

## *Use of traffic-lighting to evaluate pupil learning*

### **Rationale**

Any assessment, whether undertaken by student or teacher, is paramount in order to achieve within the four capacities of Scotland's Curriculum for Excellence (CfE). The Success of the learner needs to be measured and the type of measurement should be frequent, ongoing and meaningful. Assessment for Learning (AifL) incorporates many measures of success (Black, 2003) in the form of 'Formative Assessment' (Dylan Wiliam, 2004). Traffic lighting is method which has the potential to incorporate self-assessment and peer-assessment into a formative activity which focuses on feedback. Feedback is an invaluable feature in any classroom, in order to assess learning, there needs to be proof that it is taking place (Jones, 2009). Dylan Wiliam in *Five Key Strategies for Effective Formative Assessment* for the National Council of Teachers of Mathematics states an interesting point that when teachers are told that the responsibility of their pupils learning is theirs, the quality of their teaching deteriorates, as does their students. However, when students take an active part in monitoring and regulating their learning, then the rate of their learning is dramatically increased. By using self-assessment as a tool to promote personal growth and ownership, learning is maximised. (Wiliam, 2007) The actions of the teacher and pupil due to that feedback is important, which is why Traffic lighting has been chosen as the topic of this enquiry.

### **Aims**

The aim of this enquiry are:

- to introduce traffic lights as a self-assessment method
- to use this self-assessment method to evaluate pupil's learning and
- to use the self-assessment method to decide subsequent steps in lesson planning.

### **Methodology**

This enquiry was conducted over 5 weeks and the class used was a lower set S2 Maths class who are currently working at CfE 2nd level. There are usually between 17 and 21 people in the class. There was a range of different techniques used, post it notes, plickers and stickers. Towards the end of the enquiry a short survey was conducted to find out how pupils felt about using traffic lights.

#### **Method 1 – Post it notes**

Pupils were asked to grade how well they feel they achieved their lesson's success criteria by writing a short note and indicating Red, Amber or Green on the coloured posters by the door (Appendix A). Depending on the question, pupils were asked to indicate how they felt they had worked in terms of effort in a task. For example, this method was used during a recent end of unit test analysis, where pupils were asked to grade their level of effort and how they felt it affected their performance in a test. By placing their post-it notes on the colour which they felt described their level of effort this was used as an end of lesson self-evaluation tool.

#### **Method 2 – Plickers**

A form of instant, formative feedback that was frequently used was 'plickers' and this was used to evaluate the class' attainment during and after classwork. Plickers is an assessment tool that allows teachers to collect on-the-spot formative assessment data without the need to have students use their own devices or paper and pencil. Pupils are assigned a plickers card (Appendix B) which has four possible answers, (A, B, C or D) and any question can be projected onto a screen. Pupils can then answer using their own unique card and the teacher scans the classroom with their mobile device and collects a survey of answers (Appendix C). This method removed the need for pupils to have their own devices and as each pupil is assigned a unique card their answer is cast in secret. The plickers website allows the teacher to analyse what pupils answered. After regular intervals pupils were

asked to mark their own work and indicate using plickers how many they were getting correct. Using plickers allows electronic, permanent and easily evaluated instant feedback on class progress.

### **Method 3 – Stickers**

Pupils were asked to engage with the assessment of their work by indicating in their jotters using Red, Amber or Green stickers (Appendix D) the number of correct answers they had and therefore their need for assistance. Pupils were given individual strips of Red, Yellow and Green dot stickers and at regular intervals were asked to self-mark their work and indicate using the corresponding colour of dot to the number of questions they had correct. Pupils were asked to indicate green for all correct, yellow for more than half correct (but not all correct) and red for less than half correct.

### **Findings**

The purpose of this enquiry was to assess how feedback from traffic lighting impacted subsequent planning. This meant that the pupil's indicators of their attainment were considered when a) deciding if the class as a whole were ready to move on and b) planning the next lessons learning intentions and success criteria.

The instant visual feedback from the stickers in pupil's jotters allowed pinpointing of support to those who needed it most. Learning conversations were held with pupils to discuss their needs and offer support for pupils that indicated with a red sticker that they were in need of assistance. Consequently, pupils successfully completed exercises at an increased rate compared to when no traffic lighting was used. Using Plickers to evaluate attainment gave an indication on whether or not pupils were achieving the lesson's learning intentions – however this was reliant on pupil's honesty whilst they were self-marking.

The findings from the Post-it notes are more varied. After a homework or test, pupils were asked to indicate using the Red, Amber and Green traffic lights their performance. On all but one occasion the majority of pupils were placing their post it notes on the Amber/Yellow indicator. When the pupils were asked why they felt they were amber the general reply was "I wasn't sure – so I just picked the middle one." The results of this method were less reliable as an indicator on pupil attainment and success in their learning.

The findings from the sticker method was much the same as using plickers, although there were advantages and disadvantages associated with this method. The advantage was that an individual pupil's progress was instantaneous and identifiable. This was due to the stickers being a visual indicator on how many questions a pupil had gotten correct. The disadvantage was that collating the results for review later would be time consuming, as it would require a teacher to tally every jotter whilst circling and supporting an entire class. This data can be obtained by using Plickers in a much more convenient and timely manner.

At the end of the enquiry pupils were asked to reflect on the use of traffic lights throughout their lessons. Pupils were given a survey and asked four short questions. The questions asked were:

1. Did you like using the plickers to traffic light your work?
2. Did you like using the post-it notes to traffic light your Learning Intentions and Success Criteria?
3. Did you like using the dot stickers to traffic light your work?
4. Would you like to traffic lighting again?

Pupils were then asked to give a reason why for each of their answers. The results (Appendix E) showed that whilst pupils generally enjoyed engaging with traffic lighting, they did not particularly want to continue to use it.

## **Conclusion**

The findings show that using traffic lighting as a form of visual feedback can give a good indication of pupil attainment of their lesson success criteria. As an indicator of *correctness* it is a clear and easy tool to assess learning. However, when traffic lighting was used as a gauge of a pupil's sense of success, the water becomes muddier as there are many factors to consider. Confidence in the Mathematics classroom, especially with those that find the subject daunting and challenging, is sometimes an ongoing battle which may present itself when a pupil unfairly deems themselves 'poor' at the subject. Pupils in general enjoyed the opportunity to break up their lesson with Plickers, this was by far the most enjoyed method from the three – this is possibly down to the anonymousness that this particular tool provides. Pupils were less inclined to give themselves a sticker as a permanent reminder and indicator in their jotters that they were incorrect. In conclusion, pupils were less likely to engage fully when their success could be visually assessed.

## **Implications for Future Practice**

The outcome of this enquiry indicates that there is a strong case for further investigation into using ICT based formative assessment in the Mathematics classroom. This enquiry was conducted over short period of time for a small sample of pupils. Due to the nature of this particular class, absence levels varied throughout the enquiry which meant that the reliability of the results are in question. In order to increase the level of accuracy and in order to draw a more profound conclusion, a larger sample of pupils for a longer period should be trialled if the enquiry should be repeated.

Traffic lighting would seem to be a useful endeavour in order to assess pupil learning, however questions would need to be asked to further gauge the accuracy of the resulting data. Are we measuring what the pupil is measuring? In the case of the public displays of traffic light indicators, are some pupils too self-conscious to give themselves a green? At secondary level pupils are acutely aware of their peers and so any public display of achievement should be scrutinised, and its accuracy questioned. Research shows that novices in any subject, that is someone new and inexperienced, are likely to overestimate their own abilities in that subject and therefore relying on their own judgement of their abilities is likely to be flawed (Dunning, 1999). Due to the nature of this type of assessment, using traffic lighting as an indication of pupil understanding of their learning intention and success criteria is unlikely to occur in these classes again. Instead, as suggested by Dylan Williams, an improvement could be to ask pupils who indicate they are green in understanding to explain their reasoning to those who are red may be a more useful endeavour and would be a route that may hold more merit than simply judging a pupils correctness and as an extension, their honesty and confidence amongst their peers.

## **Bibliography**

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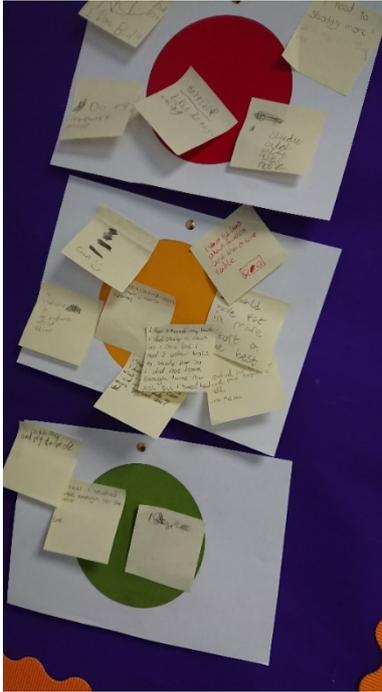
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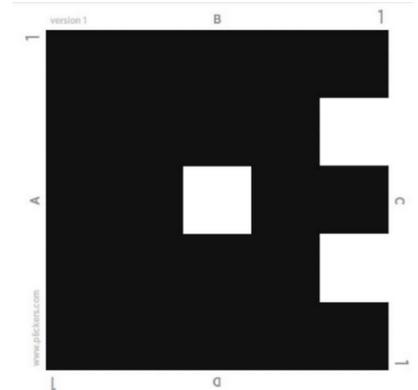
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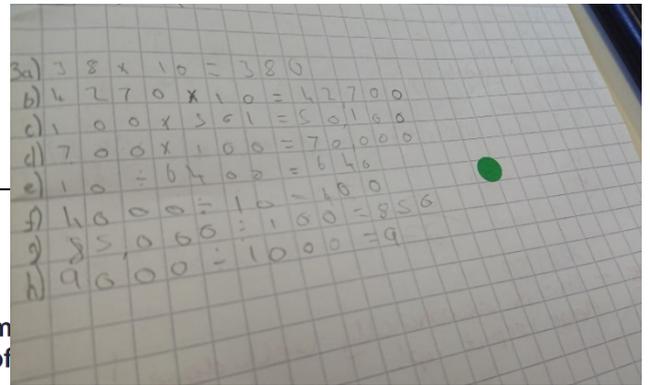
## Appendix



Appendix A - Post-it notes



Appendix B - A plickers card



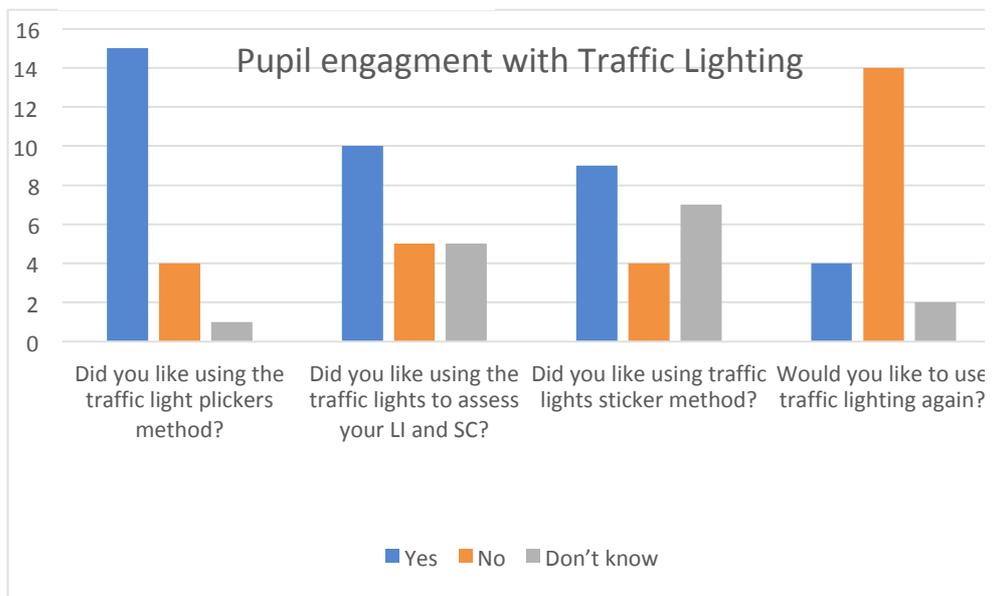
Appendix D - Stickers

I have correct so far

Green - All of them  
 Yellow - Most of them  
 Red - Less than half of

Green  
 Yellow  
 Red

Appendix C - Plickers survey



Appendix E: Results from survey