

**A Critical Analysis and Evaluation of the Observation Research Tool, 'Leuven Scale.'**

Compare and contrast a range of literature (journals, blogs, government reports, websites, Estyn reports) related to observation of the learning environment within Foundation Learning (FL). The learning environment may include indoor or outdoor spaces and resources. Observation should focus on a small group of learners, using the Leuven scale as a tool. You need to engage critically with the literature in making tentative conclusions about the creation of an effective learning environment. Consideration also needs to be given to the potential impact of using the Leuven scale on your own practice as an ethical researcher and the development of learners.

|                 |                                                                | <b>How I Have Met These Targets Within This Assignment</b>                                                                                            |
|-----------------|----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Target 1</b> | To evaluate further counter arguments supported by literature. | Within this assignment, I have used counter arguments when discussing supposed advantages and disadvantages of the research methods that I have used. |
| <b>Target 2</b> | Read even more widely to give your work even greater depth.    | In preparation for this assignment and during the writing process, I have used a variety of resources to evidence my work.                            |

**How Does the Use of Self-Assessment Impact Pupil Involvement and Engagement in Maths and Numeracy?****Introduction -**

During this assignment, I will evaluate the extent to which Self-Assessment positively or negatively impacts pupil involvement and engagement in maths and numeracy lessons. This will be evidenced by two classroom observations using the 'Leuven Scale for Involvement' as the primary research tool. During the observations, three randomly selected Year 1 pupils of medium to high ability level were observed over a 10-minute period, with observations being recorded based on engagement in the task every two minutes. During Observation 1, self-assessment was not used; whereas in Observation 2, self-assessment had been used. The use of both observations will allow a clear conclusion to be reached as to whether self-assessment increases engagement in tasks. During Observation 1, pupils were asked to measure objects around the classroom, using either a ruler or a measuring stick, depending on size. This involved movement around the indoor learning environment, which initially caused a level of disruption and a lack of engagement as pupils were excited to complete the task. During Observation 2, pupils were asked to use the 'Amser Pit-Stop' method (as shown in Appendix D) to self-assess themselves based on 'effort' and 'progress' throughout the task. Pupils were then asked to measure even more objects of different sizes

around the classroom and to draw lines of different measurements. Some higher ability pupils were also asked to convert measurements using centimeters to millimeters (as shown in Appendix D). Within the 'Discussion and Findings' section of this assignment I highlight the differences in involvement seen between these two observations and link this to the use of self-assessment.

### **Literature Review -**

"Self-assessment can increase the interest and motivation level of students for the subjects leading to enhanced learning and better academic performance, helping them in development of critical skills for analysis of their own work" (Batta, et al. 2016). Within Foundation Learning in Wales, Self-Assessment means learners can take an active role in evaluating their own progress, skill and knowledge within the Curriculum for Wales. This can be supported using the "Key Principles and Purpose of Assessment" within the Curriculum for Wales, which states "Learners are at the heart of assessment and should be supported to become active participants in the learning process" (Welsh Government, Unknown). Ideas of theorist Lev Vygotsky lend to promote the use of self-assessment within education. This is because, within the supposed "Zone of Proximal Development", learners engage in "Self-regulation" as they scaffold their own learning, suggesting that learners internalize external forms of support and guidance, to use when monitoring their own understanding (Schunk and Zimmerman, 2001).

Within the Maths and Numeracy 'Area of Learning and Experience' within the Curriculum for Wales, it is stated that Self-Assessment means that pupils "can establish their current position, set and move towards targets, and discover if and when the targets have been reached" (Welsh Government, 2008). Furthermore, some believe that "By engaging in self-assessment, children learn to make sense of maths and use it as a steppingstone for new learning" (Maths No Problem, 2018).

Contrary to this, some believe that Self-Assessment in Maths and Numeracy within Foundation Learning environments is only effective when methods are consistent and simple for pupils to understand (Twinkl, Unknown). Therefore, approaches such as "Amser Pit-Stop" (Shown in Appendix D), as used in School X, which involve a straight-forward traffic-light reflection task is arguably the perfect solution to promote self-assessment and accountability of progress for Foundation Learners in a reasonable and realistic manner.

It is evident to see that regardless of the conflicting views and opinions of professionals regarding the use of Self-Assessment in Foundation Learning, utilizing the skill can yield valuable insights and outcomes and should be implemented into learning activities where possible.

### **Methodology –**

During Observation 1 and 2, the Leuven Scale of Involvement will be used as the primary research tool, to “measure a child’s engagement in a particular task” (Learning Journal, Unknown). Observation 1 and 2 will be conducted as non-participant observations. “This method is used to understand a phenomenon by entering the community or social system involved, while staying separate from the activities being observed” (Macfarlan, Unknown). Some contend that non-participant observation may yield unreliable results; positing that the presence of an unfamiliar observer in the classroom setting might influence pupils to alter their behavior. This is often referred to as the “Hawthorne Effect” (Perera 2024). Nevertheless, in the context of Observations 1 and 2, the observer maintains a regular presence within the classroom, potentially mitigating the 'Hawthorne Effect' as pupils have become more accustomed and at ease with their presence. Furthermore, non-participant observation is considered advantageous due to its “unobtrusiveness”, meaning that “the researcher can study a situation in its natural setting without altering the conditions” (Griffiths and Parke, 2008).

“The Leuven scale is a 5-point scale that allows childcare experts, nursery practitioners and teachers to measure a child’s emotional well-being and involvement” (Learning Journal, Unknown). In terms of involvement, the Leuven Scale assesses engagement across a spectrum from extremely low (level one) to extremely high (level five). At level one, students show minimal interest and participation, while at level five, they exhibit exceptional involvement and enthusiasm. Levels progress from low to high engagement, reflecting varying degrees of interest, participation, and interaction in learning activities and the school community. This scale helps educators understand students' levels of involvement, enabling tailored support strategies to enhance their engagement and overall well-being in educational settings. Suggested drawbacks regarding the use of the Leuven Scale when measuring involvement include the fact that it does not consider those with additional learning needs or disabilities which may alter pupil behavior (Learning Journal, Unknown). Furthermore, the scale does not consider fluctuation in pupil activity levels

throughout the school day. For instance, a pupil may be more engaged in learning during the middle of the school day rather than right at the beginning or end. Arguably, it is unrealistic that a pupil can maintain engagement at level four or five throughout all lessons. On the other hand, “The biggest, and arguably most important, advantage to the Leuven Scale is that it provides a uniform, practical and applicable way for childcare professionals and parents to quantify engagement and learning” (Learning Journal, Unknown). Therefore, the Leuven Scale of Involvement has potential to be an effective research tool to aid Observations 1 and 2.

During Observation 1 and 2, I will be observing three pupils as they complete a maths and numeracy task involving a measurement activity within the classroom environment. To record my findings, I will be using the Leuven Scale template as shown in the Observation Schedules displayed in Appendix A and B. As non-participant observation will be being used, it is possible for regular recordings to be made, every two minutes, to allow a more accurate representation of varying engagement, without relying on effective memory.

### **Discussion and Findings -**

“The children were the final gatekeepers and controlled access and participation in an unequivocal manner.”  
(Brooks, et al. 2016).

Ethics in educational research involves adhering to principles and guidelines that ensure the protection, dignity, and rights of all participants involved, as well as the integrity and validity of the research itself. This involves a balance between benefit and risk and is often monitored by guidelines to ensure the safety of all involved. For instance, the British Educational Research Association (BERA) document for Ethical Guidelines for Educational Research (2018), disclose that personal information regarding pupils observed, such as age, name, gender, identity or background must be withheld. To overcome this, I have referred to each child as “Pupil 1” “Pupil 2” and “Pupil 3”. Also, I have refrained from mentioning any information regarding the school in which the observations took place, or its location. Researchers also have a responsibility to safeguard the physical, emotional, and psychological well-being of participants, avoiding all unnecessary harm to all pupils involved. “Consent may be given only by someone who is legally able to provide consent. When the participant is a child under the age of 18, the parent or legal guardian provides parental permission, which is the consent for that participant” (Office for Protection of Research Subjects, Unknown). “Assent is an agreement by an individual not competent to give legally-valid

informed consent (e.g., a child aged 7-17 or cognitively-impaired person) to participate in research” (Office for Protection of Research Subjects, Unknown). In the case of Observations 1 and 2, it will not be required to gather consent from participants’ parents as the observation will occur during the pupil’s everyday learning experience. However, it will be essential to consider and obtain assent from each participant. To achieve this using a method that the pupils will understand, it will be integrated into the lesson plan delivered by the class teacher at the beginning of the lesson and will involve children volunteering to take part in the physical measuring task.

Using the Observation Schedules in Appendix A and B, it is evident to see that in general, the engagement levels of Pupils 1, 2 and 3 were on average, ‘high’ throughout the Maths and Numeracy session, with all pupils engaging in the tasks at either a moderate, ‘high’ or ‘extremely high’ level regarding the Leuven Scale during both observations. Pupils 1 and 3 are both ‘higher ability’ children, who are considered ‘confident’ figures within the classroom. Pupil 2 is considered a ‘middle ability’ student within the class and is often seen as more ‘reserved’. To account for the varying levels of confidence to share ideas and express themselves, I have added a table titled ‘Observed Pupil Participation and Interactions’ to both Observation Schedules, allowing recordings of specific interactions and pupil input to be recorded.

During Observation 1, **Pupil 1** engaged with the task at the highest level. At the task’s start, they were slightly distracted due to the activity’s exciting nature. Following directed instruction from the class teacher to remain on-task, Pupil 1 became engaged at a ‘high’ and ‘extremely high’ level throughout the remaining 8 minutes. Pupil 1 was seen to dominate discussions and communicate ideas clearly. During Observation 2, following the use of Self-Assessment, Pupil 1’s engagement and involvement in the task was seen to increase to a ‘high’ level from the onset of the 10-minute observation period. During the final 2 minutes, Pupil 1 engaged at an ‘extremely high’ level. Pupil 1 had a high ability when measuring and drawing lines accurately.

During Observation 1, **Pupil 2** engaged with the task at a slightly lower level, with involvement at a majority ‘moderate’ level, with ‘high’ involvement during the final 2 minutes. Arguably, a potential explanation for this is Pupil 2’s lack in confidence during a group task and more ‘reserved’ nature. Pupil 2 rarely contributed to discussion and was happy to receive help from others, suggesting there was a possible lack of understanding. During Observation 2, Pupil 2’s engagement increased a considerable amount, to a majority ‘high’, occasionally ‘extremely

high' level, following Self-Assessment. Pupil 2 became more engaged as the task was independent and did not involve group work. Pupil 2 seemed to become more confident in their measuring ability during Observation 2.

During Observation 1, **Pupil 3** engaged at a majority 'high level'. Similar to Pupil 1, their engagement was considered 'moderate' for the first 2 minutes of the task. Pupil 3 was seen to have a high understanding of the maths involved with the task and was often seen helping others, in particular pupil 2. Pupil 3 was happy to contribute to the discussion and lead the group when given the opportunity. During Observation 2, following Self-Assessment, Pupil 3's engagement increased only slightly.

### **Conclusion and Recommendations -**

Overall, it is evident that in the case of Observations 1 and 2, the use of Self-Assessment in a Maths and Numeracy session had a positive impact on pupil involvement and engagement by encouraging reflection on their own learning and the evaluation of their efforts and progression. However, it is difficult to understand the reasoning for this. I believe that the increase in involvement, especially regarding Pupil 2, may be since the aspect of group work, a concept that creates anxiety for this child, had been removed. In my own opinion, I believe that the Leuven Scale may not have been the most effective research tool to use during these observations as there is a potential inaccuracy in findings due to my own personal understanding and interpretation of involvement and engagement levels between the pupils. Also, I believe the Leuven Scale did not allow the recording of each child's specific actions throughout the 10-minute period in the most effective way. The Leuven Scale did not consider whether the pupils had any Additional Learning Needs which could potentially alter their engagement levels and did not consider the pupils learning environment and any distractions that could have arisen. On the other hand, the Leuven Scale is easy to complete, and interpretation of collated results is relatively easy. The layout of the Observation Schedules created allowed for recordings to be displayed clearly and effectively. During Observations 1 and 2, a 10-minute period was used. I believe that this was a good time scale as it allowed for the observation of varying engagement levels throughout the onset of a task, without the period being excessively long, to the point where the pupils became disengaged and bored.

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## Appendix

## Appendix A – Observation 1

Three pupils chosen to be observed over a 10 minute period.  
Observation made based on involvement / engagement every 2 minutes.

Teacher explained task while all pupils sat on the carpet. Pupils then worked in groups to complete the measuring task.

**Observation Schedule**

Research Question:  
Name of Observer – Phoebe Swales  
Date – 7.2.24  
Time – 11:15

**Context**  
Year group – Year 1&2  
Lesson – Maths + Numeracy  
Objectives – I can use a ruler + a metre stick to measure objects  
Success Criteria – Measure classroom objects and record their measurements  
Ability: Pupil 1 – High Pupil 2 – Middle Pupil 3 – High

**Section A**

observation 1

**Section B**

Level of Involvement –

|         | Extremely Low | Low | Moderate | High | Extremely High |
|---------|---------------|-----|----------|------|----------------|
| Phase   |               |     |          |      |                |
| Pupil 1 |               |     |          |      |                |
| Pupil 2 |               |     |          |      |                |
| Pupil 3 |               |     |          |      |                |

**Section C**

Observed Pupil Participation and Interactions -

| Did the Pupil...?           | PUPIL 1 |   |   |   |   | PUPIL 2 |   |   |   |   | PUPIL 3 |   |   |   |   |
|-----------------------------|---------|---|---|---|---|---------|---|---|---|---|---------|---|---|---|---|
| Scale                       | 1       | 2 | 3 | 4 | 5 | 1       | 2 | 3 | 4 | 5 | 1       | 2 | 3 | 4 | 5 |
| Support Others in the Group |         |   |   |   |   |         |   |   |   |   |         |   |   |   |   |
| Lead Discussion             |         |   |   |   |   |         |   |   |   |   |         |   |   |   |   |
| Dominate Discussion         |         |   |   |   |   |         |   |   |   |   |         |   |   |   |   |
| Value Others Input          |         |   |   |   |   |         |   |   |   |   |         |   |   |   |   |
| Communicate Ideas Clearly   |         |   |   |   |   |         |   |   |   |   |         |   |   |   |   |

Linkert Scale: 1 = Always. 2 = Often. 3 = Sometimes. 4 = Rarely. 5 = Never.

**Section D**

**Additional Observations**

Pupil 1 – Eager to lead the group - eg had the metre stick etc. Led the majority of discussions. Eager to answer questions. Very enthusiastic - had great understanding and measured accurately.

Pupil 2 – A more reserved, quieter child. Remained on task for the majority of the 10 minutes but rarely contributed to discussion - maybe lacks understanding - happy to be helped.

Pupil 3 – Engaged with task - high understanding - happy to contribute to discussion + help others.

**General Observations**

Lesson involved moving around the classroom measuring different sized objects using a ruler or measuring stick. Group found the task fun and exciting as they were able to move around the class. The group worked together well as a team but occasionally had to be addressed and put back on task.

## Appendix B – Observation 2

- three pupils to be observed over a 10 minute period. Observations made based on involvement / engagement every 2 minutes.

- following the task during observation 1, pupils were asked to use 'answer pit stop' to self-assess themselves in terms of 'effort' and 'progress'. Following this, pupils were asked to measure more object and drawn lines to consolidate their learning independently.

#### Observation Schedule

Research Question:  
Name of Observer - Phoebe Swales

Date - 7.2.24

Time - 11:45

#### Section A

#### Observation 2

#### Context

Year group - Year 1&2

Lesson - Maths + Numeracy

Objectives - I can use a ruler + metre stick to measure objects

Success Criteria - Measure classroom objects + record their measurements.

Ability:

Pupil 1 - High

Pupil 2 - Middle

Pupil 3 - High

#### Section B

#### Level of Involvement -

|         | Extremely Low | Low | Moderate | High | Extremely High |
|---------|---------------|-----|----------|------|----------------|
| Phase   |               |     |          |      |                |
| Pupil 1 |               |     |          |      |                |
| Pupil 2 |               |     |          |      |                |
| Pupil 3 |               |     |          |      |                |

#### Section C

#### Observed Pupil Participation and Interactions -

| Did the Pupil...?           | PUPIL 1 |   |   |   |   | PUPIL 2 |   |   |   |   | PUPIL 3 |   |   |   |   |
|-----------------------------|---------|---|---|---|---|---------|---|---|---|---|---------|---|---|---|---|
| Scale                       | 1       | 2 | 3 | 4 | 5 | 1       | 2 | 3 | 4 | 5 | 1       | 2 | 3 | 4 | 5 |
| Support Others in the Group |         |   |   |   |   |         |   |   |   |   |         |   |   |   |   |
| Lead Discussion             |         |   |   |   |   |         |   |   |   |   |         |   |   |   |   |
| Dominate Discussion         |         |   |   |   |   |         |   |   |   |   |         |   |   |   |   |
| Value Others Input          |         |   |   |   |   |         |   |   |   |   |         |   |   |   |   |
| Communicate Ideas Clearly   |         |   |   |   |   |         |   |   |   |   |         |   |   |   |   |

Linkert Scale: 1 = Always. 2 = Often. 3 = Sometimes. 4 = Rarely. 5 = Never.

#### Section D

#### Additional Observations

Pupil 1 -

Remained on task. Still eager to lead even though task is independent. High ability and confidence when measuring. More accurate and focussed when working independently.

Pupil 2 -

Became more engaged as the task was independent and didn't involve group work. Often listened to others ideas when help was needed. Some lack of understanding. Still more confident

Pupil 3 -

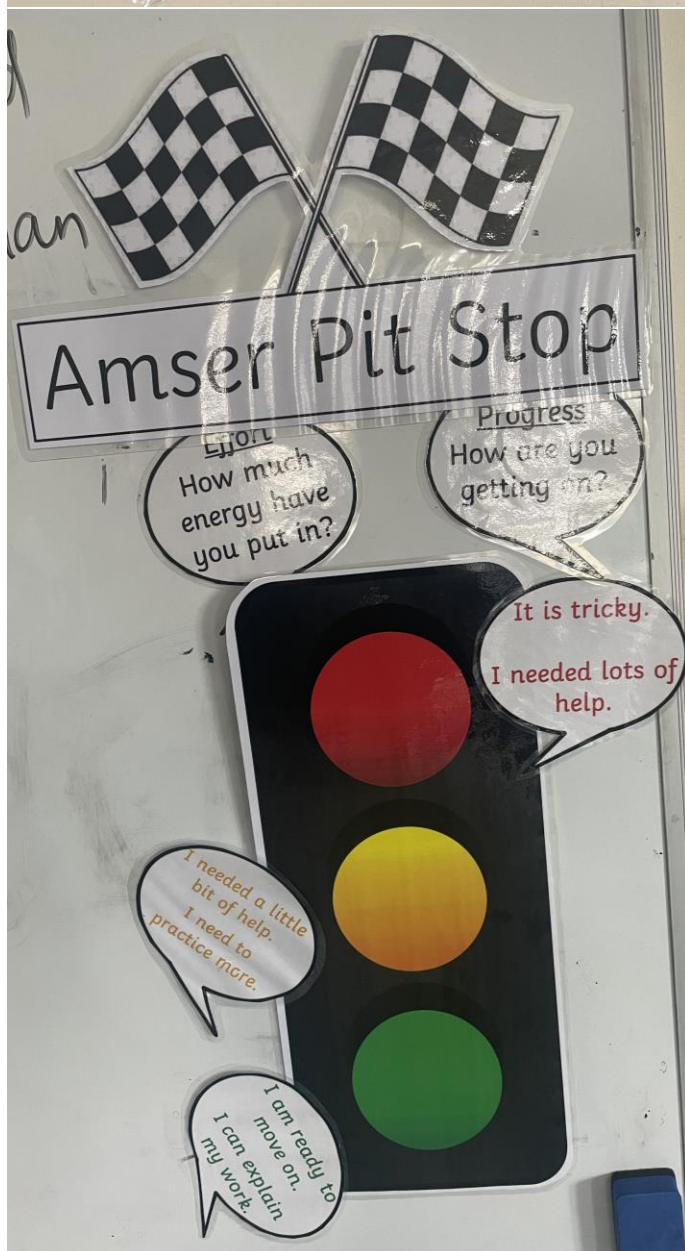
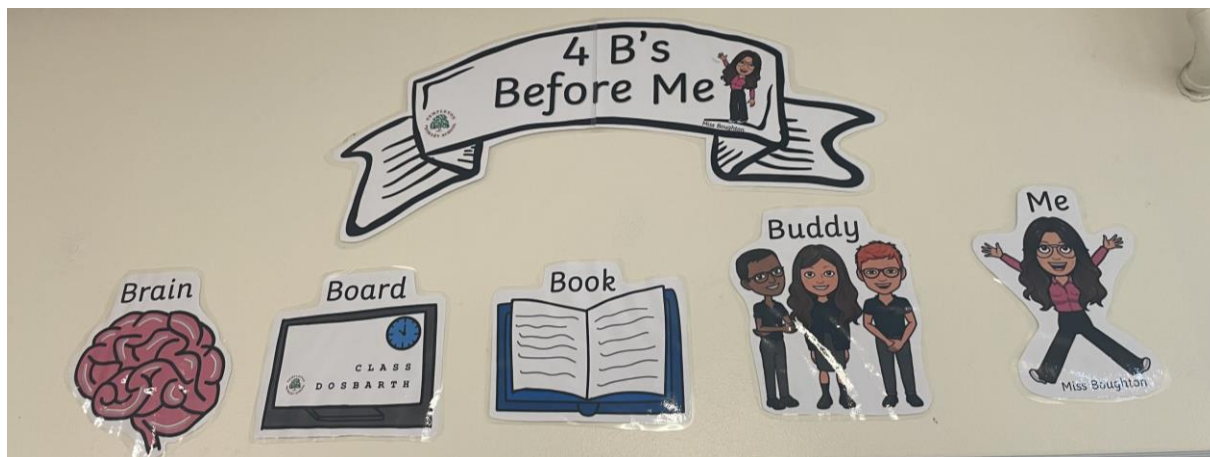
Engaged with task. Helping Pupil 2 when needed. Still more confident accurate. High ability. Focussed. inability

#### General Observations

- Following self-assessment of task observed in observation 1, pupils were asked by teacher to measure 'trickier' objects and lines she had drawn. Overall, the pupils were more focussed on this task as it was independent and they were more accurate in measuring their object as they had practiced the skill more.

1. Observation 1 involved three year 1 pupils chosen randomly from the class. They were observed over a 10-minute period, with observations being made every 2 minutes based on involvement/engagement in a maths and numeracy lesson. During the 10-minute period, the teacher explained the task while the pupils were sitting on the carpet; pupils were then asked to work in groups to carry out a measuring task using items in the classroom. From this observation, I learned that lessons involving physical movement around the classroom can cause excitement for the pupils, meaning they become more engaged in the task. On the other hand, it can cause pupils to become over-excited and easily distracted. Also, I learned that confidence/lack of confidence can easily affect involvement in group activities.
2. An example of a challenge caused by being a non-participant observer in the classroom is the fact that pupils are likely to change or alter the way they behave because they are aware that they are being observed. This is sometimes referred to as the Hawthorne Effect. This challenge could be overcome by using observation through CCTV; however, this may raise ethical concerns. An example of an opportunity regarding non-participant observation is that the pupils are being observed in their natural learning environment – therefore the findings are likely to be genuine and authentic. As well as this, some pupils may not acknowledge the observer's presence, meaning their behavior will not be altered. As the observation is non-participant, the observer can record their findings as they occur – meaning they are more accurate in terms of memory.
3. In my experience, the benefits of the Leuven Scale as a research tool were that it is based on meaningful observations and puts the children at the center of the research. The scale allowed for accurate interpretations of involvement/engagement to be made due to the in-depth descriptors of each level. I believe that a limitation of the Leuven Scale as a research tool is that it does not necessarily account for children with additional learning needs or disabilities that may alter their behavior in the classroom.
4. The main points of learning for me in terms of being a researcher in the classroom were that individual pupils within small groups can behave completely differently to each other, while the group appears to be 'on task'. Also, I learned that it is essential to sustain anonymity and confidentiality throughout the research process.
5. If I was to conduct this research again, I would complete the observation using three separate groups of pupils completing the same task, in order to determine the average level of involvement/engagement in the task throughout the 10-minute period. These groups could be of different abilities to provide deeper context.
6. In order to improve my practice in the classroom when conducting research, I could incorporate Covert Observation. This is where the researcher is 'undercover.' Here, the pupils are unaware that they are being observed, meaning their behavior will not change due to the observer's presence. However, it is difficult to record the research at the time of occurrence during covert observation, meaning it is less reliable than non-participant observation as it relies on accurate memory.

#### **Appendix D – Examples of Self-Assessment in Maths and Numeracy Practice**

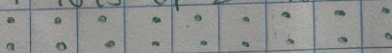


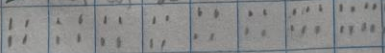
$11 = 34$ 
 $11 = 36$ 
 $11 = 38$

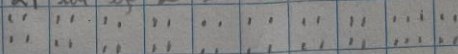
|  <b>Pit Stop Self-Assessment</b>  |             |                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------------------|
| Effort                                                                                                                                                                                              | Progress    | Next                                                                              |
| 1    ②    3                                                                                                                                                                                         | 1    2    ③ |  |

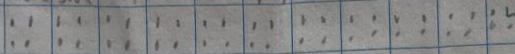
Dear Miss B, please can I reap precision this mark because it was a little bit hard. ✓

② layout    20    40

9 lots of 2 = 18  


20 lot of 2 = 40  


21 lot of 2 = 42  


22 lot of 2 = 44  


7.2.24

es

WALT: I can understand the difference between cm and mm.

$$100 \text{ mm} = 10 \text{ cm} \quad \checkmark$$

$$175 \text{ mm} = 17.5 \text{ cm} \quad \checkmark$$

$$328 \text{ mm} = 32.8 \text{ cm} \quad \checkmark$$

$$621 \text{ mm} = 62.1 \text{ cm} \quad \checkmark$$

$$196 \text{ mm} = 19.6 \text{ cm} \quad \checkmark$$

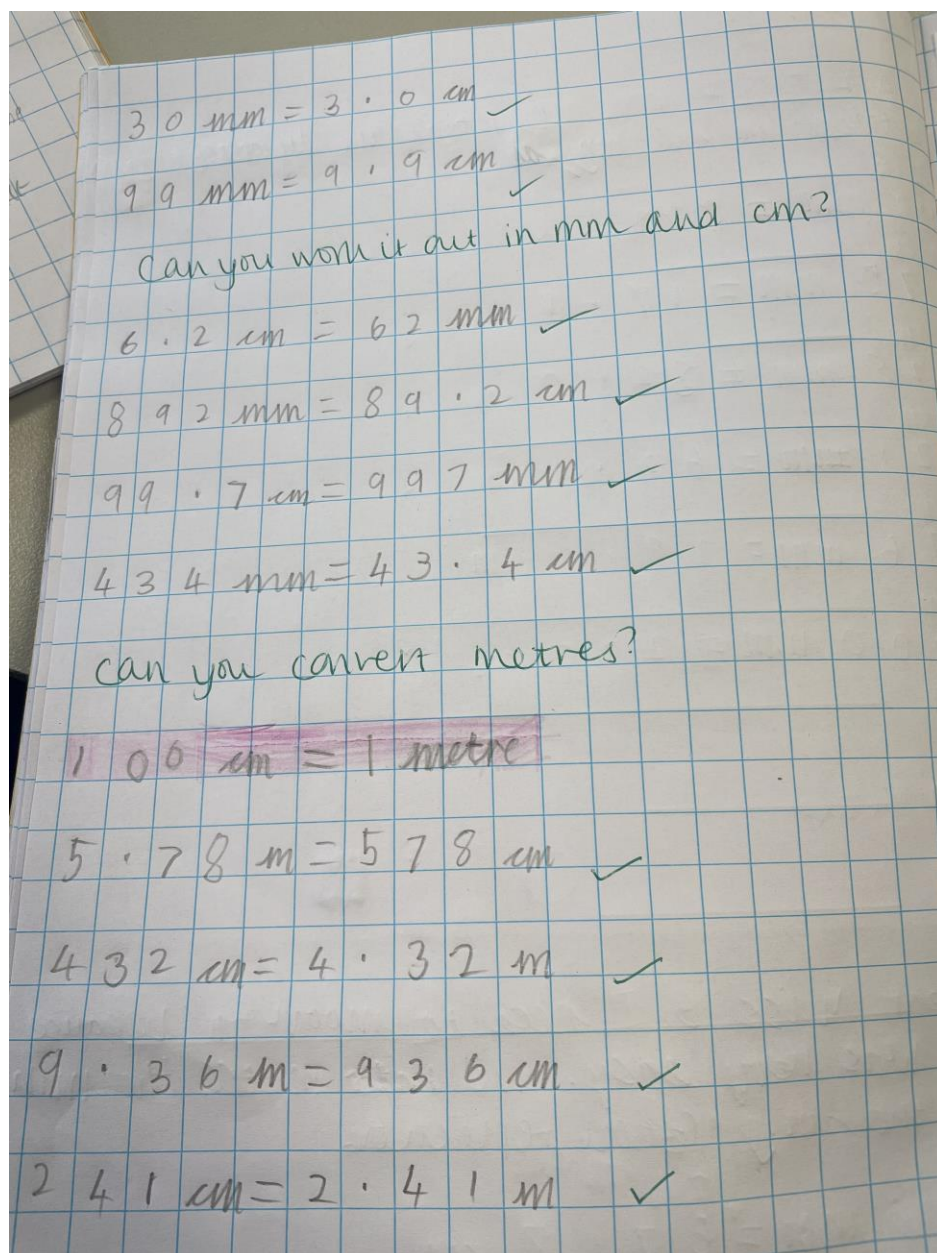
$$2000 \text{ mm} = 200 \text{ cm} \quad \checkmark$$

| Pit Stop Self-Assessment |   |   |          |   |   |                                                                                    |
|--------------------------|---|---|----------|---|---|------------------------------------------------------------------------------------|
| Effort                   |   |   | Progress |   |   | Next                                                                               |
| ①                        | 2 | 3 | 1        | 2 | ③ |  |

Dear Miss B, I need to move on because it was very easy. We had to match the mm to the cm. ✓ Great reflection

$$578 \text{ mm} = 57.8 \text{ cm} \quad \checkmark$$

$$42 \text{ mm} = 4.2 \text{ cm} \quad \checkmark$$



Seen in the above images are examples of Self-Assessment Practice within School X. This involves the use of the "Amser Pit-Stop" method, using a traffic light system for pupils to determine their own effort and progress while reflecting on a completed activity. Following this, pupils are seen to write a short note to their class teacher, accounting their opinions of their progress during the task, allowing them insight into how they feel about it. From here, the class teacher can be seen to provide the pupil with extension tasks according to the pupil's progress.

Also seen pictured in Appendix D is the school's "4 B's Before Me" initiative. This encourages pupils to solve issues themselves to their best ability, before asking the class teacher for assistance, encouraging independent learning and self-reflection.