosen, she had not been expecting to be called upon. However, both I and my research partner observed her engagement levels improve following this. Therefore, I can see the benefits of lollipop sticks over a randomizer, as the teacher could have more control when using the sticks, for example by marking them in some way, or by using different coloured sticks for different ability pupils, while the sticks may still appear random to the pupils.

However, several of the higher ability pupils kept putting their hands up to answer questions, and I felt restricted by the strategy. I did not feel able to stray from the lollipop tool by choosing those with their hands up, as this would render it pointless.

3. Evaluation

I and my research partner agreed that Child 4 was engaged throughout the starter. However, he is a higher ability pupil, and if often engaged in the lesson, so it may not have been a result of the strategy.

Child 5 was initially engaged and was keen to answer so put her hands up several times. But she seemed to lose engagement as time went on. It might be that she lost engagement because she wasn't being chosen when she put her hand up.

Child 6 was not engaged at all at first. However, after being caught off guard when her stick was chosen, she was more engaged. It might be that she was aware that her name might get picked again (after the sticks were replaced) and didn't want to be caught off guard again.

4. Conclusion

As with Lesson Study 1, there are some clear conclusions to be made about the effect the lollipop sticks had on pupil engagement.

The effect it had on child 6 was clear to see, as up until the point her stick was chosen, she had not been engaged in the lesson, but following the intervention, her engagement level greatly improved and remained high.

When comparing lesson studies, I and my research partner agree that the engagement levels of the year 6 pupils were affected by the device more positively than the levels of the reception pupils. This could be because they had a better understanding of the random questioning.

5. Action

In order to accurately measure the effects of the two different ways in which the strategy can be used (replacing/not replacing the sticks), it would be beneficial to carry out further lesson studies trialling the second method in both classes. This would provide us with more data to compare the effect.

One of the things that has been highlighted in both lesson studies and interviews is the potential benefits of pairing the lollipop stick strategy with another AFL strategy. A future lesson study therefore, might look further into this, for example by pairing the lollipop stick strategy with increased waiting time, or with think-pair-share.