Research Schools Network

Institute for **Effective Education**
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Using testing to improve the quality of learning in reading

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About IEE Innovation Evaluation Grants

The first four IEE Innovation Evaluation Grants were awarded in February 2017. Funded by the Institute for Effective Education (IEE), these grants supported pilot evaluations of innovations of teaching and learning approaches based on the Research Schools Network's goal of improving the attainment of pupils by increasing the use of evidence-based practices.

Since then a further 26 projects have been successful in their application for an IEE Innovation Evaluation Grant, bringing the total number to 30. The applications we received included a wide range of interesting, school-led innovations – from after-school film clubs to improve the creative writing of Year 5 pupils, to the use of audio feedback with Year 12 pupils – and we were really impressed with the thought that applicants had put into how these innovations could be evaluated.

The evaluations are small-scale, and test the kinds of innovations that schools are interested in. This is very much a "bottom-up" exercise, allowing schools to get some indicative evidence behind real-world initiatives. Many evaluations are now coming to an end, and we are starting to publish reports on the findings. It is important remember that these are small-scale projects, often carried out in one school, so it is not possible to generalise their findings. In fact, the main benefit of the Innovation Evaluation projects may be in the process, rather than the findings.

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Executive summary

Description of the innovation

‘Go Through’ sessions are lessons where a teacher provides whole-class feedback on a reading test. The teacher initially marks all reading tests. They then deliver a specific lesson in which they model how they would answer the questions, sharing their thought processes with the class. The lesson focuses on questions which many pupils got incorrect and on common misconceptions from the test. Pupils are taught specific reading comprehension skills and techniques. Pupils make changes and corrections to their test paper during ‘Go Through’ sessions and use testing notebooks to record their personal targets and learning points.

Summary of the evaluation

Sixty-four Year 5 pupils in two parallel classes participated in the evaluation. One class was allocated to be the intervention group while the other acted as a control group. The intervention class took three reading tests followed by three ‘Go Through’ sessions each half term for five months. The control class also took three reading tests each half term but did not carry out a structured review of the test.

NFER Year 5 reading tests were administered to all participating pupils as a pre- and post-test. Reading comprehension outcomes were reported.

Summary of findings

On average, pupils in the intervention group made more progress in reading comprehension than pupils in the control group (effect size = +0.37). In particular, the percentage of pupils scoring above age-related expectations (standardised score of 115 and above) increased more in the intervention group than in the control group.

Introduction

Description of the problem

Testing pupils at regular times to inform areas of weaknesses in pupils' understanding was inconsistent across our school. Summative testing was often done in a way that was unlikely to have a positive impact on learning in the classroom. Normally, it was carried out, results collated and then no longer referred to.

End of year assessments in 2017 showed that pupils in Years 3, 4 and 5 were not meeting age-related expectations in reading:

TABLE 1

	National age-related expectations	Mean Year group score at Ocker Hill Academy, summer 2017
Year 3	18	15.95
Year 4	21	20.71
Year 5	24	22.57
Year 6	27	27.78

Description of innovation

There was good practice in Year 6 where the teacher had developed 'Go Through' sessions as a way of providing feedback on reading tests. Reading tests are first marked by teachers. This is then used during a specific lesson to model answers in order to improve the pupils' understanding of what certain questions are asking for. This aims to develop the skill of reasoning in its widest sense, as a transferable skill which can be used across the curriculum. We were keen to develop this systematic approach across the whole academy but wanted to first pilot the approach with a specific year group to see if the evaluation gave us data that indicated the approach that was being developed had promise.

Review of the existing research

Regular testing, no matter how 'painful' it might be in the current climate of seemingly perpetual tests, is actually beneficial to learning.

There are benefits to regular testing. One is retrieval practice and the other is the 'hypercorrection' effect or the effect on an individual when they find out that they've got something incorrect that they previously thought was correct.

According to Bjork (1975), "Taking a test often does more than assess knowledge; tests can also provide opportunities for learning. When information is successfully retrieved from memory, its representation in memory is changed such that it becomes more recallable in the future". Testing is more than assessment. Bjork sees testing as a "learning event".

Dylan Wiliam continues this idea (quoted in Hendrick and Macpherson, 2017), “the more confident you are that you think an answer is correct but is actually incorrect, the bigger the improvement in the change to your thinking”.

In discussion with fellow colleagues in the school, the main problem with this is the idea that further testing adds to the feeling that pupils are tested enough. The difference between the type of testing that people were concerned about – that of a test which serves no purpose but a score in a mark book – and ‘Go Through’ sessions is that in the latter the pupils are involved in the process. This is further reinforced by Black and Wiliam (2014), who say that, “formative and summative functions intertwine… However, it should be inter-related with, consistent with and supportive of the pedagogic process as a whole”.

This is reiterated by Dunlosky et al (2013) in *Strengthening the student toolbox*, where practice testing and ‘spaced practice’ are identified as the most effective way that pupils can learn in the classroom. This research is referenced in the Education Endowment Foundation, *Metacognition and self-regulated learning* guidance report where seven recommendations are discussed at length. Recommendation three focuses on the use of teacher modelling to help pupils develop their cognitive skills, with Dunlosky’s ideas of effective learning techniques being highlighted in recommendation six.

From all this research, it seems that a better way to reconcile the difficulties a teacher faces in balancing formative and summative assessment is by trying to have a consistent pedagogic approach in using tests in a way that may help develop metacognition in pupils.

Research questions

What impact do ‘Go Through’ sessions in three reading tests delivered every half term for five months have on the reading comprehension of Year 5 pupils?

Within this evaluation we also want to answer the following questions:

1. What impact do ‘Go Through’ sessions in three reading tests delivered every half term for five months have on the reading comprehension of high prior-attaining Year 5 pupils?
2. What impact do ‘Go Through’ sessions in three reading tests delivered every half term for five months have on the reading comprehension of low prior-attaining Year 5 pupils?
3. What impact do ‘Go Through’ sessions in three reading tests delivered every half term for five months have on the reading comprehension of Year 5 pupils in receipt of pupil premium funding?

Method

Sample

Ocker Hill Academy is a mixed junior school in Tipton, Sandwell in the West Midlands. At the time the evaluation began 34% of pupils attending the school were in receipt of pupil premium funding, which was above the national average. The school deprivation indicator of 0.31 was above the national average while the area around the school had an income deprivation affecting children index (IDACI) rating of 9199, making it one of the 30% most deprived areas in England. 9.2% of pupils in the school received special educational needs (SEN) support (national average = 12%) and 2.8% had an education, health and care plan (EHCP) (national average = 1.3%). 7.2% of pupils in the school spoke English as an additional language (EAL), which was well below the national average.

'Go Through' sessions were evaluated in Year 5, despite other year groups achieving mean reading scores in 2017 which were further below age-related expectations. This decision was made because:

- There was a newly qualified teacher (NQT) and an experienced teacher who left the school in December 2017 in Year 3.
- There was a new teacher to the school as well as a job share in Year 4.

For these pragmatic reasons, the only option was to carry out the evaluation in Year 5 where there was the most experience apart from in Year 6. The sample participating in the evaluation was 64 Year 5 pupils from two classes at Ocker Hill Academy, with 32 pupils in the intervention group and 32 pupils in the control group.

All Year 5 pupils' data was anonymised during data analysis and reporting. Consent was sought by the school from the parents that this data could be used as part of the evaluation.

Assignment to condition

There were two Year 5 classes in the school. One Year 5 teacher (Teacher A) had 10 years' teaching experience, mainly in Year 5, but had also taught for two years in Year 4. They had a TLR2 (Teaching and Learning Responsibility 2) and a middle leadership role for mathematics and science. The other Year 5 teacher (Teacher B) had three years' teaching experience in Year 5 and 6, two years of which were in another school. Teacher B was chosen to be part of the intervention as they had the least experience. It was felt that Teacher B would be more of a 'blank canvas' on which the relationship between the Year 6 member of staff and themselves could develop in a coaching role.

There were 32 pupils in the intervention class and 32 pupils in the control class. Characteristics of the intervention and control classes were as follows:

TABLE 2

	Intervention group	Control group
Number of participating pupils	32	32
Girls	56%	53%
Boys	44%	47%
Pupils in receipt of pupil premium funding	16%	31%
Pupils who speak English as an additional language	13%	6%
Pupils receiving support for special educational needs	6%	6%
Pupils with EHCP/ Statement of SEN	6%	6%

The only noteworthy variations in the contextual characteristics of the groups were that there were nearly double the percentage of pupil premium pupils in the control group in comparison to the intervention group; and slightly more than double the percentage of EAL pupils in the intervention group than the control group.

Mean pre-test scores for the intervention and control group were compared to check for equivalence. Pre-test scores for the groups were not quite equivalent (the difference between the intervention and control group means (3.5) was greater than 0.25 of a standard deviation of the whole sample (3.1)), with the intervention group having a higher average standardised score (105.0) than the control group (101.5).

Description of the innovation

The innovation was the use of 'Go Through' sessions following reading tests. The Year 6 teacher who developed the approach trained a Year 5 teacher in the techniques used during the reviewing of tests after the pupils have taken them.

These techniques included:

- All tests teacher-marked prior to 'Go Through' session.
- During 'Go Through' Sessions, children use green pens to make changes/corrections to their tests.
- Children have testing notebooks in which they make notes about their own personal targets, downfalls, mistakes and key points to learn.
- Questions are looked at in order, considering the skills necessary to answer them correctly. Questions that all the children have answered correctly are often missed out: time is better spent on areas of need.
- Longer (3 mark) questions are modelled with teacher thought processes shared with the children. Answers are demonstrated in blank test papers on the visualiser.

- Specific skills such as skimming, scanning, retrieval, inference, language, authorial intent and structure are taught. The children are taught to recognise what the question requires and methods such as bullet pointing and underlining key words and phrases in both the text and the question to answer effectively.
- Children's incorrect answers are shared with the whole class regularly on the visualiser to unpick misconceptions and model answers.
- The children are encouraged to identify the purpose and audience of each text during the reading stage which helps them independently pick out the key bits of information needed to answer questions.
- Peer discussion is used to support learning and comparison of answers highlights where children have missed opportunities.

After training in the above techniques took place, the Year 5 teacher planned for reading tests from January 2018. There were three tests every half term. After each test, there was a 'Go Through' session. The intervention took place over five months, meaning pupils took nine tests and experienced nine 'Go Through' sessions. These 'Go Through' sessions took place during weekly guided reading sessions. The Year 6 teacher who delivered the training observed some of the lessons.

The parallel Year 5 class acted as a control group. They also took three reading tests every half term but their teacher carried out any review of the tests as they would do normally and did not use the techniques in 'Go Through' sessions. Both the intervention and control group continued to use the standard whole school approach to the teaching of reading through weekly guided reading sessions (although the intervention group spent three guided reading sessions each half term carrying out 'Go Through' sessions).

The two Year 5 classes were taught reading in their class groupings throughout the evaluation. There was no mixing between the classes and no additionality or extra reading/activity sessions to the classes apart from interventions (Enable Plus and Sound Discovery) for the teaching of basic reading skills, predominantly for pupils with special educational needs: one pupil from the intervention class and one pupil from the control class received this additional support.

Outcome measures

An outcome measure of the Year 5 NFER reading test was taken at the start of the evaluation in December 2017 – a pre-test. The training of the participating Year 5 teacher then took place and the intervention was delivered over the remainder of the academic year finally ending with a different end-of-year NFER test in reading comprehension in June 2018 – a post-test – to establish how much progress pupils in the intervention and control groups made.

The pre- and post-tests were comparable, using a standardised measure and were administered by the class teacher. The tests were equivalent versions of NFER tests Suite 2. This test focused on reading comprehension – the content of which was mapped to the content domain of the Key Stage 2: English reading test framework published by the DfE 2015.

The administration of the pre- and post-tests was overseen by a member of the senior leadership team (SLT) and the tests were also marked by a member of the SLT. To reduce bias in marking, tests from the whole year group were mixed so that they were not marked in

classes, the names were covered and the member of the SLT marking them was someone who did not know Year 5 pupils well enough to recognise any aspects of their writing, such as handwriting.

Process evaluation

Four of the 'Go Through' sessions were observed, as previously discussed, by the Year 6 teacher who delivered the training. They observed the 'Go Through' sessions to check that they were in line with the training that was delivered but also as a way of discussing issues arising from the implementation of the intervention by the class teacher. An observation framework (see Appendix A) was devised to ensure that the classroom support and observation was carried out effectively and consistently.

Interviews took place with both the Year 5 intervention group teacher and the Year 6 coach regarding their views of 'Go Through' sessions as part of the process evaluation. This was done by the head teacher, who oversaw all aspects of the evaluation. A selection of intervention group pupils, including those with high and low pre-test scores, and those in receipt of pupil premium funding and those not in receipt of pupil premium funding, were also interviewed.

The questions that were asked of the teachers focused on what they felt the impact of 'Go Through' sessions was, with particular reference to impact on pedagogy. Teachers were asked these evaluation questions:

- Tell me about how your 'Go Through' sessions were organised and delivered.
- How did the children respond to the 'Go Through' sessions?
- What outcomes did you anticipate would be achieved by the 'Go Through' sessions?
- What outcomes were achieved by the 'Go Through' sessions?
- Did anything particularly surprise you during the delivery of the 'Go Through' sessions?
- How has this experience changed your thinking regarding the teaching of reading and the use of tests to facilitate the teaching of reading?

Pupils were asked these questions:

- Can you explain how reading comprehension tests are used?
- Explain what happens after you have done your comprehension test and how it helps.
- So, do you think this way of teaching reading and using tests helped you understand reading comprehension more?
- What skills have you gained/developed through doing 'Go Through' sessions?
- Do you feel that your reading has improved since starting this particular way of teaching reading comprehension?

Data analysis method

The analysis of quantitative outcome data provided from the NFER tests was reported as mean scores for the control and intervention groups at pre- and post-tests from which an effect size was calculated. The percentage of pupils in each group scoring 85 or above (which is

categorised as at or above age related expectations ranges) and 115 or above (which is categorised as above age related expectations) were also calculated and reported.

Sub-group analysis for pupils with high scores in the pre-test (>115), low scores in the pre-test (<85) and pupils in receipt of pupil premium funding had been planned as these groups were areas of focus for the school: there is a high correlation between low prior attainment and eligibility for pupil premium funding, particularly in reading comprehension, and there are significant issues at the school regarding facilitating access to the higher order reading skills for high prior attaining pupils. However, the small numbers of pupils with these characteristics in the sample and lack of similarity in pre-test scores between intervention and control group pupils in these groups meant that valid comparisons for these sub-groups could not be made.

The analysis of the qualitative data from teacher questionnaires and pupil interviews was carried out by the school head teacher. He looked for themes in teacher and pupil responses and selected quotes which gave a flavour of staff and pupil feelings about the 'Go Through' sessions.

Cost analysis

Budget item	Amount
Supply cover for trainer and trainee to meet to discuss observations and any issues	6 x £200 = £1,200
Supply cover for six lesson observation and post-observation meeting – four lesson observations by trainer (Year 6 teacher) on trainee (Year 5 teacher) and two lesson observations by trainer (Year 5 teacher) on trainer (Year 6 teacher)	6 x £200 = £1,200
Supply cover for marking, collection and collation of data	2 x £200 = £400
Standardised tests	£500
Total expenditure	**£3,300**
Expenditure on the intervention	**£2,400**

As might be expected from a project like this, the largest expenditure was that of operational costs such as supply cover to allow staff to meet, observe and discuss the implementation of the intervention. This expenditure works out at £37.50 per pupil but, as one can see, this was mostly to ensure that implementation of the intervention was consistent. Once this has been secured, then the costs incurred would decrease quite significantly.

Results

Outcome findings

There were 64 pupils in the sample, of which 32 were in the intervention group and 32 were in the control group. All the pupils in the intervention group were from one Year 5 class and all the pupils in the control group were from the other, parallel Year 5 class. The following results were from the testing of the pupils using the NFER test.

TABLE 3

	Intervention group (n=32)	Control group (n=32)	Difference
Mean pre-test scores	105	101.47	3.53
Mean post-test scores	114.88	107.41	7.47
Effect size	+0.37		
% of pupils age expected pre-test (85+)	90.63%	93.75%	3.12%
% of pupils age expected post-test (85+)	100%	100%	0.0%
% of pupils above age expected pre-test (115+)	25%	9.4%	15.6%
% of pupils above age expected post-test (115+)	56.3%	12.5%	43.8%

Process evaluation findings

Due to the close monitoring by the Year 6 teacher, 'Go Through' sessions were delivered as planned. No elements of the approach were altered to ensure a consistency of delivery of the sessions in line with the training. Staff are used to this level of monitoring to ensure compliance as this is a significant part of the ethos and practice of the academy.

Interviews

The teacher of the intervention group, as well as clearly showing a good understanding of the strategies used and their effectiveness, emphasised the enjoyment the pupils seemed to get from an activity which was, on the surface, just going through a test. Comments included:

- "The children enjoyed the competition element."
- "I was surprised by the big improvement of the children's confidence and results. Very few children did not achieve a standardised score of 100 by the end of the year."
- "The competition – they loved beating their old score and beating others! Also, I couldn't believe how long they could be engaged in essentially just a test."

Differences in attitudinal responses for the teachers and pupils were interesting particularly when cross-referenced with outcomes from the intervention. As one can see, there was a general surprise from the teacher about how the pupils enjoyed the 'Go Through' sessions and tests but this sense of excitement and interest was clearly articulated by the pupils. For example:

- "It's just exciting. I find tests more enjoyable than lessons for some reason…you're excited to see what you've got and how you've improved and see which ones you got wrong and how you can improve".
- "On the questions I got wrong, I like seeing how I got them wrong. It's interesting to see how you got them wrong".
- "To see what you need to improve on…if you get a question wrong, like a deduction question work on that and improve on that".
- "I think more about an author's point of view and how they wrote it…I think about the author's point of view deeper and understand what the story is about".

Conclusion

With an effect size of +0.37 the intervention group made more progress than the control group. Although these results are not statistically significant, it does indicate that the approach is promising and worth investigating further, perhaps by scaling up the evaluation to involve another comparable school. It is also important to point out that the intervention was carried out with a small sample of pupils and the intervention and control groups were not quite equivalent at the pre-test.

Both the intervention and control groups made good progress in the percentage of pupils scoring at (standardised score 85+) and above age related expectations (standardised score 115+). However, the intervention group made far greater increases than the control group in percentage of pupils above age related expectations (115+). These results are likely to be due to the intervention clearly focusing on higher order reading skills more systematically and therefore more effectively in a lesson. It allows the teacher to model reading strategies to tackle more difficult comprehension questions and in so doing may begin to develop pupils' metacognition.

In the evaluation plan, it was decided that we would compare the progress of intervention and control group pupils who achieved high pre-test scores, low pre-test scores and those in receipt of pupil premium funding. The sample sizes for these groups were very small and the pre-test results were not that similar for these groups. Unfortunately, this means that it would be inappropriate to calculate an effect size and means we are unable to conclude too much about the impact of 'Go Through' sessions for these groups.

Despite these reservations regarding the statistical analysis of the data there does seem to be encouraging signs regarding 'Go Through' sessions, particularly looking at the impact on middle prior-attaining intervention group pupils going on to achieve above age-expected reading comprehension at the end of the intervention.

Limitations

A potential limitation the teachers and senior leadership team (SLT) involved needed to be aware of is the diffusion of treatment (when control group pupils experience elements of the intervention) but through discussion and interviews with the Year 5 staff this was found to be low.

There is also the potential for the individual teacher's pedagogy as part of their normal practice to have had an impact on the results. There was a whole school focus through staff meetings to use testing feedback more effectively in year groups but this did not have the same focus as in the intervention where there was a defined set of techniques.

As a subsidiary impact of the intervention, the coaching provided to the intervention teacher allowed them to see how a middle leader can implement effective change in pedagogy (the intervention teacher has subsequently become a middle leader within the academy). It is possible that this experience may have influenced the progress made by pupils in their class.

The small sample size and the fact the evaluation was carried out in one school limits the generalisability of the findings.

Implications for practice

There is now a regime of focused training in place to develop and enhance ‘Go through’ sessions throughout the academy. Monitoring of planning is taking place to ensure that consistency of approach is being developed. We are also looking to extend this intervention into the teaching of mathematics.

We have already begun sharing this research with local schools in Tipton, our learning community area, and also begun scaling up the innovation to involve another comparable junior school.

Implications for further evaluation

The generalisability of the findings is limited by the small sample size of pupils from one school. It would be beneficial to replicate the study with a larger sample size of pupils over a number of schools. Evaluating the approach on a larger scale would allow sub-group analysis of a larger sample size of pupils to answer the questions:

- What is the impact for high prior-attaining pupils?
- What is the impact for low prior-attaining pupils?
- What is the impact for pupils in receipt of pupil premium?

This pilot evaluated the impact of ‘Go Through’ sessions when the class teacher had frequent, one-to-one support from the trainer/coach. It would be interesting to evaluate whether these findings would be replicated with less support or group support from the coach.

Finally, it would be interesting to investigate how this approach balances with developing a culture of reading and reading for enjoyment in the curriculum. In the current climate of changes to ‘The education inspection framework’ by Ofsted, January 2019, this pedagogical approach could be viewed as poor practice. Alternatively, it could be argued that the intervention gives children the tools to get more out of the material they read, improving their reading competence and, potentially, their reading pleasure.

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Appendix A: example lesson observation

Reading hypercorrection observation

16/1/18

Lesson overview
First (cold) observation of reading hypercorrection in year 5 No prior support given. Reading revision notebooks introduced. Reading test completed yesterday and marked completely by **
Positives
✓ Great use of caution triangle to highlight questions/areas to cover during go through session. The children found these useful to flag up their areas of need. ✓ Constant referral back to reading booklet/ text ie. Which text do we need to look in? How do we know? Find the specific section. ✓ Good technique of missing questions that don't require work or explanation- time better spent on areas of weakness. ✓ Encouragement of text based answers ✓ Children re-writing questions to form corrected/ modelled answers
Points to consider
➢ Perhaps get the children to keep a note of their scores on the inside cover of their revision books to set them personal best goals and keep a check on end of year targets. ➢ Model the sort of advice you want them to write in their revision books to avoid misconceptions ➢ Model identifying key words in both the questions and the text. Use the visualiser for this and share your thinking. How do we know where to look? Which words are the important ones? What if the words aren't there? Are there synonyms? ➢ Model the answering of questions on a blank test paper on the visualiser rather than using those from the mark scheme which are often unrealistic. ➢ Teach children to identify question types to spot what is required of them (including amount of marks available) ➢ Encourage key words that may re-occur to be noted down in revision books (such as turning point, contrast, etc. ➢ Consider starting by reading the whole text together and use reading skills (clarification, summary etc) to gain a better understanding of the text before beginning.
Discussion Points?
● How were staff used during the delivery of the test? ● How did the children manage their timings during the test?
Next steps
❖ ** to observe delivery of the test (w/c 12/2/18) ❖ Children to use revision books to revise personal notes prior to next test. ❖ ** to observe ** leading hypercorrection session (w/c 5/2/18)

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