

**Assessment Title:**

**Can traffic light cups be used in years 2 and 3 for pupils to self-assess their understanding of the task?**

|                    |                                                                                                                                 |                                                                                                                                                                                                  |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | Targed/Target                                                                                                                   | Yr hyn yr wyf wedi'i wneud yn yr aseiniad hwn.<br><br>What I have done in this assignment.                                                                                                       |
| Targed/Target<br>1 | Develop your critical thinking about your practice in order to identify what needs to change in order to make further progress. | I have included references from a wide range of sources which have different viewpoints on AfL.<br><br>I have also critically examined my own research in order to come to a balanced conclusion |
| Targed/Target<br>2 | Continue to develop your understanding of the pedagogical principles to improve teaching and learning.                          | Pedagogical principles and teaching approaches are considered throughout this assignment                                                                                                         |

## ***INTRODUCTION***

The research focus developed as a result of a number of situations that arose while on professional teaching experience in a primary school setting.

Firstly, including Assessment for Learning (AfL) techniques appropriate to the relevant Key Stage was a target and aim in both terms whilst on professional teaching experience, and the opportunity arose to use an alternative AFL strategy that the partner school were not currently using. A strategy that could be of great use to the understanding of AfL in a primary setting.

Secondly, an observed issue that had occurred in both term one and term two whilst in the school in question, for student teachers and qualified teachers alike, was the problem of pupil's rising from their seats and forming an orderly queue in order to receive help or feedback on a task. This "orderly queue" quickly had the potential to become a disorderly queue, with pupils distracted by other pupils, causing disruption to the rest of the class who were attempting to continue with the task.

As a result of this, an AfL strategy was arguably needed to reduce the disruption caused in the classroom, and its effectiveness observed and reflected upon, in order to determine whether it was a viable solution. A research partner with similar interests in the effectiveness of AfL, and trial of new AfL techniques to the primary setting, was also curious to find a solution to the above problems.

The two classes researched were comparable, with both being mixed attainment, mixed gendered pupils from varied socio-economic backgrounds. School X denotes the school where the above research idea stemmed from. The class in question are a Year 2 class of 25 pupils. School Y refers to the research partner's school, a Year 3 class of 26 pupils.

The original idea for a solution came from exploring alternative AfL methodologies that may assist in the problem. The documentary 'The Classroom Experiment' (BBC, Accessed 17 December 2019) posed an interesting idea for self-assessment in younger ages that could arguably be of dual benefit of discouraging pupils from leaving their seats; the use of traffic light cups. This led to the initial research question being investigated: Can traffic light cups be used in years 2 and 3 for pupils to self-assess their understanding of the task?

## **LITERATURE REVIEW**

Early work on assessment strategies in education tended to take a Summative Assessment (Scriven, 1967) approach, focusing on what a pupil had learned at the end of the topic though a recall method such as an exam. While this traditional method of assessment is still very popular with Key Stage 4 practices, namely GCSE assessment, Black and Wiliam's (1998) seminal review used meta-analysis to look at a different way of assessing pupils learning, Formative Assessment. Their review concluded that the achievement gains associated with Formative Assessment were some of the largest ever reported for educational interventions. Their criticism of Summative Assessment is that it is a product of what is undertaken inside the classroom, and not used to support the pupils to gain insight into their learning and improve it indelibly.

Ultimately, this is the aim of Formative Assessment, and the Assessment for Learning (AfL) techniques that have been developed and encouraged by Wiliam in publications through the most recent decade (Wiliam, 2011; Wiliam and Leahy, 2015; Wiliam, 2018) as well as other key practitioners in the educational field of primary education in the last twenty years (Hall and Burke, 2003; Clarke, 2008; Glazzard, Chadwick, Webster and Percival, 2010). In an ideal world, Looney (2011) theorises that a seamless system would be implemented, where formative and summative assessment are integrated, and overcome current technical barriers linking "*large-scale, standards-based assessments and classroom-based formative assessment*" (p.15).

Drawing on the research of Wiliam and many others, an AfL strategy named Traffic Lights has increased in popularity since the importance of AfL has been accepted amongst educational professionals. Traffic Lights (Wiliam, 2018) are used to "*activate students as owners of their own learning*", and involves students placing a colour relating to one of the three in a traditional traffic light, red, amber and green, to indicate how confident their understanding of the initial learning intention of the session. In higher key stages it is theorised that pupils will be able to pay close attention to learning intentions marked with a red traffic light in order to inform the amount of effort required to study that topic in preparation for a summative assessment, thus both formative and summative can work hand in hand.

Another application of Traffic Lights presented by Wiliam can be observed in a documentary titled "The Classroom Experiment" (BBC, Accessed 17 December 2019). A teacher in the documentary, under the instruction of Wiliam, implemented traffic light cups as a means of pupils indicating to the teacher whether they are confident in the task (green), may need some assistance but can continue working (orange) or in need of immediate attention and could not carry on with the task without it (red). This was investigated with a Key Stage 3 class, undertaking an assessment, and the results were seemingly positive with pupils feeling as though they could access the assistance they needed from the teacher more effectively than simply putting their hands up. However, in an alternative teacher's experience, many traffic light cups were turned to red, and the teacher was unable to reach out to all students in the class to assist them within the lesson time frame. This illustrates a negative effect of some AfL techniques, specifically the traffic light cups, creating disillusionment from teachers and pupils alike, and could cause both to not engage with the traffic light cups in the positive way that has been previously observed.

While the examples explored in The Classroom Experiment (ibid) do show the positives of traffic light cups, it is important to remember that not all literature is as supportive of AfL techniques. Didau (2016) states that educational professionals could assume that AfL techniques are "seen to work" but this is a product of "confirmation bias" (p.37-38). Didau argues that when we see AfL techniques apparently raising performance then we assume that this is down to the AfL technique and not due to the multitude of other teaching factors that are being presented to the pupil, such as teacher praise, quality of resources and lesson planning. However, when the expected outcomes are not observed, researchers are more likely to put this down to such issues such as an "off day" or that the teacher did not perform well enough in the lesson (p.38). Thus, bias would be present in their research results.

On balance, after extensive research around the topic of AfL, it is certainly accepted as a benefit to pupil's learning across the educational community. Therefore in order to find a solution to the "classroom queuing" outlined above, the implementation of a well-established AfL technique such as traffic light cups could be beneficial, and as an attempt of this technique with Foundation Phase and Key Stage 2 pupils has not been observed as of yet, this could inform future discussion about the generalisation of AfL techniques across phases when linked to self-assessment. However, it is with caution that this is researched, heeding the disadvantages seen from the unsuccessful teacher in the documentary and David Didau's comments on the topic of "fads" in AfL. Therefore, results gleaned from the research

in hand will be tentative and used to inform personal practice experiences only at this time, with further extensive research needed before the results can be generalised past this point.

## ***METHODOLOGY***

There is merit to the notion that teachers should engage in research relevant to their practice. Importantly, this has become mandatory in the inclusion of research in the Qualified Teacher Status Standards (Welsh Government, 2019). Being a teacher who engages in research and critical analysis to develop new techniques is explicitly outlined in both the Innovation standard and the Professional Learning standard.

As briefly outlined above, the main reason for undertaking this particular research was to engage with the traffic light cups in a systematic and measured way to observe whether they would be an effective addition to classroom practice, and to observe whether they were additionally transferable and useful in a research partners classroom. Also to assess whether it is possible that the cups could be implemented in not only Key Stage 3 as has already been observed, but also in Foundation Phase and Key Stage 2.

A lesson study was chosen as the method of data collection as it allows teachers to work collaboratively to improve teaching and learning strategies and techniques (Dudley, 2014). A traditional lesson study comprises of three components; a non-participant observation, a focus group interview and a written reflection using a joint template.

The lesson which both classes were scheduled to undertake, which was the most similar and therefore the most comparable, was subtraction with School X introducing the column method to a group of Year 2 pupils, and the School Y class revisiting and practicing column subtraction with monetary values.

Three focus pupils were chosen based on a spread of attainment for the group being observed. To explain further, in School X a higher level attainment group were observed, so a More Able (MA), Able, and Lower Attaining (LA) pupil from the pupils available on the day were chosen. These pupils were chosen as the most likely group in the class to access the column subtraction method being taught in both School X and School Y. In contrast, School Y opted to group the pupils in mixed attainment groups meaning a spread of MA, Able and LA pupils across the whole class was achieved.

These actions were directly mirrored in both School X and School Y. As described, a major difference of note is that School X's pupils were still in a Year 2 Foundation Phase classroom, whereas School Y's pupils were a Key Stage 2, Year 3 classroom. However, due to embracing recommendations of Donaldson (2015), School Y's Year 3 classroom mirrored a Foundation Phase classroom in that there were groups of children working on the directed task while others had free choice of a number of challenge areas in the classroom. This worked well as both research partners could work with a smaller group of pupils on the focused task without too many pupils needing academic support.

Using the method of Non-Participant Observation as outlined in Cohen, Manion and Morrison (2007) where the observer does not attempt to participate in the task, an observation of the focus pupils using the traffic light cups in the setting of a normal lesson was undertaken. Additionally, in this research, the principle set out in Dudley (2015) was adhered to whereby the observer was focused on the learning being completed and not the teaching being undertaken. An observation schedule was created which would yield mainly qualitative data on how the focus pupils engaged with the cups, with one quantitative question looking at the number of times that pupils engaged with the cups. This is because it was hypothesised that, as the pupils in School X were younger than those in School Y, they may have more difficulty self-assessing and thus engaging with the cups in general.

As highlighted by Roethlisberger and Dickson (1939) the presence of an observer can alter the participants behaviour (The Hawthorne Effect). In order to mitigate this, a full explanation to the pupils several times emphasising the importance of honesty in this research, as well as the observer being introduced to the pupils so that they were comfortable with the additional presence.

A focus group semi structured interview then took place. As outlined in Cohen et al (ibid) focus groups are "contrived settings" (p. 376) which in itself can be a positive and a negative. Positively, participants can engage in a conversation about a specific topic which they might not naturally do, conversely a negative implication could be that they may not yield quantitative data, or any data at all that is generalisable past the specific focus group in which it was generated.

The three pupils per class which had been the focus pupils for the observation were asked to be part of the focus group interview immediately after the observation. The focus group pupils were asked whether they assent to being interviewed with the "thumbs up, thumbs down" approach used again for consistency. All three of the focus participants said that they

consented and it was stressed to the pupils that they did not have to answer all of the questions and they could withdraw their answers if they wished, but all three pupils continued to give assent for the interview.

The interview was undertaken by both research partners to ensure rapport was present and the importance of honesty was reinforced. A semi-structured interview technique was employed, defined in Punch (2014), as on the continuum between structured and unstructured interview approaches. This was realised by asking a number of predetermined questions to the focus pupils, but due to the semi-structured nature of the interview expansion could be requested, as well as ensuring pupils were reflecting on the desired topic and not deviating.

Finally, the Brookfield (1998, 2005) model of reflection was employed, using four lenses to reflect on the research. These are autobiographical, from the student's eyes, from the view of a colleague and from theoretical literature. A critical reflection template was created ahead of the sessions, and completed by both research partners before joint discussion took place in order to preserve individual reflections on the lesson before creating joint opinions on the research. These reflections took place after the focus group interview.

It was important that the study was completed as ethically as possible. In order to mitigate many ethical issues, it was imperative firstly that an Application for Ethical Approval was submitted to the UWTSD Ethics Committee, ensuring that UWTSD Research Data Management Statement (UWTSD, Accessed 17.12.2019), Ethical Guidelines for Educational Research, (BERA, 2018) and the UNCRC (2010) Rights of the Child were adhered to closely. This application was approved on 24 January 2020.

Secondly, as outlined in The BERA/SAGE handbook of Educational Research chapter The Ethics of Research (Farrimond, 2017), the ages of the children involved in the research did pose a challenge as to whether they were considered old enough to give Informed Consent to being a part of the research. Farrimond (ibid) also stresses the importance of gaining assent from the pupils themselves such as taking into account the pupils' actions, saying no, and other forms of withdrawal that indicate that the pupil is not consenting to carry on with the research. From these important guidelines, the standards used in this research to determine consent from "gatekeeper" consent as well as pupil assent were constructed.

The methods through which consent and assent were obtained are briefly outlined. In summary, consent was sought from the parents of the focus group participants through a

consent form and explanatory letter, a copy of which can be found in Appendix 7. Assent was sought consistently through the research process through the “Thumbs up, Thumbs down” approach to ensure that the focus group pupils were as comfortable with the process as possible.

## **RESULTS**

### **Lesson Study 1**

#### **Observation**

From the observation section of Lesson Study 1, it can be seen that the pupils engaged with the traffic light cups in different ways.

Child X who is traditionally a MA pupil engaged with them the second most – a total of 6 times, using them appropriately and seemingly being able to self-assess, as they were only used after the main task was completed fairly quickly. When Child X moved onto the extension task, column subtraction which had not been taught before, it can be observed that they effectively self-assess when they are in need of help in the first instance, moving the cup to red. However, after this occurred, Child X did not move back to red despite performing the task incorrectly. Child X continued to attempt the work and stayed on orange. They may not have seen themselves as stuck due to a usual confidence in their own abilities, and therefore did not effectively self-assess that they were struggling with the task.

Child Y, usually an able pupil, did not engage with the cups whatsoever in the task – the cup remained on green throughout the task. However, this was effective self-assessment on Child Y’s behalf as during the task they were fully comfortable, and noted to myself during the task that they had already engaged with column subtraction at home. Child Y’s written work was perfectly correct and general ease with the task was evident throughout.

Child Z is the Lower Attaining child in this particular group of pupils, and engaged with the cups the most often, a total of 8 times. Child Z was also the only pupil to become distracted with the cups, stacking them as the lesson introduction was being conducted. However once the task begun, Child Z desisted from touching the cups unnecessarily and seemingly used the cups correctly to self-assess how he was finding the task. He struggled minorly in the first task, changed his cup to orange before mirroring the other pupils in the group using a hundred square to complete the subtraction, the orange reflected that he was not completely

stuck and still trying but he changed the cup back to green when he employed the correct learning scaffolding for the lesson. Child Z engaged with the red cup seemingly correctly self-assessing that when he was on red he was completely stuck and therefore stopped working when he was on red. A question could be posed here as to whether Child Z may have changed the cup to red deliberately to avoid the task in hand, as towards the end of the lesson Child Z is balancing the cups and ends the lesson on red.

### Interview

In terms of the focus group interview, the pupils had a number of interesting insights that they shared.

### *Positive attitude*

Overwhelmingly pupils in the lesson study 1 focus group said that they engaged with the cups, and used positive language such as the word “good” being used 6 times, and at least once by each child, and “yes” also used a total of 6 times again at least once by each child, especially in response to the questions “Did you use the cups today?” and “did you feel that the cups helped you in the lesson?”

### *Teacher attention*

The theme of teacher attention became evident in response to two questions; “did you feel that the cups helped you in the lesson? How did the cups help you?” and “Do you think using the cups is a good or bad idea? Why?”.

In response to the first question, all pupils made reference to either the word “teacher” or the word “Miss”, with two pupils citing that a teacher will come and assist. However, Pupil X made a quite astute comment that it was a good method because it “saves time for teachers”. It seems as though Pupil X was not thinking of the benefit to themselves but rather the teacher instead. In response to the second question, Pupil X agreed that the cups were a good idea and Pupil Y reiterated that “Miss will know when you need help”. The pupils seem to think there is benefit to the teacher rather than themselves, however as discussed further on, this could be due to a response bias.

As a result of possible areas of bias in Lesson Study 1, a decision was made to reiterate strongly to pupils participating in Lesson Study 2 that there is no correct answers to the focus group interview questions and that they should state their own opinions honestly in the interview.

## **Lesson Study 2**

### **Observation**

Again, it can be seen from the observation section in Lesson Study 2, the three focus pupils engaged with the traffic light cups in different ways to those in Lesson Study 1. Opposed to Lesson Study 1, all focus study pupils engaged with the cups in some way, including Child T who was easily the most confident child with the subtraction task, differing from the confident Child Y in Lesson Study 1.

Child T engaged with all cups at least once, changing the colour of the cups a total of 8 times. They seemed to self-assess well, using orange to signify when they were not completely stuck, and sometimes changing back to green without teacher input when they realised that they knew what to do. The time spent on red for Child T was usually waiting for a teacher to check completed work, with one exception when Child U also needed help.

Child U and V engaged with the cups similarly, not using the orange cup at all and both being distracted by the cups at various points during the lesson. Child U was not as confident with the subtraction, but Child T would assist. As noted in the Observation Schedule for Lesson Study 2, Child U only changed the cups to a red cup at the same time as Child T when Child T could not assist themselves.

### **Interview**

Similarly to Lesson Study 1, consistent evidence was found in relation to pupils not discussing the theme of *self-assessment* or stating how the cups helped themselves with the task in hand, with one exception here. The themes of *positive attitude* towards the cups and *teacher attention* still seem present here.

### **Positive Attitude**

In parallel with the findings from Lesson Study 1, the focus group interview from Lesson Study 2 yielded similar results with focus groups attitude towards the traffic light cups being very positive. All pupils felt that the cups had helped them in the lesson, and with Child V using words such as “happy” when asked how making the cups made them feel, as well as Child U stating it “felt great” when asked how the cups helped.

There was one inconsistency, however. Early on in the interview, when the focus group pupils were asked “Did you use the cups today?” Child U denied using the cups stating “No I didn’t, didn’t need to”. Child T questioned this, and Child U changed their mind, stating “actually I did use them”. This inconsistency in what they remembered could be linked to some embarrassment around using a visual stimulus being used to indicate that the pupils needed help, which could be a negative to the use of traffic light cups in the early years of Key Stage 2. Pupils resilience may not be high enough in less confident pupils to want to admit that help is needed.

### *Teacher attention*

Again, the theme of teacher attention seems to have arisen. Two pupils, Child T and V responded that the way the cups helped them was to “wait for the teacher to come” presumably this is in reference to gaining a teacher’s attention without raising their hands. Additionally, in relation to the question “Do you think that using the cups is a good or bad idea? Why?” Child T responded that “instead of saying Miss easily get help” although it can be argued that, in contrast to the pupils in the focus group of Lesson Study 1, they did not see the benefits to the teacher, only the benefits to themselves as a result of accessing the teacher in an easier, simpler manner.

### *Self-Assessment*

In relation to self-assessment, Child U made an astute comment of “Yes if on green you’re ok, red need help, orange need a bit” in relation to the question “Do you think that using the cups is a good or bad idea? Why?”. It can be argued that this is the only pupil in the two focus groups that has noted the benefit to the fact that they can “self-assess” whether they “need help” or “need a bit”, meaning that they are aware that there are different stages to understanding the task.

### **Reflection**

When examining the critical reflections completed after both lesson studies, there are again emerging themes in both the section completed by the researcher and the research partner on each day. Both remarked on a positive attitude to the cups (linking to the themes of *positive attitude* recorded in focus group interviews also), and that the pupils seemed to develop in their understanding of the topic. Both researchers also remarked that pupils used the cups effectively and correctly when demonstrating that they were in need of assistance

but that not all pupils had moved to red when they needed assistance, for example Child X and Child U.

Much similar discussion was recorded by the researcher who took the observer role in each lesson study. A theme here was distraction, a downside of implementing the traffic light cups long term could be that pupils become increasingly used to the cups and do not see them as a “special” activity as they may have in this case, and therefore familiarity could cause pupils to treat the cups with less respect and play with them more often causing pupils more distraction than assistance.

In summary, the findings outlined were generally positive towards the traffic light cups use in the Foundation Phase and Key Stage 2, with all pupils in School X and School Y giving responses in the focus group interview that indicated a positive attitude associated with the techniques. This is in line with research conducted by Blandford and Knowles (2012) which concluded that in primary schools *“daily interaction of the early years practitioner provides many opportunities for embedding formative assessment in class room practice”* (p.497) as well as Glazzard et al (2010) who also encourage the use of self and peer assessment in the early years classroom.

It also seems evident that the initial situation described was eliminated. Neither researcher in either of the lesson studies observed pupils rising out of their seats to gain confirmation of whether they were completing the task correctly, rather the focus pupils were evaluating as to whether they were confident with the task, and if they were not confident the focus pupils used the cups to indicate to the teacher that they needed assistance.

In parallel with the empirical evidence supporting the correct use of traffic light cups to aide pupils in their self-assessment of a task and therefore their ability to stay on task for the whole of the lesson, is the evidence from the reflections of both research partners. This stated that during the lesson study focus group pupils were more focused on the task when compared to other lessons completed. There was generally less disruption to the class and pupils stayed on task for the majority of the lesson, with a few exceptions such as pupils becoming distracted by the cups. This is in agreement with the findings in ‘The Classroom Experiment’ (ibid) and shows that this particular AfL technique of traffic light cups appear, tentatively, to be transferable to Foundation Phase and Key Stage 2.

Additionally, it is observed that the implementation of traffic light cups seems to be more beneficial to MA pupils, this is hypothesised to be because higher achieving pupils are less likely to “self-handicap” their learning (“self-handicapping” is associated with lower self-esteem and a skewed view of self-assessment, especially in younger children of elementary school age) which is linked to academic achievement (Schwinger, Wirthwein, Lemmer and Steinmayr, 2014). Conversely however this was evident in a slightly different way with Child Y, as the complete confidence displayed meant they did not engage with the cups at all, therefore Child Y could be seen as an MA pupil in this situation who was self-assessing well as they were aware that they did not need any academic assistance.

## **CONCLUSION**

In conclusion, the classroom implications for a study of this nature are seemingly positive. It has been observed that this AfL technique has been beneficial to this cohort of focus group pupils, meaning that continuing use of traffic light cups with both classes as a whole class exercise, and furthermore as a whole school, may yield positive results with the pupils in School X and School Y.

However, when critically examining the research presented, a number of merits and limitations must be taken into account.

Firstly, the Lesson Study design is one that has been tried and tested in schools in Japan since the 1870's and is very much an integral part of action research in the West more recently (Dudley, 2014). The Lesson Study methodology combines three important components – observation, focus group interview and reflection, all of which separately have their own benefits and have already been found successful when developing pedagogical approaches such as AfL (ibid), hence why it was particularly appropriate for the research question chosen here.

The authenticity which can be maintained as part of a Lesson Study methodology is also vitally important. In order to study teaching and learning of pupils in Foundation Phase and Key Stage 2, there can be no other way to attempt this than to observe what actually happens in these two classrooms. To attempt to imitate this outside of a classroom, with older or adult participants, would be detrimental to the whole ethos of Lesson Study. An artificial situation would simply not yield transferable and generalisable results, therefore the fact that this Lesson Study took part in two very authentic contexts is to be commended.

Additionally, as the majority of the results yielded were qualitative in nature it is important to ensure reliability in the results (Cohen et al, 2007, p.149). An attempt to achieve this was through the aim to gain similar results across two observations in different times and different places.

Despite the numerous benefits that have been demonstrated since its inception in educational research, there are limitations to the Lesson Study methodology also.

Firstly, it is usually acknowledged that the larger the sample of focus participants, the more representative of the pupil populous it will be (Cohen et al, 2007, p.263), that is to say that if a larger sample had been adopted, it would be far more likely that the results gleaned could be seen as representative, and therefore more likely that the results could be generalised past the specific participants used in this lesson study.

Secondly, as mentioned, Didau (2016) suggests that the confirmation bias is heavily present in educational research as there is a “tendency to seek out only that which confirms what we already believe and ignore that which contradicts these beliefs” (p.37). This type of bias could have been present in much of the study, as the observer only focused on three pupils which were chosen due to their spread of academic attainment, however there is no evidence to the contrary that out of the MA, able and LA pupils available on a particular day that the researchers did not chose those children who they thought would interact with the traffic light cups best. Observer bias could have been present where the research partner only notes phenomena that concurred with the hypothesis of the study. This researcher bias could also have been present when annotating all pupils response in the focus group interview scenario. In order to mitigate this, a solution could have been to randomise the choice of participants from three pools of participants based in the pupils current attainment levels.

Thirdly, the interviews present further fundamental flaws in the research design. The age of the participants here, and their familiarity with the researchers could lead them to give answers which they predict that the researchers would want to hear. For example, none of the participants said that they did not like the cups, and just over half the participants gave an answer relating to teacher benefit to the interview questions presented. While honesty and integrity was verbally encouraged many times to the young participants, this could not be guaranteed as the motive for the pupils' answers was not analysed.

In order to improve this research going forward, the design of the observation schedule and interview questions could be developed in order to avoid confirmation bias, and an alternative member of the research team who the pupils were not comfortable with could take the interview to avoid participants providing what they see as “desirable” answers. It is with caution that this is recommended however, as a lack of a familiar researcher in the interview with the younger pupils could disrupt rapport between the interviewer and the participants.

This research has been immensely encouraging to conduct, and as such it is recommended that the use of traffic light cups, and other AfL techniques traditionally earmarked as “secondary school techniques”, be implemented into practice with Foundation Phase and Key Stage 2 learners. By sharing good practice such as this attempt at something different, teachers can collaboratively bring the teaching profession forward and create new pedagogical approaches that can be used across key stage barriers.

Word count – 5484

## References

- Black, P., Wiliam, D. & King's College London. Department of Education Professional Studies (1998) *Inside the black box: raising standards through classroom assessment*. West Palm Beach, FL: GL Education Group
- Blandford, S. & Knowles, C. (2012) Assessment for Learning: A Model for the Development of a Child's Self-Competence in the Early Years of Education. *Education 3-13*, 40(5), pp.487–499.
- British Educational Research Association [BERA] (2018) *Ethical Guidelines for Educational Research* 4<sup>th</sup> Ed. London: BERA.
- Brookfield, S. (1998) Critically reflective practice. *Journal of Continuing Education in the Health Professions*, 18(4), pp.197-205.
- Brookfield, S.D. (2005) The power of critical theory for adult learning and teaching. *The Adult Learner*, 85.
- Cohen, L., Manion, L., & Morrison, K. (2007) *Research methods in education* 6th edn., London: Routledge.
- Clarke, S. (2008) *Active learning through formative assessment*, London: Hodder Murray.
- Didau, D. (2016) *What if everything you knew about education was wrong?*, Carmarthen, Wales: Crown House Publishing.
- BBC (2010) The Classroom Experiment (Episode 1) [video] Available at: <https://www.youtube.com/watch?v=J25d9aC1GZA> (Accessed: 17 December 2019)
- Donaldson, G. (2015) *Successful futures: Independent review of curriculum and assessment arrangements in Wales*. Welsh Government.
- Dudley, P. (2014) *Lesson study: a handbook (revised)*. Available at: <http://disde.minedu.gob.pe/handle/123456789/5017> (Accessed 17 December 2019)

Dudley, P. (2015) *Lesson Study: professional learning for our time*, London: Routledge.

Farrimond, H. (2017) 'The Ethics of Research', in Wyse, D., Selwyn, N., Smith, E., & Suter, L. E. (ed.) *The BERA/SAGE handbook of educational research*, London: SAGE Publications Ltd.

Glazzard, J. (2010) *Assessment for learning in the early years foundation stage*, London ; Thousand Oaks, CA: SAGE Publications.

Hall, K. & Burke, W.M. (2004) *Making formative assessment work : effective practice in the primary classroom*, Maidenhead: Open University Press.

Looney, J. (2011) Integrating Formative and Summative Assessment: PROGRESS TOWARD A SEAMLESS SYSTEM? *OECD Education Working Papers*, (58), pp.1-63

Punch, K. (2013) *Introduction to social research : quantitative and qualitative approaches* Third., Los Angeles, California: SAGE.

Roethlisberger, F. J., & Dickson, W. J. (1939). *Management and the worker*. Cambridge, MA: Harvard University Press.

Schwinger, M., Wirthwein, L., Lemmer, G. & Steinmayr, R. (2014) Academic self-handicapping and achievement: A meta-analysis. *Journal of Educational Psychology*, 106(3), p.744.

Scriven, M. (1967). "The methodology of evaluation". In Stake, R. E. (ed.). *Curriculum evaluation*. Chicago: Rand McNally.

United Nations (1989) Convention on the rights of the child. Available at <https://www.ohchr.org/en/professionalinterest/pages/crc.aspx> (Accessed 27 January 2020).

University of Wales Trinity St David (2016) *Research Data Management Policy*. Available at: <https://www.uwtsd.ac.uk/media/uwtsd-website/content-assets/documents/strategies-policies/Research-Data-Management-Policy-27.01.16.pdf> (Accessed: 17 December 2019).

Welsh Government (2019) *Professional standards for teaching and leadership*. Available at: <https://hwb.gov.wales/professional-development/professional-standards> (Accessed: 01 February 2020)

William, D. & Leahy, S. (2015) *Embedding formative assessment: practical techniques for K-12 classrooms*, West Palm Beach, FL: Learning Sciences International.

William, D. (2011) *Embedded formative assessment*, Bloomington, IN: Solution Tree Press

William, D. (2018) *Embedded formative assessment 2<sup>nd</sup> Edn.*, Bloomington, IN: Solution Tree Press