

The effect of using technology to set and mark homework on reducing workload

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PURPOSE OF RESEARCH

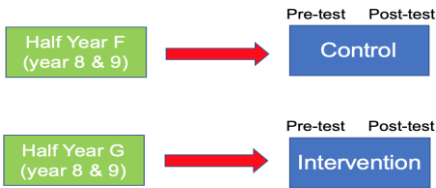
There is evidence that teacher recruitment and retention are negatively affected by increased workload. Following staff research using an adapted workload survey from the DfE material (DfE, 2018), it was identified that marking and homework (especially KS3) were key areas for staff in relation to workload. Many staff also expressed the desire to have more training in technology of various types. As such, the decision was taken to research whether using technology to help set and mark KS3 homework would reduce workload.

THE RESEARCH DESIGN

A pre-and post-test non-randomised matched-pairs design was used. To define the independent variable (use of a technology-based homework setting and marking system) two existing groups of participants were case-matched across two conditions:

- Control condition (IV Level 1) – Setting and marking traditional homework, not using technology
- Intervention (IV Level 2) – Using technology to set and mark homework

Figure 1: Research Design



Dependent variables

The following measures were used:

- DV1 (homework) – Monitoring point 1&2 data (homework) as a pre- and post-test
- DV2 only (teacher time) – Time taken to mark homework (pre- and post-test)
- DV3 (teacher perception) – Teacher questionnaire (post-test)

In addition, control group data (homework) in the Spring term was compared to their prior performance in the Autumn term

The design allowed for the testing of the following hypotheses:

- H1 – Pupil homework as measured by monitoring point 1&2 will not be negatively affected by moving to a technology-based homework model
- H2 – Teacher's perceptions of time taken to mark homework will improve as a result of using technology
- H3 – Teachers will spend less time setting and marking homework

LIMITATIONS

- Lack of randomisation means the sample may be biased
- Small teacher sample size (5.3%)
- Small time for the intervention to have an effect
- Subjective variation in teacher assessment

METHODS

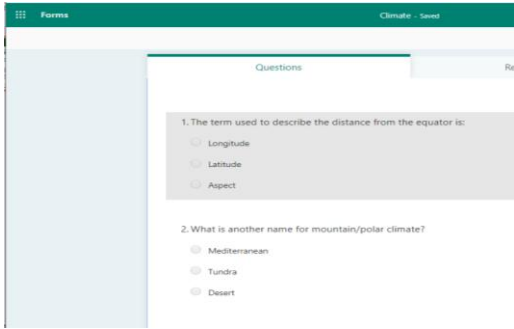
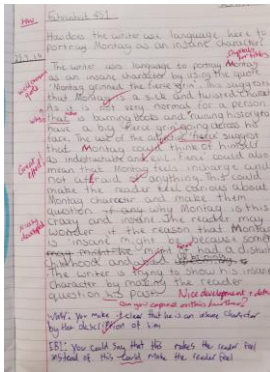
Participants and sample size

112 pupils from a rural secondary school in England took part in the study (66 boys and 46 girls). There were 56 students in the control and 56 in the intervention. These pupils were case-matched using KS2 prior attainment, behaviour, homework and teacher knowledge of the pupils. A total of six teachers across two subject areas were used in the sample – control groups and intervention groups.

Procedures

Teachers received training on how to use Google forms to create homework that will effectively "self-mark". For a six-week period all students were given traditional homework, set and marked fully by the teacher. In the intervention period of 6 weeks, students were given homework that used homework created on Google forms.

Traditional Homework



Self-marking Homework

Materials (and apparatus)

No additional materials were required as the study drew on existing teacher practices and resources

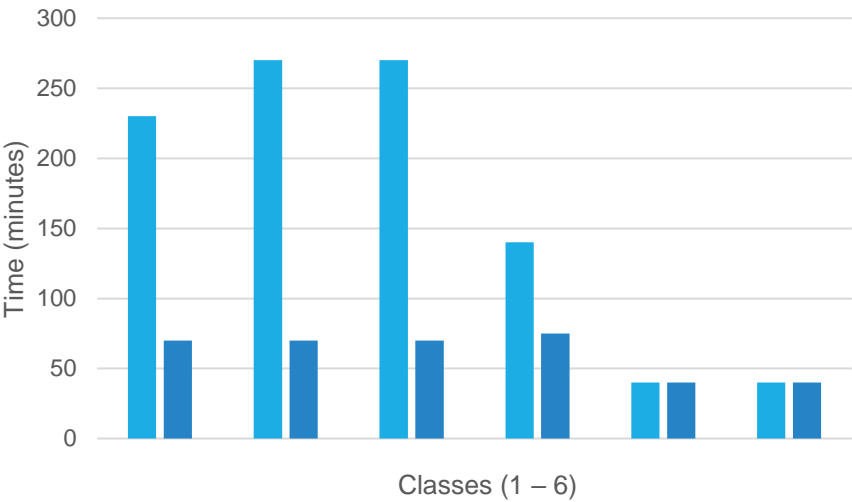
CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

The project findings suggest that using technology to set and mark homework could substantially reduce teacher time (DV2); although a larger study would be needed to confirm this. The average time saved per piece of homework was 27 minutes. The analysis of monitoring data showed that using technology may not negatively affect the quality of pupil homework (DV1).

A post-test questionnaire of staff indicated that all staff who participated felt that self marking homework reduced time with an average score of 9.4/10. (where 1 = no time saved, 10 = a significant amount of time saved (DV3).

RESULTS

Figure 2: Graph to show the comparison in time between using traditional homework methods to set and mark homework, against using technology to set and mark homework



- Total time creating and marking traditional homework (minutes)
- Total time creating and marking technology-based homework (minutes)

Gain scores were first calculated from pre- and post-test data.

Separate two-tailed Wilcoxon signed-rank tests were carried out on homework scores and pupil attainment (see tables below).

Year 8 Homework	Effect size (r)	CI (95%)	p-value	[d]
IT	0.277	-0.495 -1.050	0.317	0.392
History	0.192	-0.120 -0.505	0.245	0.383
Year 9 Homework	Effect size (r)	CI (95%)	p-value	[d]
IT	0.302	-0.539 -1.142	0.317	0.426
History	0.277	0.204 - 0.351	0.086	0.577

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