

# The effect of replacing marking with digital mastery.

A study comparing rates of academic progress between classes in English and History groups, who were subjected to traditional marking (control) or digital mastery (intervention).

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## PURPOSE OF RESEARCH

Staff surveys, such as a well-being survey and the Staff Workload Reduction Survey (adapted from the DFE workload survey – Department for Education (2018) Identifying the issues: school workload reduction kit, [www.gov.uk](http://www.gov.uk)), consistently reflected a concern with marking workload, notably in extended writing and assessments. 28/56 teachers stated that they found marking too much, within their workload. This was also a concern raised in our Staff Improvement Group.

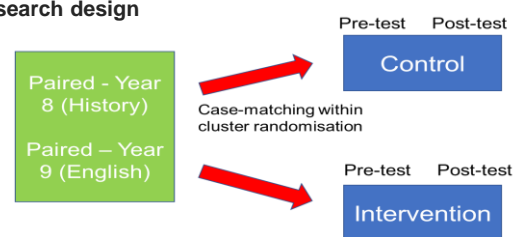
Quality Assurance Measures have also noted that in some books there was more 'green pen' (teacher marking) then red (student developing previous work/ DIRT/ Mastery). Additionally, we wanted to support staff well-being, as some staff feel overwhelmed by the prospect of marking.

## THE RESEARCH DESIGN

A pre-and post-test matched-pairs design was used. To define the independent variable (Digital Mastery, where students reflect on their previous writing and use digital strategies to make instant progress), after case-matching, participants were randomly allocated to one of two conditions:

- Control condition (IV Level 1) - Control condition: Existing marking practice (staff marked under the guidance of the old policy, evidence of marking every 6 lessons. Dialogic Marking.)
- Intervention (IV Level 2) – Digital Mastery

Figure 1 – Research design



### Dependent variables

The following measures were used:

- DV1 (attainment) – pre- and post-test teacher assessments
- DV2 (teacher wellbeing) – International Personality Item Pool questions (Working too hard, Optimism, Self-efficacy, Enthusiasm, Love of learning) (Goldberg et al., 2006) (pre- and post-test) [Working too hard (Simms, et al., 2011); Optimism; Enthusiasm; Love of Learning (Peterson & Seligman, 2004); Self-efficacy (Costa & McCrae, 1992)]
- DV3 (teacher voice) – reflective questioning post-test only
- DV4 (teacher time) – recorded using <https://clockify.me/>

### The design allowed for the testing of the following hypotheses:

- H1 – Pupil attainment as measured by assessment data will not be negatively affected by reducing marking
- H2 – Teachers' perceptions of workload and well-being will improve as a result of digital mastery
- H3 – Teachers will spend less time marking student books (green pen)
- H4 – Teachers will feel time spent is purposeful, as a result of digital mastery

**REFERENCES** Goldberg, L. R., Johnson, J. A., Eber, H. W., Hogan, R., Ashton, M. C., Cloninger, C. R., & Gough, H. C. (2006). The International Personality Item Pool and the future of public-domain personality measures. *Journal of Research in Personality*, 40, 84-96. Costa, P. T., Jr., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (Neo-PI-R) and NEO Five-Factor Inventory (NEO-FFI): Professional manual*. Odessa, FL: Psychological Assessment Resources. Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A handbook and classification*. New York: Oxford University Press/Washington, DC: American Psychological Association. Simms, L. J., Goldberg, L. R., Roberts, J. E., Watson, D., Welte, J., & Rotterman, J. H. (2011). Computerized adaptive assessment of personality disorder: Introducing the CAT-PD project. *Journal of Personality Assessment*, 93, 380-389.

## METHODS

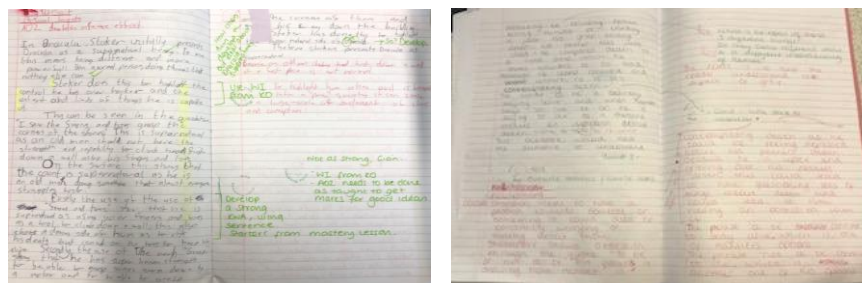
### Participants, sample size and randomisation

Four classes from a rural secondary school, rated Outstanding by Ofsted, took part in the study. Two History Year 8 classes (N = 60) and two English Year 9 classes (N = 58). A total sample size of 118 (50 boys; 68 girls).

Individual pupils were case-matched across year groups controlling for prior attainment and whole classes were then cluster randomised to one of the two conditions.

### Procedures

In the control group teachers used the current marking policy. Books were green pen marked, by teaching staff, every six lessons. Staff used Dialogic Marking to encourage student responses which were responded to by students in red pen.



In the intervention group teachers read through a specific piece of writing, every 6 lessons. They used this to obtain an overview of the skills the class (or differentiated groups/pupils) needed to master to improve. They then created a set of marking codes which they applied in the mastery lesson. Teachers then used their marking time to create 'Digital Mastery' tasks, based on their overview. A lesson was dedicated to support 'Digital Mastery' tasks, directly improving their skills through digital modeling, digital tasks, and digital worksheets (digital resources) – to improve their skills first and then apply it, by rewriting a section of their work to demonstrate their new understanding.

Why is the following 'method' clear? What does the student do?

Firstly, the use of the verb 'mocks' is used to describe how Dorian feels insecure about growing old and that the painting will be a reminder of not staying young. 'Mocks' connotes tease and taunt, which could suggest that Dorian believes his own beauty that has been captured in the portrait will tease him and make his jealousy of his past youth immeasurable. It is almost as if he views the portrait as possessing supernatural powers with the ability to haunt and tease him into his mature years. Here, Wilde is exemplifying Dorian's melodramatic reaction towards growing old as he is being presented as if he fears an inanimate object (the portrait); something which cannot be changed.

Create a success criteria using what you have learned from the model above.

**Success criteria:**

1. word class
2. Explains what the chosen word describes and tells us- puts into context
3. Provide 1-2 connotations per word
4. Use connotations to explain interpretation suggests/implies/shows
5. Provide second interpretation "It's almost as if" ....

Brodie RUTHERFORD

Used word class

September 20, 2019, 9:23 AM

Reply...

Brodie RUTHERFORD

How the word is used in that sentence

Reply...

Brodie RUTHERFORD

Connotes-what it suggests or what is meant by this word or different uses for the word

Reply...

Brodie RUTHERFORD

To understand the multiple things it could mean

Reply...

Brodie RUTHERFORD

Verb-to tease/mock or prod at about something

Reply...

Brodie RUTHERFORD

Verb-to make fun of or in this case to 'tease' Dorian about the portrait

100%

Give Feedback to AJ

A.O:	What do you need to do in this section to create a CLEAR and DEVELOPED answer?	Sentence starter
	Repeat process for extract analysis, new quote start from here*, word or method is the same quote start there ***	
AQ1	Quote	The idea that... is reference in (when) ...
AQ2	Clearly state what is literally happening in the narrative at this point and what the quote literally tells us about this.	On the surface ...
AQ2	What does the quote as a whole connote about the topic?	This therefore connotes...
AQ2	Pick out key word and method. First say what the stand alone word suggests. Then say how the connotation from that stand alone word evokes a DEVELOPED idea about character/topic.	However, the use of the (method) 'key word' connotes... and therefore evokes the idea that...
AQ2	Based on your ideas and interpretations previously stated, how the writer wanted an reader/audience to react to this interpretation. What does he want them to process, once they think/feel/understand this?	Therefore, with this understanding the reader/audience thinks... feels... understands... believes...
AQ3	Once a reader or audience member has understood the writer's message. What does the writer want them to do with this message?	Therefore, this is effective as it challenges a (century) reader/audience to...
AQ3	How does this link back to the writer's overall intention?	Therefore (name)

### Materials (and apparatus)

- Computers – used by staff to create Digital Mastery tasks
- iPads – used to access Digital Mastery
- Google Drive – as shared drive and platform, for access to Digital Mastery

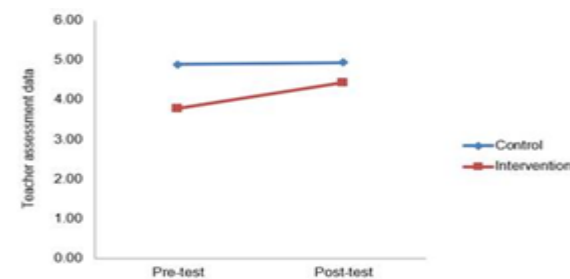
## RESULTS

### Pre- and post-test teacher assessments:

H1: Attainment

Gain scores were first calculated from the pre- and post-test results in Figure 2. A two-tailed paired samples t-test indicated the workload reduction intervention has a non-significant ( $p = 0.127$ ) positive effect compared to the control condition ( $d = 0.507$ ,  $CI (95\%) = 0.249 - 0.766$ ).

Figure 2 – Pre- and post-test data from the present study



For completeness, and to assess the effect of case-matching, and a reduced sample size as a result of this, the full data from both classes was analysed. A two-tailed Mann-Whitney U test was used. Similar results were found ( $r = 0.249$ ,  $CI (95\%) = -0.044 - 0.541$ ,  $p = 0.154$  [ $d = 0.514$ ]).

### International Personality Item Pool questions:

Regarding well-being, the control group and the intervention group reported almost identical scores for the following scales: Love of learning; Enthusiasm, Optimism and Self-efficacy. However, those in the intervention group demonstrated a more positive score in 'Working too hard'. Staff reflected that they had a much better mindset as they felt as though the time spent was more productive.

## CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

The results should be approached with caution because of the small sample size. However, there is evidence to suggest that there was a moderately strong improvement in students' progress in the intervention group. Additionally, staff well-being improved for the teachers in the intervention group. In future research, more time should be given to support staff who are completing the Digital Mastery. Staff felt as though they would have benefitted from more CPD on this subject matter, as they grew in digital confidence. Future research should now look at larger groups to measure impact.

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