The feasibility of using whole-class feedback to address common pupil misconceptions – a randomised controlled trial (Geography)

A study comparing rates of academic progress within Year 10 and Year 11 GCSE Geography groups who were subjected to traditional written feedback (control) and an alternative feedback method utilising whole-class verbal feedback as a part of a workload-reduction strategy.

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"Being the best we can be"

PURPOSE OF RESEARCH

A workload survey of teaching staff at Richmond School, conducted in June 2019, concluded that the marking of pupils' work was a major factor in contributing towards teacher workload. Additional investigations revealed that the length of time required to provide detailed, informative and individual written feedback to pupils, coinciding with the frequency of data collection, was a common and significant factor in staff workload.

Prior to the survey, a preliminary lesson study investigation into the use of common whole-class feedback methods to reduce the necessity of written feedback was undertaken. Findings were positive and led to the formal introduction of a whole class feedback form to staff in September 2019.

The study investigates the impact of whole class feedback upon pupil progress and staff workload.

THE RESEARCH DESIGN

Matched pairs designs (randomised)

A pre-and post-test matched-pairs design was used. To define the independent variable (whole class feedback), after case-matching, participants were randomly allocated to one of two conditions:

- **Control condition (IV Level 1)** – Traditional written feedback, provided by the teacher, utilising specific and detailed feedback (WWW/EBI) on the assessment.
- **Intervention (IV Level 2)** – Whole class feedback – informed by unique marking codes written onto the assessment and explained verbally by teacher.

Figure 1: Research design
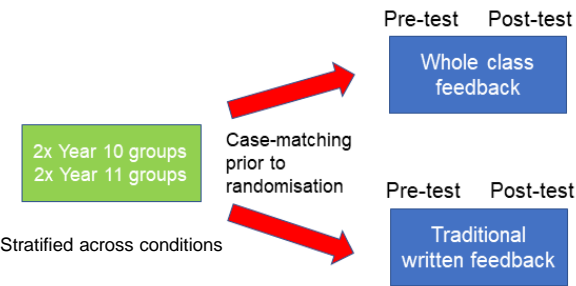
Dependent variables

The following measures were used:

- **DV1 (attainment)** – Pupil attainment on assessments conducted before and after the study period.
- **DV2 (teacher perception)** – Qualitative opinions of participating staff on whole class feedback.
- **DV3 (teacher time)** – The length of time required to mark both the control group's assessments and the intervention group's assessments.

The design allowed for the testing of the following hypotheses:

H1 – Pupil attainment will not be negatively affected by reducing written feedback.

H2 – Teacher's perceptions of marking workload improve as a result of whole class feedback.

H3 – Teachers spend less time providing feedback to students when using a whole class method.

METHODS

Participants, sample size and randomisation

Four mixed-ability GCSE Geography classes (2x Y10, 2x Y11) took part in the research. The total sample size was 111. Stratified allocation of pupils involved 1 class within each year group (11a, 10d) being subjected to the control condition, whilst the alternate classes (11d, 10a) were subjected to the intervention. Lasting for a term (14 weeks; equating to around 40x 1hr lessons), controlling for pupil prior attainment allowed for analysis of the impact of whole-class feedback for all abilities within exam-class teaching.

Procedures

All students were taught by their own teacher and undertook classwork tasks relevant to the scheme of work (GCSE course content formatively assessed through practice exam questions). Both groups received the same input (in terms of lesson content and practice exam questions).

The formative exam questions were marked and fed-back to students in two different ways – the control group were provided with traditional written feedback, whilst the intervention group provided with coded verbal feedback linked to the school's new whole-class feedback model. Both classes were then subjected to the same summative assessment at the end of the investigation.

Materials (and apparatus)

Assessment data from the end of the previous academic year was used for the pre-test.

The whole-class feedback form detailed below was applied to intervention groups. The teacher involved measured the time it took to mark each question involved (per capita) using both methods. In addition, pupil voice was utilised with intervention groups to ascertain opinions on the impact of whole-class feedback on their perceived learning.

A summative assessment (based on the content and exam technique learned during the trial period) was then used with all groups to measure pupil progress over the course of the 14 weeks by contrasting attainment scores with those from the pre-test the previous academic year.

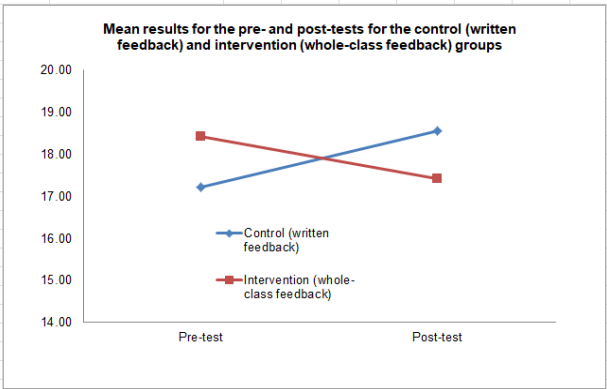**Figure 2: Whole-class feedback form (intervention method)**

Figure 3: Exam question marked using intervention method (top) and control method (bottom)

RESULTS

The Geography teacher involved reported a positive impact on workload through the use of the whole-class feedback form . . .*"the use of whole class feedback saves a wealth of time when recording written feedback on student test papers. When timed, it took me just under 17 minutes to mark a full test paper utilising the traditional written method. The new verbal method with the recording of simplified assessment objective symbols and WWW/EBI brought this down to just over 11 minutes."*

Gain scores were analysed. A two-tailed Wilcoxon signed-ranks test indicated that the application of whole-class feedback had a significant (p = 0.003) negative effect on pupil progress compared to the controlled condition (r = -0.186, CI (95%) = -0.431 - 0.060) [d = -0.374]

	Low PA mean progress	**Middle PA mean progress**	**High PA mean progress**
Control (written feedback)	-1.2 GCSE grades	+0.00 GCSE grades	+0.9 GCSE grades
Intervention (whole-class feedback)	-1.6 GCSE grades	+0.00 GCSE grades	-0.4 GCSE grades

LIMITATIONS

The pre-test relies on historical data obtained before staff started working on assessment validity - hence most recent data might show negative progress but is in fact more trustworthy. Students in the Y10 control group changed teachers before/after (meaning pre-test data might have been marked to a different standard creating unfair bias). Findings are based on just 14 weeks worth of learning – this presents issues with reliability. We should ideally base this investigation over the course of a year and involve final summative scores on external exams.

CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

Whole-class feedback is clearly something which reduces the workload of teaching staff who have multiple teaching groups within a cohort sitting the same assessment. It clearly allows the teacher to save time by collating recognition of common errors and ways for students to address these. However, due to the limitations detailed above, the study must be considered a work in progress whilst ongoing developments to assessment validity take place. Further analysis will now be conducted in order to assess the apparent negative effect above and whether these are accurate or due to the unreliability of the assessment process.

Education Development Trust