



# Building Capacity for Evidence Based Practice



An Overview: 2017/18



# 1. Introduction



**The Kyra Research School is part of a network of twenty-three research schools across the country, all committed to identifying and sharing evidence-based practice with teachers and school leaders.**

We exist to support schools across our region, and beyond, to make better use of evidence to inform their teaching and learning. We aim to lead the way in the use of evidence-based practice, connecting and involving teachers and leaders with the latest research, and helping them make better use of evidence in order to implement 'what has worked' in their own classroom, to improve outcomes for pupils. In order to achieve this, we provide regular communication, events and training for teachers and leaders about how to improve classroom practice based on the best available evidence, and also support schools to measure the effectiveness of their work.

This year has been both a busy and productive one for the Kyra Research School. We have shared a wealth of resources and key information with schools relating to research-evidence and how to apply it, and we have also provided opportunities for teachers to engage in research first-hand through our Teacher-Led Research programme. As well as this, we have trained our first cohort of Evidence Leads in Education, who will provide ongoing support and advice to colleagues on research and evidence-based practice throughout the county.

Our work at Kyra Research School this year has also seen us reaching out beyond the county of Lincolnshire, working with teaching schools, school improvement services and local authorities in areas such as Rotherham, Derbyshire and Leicestershire. This is very exciting indeed, as it means the capacity which Kyra is creating, to enable schools to engage with research and evidence-based practice, continues to expand. Our hope is that this will lead to improved teaching and learning in as many schools as possible, ultimately making a real and positive impact to the lives of countless children.

**James Siddle**

Head of Kyra Research School

## 2. Our Training



### The Teacher-Led Research Programme

The Kyra Research School Teacher-Led Research Programme (TLR) is a 12-month programme, which was developed to offer teachers and leaders from primary and secondary schools the opportunity to learn about, and to engage in, educational research in a hands-on and practical way. Its purpose is to bring evidence-based research (which can so often be confined to academic circles) directly into schools, and into the classroom, in a way which results in real impact on school improvement, development and evaluation.

The programme introduces its participants to the basics of research, and guides them through the process of designing, implementing and evaluating their own research/innovation project, or micro-trial. The chosen project must be designed to meet, or contribute towards, a key priority in the improvement plan of their own school.

The TLR is a year-long programme, made up of six training sessions (which make up the equivalent of 4 full days of training) and including ongoing mentoring and support between training sessions and optional online twilight discussions. Juliet Brookes, Research and Development Lead, explains “The TLR sessions are very much framed around the three stages of the Education Endowment Foundation’s DIY evaluation guide; preparing for, implementing, and analysing/reporting on a research or innovation project. However, the sessions also include plenty of customised content based on our participants’ particular research interests, and on their training needs survey results.” The TLR programme has many aspects, which include practical workshops, reading tasks, group discussions, learning about the latest theory and research, and sharing information on in-school teacher-led research activities and project progress.

As a result of the TLR, participants develop and refine their own ‘theory of change’ to impact on pupil progress, and eventually share their finding in the form of a research poster which is presented at a showcase celebration. Following its very successful first year, the Kyra Research School TLR Programme began again in July, offering yet more teachers and leaders the opportunity to learn about the transformational role that evidence-based research and innovation can have in schools. The programme has also expanded geographically, with the TLR now also taking place in Chesterfield and in Rotherham.

# TLR Delegates

## Louis Frith

"I originally found out about the Kyra Research School TLR programme when I was approached by a member of the senior leadership team at my school, who suggested taking part in the programme for the purposes of personal CPD, and also with a view to ultimately sharing what I learned about evidence-based research with colleagues throughout the school.



The programme was made up of six sessions, where we learned about the significance and impact of evidence-based research in schools, and how to plan, design, implement, and evaluate a research project for ourselves. We were guided through complex and previously unfamiliar topics such as research methods, feasibility, preparing a research proposal, and delivering, monitoring and documenting the implementation of a research project. Finally, we were taught how to analyse data in order to evaluate the significance of the statistical outcomes of our project. There is so much information out there regarding research, and it has the potential to be overwhelming, but the TLR sessions succeeded in distilling a huge amount of information for us in a manageable and very effective way. I also learned a great deal by going through the process of implementing a research project for myself, and I learned as much from what didn't quite go to plan as what did!



### To what extent does recorded verbal feedback positively affect student progress?

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#### 1. Purpose of the research

The value of inclusive, relevant and timely feedback is regularly discussed. Much research, such as *Inside the Black Box* (William and Black, 1998) and the follow-up *Working Inside the Black Box* (Black et al, 2004) unequivocally highlight the significance and the consequent impact upon students' outcomes, where feedback induces direct student responses. Within the Priory Academy LSST, there is currently an academy-wide focus upon ensuring that students are actively responding to feedback. There is however little suggestion, both within the academy and within the research, as to the format best suited to providing students with feedback to respond to. This research investigated the impact of response marking upon KS5 students, whether provided in written format or verbally-recorded format, with the intention of deepening understanding of the effect of the feedback format, hoping to discover best practice to increase student outcomes.

#### 2. Research Design

A between-participant design with two levels to the independent variable was used with a pre- and two post- tests. The first post-test was conducted immediately after the intervention, and the second post-test was conducted later to assess long-term impact on student outcomes. Two conditions were defined.

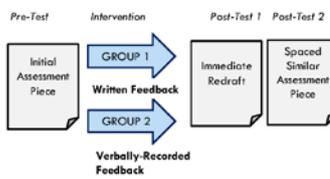
Control Condition: Provision of written feedback inducing response (currently normal assessment practice).

Experimental Condition: Provision of verbally recorded feedback inducing a response.

#### 3. Methods

##### Participants, Sample Size and Randomisation

Two year 13 classes studying Law were selected to take part in the trial. The trial group consisted of 20 students in total, 8 males and 12 females. All students were aged between 17 and 18 years. These pupils were selected as the focus of the trial was KS5 extended writing. Students were randomly allocated to the control or experimental group.



##### Procedures

The trial consisted of three formative assessment pieces. For each assessment piece, in the first instance, the students were given an essay title on a topic for which all students had received teaching of identical lesson plans from the same teacher. These initial responses were provided with feedback and were scored according to examination mark schemes – for randomised Group 1 in written format and for Group 2 in verbally-recorded format – providing similarly structured comments on content, structure and specific use of case examples. Following this feedback, all students were asked to immediately redraft that essay which were then remarked according to examination mark schemes. A similar question was then posed one week later and again assessed according to examination mark schemes.

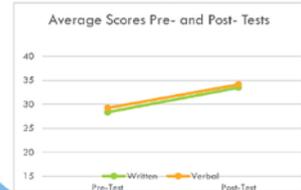
##### Materials

All assessment materials were designed externally and taken directly from previous examination materials. The structured feedback guidelines were produced by the researcher and adhered to strictly on account of there being a sole researcher.

#### 4. Results

Gain scores calculated from the pre-test and post-tests were used in the analysis. A Mann-Whitney U Test (two-tailed) found the effect size to be  $-0.023$  indicating that the provision of recorded-verbal feedback actually had a lower impact on student outcomes than written feedback. However it was clear that both the verbally-recorded feedback and the written feedback positively impacted student outcomes, with Group 1 seeing a Mdn score increase of 3.5 and Group 2 seeing a Mdn score increase of 2.5.

The findings however were clearly not significant due to  $p=0.88$ .



#### 5. Conclusion and Recommendations for future research

Response feedback improves student attainment. Written response feedback has a greater impact on student outcomes than verbally-recorded feedback, but a negligible one. One of the clear issues with this trial to be considered before replication is the lack of significance. If this trial were to be replicated it would need a much higher sample size to remedy this. Additionally, this research was undoubtedly impacted by the research structure and the lack of capability for students for score lower in the first post-test than the pre-test due to access to the pre-test answer at time of post-test 1.

*“There is so much information out there regarding research, and it has the potential to be overwhelming, but the TLR sessions succeeded in distilling a huge amount information for us in a manageable and very effective way.”*

My project was based on feedback to pupils; specifically, whether written or verbally recorded feedback was more effective in improving pupils’ progress. I collected data from 120 pupils, all of whom completed a timed essay. Half received written feedback, and the other half, recorded feedback. The content and detail included in both the written and recorded feedback had to be as similar as possible to make the research valid. Following feedback, all pupils re-drafted their essay, and at a later date answered a different, but similar, essay question in timed conditions. The outcome of my research project was that both forms of feedback had a similar effect. While in some ways this was disappointing, I learned a huge amount through the process and the TLR programme set me up well to complete further research projects more proficiently in the future, as well as putting me in a position to be able to support my colleagues with their own research projects. I know that next time I would do some things differently, for example, increasing the size of the study so that there would be more data to analyse.

I presented the results of the project on a research poster, and I explained the process and outcomes of the project to others on the TLR programme, and to my headteacher. Taking part in the programme has not only given me a much greater understanding of the importance of evidence-based research and a much clearer understanding of the research process itself, but it has also helped to raise the profile of evidence-based research within my school. I think raising this awareness is extremely important in supporting continual improvement across the education sector, making sure that the best educational theory, what is shown to really work, is actually put into practice effectively in classrooms across the country.”



## **Julia Greenfield**

“I undertook the TLR programme last year, and as part of that I ran a micro-trial with John Noden, who is the year 3 and 4 phase leader at Lacey Garden Junior School.

With the government’s multiplication table check being rolled out nationally in 2019, we decided that a research trial on the effectiveness of different methods of teaching multiplication tables would be very useful for teachers and pupils alike. We decided to test the effectiveness of three methods; interleaved retrieval practice, interleaving, and the control involved chanting of multiplication tables in a block of time.

We undertook the micro-trial in January 2018. Using the network we had built up through the Kyra Research School we conducted research in 15 schools, across 21 classes of Year 4 pupils, totalling around 450 children. We made sure we had a good mix of different types of schools with varying pupil demographics. Our focus was on the level of pupil retention of their times tables in response to each of the three different methods of teaching. We particularly focused on the 6 and 12 times tables.



The trial lasted for one week, and was based on exactly 4 minutes of teaching the multiplication tables daily. Before the trial took place John and I produced resources and videos to make sure that practice was standardised across the board during the trial. We received ongoing support from the Kyra Research School throughout the process of planning and conducting the trial, which helped us to make sure that we were doing all of the right things!

**“The data we collected showed some promising initial findings that children who were taught their times tables through interleaving demonstrated the greatest level of retention.”**

Following the trial, pupils were tested on the multiplication tables at the end of the week, on the following Monday, two weeks later, and thirty days later. The data we collected showed some promising initial findings that children who were taught their times tables through interleaved retrieval practice demonstrated the greatest level of retention. Interleaved retrieval practice meant completing times table retrieval exercises for 1 minute at four different times during the day (rather than in one 4-minute block).

However, the findings weren't quite at the statistical threshold which proves reliability and statistical significance. Therefore, from this promising premise, we are looking to replicate the trial with more children and over a longer period of time, this time with only two variables (interleaved retrieval practice and interleaving) to see if we can reach a statistically significant outcome this time around.”

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**Interleaved Varied Retrieval Practice, when learning the 6 and 12 times tables, improves retention compared to 'typical practice' – a randomised control trial with three levels to the independent variable**

**Purpose of the Research**

There is evidence from recent studies that interleaving content, as opposed to mass practice, can enhance pupil learning and retention of information or skills (Taylor and Rohrer, 2010; Rau et al., 2013). Evidence also suggests that retrieval practice, as opposed to restudy, supports longer-term retention of information. The present study seeks to assess the effectiveness of interleaving and interleaving, alongside varied retrieval practice, with Year 4 pupils. The focus is on retaining times tables.

**The Research Design** A between-participant design was used with a pre- and post-test. The independent variable 'type of practice' was defined operationally by creating three conditions:

Control - A  
Typical practice (chanting)

Intervention B  
Interleaved practice (chanting)

Intervention C  
Interleaved varied retrieval practice

**Materials** Tests - randomised 6 and 12 times tables test. Teaching sequence as outlined above with videos to demonstrate, counting sticks, multiplication flashcards, whiteboards/number fans.

**Participants, Sample Size and Randomisation**  
 The trial studied 451 Year 4 pupils in 15 schools. Due to attrition, data was sampled from 335 pupils. There was purposeful sampling of children based on the pre-test score and number of Pupil Premium children, followed by stratified randomisation. Pupils were case-matched across schools from the pre-test average class score. Pupils were randomised at class level to one of three conditions.

**Methods**

**Procedures**  
 Participants took the pre-test of a randomised multiplication test of multiples of 6 and 12. Children, based on pre-test raw score, were then part of a stratified randomisation process according to their school, based on the numbers of pupils and of Pupil Premium children per class. Following the randomisation, participants then received instruction in one of the following three methods for five consecutive days.

The (Control - A) group experiencing 'typical practice' received one daily session of multiplication table practice. This involved class chanting, using a counting stick, to chant up and down the 6 times table following the structure '... multiplied by ... is ...', before 'jumping' to random intervals along the counting stick. This lasted 2 minutes and was immediately followed by repetition of the activity for the 12 times table.

The group (Intervention B) experiencing 'interleaved practice' chanted up and down a multiplication table (following the structure outlined above) four times throughout the day. Each period of chanting lasted 1 minute. Each of the focus times tables (6 and 12 times tables) was chanted once on the morning and once on the afternoon, with a period of at least one hour between each chanting period.

The group (Intervention C) experiencing 'interleaved varied retrieval practice' experienced four separate episodes each lasting 1 minute. Episodes were separated by at least one hour. The four episodes experienced consisted of:

- Teacher-led, randomised multiplication test for both of the focus times tables (x6 & x12) with answers recorded on paper.
- Child-led peer testing of one of the focus times tables, using flashcards.
- Independent self-testing of one of the focus times tables using flash cards (containing questions on one side and answers on the reverse), where children 'read aloud' the question, e.g. '6 multiplied by 3 is'.
- Teacher-led, randomised multiplication test for the other focus times table with answers shared using whiteboards/number fans.

Following the instruction week, was a post-test on the last day of the trial, the following Monday and a further post-test two weeks after and 30 days later.

**Data Analysis** Gain scores were calculated from pre- and post-test scores. Scores in all comparison groups were not normally distributed so non-parametric tests were used. Kruskal-Wallis ANOVA followed by separate Mann-Whitney U tests (one tailed) was used with  $p < 0.05$ . Multiple comparisons were then interpreted with a Bonferroni adjusted alpha ( $p = 0.0167$ ).

**Results**

	Control - A V Intervention B	Control - A V Intervention C	Intervention B V Intervention C
Effect size (r)	0.10	0.11	0.00
p-value	0.077	0.031	0.379

Overall  $p = 0.159$  (two tailed) so was not significant and when the results were interpreted with a Bonferroni adjusted alpha of  $p < 0.0167$  both interventions, compared to the Control, were not statistically significant. Although the probability of an effect between Intervention B and the control group was more likely than Intervention C and the control group was similar with  $r = 0.10 / 0.11$  (Int. B v Control - A) compared to the control and, taking the EEF convention of months gain, this equates to 2 months additional progress for the intervention groups.

**Limitations**  
 Attrition at 25.8%, was large (largely due to pupil absence over duration of the trial) and a larger sample size may have impacted on the results. The trial was also conducted over a short period of time and results may have been different with a longer (or shorter) period of learning. The control groups scored (slightly) lower on average on the pre-test and this may have impacted on the progress of this group compared to their peers.

**Conclusions and Recommendations for Future Research**  
 Data suggested that interleaved practice and interleaved practice with varied retrieval, typically had a positive impact on outcomes with learning the 6x and 12x tables. However, the trial data suggested that further research would be useful as the Bonferroni adjusted alpha of  $p < 0.0167$  was not met.

**Figure 1. Pre- and post-test times table scores for the control and intervention groups**

Group	Pre-test (Mean)	Post-test (Mean)
Control A	~8.0	~10.0
Intervention B	~8.0	~12.0
Intervention C	~8.0	~10.0

- Mablethorpe Primary Academy
- Morton Trentside Primary School
- Claycote C of E Primary School
- Gosberton House Academy
- LWF - St Lawrence Academy
- SSSF - The Priory School
- GANF - Ambergate Sports College
- Boston Grammar School



Education  
Development  
Trust

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### The impact of feedback and marking strategies on pupil attainment in Writing in Year 5 and Year 9 and teacher workload – a randomised control trial with three levels to the independent variable

Purpose of the Research	Methods	Results																																																																																								
<p>EEF A Marked Improvement – There is little high quality research evidence to suggest that extensive or detailed marking has any significant impact on pupil learning. Delayed feedback – Spalderson, N. &amp; Bjork, R – Delaying, reducing and summarising feedback can be better for long-term learning than providing immediate, trial by trial feedback.</p> <p>The present study seeks to assess the effectiveness of written feedback, live feedback and whole-class feedback on pupil attainment in Writing in Year 5 and Year 9 for pupils in mainstream and special schools. The impact of the feedback strategies on teacher workload has also been examined.</p> <p><b>The Research Design</b> A between-participant design was used with a pre- and post-test. The independent variable 'type of practice' was defined operationally by creating three conditions:</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Intervention A Written feedback</p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Intervention B Live feedback</p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Intervention C Whole class feedback</p> </div> </div> <p style="text-align: center;">↓</p> <p>Pre-test → Post-test</p> <p><b>Materials</b> 5-day teaching sequence for Year 5 (Primary) and Year 5 and Year 9 (Special), 3-day teaching sequence for Year 9 (Secondary). All teaching sequences include a teacher's PowerPoint and additional resources. Pre- and post-test stimulus (video and pictures) and writing tasks for both year groups. Teacher training resources. Whole-class feedback proforma, pre- and post-Likert Scales – teacher surveys.</p> <p><b>Participants, Sample Size and Randomisation</b> The trial studied 260 pupils from 8 schools. Due to attrition, data was sampled from 147 pupils. Pupils were randomised at class level to one of three conditions.</p>	<p><b>Procedures</b> Intervention A groups received a 3 or 5 day teaching sequence (dependent upon Phase) focused on imaginative writing. Written feedback related to the lesson success criteria was given 3 times over the course of the teaching sequence following a given rubric – one positive comment, one next steps comment. Pupils given 10-15 minutes at the start of the next lesson to respond to written feedback.</p> <p>Intervention B groups received a 3 or 5 day teaching sequence (dependent upon Phase) focused on imaginative writing. Teachers provided in-class individual verbal feedback. Books reviewed in lesson not after lesson review of books or written marking.</p> <p>Intervention C groups received a 3 or 5 day teaching sequence (dependent upon Phase) focused on imaginative writing. 3 times over the course of the teaching sequence, the teacher provided whole-class verbal feedback to pupils supported by the use of a whole-class feedback proforma. Pupils given 10-15 minutes at the beginning of the next lesson to engage with feedback and associated tasks.</p> <p>Pre- and post- teaching sequence, pupils completed a cold-write based on a picture or video stimulus. Scripts were marked by independent markers. Success criteria from the week's teaching sequence were scored and totalled. Teachers completed Likert Scale questionnaires pre- and post- trial, focused on initial and post-trial perceptions of the impact of various feedback and marking strategies on pupil attainment, pupil response to feedback and teacher workload.</p> <p><b>Data Analysis</b> Gain scores were calculated from pre- and post-test scores. Overall scores in all comparison groups were normally distributed so parametric tests were used. Results were analysed using a between-subject ANOVA followed by planned comparison (two-tailed) using the Clark-Carter t value. Multiple comparisons were then interpreted with a Bonferroni adjusted alpha (<math>p = 0.0167</math>).</p> <p><b>Overall Analysis – all pupils</b> Note that Secondary pupil data is within written and whole class feedback only.</p> <table border="1"> <thead> <tr> <th></th> <th>Written feedback V</th> <th>Written feedback V</th> <th>Whole class feedback V</th> </tr> <tr> <th></th> <th>Live feedback</th> <th>Whole class feedback</th> <th>Live feedback</th> </tr> </thead> <tbody> <tr> <td>Effect size (g)</td> <td>0.26</td> <td>-0.11</td> <td>0.35</td> </tr> <tr> <td>p-value</td> <td>0.222</td> <td>0.506</td> <td>0.062</td> </tr> </tbody> </table> <p>Overall <math>p = 0.170</math> (two tailed) so was not significant and when the results were interpreted with a Bonferroni adjusted alpha of <math>p = 0.0167</math> the 3 conditions were not statistically significant. Although the probability of an effect between whole-class feedback and live feedback was most likely. Taking the EEF convention of months gain, written feedback compared to live feedback equated to 3 months additional progress, written feedback compared to whole-class feedback: -2 months additional progress, whole-class feedback compared to live feedback: 4 months additional progress.</p> <p><b>Secondary School – Year 9 pupils</b> For reasons of fidelity, written feedback compared to whole class feedback is reported only.</p> <table border="1"> <thead> <tr> <th>Live 25.00</th> <th>Pre 0.603 (two tailed)</th> </tr> </thead> <tbody> <tr> <td></td> <td><math>p = 0.083</math></td> </tr> </tbody> </table>		Written feedback V	Written feedback V	Whole class feedback V		Live feedback	Whole class feedback	Live feedback	Effect size (g)	0.26	-0.11	0.35	p-value	0.222	0.506	0.062	Live 25.00	Pre 0.603 (two tailed)		$p = 0.083$	<table border="1"> <thead> <tr> <th></th> <th>Written feedback V</th> <th>Written feedback V</th> <th>Whole class feedback V</th> </tr> <tr> <th></th> <th>Live feedback</th> <th>Whole class feedback</th> <th>Live feedback</th> </tr> </thead> <tbody> <tr> <td>Year 5 Primary School</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Effect size (r)</td> <td>-0.13</td> <td>0.03</td> <td>-0.16</td> </tr> <tr> <td>p-value</td> <td>0.469</td> <td>0.372</td> <td>0.134</td> </tr> <tr> <td>Special School</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Effect size (g)</td> <td>0.56</td> <td>0.01</td> <td>0.53</td> </tr> <tr> <td>p-value</td> <td>0.130</td> <td>0.971</td> <td>0.090</td> </tr> <tr> <td>Year 5 Special School</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Effect size (r)</td> <td>0.21</td> <td>0.38</td> <td>-0.13</td> </tr> <tr> <td>p-value</td> <td>0.037</td> <td>0.355</td> <td>0.643</td> </tr> <tr> <td>Year 9 Special School</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Effect size (r)</td> <td>0.24</td> <td>-0.18</td> <td>0.32</td> </tr> <tr> <td>p-value</td> <td>0.655</td> <td>0.347</td> <td>0.271</td> </tr> <tr> <td>SEND – all pupils</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Effect size (g)</td> <td>0.24</td> <td>-0.29</td> <td>0.53</td> </tr> <tr> <td>p-value</td> <td>0.456</td> <td>0.380</td> <td>0.087</td> </tr> </tbody> </table> <p>Attrition at 55.5% was very large (due to pupil absence over duration of the trial and evidence of contamination between the 3 conditions) and a larger sample size may have impacted on the results. The trial was also conducted over a short period of time and results may have been different with a longer period of learning.</p> <p><b>Conclusions</b> Overall data suggested that whole-class feedback and written feedback typically had a positive impact on pupil attainment with live feedback having a negative impact on pupil attainment. This result was mirrored for SEND/PPM with whole-class feedback having a high positive effect size of +7 months. However, when data for Year 5 Primary pupils was analysed, live feedback had the most positive impact on pupil attainment equating to an additional 2 months progress compared to whole-class and written feedback. The trial data suggested that further research would be useful as the Bonferroni adjusted alpha of <math>p &lt; 0.0167</math> was not met. Live feedback was stated as having the most positive impact on teacher workload. Teachers commented that whole-class feedback also had a positive impact on teacher workload but still took time after school to collate. Written marking was described as onerous and time consuming.</p>		Written feedback V	Written feedback V	Whole class feedback V		Live feedback	Whole class feedback	Live feedback	Year 5 Primary School				Effect size (r)	-0.13	0.03	-0.16	p-value	0.469	0.372	0.134	Special School				Effect size (g)	0.56	0.01	0.53	p-value	0.130	0.971	0.090	Year 5 Special School				Effect size (r)	0.21	0.38	-0.13	p-value	0.037	0.355	0.643	Year 9 Special School				Effect size (r)	0.24	-0.18	0.32	p-value	0.655	0.347	0.271	SEND – all pupils				Effect size (g)	0.24	-0.29	0.53	p-value	0.456	0.380	0.087
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## Anna Miller

I designed a micro-trial on the topic of marking and feedback, and how different methods of feedback might affect pupils' learning and progress. The trial took place in 3 primary schools, 1 secondary school, and 5 special schools, in 14 classes altogether across the schools. The research was based on a literacy sequence lasting one week; with one literacy sequence being designed for year 5 and another for year 9. I had support from SLE's and lead teachers to make sure that those teaching sequences



were really high quality. They also had to be very detailed and precise, so that all teachers were teaching exactly the same content, on the same day, for the same amount of time. There could be no deviation in the approach to teaching, to ensure that only the effect of the feedback was being tested. All of the teachers involved in the trial were given an afternoon of training to guarantee consistency in the teaching of the sequence across the classes and schools involved.

Three different types of feedback were tested in the trial, these were live (verbal) feedback, whole class feedback, and written marking. Live feedback consisted of the teacher or TA moving around the classroom and offering individuals one-to-one verbal feedback on their work. Whole class feedback consisted of taking in books, reading all of the pupils' work, and filling in a proforma summarising positives/negatives in pupils' work overall, and making a note of any pupils who hadn't understood or needed extra support. In the first 10-15 minutes of the next lesson, whole class feedback was delivered based on the information gathered on the proforma, with TA support of children who needed extra help. Written feedback outlined positives in the work of each pupil, and next steps for

improvement, including corrections and/or questions. Again, 10-15 minutes at the start of the next lesson was set aside for pupils to respond to written feedback.

To track the effect of the different types of feedback, pupils were given a cold writing task prior to the trial week, where pupils completed 45 minutes of imaginative writing in response to a stimulus. After the trial week, the pupils again completed a 45-minute imaginative writing task, in response to a different stimulus. A team of teachers, with expertise in marking writing, were given training on how to mark the written tasks against clear and specific criteria. Marking was also moderated in pairs and by the Project Leads to ensure accuracy and consistency.

"I presented my trial and findings on a research poster, which I then shared with others on the TLR, headteachers, and at the Kyra Research School conference. All of us on the TLR learned a lot from one another's research projects and trials and were able to ask one another questions and share what each of us had taken away from the process." Our data showed that overall whole class feedback was the most beneficial, followed by written feedback, and that live feedback was the least beneficial. The findings were interesting and promising, and whole class feedback seemed to offer a significant advantage based on the data collected within the trial. However, unfortunately the data did not meet the threshold of statistical significance which would prove its reliability. If I were to replicate this trial, I would include only two variables to make the likelihood of the data being statistically significant stronger, and would also aim to increase the pupil sample size. I presented my trial and findings via a research poster, which I then shared with colleagues on the TLR, headteachers, and delegates at the Kyra Research School conference. I learned so much from taking part in the TLR which has further developed me in my role as Research Champion for the Mobilise project. The TLR Celebration Event was a great opportunity for everyone who had completed to programme to share and celebrate their research posters and projects and to continue learning about quantitative and qualitative research.

**All of the TLR Research posters are available online to be viewed here:** <https://kyra.researchschool.org.uk/?p=679&preview=true>



**The use of expanded retrieval practice improves the retention of spelling rules in KS2 pupils – a preliminary study.**

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#### Purpose of the research

The links between neuroscience and education is an exciting area of research in which we can explore how we learn and influence more explicit processes. There is increasingly promising research surrounding retrieval practice in various forms. These include spaced learning (having distraction activities between repeated content), distributed learning (evenly distributed breaks between repeated content), and expanding retrieval practice (breaks between repeating content get gradually longer). (Carpeta et al, 2006, 2009; Carpenter, 2012; Biggart et al, 2017; Kramer et al, 2012; Kelley and Whasson, 2015; Gerber & Toppino, 2015)

Our School Development Plan identifies 'consistency of spelling strategies and approaches in all key stages' as a priority. This is an important area to explore using a randomised controlled trial design because the data shows spelling as a concern in KS2 in particular and interventions are taking place to close gaps. This research aims to explore a retrieval method to improve pupils ability to retain spelling rules within a given time frame.

#### Research Design

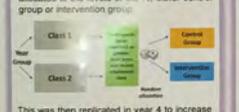
A between-subject matched pairs design was used with a pre and post-test. To address the aims of the research the independent variable was operationalised by creating two conditions:

- IV Level 1 (Control Condition) Spelling tests, normal school practice
- IV Level 2 (Intervention) Spelling tests with the addition of expanding retrieval practice

#### Matched Pairs

Across two year 3 classes, pairs were case matched on gender, birth term and recent attainment data in reading and writing.

A pupil from each pair was then randomly allocated to the levels of the IV, either control group or intervention group:



This was then replicated in year 4 to increase the sample size for analysis.

#### Sample Size

Prior to carrying out the research an A priori Power Analysis indicated that a sample of at least 60 participants would give .33 effect size (one tailed) with alpha 0.05

#### Methods

##### Participants

In total 70 pupils from year 3 and 4 (30 girls and 40 boys) took part in the study. Across year 3 there were 18 pairs case matched and across year 4 there were 17 pairs.

##### Procedure



- Phase One: Pre-testing** – All children in both classes took part in a 'cold' spelling test before being taught any rules or strategies to provide baseline data.
- Phase Two: Teaching** – Over one week both classes were taught the spelling rule as per the 'No Nonsense' Spelling Scheme Overview. All children in both classes were exposed to the teaching as normal practice, as this is the same for both the control and intervention groups.
- Phase Three: Expanding Retrieval Practice** – The process of retrieval is then tested by the intervention group taking part in re-tests at specific times over 30 days (Day 2, day 10, day 30).
- Phase Four: Post-testing** – Both the control group and the intervention group take part in the day 30 final re-test.

The procedure was carried out in year 4 then replicated in year 3. The tests were marked and gain scores were calculated and analysed for both year groups.

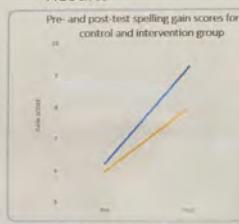
##### Materials

- 'No Nonsense' Spelling Programme (year 3 and year 4) block 5. Both teachers in year group taught to same planning to ensure all children received the same strategies.
- Spelling tests & answers.

#### Results

Gain scores were first calculated then a one tailed Mann-Whitney U test indicated a significant ( $p = 0.032$ ), small positive effect ( $r = 0.202$ ) compared to existing classroom practice. Therefore this indicates that the addition of expanded retrieval practice for the intervention group improved the retention of the spelling rule compared to the control group.

The results confirm there has also been an improvement in the control group, but the gain scores are much higher in the intervention group.



When comparing the mean gain scores for gender, interestingly the results suggest that the intervention had a greater impact on the boys, though it is not clear why this would be the case and further research is required to explore this.

The number of SEND children within the sample was very small (9 children) and only 4 of which were in the intervention group. Their mean gain score was 1.25 which was much lower than the overall intervention gain score of 3.06. Further research is required to investigate the impact for SEND pupils.



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#### Conclusions and recommendations for further research

The expanded retrieval practice intervention appeared to have a small positive effect on improving children's retention of identified spelling rules compared to normal classroom practice. The data also suggested that the greatest gains were for boys. Further research could also include focus groups or survey qualitative data to look at pupils' motivation and confidence and to see whether this gives any insight into the impact on gender. A future study may also wish to compare different intervals to find the optimal expansion. Replication in different age groups should also be considered, as research suggests that early years may have greater gains with expanded retrieval vs. distributed retrieval.

#### Limitations

Although the results indicate a small positive effect size, the study was limited by its relatively small sample size and therefore requires replication with a larger sample to increase validity.

Each class was taught the spelling rules by the class teacher following the 'No Nonsense' Spelling Programme. However concerns were raised that the teaching methods interpreting the programme can differ. To reduce the impact of this the teachers ensured they followed the same planning. However when replicating the study it would be more robust for the same teacher or researcher to conduct the tests or use a video recording.

Due to time constraints, the study was also limited as to how many spelling rules could be taught. Due to the study taking place across 30 days, only 1 rule for each year group was tested. It would therefore be beneficial to replicate the study with various spelling rules to see if this impacts the effect size.

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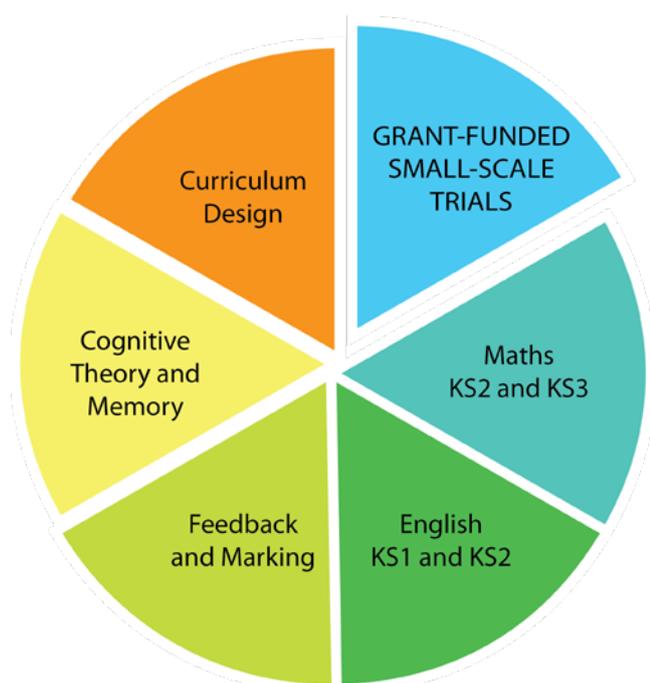
## Teacher Led Research Programme

# 3. Funding for Small Scale Research Projects

For schools interested in running their own research trial, the Kyra Research School are offering the opportunity to apply to take part in a Mobilise Grant-Funded Trial, designed for small-scale research projects. The ambition of the Mobilise Grant Funded Trials is to encourage schools to engage in their own research to support evidence-based practice in the classroom. The grants aim to support the writing of quality bids for research projects, to create capacity to undertake these projects in schools, and to help to develop and embed an evidence-informed approach within the education system. Any Lincolnshire school, or group of schools, can apply. The school must show that it has a promising project based on a piece of evidence, or on their own innovative idea. The school must also have done their own initial pilot of the idea that shows some promise to support their application; this must include data with a comparison between an intervention group and a control group. Once the trial is complete, results must be presented on a research poster, shared by the school, and disseminated across the wider county.

The grants aim to support the writing of quality bids for research projects, to create capacity to undertake these projects in schools, and to help to develop and embed an evidence-informed approach within the education system.

It is anticipated that there will be up to three opportunities to submit bids for funding to support research projects, but the funding will be allocated to successful bids on a first-come-first-served basis; as such it cannot be guaranteed that a third bidding round will take place. As part of the Mobilise Grant-Funded Trials, the Kyra Research School are also offering one-day CPD workshops to prospective applicants, to support the writing of a quality bid. Those who are successful will also benefit from mentoring and support throughout the implementation of their project.



The first workshop and the first application window for the Mobilise Grant-Funded Trials have now ended, but there are two more opportunities to take part in the CPD workshop and to apply for a grant:

### Workshop dates:

Workshop 2: 13.11.18

Workshop 3: 08.03.19

### Application windows for bids:

Round 2: 5.11.18 – 7.12.18

Round 3: 25.2.19 – 22.3.19

For more information, contact:

[research@kyrateachingschool.com](mailto:research@kyrateachingschool.com)

# 4. Evidence Leads in Education



This year the Kyra Research School designated, inducted and deployed its first cohort of Evidence Leads in Education (ELEs). The main purpose of the ELEs is to support school leaders throughout Lincolnshire, and beyond, in using evidence-based practice in their own context to enable school improvement. All of our ELEs are outstanding teachers, who are also middle and senior leaders, with the skills to support individuals and teams in similar positions in other schools. ELEs are experts in using research and evidence to inform practice in the classroom, and combine their knowledge, interpersonal skills, and coaching skills to help to make evidence-based practice a reality in as many schools as possible.

Applications to become an ELE were invited over a three-week period in February 2018, (applications also had to be endorsed by the applicants headteacher or a senior leader). Applications were narrowed down to a short-list and invited for interview, with successful candidates demonstrating attributes which lent themselves to excellent communication, training and innovation, qualities which are all vital to fulfil the role. The new ELEs attended a training day in April to prepare them for their role, and will also continue to attend annual training days each year, to keep on top of the latest education theories and research.

ELEs have been deployed to support and contribute to the work of the Research School, focusing on encouraging the use of evidence to inform school improvement decisions. ELEs have been deployed in a variety of different ways so far to maximise their impact, for example, to co-design and co-deliver CPD including the TLR in Lincolnshire and Chesterfield, and to act as a coaches and mentors for practitioners who are engaged in evidence-informed interventions. Other deployments have included activities such as speaking at after-school staff meetings, leading workshops to look at the evidence on a particular area of the curriculum, facilitating a professional learning community, undertaking activities relating to evaluating interventions or projects, and co-designing micro-trials.

“The introduction of the first cohort of ELEs has really helped to build capacity within the system to further the influence and impact of research and evidence-based practice in schools across Lincolnshire and beyond”, says Juliet Brookes. “We are intending to recruit more ELEs later this term, and the hope is that we are developing a sustainable model which will continue to engage more schools in evidence-based practice, and help them to become increasingly proficient in their own right in this area.”

There are now plans to work with other local authorities and school improvement services within the East Midlands to develop further ELE hubs across the region. Kyra’s ELE model is also being replicated beyond the East Midlands, at Doncaster Research School (under the name of ‘Specialist Leaders’) and also at the Aspirer Research School in Cheshire. “It is fantastic to see other Research Schools taking up our ELE model”, says Juliet, “as it means that the impact of evidence-based practice can spread even further, and that ELEs can help teachers and leaders to use it to enable school improvement on an even wider scale.”



## Laura McQuade – An ELE

"I have been a secondary school teacher for 17 years, and wanted to further develop myself by engaging with research surrounding best practice in teaching and learning. This led to me completing a part-time PhD in Research in Education, as well as completing my own research project with the Lincolnshire Teaching Schools Alliance on self-regulatory strategy development in relation to writing. This meant guiding and enabling pupils to design their own marking schemes to support them in developing their writing skills, and I presented my research findings at a Kyra Research School workshop. When the role of ELE was advertised by Kyra, I felt that it would fit perfectly with my interests and experience and so I applied. I got through to interview and was accepted, along with six others. We had a day of induction and training, which included particular emphasis on how to support and coach others in the area of research and evidence-based practice.

After training, we were each allocated our first task as an ELE, which was designed to be in line with our own particular experience and skills. I was deployed to co-deliver the TLR in Chesterfield alongside Juliet Brookes. In this role I am helping teachers to learn all about research and evidence-based practice, and will be helping them to design, complete and evaluate their own research projects.

Being an ELE has also allowed me to make a real difference within my own school setting. Teachers at my school are given the option to engage in a research project to fulfil their annual CPD, and I support each teacher who takes this opportunity up with training and mentoring. The school is becoming much more research orientated as a result. Research posters completed by the teachers who have taken part are disseminated to staff throughout the school, as well as being displayed in the staffroom. Research and evidence-based practice make a tangible difference in the classroom, and I think it has also meant that our pupils feel even more valued, because they know their teachers are actively engaging in research to improve teaching and learning. Overall, engaging in research projects keeps us very pro-active as a staff and makes the school a very exciting place to be."

# 5. Kyra Research School

## Working with Rotherham School Improvement Service (RoSIS)



Kyra Research School has been working very closely with the Rotherham School Improvement Service (RoSIS) over the past year to support school development through research in the borough. In the Autumn Term 2017 Kyra partnered with RoSIS to organise and host a conference focused on strategies to 'close the gap' and raise the bar of achievement for disadvantaged pupils in the area. James Siddle and Juliet Brookes organised prestigious speakers to join in the conference and share their advice and wisdom. This included Steven Higgins of the EEF, the key figure behind the development of the famous 'Teachers and Learning Toolkit', and also Alex Quigley of the EEF, author of the book 'Closing the Vocabulary Gap'. Kyra also ran workshops on the day and put together an 'expert panel' who discussed key strategies for closing the gap, and answered pertinent questions posed by attendees.

Kyra have also facilitated a number of workshops for a group of head teachers working across the Rotherham borough, led by James Siddle and Juliet Brookes. The workshops were put in place to train and support heads interested in undertaking research in their own schools as part of a borough wide research project with a focus on 'closing the gap' for disadvantaged pupils in the area of writing. The project is now underway across 35 schools in the Rotherham area, with 30 primary schools, 3 secondary schools and 2 special schools all taking part. It is testing the impact of self-regulatory learning on the rate of pupils' progress in writing. Kyra Research School have been instrumental in setting the project up, which will run over a period of two years, and will also be providing on-going support for the head teachers involved.

Kyra's work with RoSIS is set to continue, with a cohort for the Teacher-Led Research Programme. Kyra is also supporting RoSIS to deliver a programme focused on the development of Teaching Assistants, similar in approach to the Mobilise project, which has proved to be a great success across Lincolnshire.

Del Rew, Head of Education at RoSIS, explains "the Kyra Research School has been instrumental in helping us to provide the necessary information and training needed to support our schools in conducting research, in order to improve outcomes across the Rotherham borough. Our relationship with the Kyra Research School has proved to be very fruitful so far, and we look forward to continuing our work with them in the year ahead."

## 6. Further Resources



Take a look at our videos from the initial launch of our Research School, featuring Professor Steve Higgins, James Siddle, Marie-Claire Bretherton and others:

**Professor Steve Higgins:** <https://www.youtube.com/watch?v=k08O5b0EAQg>

**James Siddle:** <https://www.youtube.com/watch?v=wS854UMtQe8>

**Marie-Claire Bretherton:** <https://www.youtube.com/watch?v=S0IRQf60N3g>

Read the Kyra Journal, Evidence Enabling Excellence (2017), featuring more case studies and a report on our initial launch here: [https://kyrateachingschool.com/assets/downloads/Kyra\\_Journal\\_March\\_2017\\_-\\_Evidence\\_Enabling\\_Excellence.pdf](https://kyrateachingschool.com/assets/downloads/Kyra_Journal_March_2017_-_Evidence_Enabling_Excellence.pdf)



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