



National College for
Teaching & Leadership

Closing the gap: test and learn

**Teacher led randomised controlled trials
- Literacy**

January 2016

Contents

1.	What is the early adopter strand of closing the gap: test and learn?	3
2.	Research posters	4
	Phonics	5
	A small group intervention, Pulling It Together may be more effective at developing a child's phonic and word reading skills than small group additional 'phonics' lessons	5
	Reading	6
	The impact of domestic help to facilitate home reading	6
	Peer reading improves the reading age of pupil premium children compared to reading only to adults	7
	Speaking	8
	Creative arts workshops and performance does improve the self-esteem and has no negative effect in speaking and listening skills of pupils with special educational needs	8
	The scripted intervention programme, Talk Boost, may be significantly more effective at developing the expressive language skills of children in Reception than practitioner planned regular small talk groups	9
	Spelling	10
	The use of kinaesthetic strategies improves spelling in Year 2	10
	Directive versus inductive approaches to teaching spelling; Which is the most effective in supporting effective learning and progress in spelling?	11
	A preliminary study into the effects of a weekly spelling test on pupils progress in retaining spellings	12
	'Look, Cover, Check, Write' improves attainment in Year 1 primary school lessons	13
	Writing	14
	Aiming for speed: Will learning to play darts help to increase writing speed?	14
	Preliminary evidence for the impact of context-based learning on effort and achievement within extended writing	15
	The effect of specialist art teaching on improving handwriting	16

1 What is the early adopter strand of closing the gap: test and learn?

The delivery of comprehensive training for teaching schools participating in the closing the gap: test and learn programme covered rigorous and robust research methods appropriate for use in schools, including quantitative research methods such as RCTs, so that teachers gained an awareness of research methodologies (set-up, design and evaluation) and were able to contribute effectively to the trials. This also ensured that teachers in different contexts were able to deliver the interventions under trial in a consistent manner. The strand of work delivered through the RDNE events focused on training teachers in the delivery of small-scale RCTs (and other forms of experimental research) and immediately yielded school-level activity. In response to this, the NCTL made available 50 'early adopter' grants to support participating teaching schools and their alliances in delivering their own small-scale RCTs. A total of 48 of these studies were presented at a conference poster event at NCTL in Nottingham on 21 October 2015.

2 Research posters

This supplementary document to the main closing the gap: test and learn report contains examples of small-scale trials (micro-enquiries) that were designed and run by teachers, with support from the project team. The teachers running each trial produced a research poster to display at the dissemination event in October 2015, similar to the way that postgraduate researchers present their work at conferences.

50 schools were funded to carry out micro-enquiries as part of closing the gap: test and learn. 47 posters were produced in all. 2 studies were not completed as a result of factors outside the control of the teachers. 1 further study was completed but the school did not produce a research poster in the correct format.

The posters contained in this document all relate to interventions aimed at improving pupils' literacy.

A small group intervention, Pulling It Together may be more effective at developing a child's phonic and word reading skills than small group additional 'phonics' lessons – results from a small scale pilot study

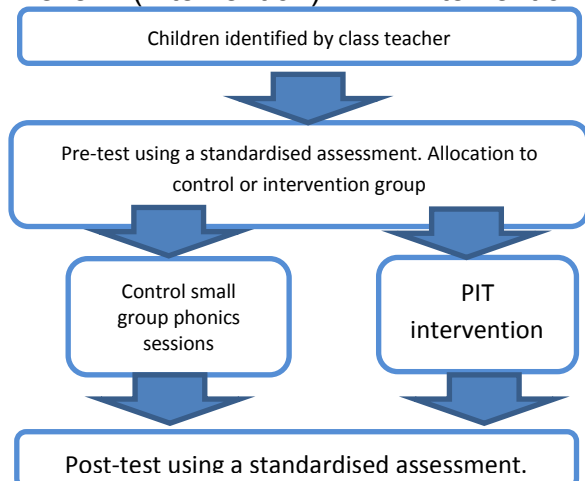
Lead Researcher: Megan Dixon
Schools involved: 4 schools within the Aspirer Teaching Alliance, Cheshire

Introduction

The introduction on the Phonics Screening Check in for children in Year 1 emphasised the need for all children to develop their knowledge of phoneme-grapheme correspondences and the metacognition of blending as a strategy for decoding single words. Although for many children, a balanced literacy curriculum including regular systematic phonics teaching is adequate, for some this structure is not effective and children can fail to develop these skills. One approach to supporting these children has been for a Teaching Assistant to reteach the whole class phonics lessons in a small group. It appears that some children fail to respond to this additional provision and may benefit from a different approach to the learning. As a consequence, for several years, the Teaching School at the heart of the Aspirer TSA, Ash Grove Academy, has been piloting a small group intervention intended to support the phonics learning within a meaningful context. This intervention, named PIT – Pulling It Together, was designed to complement the literacy curriculum, supporting the children to effectively consolidate their phonic knowledge and apply their skills within a reading and writing context. This trial sought to establish the efficacy of the intervention across a number of schools in the Teaching School Alliance.

Research design

This trial had 1 research aim; To establish whether a 6 week small group intervention (PIT) was more effective at developing a child's phonic and word reading skills than small group additional 'phonics' lessons. A matched-pair design was used with pre and post-tests only. To address the aims of the research the independent variable, word reading skills, was operationalised by creating two conditions
 Level 1 (control condition) – TA-led small group additional phonics lessons
 Level 2 (Intervention) – PIT intervention



Method

Participants:

The participants were children in Year 1, who were considered to be in danger of falling behind phonics acquisition and failing to establish age appropriate word reading skills. The children were identified from 4 schools across the Aspirer TSA.

Initially, 8 children were selected by the class teacher from the Year 1 class. It was essential that the children were not taking part in any other intervention at the time, or on the SEN register in school. The total number of children in the study was 32.

Procedure:

In each school, a Teaching Assistant (TA) who is familiar with the Year 1 class attended a half day training session in how to deliver the PIT intervention. A standardised pre-test using the Diagnostic Test of Word Reading Processes (GL Assessment) was administered by the TA.

After identification and pre-testing, a case-matched sample (controlling for gender, age, time in school and attainment) was generated and each pair was randomly allocated to either the control or the intervention group

The intervention group received the PIT intervention, daily for 20 minutes in the afternoon, delivered by the trained TA, following the protocol of the intervention structure. The control group received a small group phonics lesson, based on the whole class phonics lesson of the day. The phonics session for the control group was delivered by the same TA. After the 6 week intervention all the children were retested using Diagnostic Test of Word Reading Processes

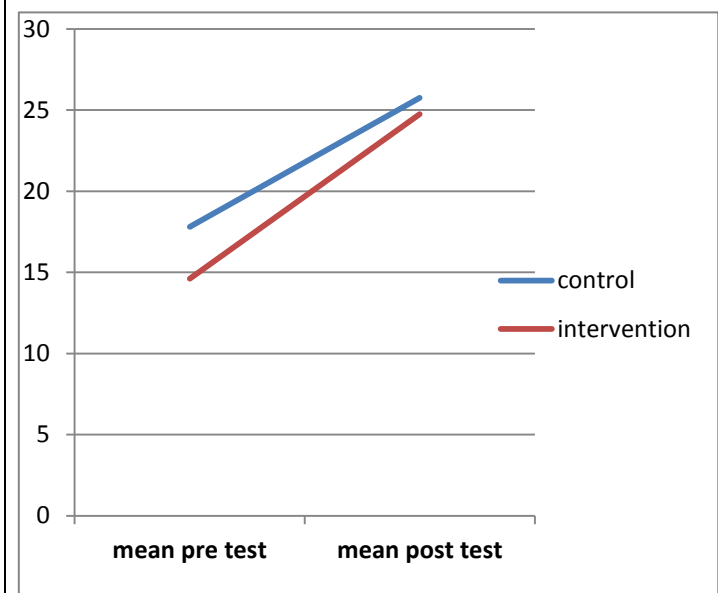
Materials:

- PIT Intervention materials to deliver the intervention.
- Training in the intervention to ensure it is delivered as designed.
- Diagnostic Test of Word Reading Processes

Results

Gain scores were first calculated from the results and shown in the graph and table below. A Wilcoxon signed-rank test indicated a non-significant (p = 0.136) small positive effect (r = 0.161) for the intervention group compared to the control.

	mean pre-test	mean post test	mean gain
Control	17.8	25.75	7.95
PIT intervention	14.6	24.75	10.15



Conclusion

This small preliminary trial suggests the positive value of using the intervention Pulling It Together to support phonics learning within a meaningful context. However, the result was not significant and this is likely to have been caused by the small sample size. As the design protocol has been piloted and training in the intervention can be arranged, the trial should be replicated across other schools within the Teaching School Alliance, increasing the sample size and therefore the external reliability of the findings.



For further information contact Megan Dixon
mdixon@aspiremat.co.uk

A Preliminary Pilot Study: The impact of domestic help to facilitate home reading

Laura Stratford
Kyra Teaching School Alliance



Introduction

This study brings together literature on parent involvement in child reading development, with the on-going challenge faced by schools to close the attainment gap of disadvantaged children.


I investigate how six weeks' domestic help facilitates parent involvement, and how it impacts on children's reading attainment and motivation in three case studies.

This intervention aims to improve reading attainment by:

1. increasing child's **motivation** for reading through autonomy and enjoyable experiences
2. encouraging a warm, positive parent-child interactions and **relationship** around reading
3. valuing parents' role in their child's education, and increasing **parents' self-efficacy**
4. fostering regular reading by building it into a family's **routine**

A non-randomised case matched design incorporating semi-structured parent interviews

Three children (two families) participated in the intervention. I match paired them with children in their year group based on age-related reading attainment, age and EAL/SEN/PP status, to compare their progress and used questionnaires and interviews to find out more about the intervention families' experiences.

Pre-intervention reading assessment		
Intervention : Cleaner facilitates parent-child shared reading		Match pair: No intervention
Post-intervention reading assessment		

The cost of this intervention was £375/child based on 2 siblings in one family, excluding administration.

Method

Participants

Families participating in the intervention had children at Monks Abbey School, who would be at home during the summer holidays. Parents volunteered themselves to participate in the intervention via a questionnaire sent to all FS and KS1 parents.

Procedure

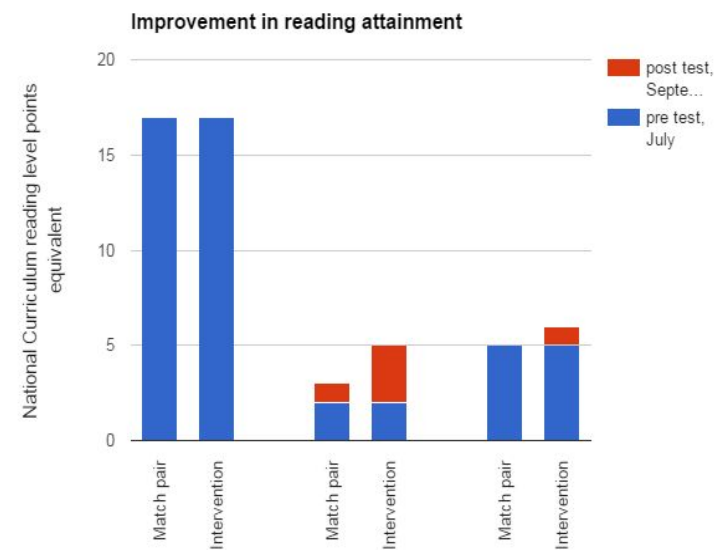
Participants had a cleaner who came to their home, five evenings a week throughout the summer holidays, to do domestic chores. The parent would spend this time pleasure-reading with their child - that is, reading for enjoyment to each other, without following any prescribed reading scheme or activities.

Materials

The parents and children chose the books together from their own collections, the school library and the public library.

They were provided with a form for recording books read, with space for comments about the child's attitude to reading.

The reading assessments were done by their teacher, who was blind to the trial, as part of the school's usual assessment procedure; participants did not receive any additional testing.



Results

Parent comments:

"G has come on in leaps and bounds. The challenge was getting into the habit - we had to do it because (the cleaner) was there, but after a week we got used to it and the children said: 'It's time to read!' and we started doing it at weekends when (the cleaner) wasn't there... To start with we did not use the whole hour for reading, but now we use more than the hour." Post intervention interview

"As a family as a whole it has brought us all closer as we now sit and read together daily.... Our routine has changed but for the better....after dinner we now sit down and read for half an hour (any book they like) instead of watching TV." 6 week post intervention questionnaire

"I can do more because I'm less exhausted. If I'm too busy, it can knock me out for days. We've done more this holiday than we have in ages." (referring to her ME) Post intervention interview

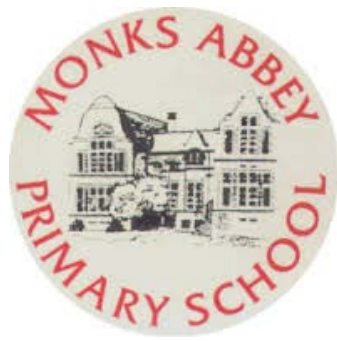
"This has had the most impact on D (younger sister, age 2). She sits much better while we read and often takes books to bed to study the pictures." 6 week post intervention questionnaire

Conclusions

This study indicates that the intervention had a positive impact on the pupils involved, but for different reasons - in one case by establishing an enjoyable family reading habit; in another case, by removing some of Mum's laborious chores and thereby reducing the negative effects of her ME and increased the range of activities she could do with her children. In both cases, parents observed increased interest in reading by a pre-school sibling who was not assessed in the study.

I recommend repeating the intervention with a larger sample size to gain a greater body of data. It can then be compared with other reading interventions for its impact. More families could be involved by promoting the intervention on a whole school level, which could have the benefit of removing any perceived stigma in being offered the intervention.

In particular, I recommend that this intervention is repeated with families who do very little or no reading with their child, to ascertain its usefulness for the children who most need additional support with reading and who live with the highest levels of deprivation. A questionnaire is not an effective way to survey a school population's reading rates or to recruit families, and I would recommend direct, personal invitations to participate..



Peer reading improves the reading age of pupil premium children compared to reading only to adults – a preliminary study

Authors:

Theresa Peacock and Bridie Bear
Theresa.Peacock@monksabbey.lincs.sch.uk

Purpose of the research: Recent research carried out by teaching schools on behalf of the National College for Teaching and Leadership's (NCTL) national agenda R&D project suggests that peer reading can have a positive impact on pupils' reading ability and enjoyment. The original research shows that it has a positive impact on KS3 pupil premium (PP) pupils and we wanted to explore the potential impact on KS1 and KS2 PP pupils. This was an important area to explore using a randomised controlled trial design because all schools strive to close the gap for all groups. It may also lead to ways to optimise learning time for PP pupils. The research had two aims; these were:

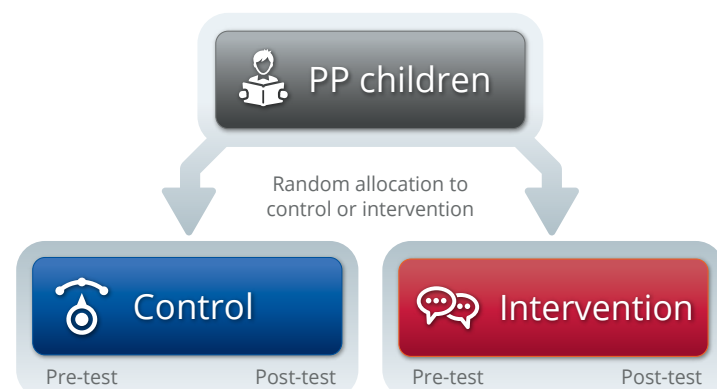
- To establish whether reading to peers can have a positive impact on the reading ability of PP pupils
- To establish whether reading to peers can have a positive impact on the reading enjoyment of PP pupils

This study was conducted with funding from the NCTL Closing the Gap: Test and Learn programme and support from CfBT Education Trust.

The research design

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

- **IV Level 1 (Control condition)** – PP readers continue to receive current reading intervention
- **IV Level 2 (Intervention)** – PP readers receive additional peer reading time three times a week



Methods

Participants, sample size and randomisation

Eight classes from an inner-city primary school participated in the study. From these classes, PP children were identified and then randomly allocated to a control or intervention group in each class. As this participant group contained similar pupils and the study primarily aimed to test the effectiveness of the design, simple randomisation was applied.

In total, 54 PP pupils took part in the study. The small sample made it unlikely that anything other than a large effect size would be detected as significant; however, it was considered important to establish the effectiveness of the design before considering the implementation of a larger study.

Procedures

The randomly allocated groups were both given the New Group Reading Test (NGRT) to establish reading age. They were also asked to rank their enjoyment of reading on a scale from 1 to 10.

The control group then continued with the normal reading provision (guided reading once a week, reading to an adult individually once a fortnight).

Members of the intervention group were buddied up with a peer from their own class (working above the reading level of the intervention participant). The intervention group had three 15-minute sessions where they would read to their buddy. This was repeated each week for six weeks. At the end of the six weeks, both groups were again given the NGRT reading age test.

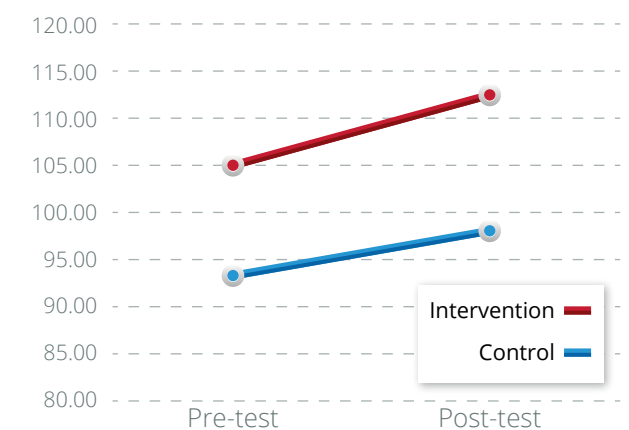
Materials (and apparatus)

The reading buddies had reading records that they would fill in for each other. The NGRT was used to gain a reading age in months. This NGRT was developed by GL Assessment and the National Foundation for Educational Research (NFER) and is available from www.gl.assessment.co.uk. The NGRT includes sentence and passage comprehension.

Results

Gain scores were first calculated using the results in the graph below. A Mann-Whitney U test indicated that there was no difference ($p = 0.114$ (one-tailed)) between the progress rate of children in the intervention (Mdn gain = 5.0) compared to the control (Mdn gain = 2.00). The effect size was small ($r = 0.124$). However, artificially amplifying the sample by a factor of two (from $n = 54$ to $n = 108$) yielded a significant result ($p = 0.043$), suggesting that a future larger study might be able to detect a positive benefit for peer reading compared to existing practice.

Pre- and post-test scores for the control group and intervention



Limitations

The main limitation was sample size. However, it should also be acknowledged that the use of simple randomisation may have introduced the risk of between-participant variation which could have affected the results.

Conclusions and recommendations for future research

The research design was effective in producing findings that suggested that the intervention group made an average of five months' reading age gain over six weeks compared to two months for the control group, although a large study would be needed to confirm this effect. On the current evidence, the intervention appears to be at least equal to existing practice and therefore a viable alternative treatment, one which might show a modest benefit if the findings were replicated in a larger trial involving at least twice as many children. A future study may also wish to consider case-matching or stratified randomisation as a means of controlling for between-pupil variation.

Sting in the Tale

A Collaborative Opera by The Wyvern Federation and English Touring Opera

Creative arts workshops and performance does improve the self-esteem and has no negative effect in speaking and listening skills of pupils with special educational needs.

Sarah Botchway
Lambeth Teaching School Alliance, The Wyvern Federation

Introduction

Through experience as a Headteacher and fostering a school rooted in the creative curriculum I have been able to witness the impact of the arts on children to flourish in all areas of the curriculum. However, children with special educational needs often do not get this opportunity. This research tested whether giving children with special educational needs the opportunity to develop and perform their own opera to a public audience would indeed raise their self-esteem and improve their speaking and listening skills.

This is an important area to explore using a randomised controlled trial design because as a society we believe developing ones creativity enables you to become a more rounded person. Increasing self-confidence enables a person to succeed in other areas of life. However, the arts' is often associated with those who are gifted and talented and already articulate in that area.

The opera 'Sting in the Tale' was a collaboration between English Touring Opera and The Wyvern Federation. The opera was written by all the children involved, who also performed. Much of the text, both spoken and sung, was created by the group, as were most of the movement work, and many of the sounds. A large number of creative sessions led by director Tim Yealland and composer Llywelyn ap Myrddin led to the final opera, which was performed for the first time at Ovalhouse Theatre.



Research design

A between-subject design was used with a pre- and post-test. To address the aims of the research the independent variable creative workshops and performance was operationalised by creating 2 conditions.

- Level 1 (Control condition): Carried on as normal and will not participate in the workshops and performance.
- Level 2 (Intervention): Had a series of creative workshops leading to a performance to a public audience.

Method

Participants

- All participants being tested were on the special educational needs register with some having a statement of special educational needs, within Key Stage 2 and not attending a special school. These children were put forward by the Special Needs Co-ordinators (SENCO) of the schools.
- Guidance was given to the SENCO that the children chosen should be fairly equal in terms of ability and gender.
- The trial co-ordinator then randomly selected the children using an excel wizard. The wizard split the children into two group, intervention or control. Therefore the children were randomly allocated to control or intervention.
- The total number in the population was 37. Twenty three students had the intervention and fourteen students were the control.

Materials

- Questionnaires were provided to measure self-esteem (adapted from the Rosenberg self-esteem tests) and NHS tests to measure speaking and listening of the pupils.
- Professionals from the English Touring Opera carried out the workshops, with professional musicians and a soprano singer accompanying the group.
- A professional set designer created the set and props for the show.

The high quality expertise of the professionals raised the expectations of the pupils in which they needed to aspire to.

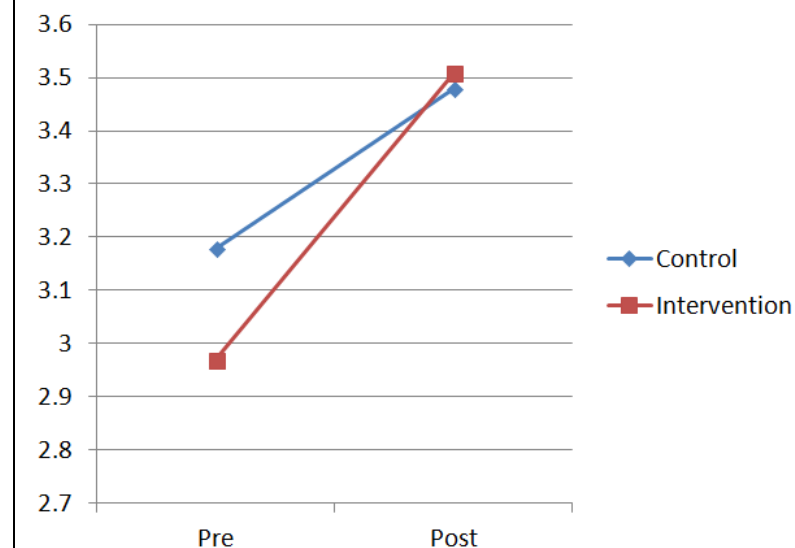
Procedure

The research began with the population completing pre-tests on self esteem and speaking and listening. The intervention group then took part in 16 half day workshops to create the opera. The workshops focussed on writing lyrics, sound and dance movements and developing a new story based on Aesop's fables. This culminated in final performances at Oval House Theatre. At the end of the intervention the whole population completed post tests.



Results

Gain scores were first calculated from the graph below. A Mann-Whitney U test indicated a moderate ($r = 0.355$) significant gain ($p = 0.037$) in self-esteem scores for the children who participated in the opera project (mean=0.54) compared to the control (mean=0.3). However, there was no improvement ($r = 0.039$, $p = 0.355$) in the children's speaking and listening skills. It was fortunate, in the light of the results, that the intervention group had lower average self-esteem scores in the pre-test, otherwise the effect might not have been detected.



Conclusion

The results from this trial are considered as a preliminary finding due to the small sample size and the imbalance in the number of pupils in the control compared to those that experienced the intervention. Due to a number of pupils from different schools taking part, responsibility of the tests were delegated to different adults to administer. This could have led to a lack of consistency in how they were administered. The tests used could have been more children friendly, it was noted that the children found some of the questions difficult to fully grasp. Overall the research trial has shown a positive impact on the pupils. Even though the results showed no effect on speaking on listening, testimonials from the children and adults involved expressed qualitatively the improvement in confidence, behaviour and focus of the pupils. The intervention has closed the gap of pupils having lower self-esteem compared to others who begun with greater self-esteem.



A blog charted the events of the whole process:

www.sarah1haras.wordpress.com

The scripted intervention programme, Talk Boost, may be significantly more effective at developing the expressive language skills of children in Reception than practitioner planned regular small talk groups – results from a small scale study

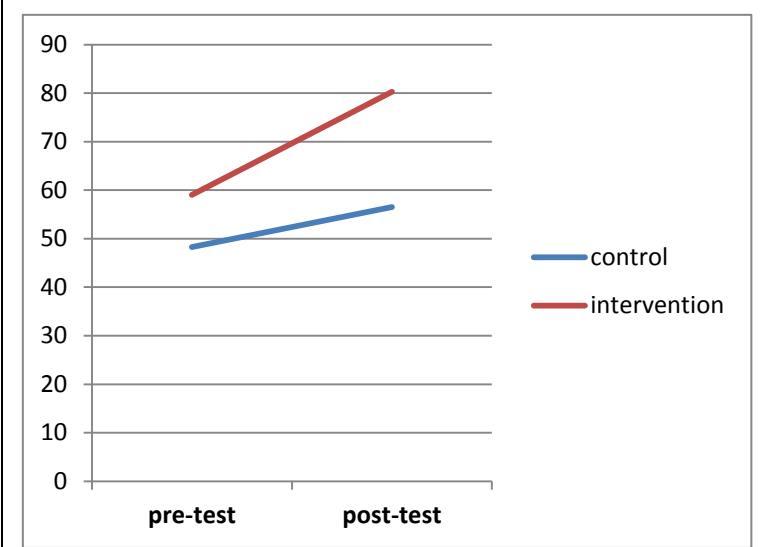
Lead Researcher: Megan Dixon, at Ash Grove Academy
Schools involved: Two schools from the Aspirer Teaching Alliance, Cheshire

Introduction
 Recent research highlights that up to 80% of children in areas of socio-economic disadvantage start schools with delayed speech language and communication needs (Bercow, 2008, ICAN, 2014). The developing of receptive and expressive oral language is highly correlated to achievement in reading, writing and mathematics (Locke et al, 2002). However, as the Bercow review (2008) highlighted the oral language development of children is an area teachers often feel inadequately prepared to support. At a local area, the development of SLCN has been highlighted by Head Teachers as an area of concern in their schools. Although the importance of developing Speech, Language and Communication needs is widely acknowledged, as yet it is unclear whether a scripted, systematic intervention, such as Talk Boost is more effective than bespoke small group talk sessions currently planned and delivered by the class practitioners. Talk Boost has been trialled in many schools (I CAN) and the results indicate that many children make accelerated progress in their expressive language. However, initial trials, with younger children at appeared to show a mixed response to the intervention. This trial was designed to establish the effectiveness of this intervention for children in Reception (Foundation stage 2) in comparison to regular classroom practice and indicate whether it should become a key tool for effective provision for children across the Teaching School Alliance.

Method
Participants:
 The trial was conducted at two schools, in the Reception class. Any child receiving Speech, Language and Communication therapy was not included in the trial. Initially, 12 children in the class were selected by the class teacher as having low levels of SLCN, with a total of 24 children being included in the trial.
Procedure:
 The class teacher identified the lowest 12 children from each class. The Communication Trust Progression tool was used to establish whether Talk Boost may be an appropriate intervention for the selected children and then 8 children (the lowest scoring) were selected to receive the intervention. The children were case matched controlling for age, gender and pre-test scores before being randomly allocated to control or intervention. The Communication Trust Progression Tool was administered by the same person in each school trained to deliver the assessment. The children received the Talk Boost intervention (as scripted) or a small group guided talk group as per normal classroom practice for 10 weeks. Each condition (control and intervention) was delivered in a small group, by a Teaching Assistant (as Talk Boost is designed to be delivered by a TA). The sessions ran at the same time each day for both groups, 3 times a week. All the children were post-tested by the same tester, using the Communication Trust Progression Tool.

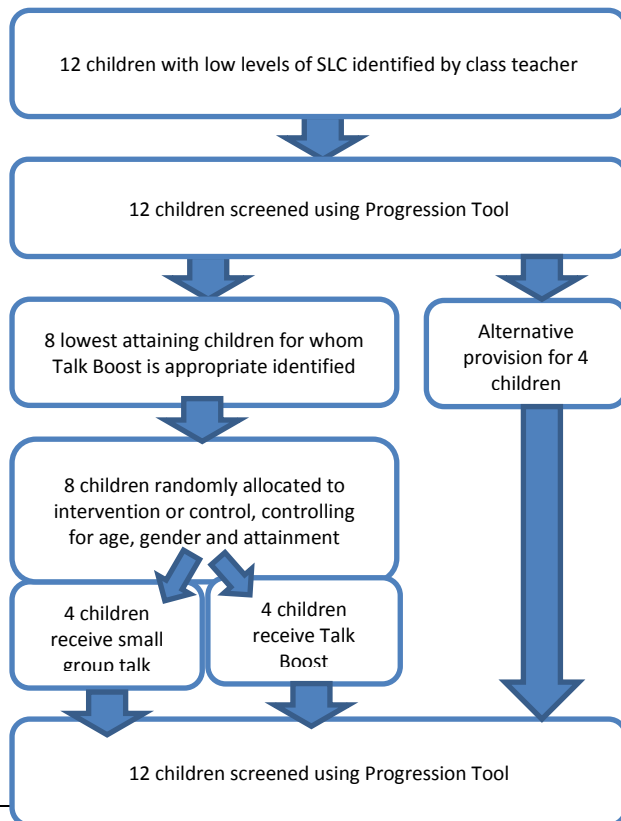
Results
 Gain scores were first calculated from the results and shown in the graph and table below. A Wilcoxon signed-rank test indicated a significant ($p = 0.027$) (one tailed) medium to strong positive effect ($r = 0.444$) for the intervention group compared to the control.

	pre-test	post-test	mean gain
Control	48.3	56.5	8.2
Intervention	59	80.25	21.1



Research Design
 This trial had 1 research aim; To establish whether a 10 week small group scripted Speech and language intervention (Talk Boost) is more effective at developing the expressive language of children in Reception than small regular practitioner planned talk groups (current class practice). This was a between-subject design with the pre and post-test only. To address the aims of the research the independent variable, expressive language control (syntactic control), was operationalised by creating two conditions IV Level 1 (control condition) – normal classroom practice- practitioner planned small group intervention IV Level 2 (Intervention) – Talk Boost intervention

- Materials:**
- Talk Boost Intervention materials to deliver the intervention.
 - Training in the intervention to ensure it is delivered as designed.
 - The Communication Trust Progression Tool Assessments



Conclusions
 This small preliminary trial suggests the positive value of using a scripted intervention such as Talk Boost to accelerate the Speech, Language and Communication needs of children in a Reception classroom. As the design protocol has been piloted and training in the intervention can be arranged, the trial should be replicated across other schools within the Teaching School Alliance, increasing the sample size and therefore the external reliability of the findings. In addition, further trials in other year groups, including Year 1 and Year 2 will ascertain the optimum age for the intervention to achieve maximum impact across the Teaching School Alliance.

References
 Bercow, J. (2008) *A review of Services for Children and Young People (0-19) with Speech, Language and Communication Needs*, Department for Children Schools and Families, UK. Available at <https://www.education.gov.uk/publications/eOrderingDownload/Bercow-Report.pdf>
 Hartshorne, M. (2006) *Speech, Language and Communication Needs and Literacy Difficulties I CAN Talk Series, Vol 1*, available from www.ican.org.uk, accessed 30.11.2011
 Locke, A. Ginsborg, J and Peers, I (2002) Development and Disadvantage: implications for early years and beyond. *International journal of Language and Communication Disorders*, 37 (1) 3-15

Further information about the Talk Boost Intervention can be found here: <http://www.ican.org.uk/talkboost>
 For further information, contact Megan Dixon, mdixon@aspiremat.co.uk

The use of kinaesthetic strategies improves spelling in Year 2 – a small-scale pilot study



Research Design

This was a between subject, pre- and post-test experimental design. To address the aims of the research the independent variable (IV) was defined operationally by creating two conditions. Bias was reduced through the use of stratified randomisation, controlling for gender and phonic phase.

- IV1 – normal classroom practice (LSCWC) – Control group
- IV2 – practical strategies – Intervention group



Introduction

This randomised control trial (RCT) was a preliminary pilot study into the effectiveness of two small schools' existing spelling strategy (Look Say Cover Write Check - LSCWC) compared to a practical strategy involving kinaesthetic methods and episodic memory. Opinion in schools and from research seems to vary on whether the LSCWC method has a positive impact on students' ability to retain and apply spellings. We were interested in whether switching to a more practical method might have more impact on progress than our existing practice (two tailed hypothesis), and also whether it would increase engagement of parents in spelling homework. This is an important area to explore using an RCT because it allows a direct comparison of approaches, enabling teachers to use the outcomes to improve teaching and learning in spelling, and supporting parents with the most effective strategies to use at home.

Method

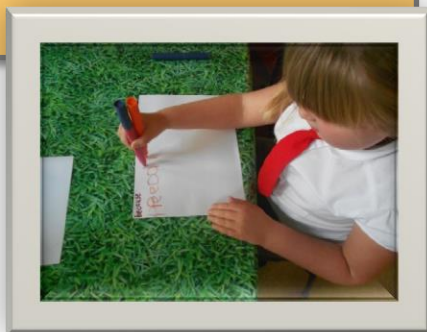
Participants- 38 students from two schools participated in the trial. All students were in Year 2 and all were working within Phase 6 of phonics progression. Both control and intervention groups had equal numbers of boys and girls.

Materials- teachers worked together to develop appropriate lists of words and accompanying stories featuring the identified words from Phase 6 lists. Individual packs were made up for each student including kinaesthetic materials such as salt and play-dough, and packs were also sent home with games and practical activities for practise.

Procedures- The control group were given a list of ten words to learn using the LSCWC method, with practise opportunities in school and at home using a recording sheet.

The Intervention group used the same set of words, but worked with their teacher to turn the words into a story with actions which they practised in school. This was supported by kinaesthetic methods for making the words using practical equipment.

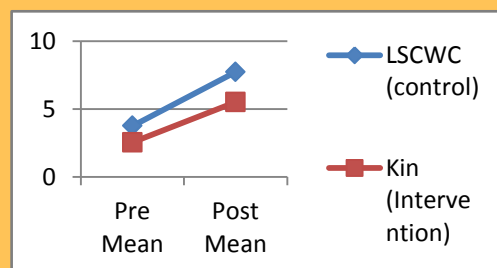
After two weeks, spelling tests were administered to both groups using both single word list and in sentence context. The cycle was repeated three times over the term with new sets of words.



Results

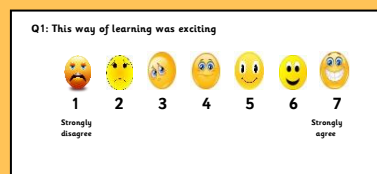
Gain scores were first calculated from the data summarised in the table and displayed in the graph below:

	Pre Mean	Post Mean
LSCWC (control)	3.75	7.72
Kinaesthetic(Intervention)	2.54	5.51



A Mann-Whitney U test indicated a significant ($p=0.038$) (two tailed) decline in spelling progress for children who experienced the kinaesthetic spelling strategy (MDN = 2.5) compared to children who experienced the school's normal practice (control) of LSCWC (MDN = 4.0). This represented a moderately negative effect size ($r= - 0.19$).

Students in both groups were also asked to complete a brief rating exercise about their method using a 7 point Likert scale for two statements:



Where 1 = strongly disagree and 7 = strongly agree	Control group mean	Int. group mean
Q1: This type of learning was exciting	2.8	5.9
Q2: This type of learning helped me to improve my spelling	4.6	3.5

A number of children in the intervention group commented that they would like to try using a combination of both LSCWC and the practical approach.

Conclusions & recommendations for future research

Results indicate that the control group method of LSCWC was more effective than the intervention method (gain score of 3.97 control compared to 2.97 intervention) in increasing progress in spelling. However, limitations to the study included the small cohort size and that all students in the study were already working within phase 6 of the phonics programme. Schools may wish to consider replicating the study with students at an earlier phonics phase and with a larger cohort size, but caution should be used due to the negative effect size of the intervention method.

Evaluation with the students produced interesting results on the Likert scale, with a number of students expressing that, whilst the intervention method helped them to remember the whole words in their list, it was not as helpful when remembering the letter sequence in each word. The large majority of the students in the intervention group found the method more enjoyable than the control method. They expressed an interest in using a combination of the control and intervention methods to help them improve their spelling in the future. Research into the brain and memory has shown that consolidation from short term to long term memory involves both rehearsal and meaningful association. This may also suggest that a combination of approaches would be beneficial, and could form the basis of a future study.

Teachers involved in the study were interested to explore whether the intervention method would have more effect with students at an earlier phonics phase, in Year 1 for example. A different study within the Closing the Gap trials was carried out by C. Morris ('Look Cover Write Check improves attainment in Year 1 primary school lessons', Great Oaks Federation). This study involved mixed ability Year 1 students and was a post-test within-subject design. Results here also indicated that the LSCWC method was most effective when compared to active approaches and normal classroom practice.

On the basis of these results, the schools involved are likely to continue with current practice for this group of students, but may explore the use of combined methods at earlier phonics phases and with different sub-groups, e.g. EAL students, students with SEND.



Directive versus inductive approaches to teaching spelling: Which is the most effective in supporting effective learning and progress in spelling?

Authors: Louise Dring, Brian McMillan, Craig Marsh, Natalie Woodward

References:

1. Building Learning Power: Helping Young People Become Better Learners - Claxton, G. (2002)
2. Hawthorne Revisited – Landsberger, H. A (1958)

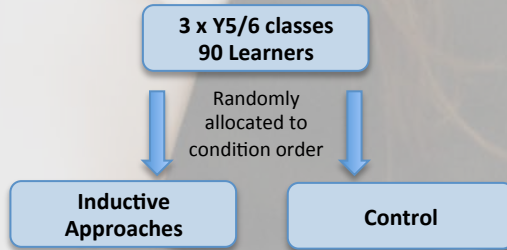
With thanks to Julie Tallant for materials artwork

Purpose of the research: The traditional directive approach to teaching spellings is having little impact on improving learners' ability to spell beyond the words given on their weekly spelling list. When confronted by a 'blind' spelling test, test performance is significantly lower than practice tests as learners are not able to apply knowledge of spelling rules and patterns to new and unfamiliar words. Spelling performance is high on the agenda for many schools following the introduction of statutory testing for 7 and 11 year olds in Spelling, Punctuation and Grammar. This research aimed to find out if a more inductive approach to teaching spelling encouraged deeper learning of the rules and patterns behind words, thus improving learners ability to spell new and unfamiliar words through better application of spelling knowledge.

The Research Design: A 2 x 2 mixed factorial design was used with a pre and post test. To address the purpose of this research, the independent variable (teaching and learning approach) was operationally defined by creating two conditions.

Level 1 – Control Condition: Directive approaches used to deliver one spelling rule per week (Normal Classroom Practice)

Level 2 – Experimental Condition: Inductive approaches to teaching four spelling rules used across all four weeks.



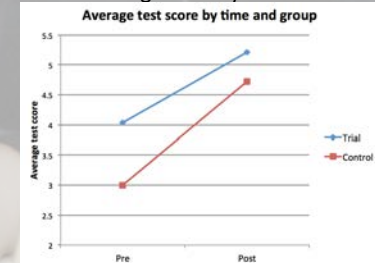
Teachers and group leads switched to alternative approach at mid point of the study

Participants, Sample Size and Randomization: Two primary schools were invited to take part in the research, with only one school completing the project. In total the study included 59 children (29 girls, 30 boys) Learner's were taught in mixed ability classes randomly allocated to a condition.

Procedures: Four spelling rules were identified to be taught over a four week period. All participants were tested on the four rules before the study. The control group experienced a normal directive approach to teaching the spelling rules based on learning one spelling rule per week. The experimental condition group used inductive approaches to sort and identify patterns and rules for words drawn from all four 'rules' each week. The language of Building Learning Power by Guy Claxton¹ was used with this group to build a 'Speller's Toolkit' with which they explored the patterns and rules for themselves. Learners were encouraged week on week to add to their knowledge of the word groups and patterns they were discovering. At the end of the study all participants were tested again on the four spelling rules and their progress compared.

Materials: A 'Speller's Toolkit' was developed using three of the Learning Muscles from Guy Claxton's work 'Building Learning Power'

Results: A two way mixed ANOVA showed no main effect of group ($F(1,57)=1.13$, $p = 2.92$, partial $\eta^2 = 0.02$) but a significant main effect of time ($F(1,57)=38.57$, $p < 0.001$, partial $\eta^2 = 0.40$). Across both groups, the average test score at time 2 (mean 4.97, SD = 2.84) was significantly higher than the overall average test score at time 1 (mean = 3.51, SD = 2.90). There was no significant time x group interaction ($F(1,57)=1.44$, $p = 0.236$, partial $\eta^2 = 0.02$), i.e. the extent to which scores improved between times 1 and 2 did not differ significantly between the two groups.



Limitations: There are two possible limitations: The study may be underpowered as the sample size was smaller than originally intended; It was not possible to double blind as both teachers and children knew which group they were in, raising the possibility of the Hawthorne effect.²

The Speller's Toolkit

Making Links - to other knowledge of words & language

Noticing - patterns and similarities between the words in each group and across the four weeks

Reasoning - using knowledge of other words to work out unfamiliar spellings

Discussion: The study did not demonstrate that inductive approaches resulted in a significantly greater improvement in test scores compared the control group although there was an overall significant increase in scores between the two time points. Future analysis could examine if ability, SEN status, pupil premium eligibility or gender had an impact on the effect of teaching style on test scores. Future studies could explore the impact over a longer period as the inductive approaches were still novel to learners at the end of the study period. Staff felt towards the end of the trial that learners were just getting used to the new approach and if tried for longer, would potentially have had greater impact.



A preliminary study into the effects of a weekly spelling test on pupils progress in retaining spellings

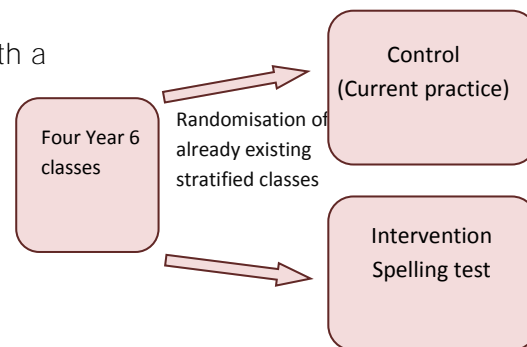
Sharon Baker and Ann Howard
Westbridge Teaching School Alliance

Introduction

Weekly spelling tests have been commonly used in primary and secondary schools without research based evidence as to whether they help pupils progress in learning and remembering how to spell. Teachers and Senior Leaders within Westbridge Teaching School Alliance were sceptical as to the impact of a **weekly test on pupil's progress in remembering spellings.** With the inclusion of spelling lists within the English programmes of study for the National Curriculum 2015, we wanted to research whether spelling tests have a part to play in our school strategies for learning spellings.

Research design

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



IV Level 1 – Weekly spelling lessons using existing practice in school (control condition)

IV Level 2 – In addition to the existing practice a weekly list of spelling was taken home to learn and tested each week.

Method

Participants

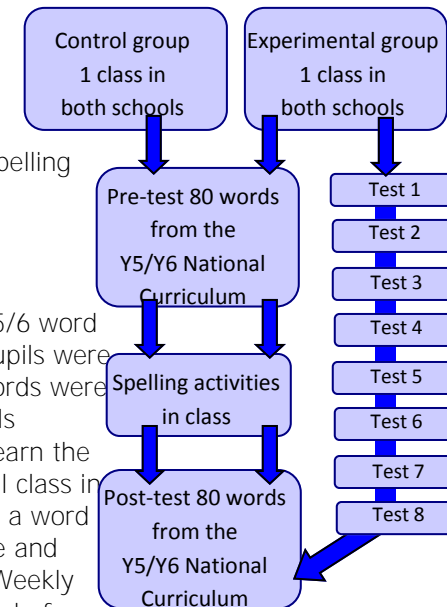
Westfield Community School and Platt Bridge Academy together form the Westbridge Teaching School Alliance. The two primary schools serve two separate communities in Wigan with high levels of socio economic deprivation. The research was completed in four year 6 classes (two in each school) Both schools teach spelling through a variety of spelling strategies but without any spelling tests. In total 88 pupils took part in the study. 46 pupils from Westfield Community School and 42 from Platt Bridge Academy. Classes are already stratified in mixed ability, mixed gender groups. One of the year 6 classes in each school was randomly allocated as the control group while the other class tested the experimental hypothesis that a weekly spelling test would increase their spelling score compared to the control group.

Procedure

Eighty words were taken from the year 5/6 word list of the new national curriculum. All pupils were given a pre-test of the 80 words. The words were then split in eight groups of ten. All pupils completed spelling activities in class to learn the ten words of the week. The experimental class in each school was also given the words as a word list at the start of the week to take home and learn for a test at the end of the week. Weekly spelling scores were recorded. At the end of eight weeks all pupils completed a post test of the same 80 words in the pre-test. Pre and post tests were carried out by the trial co-ordinators

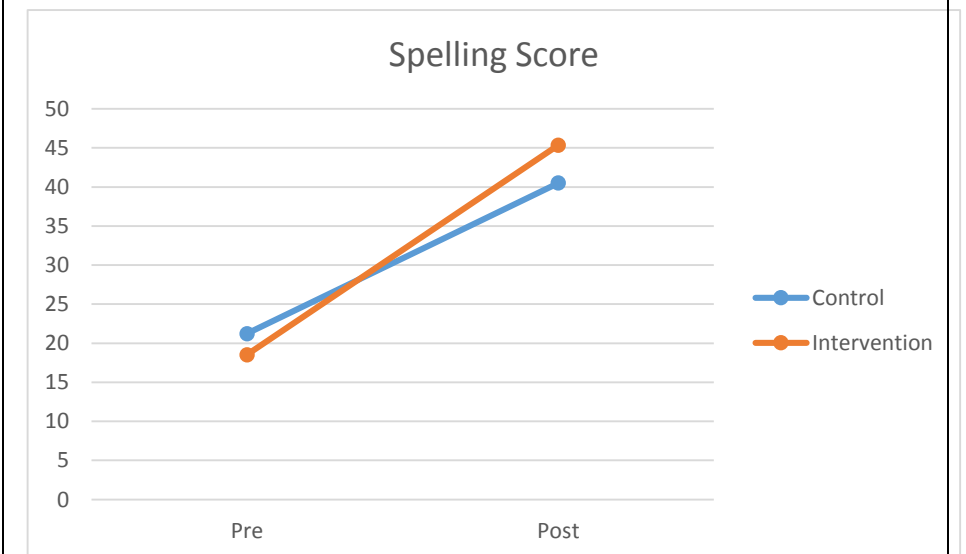
Materials

The trial co-ordinators wrote context sentences for each of the eighty words drawn from the National Curriculum spelling list for Years five and six. Words were divided into groups of ten and the context sentences containing the words were given to class teachers on a weekly basis to be used within the schools agreed teaching strategies for spelling. In addition the pupils from the two intervention groups received the same list to take home. Pre and post - test recording sheet was produced and scores were recorded in an Excel spread sheet.



Results

A Mann-Whitney U test was applied to pupils' spelling gain scores (calculated from the data in the graph below).



This indicated significant progress ($p=0.003$ (one tailed)) if a weekly spelling test was used (Mdn 26.50) compared to no weekly spelling test (Mdn = 21).

Conclusions

We were surprised by the outcomes of our research as we had not expected the spelling test to make a significant difference to pupil's progress scores. Although this was a trial involving a reasonable number of pupils we intend to expand the trial in the two schools next year. As there appears to be a positive effect we propose to carry out a within subject design trial so all pupils would experience spelling without tests and then with test. We would then be able to look at the impact on individual pupils, gender and ability groups. What the research did not show was how long pupils remembered words they could spell on the post- test or if they applied it to free writing activities.

Future research may want to replicate our subsequent within subject trial.

Contact email: sharon@westfield.wigan.sch.uk

ann.howard@plattbridge.wigan.sch.uk

'Look, Cover, Check, Write' improves attainment in Year 1 primary school lessons

Author:

Charlotte Morris

Charlotte.Morris@gofederation.co.uk

Purpose of the research: This is an important area to explore using a randomised controlled trial design because spelling is a weakness for children throughout the key stages in our school and the children do not always engage in spelling homework. Finding a more active strategy could help create a method that is suitable for all groups of learners. A number of approaches are possible and so the study has aimed to test two strategies against a control condition to ensure efficient use of participants. The research by necessity applied a mixture of one- and two-tailed hypotheses because although it was predicted that both active learning and the Look, Cover, Check, Write strategy would be better than the control, it was not known which of these would be best when compared to each other. This study was conducted with the support of a grant from the National College for Teaching and Leadership as part of the Closing the Gap: Test and Learn programme.

The research design

A post-test (counterbalanced) within-subject design was used. To address the aims of the research the independent variable was operationalised by creating three conditions that allowed for the testing of two interventions simultaneously:

- **IV Level 1 (Control condition)**
– Normal teacher practice without video delivery
- **IV Level 2 (Intervention A)**
– Teacher on video delivering general (active) spelling strategy
- **IV Level 3 (Intervention B)**
– Using the Look, Cover, Check, Write (LCCW) approach delivered by the same teacher on video



Methods

Participants, sample size and randomisation

Three mixed-ability Year 1 classes were randomly allocated to the order in which they experienced the conditions. 88 pupils took part in the study. Prior to analysis, two missing pieces of data (caused by absence) were replaced with the mean for that group.

Materials (and apparatus)

Videos of spelling strategies and a script for the teachers were developed. There were also standard sets of spellings and a test score sheet.

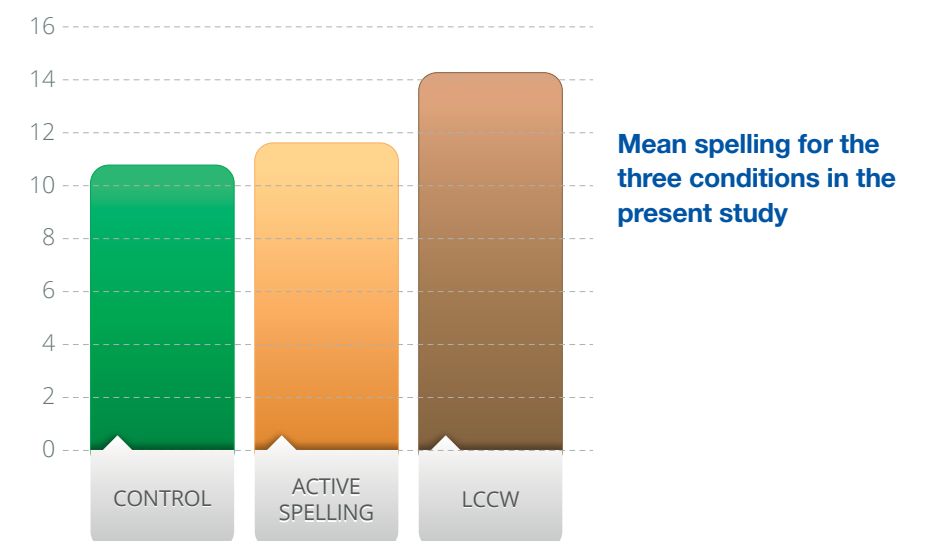
Procedure

Each class had the same set of words to learn during the fortnight. Then each fortnight new words were added to the spelling list. The spelling tests were 10 minutes long and delivered in the mornings. All teachers involved received a detailed briefing prior to the start of the research.

Results

An initial Friedman's ANOVA indicated that the overall change (shown in the graph) was significant ($p < 0.005$ (two-tailed)) with a moderately small effect size detected ($W = 0.22$). This test was then followed by planned comparisons comparing all conditions with each other using Wilcoxon signed-rank tests. A Bonferroni adjusted threshold for significance of 0.0167 was applied. The results from these tests and effect sizes are given below.

	Control	Active spelling	LCCW
Control		$r = -0.045$ $p = 0.037$ (one-tailed)	$r = -0.241$ $p < 0.005$ (one-tailed)
Active spelling	$r = 0.045$ $p = 0.037$ (one-tailed)		$r = -0.191$ $p < 0.005$ (two-tailed)
LCCW	$r = 0.241$ $p < 0.005$ (one-tailed)	$r = 0.191$ $p < 0.005$ (two-tailed)	



Conclusions and recommendations for future research

Use of the LCCW strategy produced significantly better attainment during the spelling tests than both the active spelling approach and normal classroom practice. However, it appears that the active spelling approach is at least an equal alternative treatment to normal practice. A moderately small positive effect on attainment was detected with regard to the LCCW approach compared to the control and a moderate effect compared to the active learning approach. A future study may wish to look at the effectiveness of the approach in different contexts and with different sub-groups of pupils. In summary, LCCW appears to be a highly effective way of improving children's spelling as measured by in-class testing.

Limitations

This study used a more laboratory-style approach than most education experimental research so far. This said, it is believed that the study maintained high levels of mundane realism (maintaining a real classroom environment) and therefore good levels of both external and internal validity. It is too soon, however, to be certain what the effect of these much more tightly controlled forms of design are and whether they produce demand characteristic and other biases (resulting from the use of video rather than a live teacher) that are known in psychology research.



Aiming for speed: Will learning to play darts help to increase writing speed?

Frances Bryant Khachy

Introduction

Pencil grasp is not a subject that is widely researched in the UK. Although handwriting is an essential skill for learners, inefficient grasp can disadvantage students as it can obscure, smudge or slow writing. While existing research is directed at initial pre-school pencil holds or special needs, this project focusses on mixed ability left and right handwriting grasps at Lower Key Stage 2.

While fluent handwriting might seem irrelevant in the digital age, the impact on learning can be considerable. Berninger et al. (1997) suggests that being able to write fluently and automatically aids cognitive, language and attentional resources. Suzanne St John (2013) finds that there is a cost to working memory from an 'improper pencil grasp'. Rosenblum et al (2003) notes that educational and emotional development suffers in those with poor handwriting. Marsha R. Cohen (1997) finds that girls write faster than boys and that "Handwriting speed has the potential to act as a limiting factor under some circumstances" (p.1428). There is evidence that children fail to complete GCSEs and other exams and simply due to handwriting speed.

This research aimed to address pencil grasp by improving fine motor skills and develop muscle memory to stretch fingers and hold a pencil or pen more efficiently and, therefore, be able to improve writing speed.

Research design

A between-subject design was used with a pre- and post-test. To address the aims of the research the independent variable (learning to play darts) was operationalised by creating two conditions.

IV Level 1: Normal practise i.e. not learning to play darts (Control condition)

IV Level 2: Learning to play darts (Intervention / experimental condition)

Participants

Two mixed ability Year 4 classes from the same school participated in the study. Already existing stratified classes (for equal numbers of boys, girls, abilities, SEN and autumn, spring and summer born) were randomly allocated to the control or the intervention by the toss of a coin. In total, 40 pupils (21 girls and 19 boys) took part in the study – 20 in the control group and 20 in the intervention.

Procedure

The experiment ran for 6 weeks. On day one children from both classes were given 10 minutes to copy as many words as they could from a standard text.

The intervention group were then taught to play darts. They played competitively in teams of two and kept scores on a notepad. Children were only allowed the score (by the opposing team) if they held the dart with a finger and thumb only. Teams played for fifteen minutes, three times a week.

On the final day, children from both classes were given 10 minutes to write out same text.

Materials

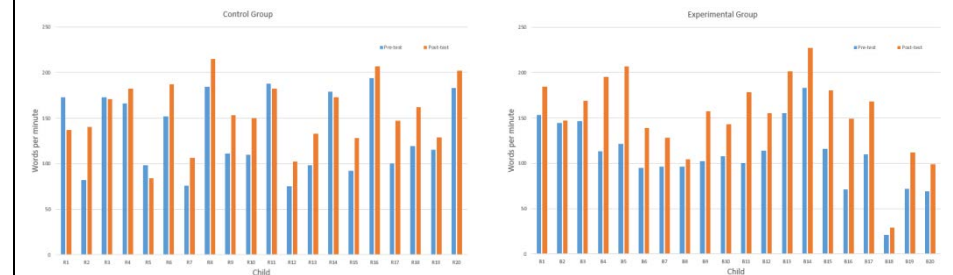
A writing task was created using three paragraphs of writing by Pie Corbett. Text alternated with blank lines for the children to write on line by line. Words per minute were calculated from this.

Children were also asked to rate their discomfort from writing on a 0 to 5 pictorial Likert Scale.

For the intervention groups of four children were given a set of safety sucker darts and a plastic target (Free Darts by Geologic). Scores were kept on notepads.

Results

Results A: words per minute
 Gain scores were first calculated from the results in the graph below:



A Mann Whitney U test indicated significant ($p = 0.005$ (one-tailed)) progress improvement for children who were exposed to the darts throwing (Mdn = 42.5) compared to the control (Mdn= 28.5).

Results B: discomfort from writing

A second Mann Whitney U Test showed that there was no difference in comfort for those who had done the intervention to those who had not.

Results C: the contingency tables below suggest that at pre-test there was a balance of standard and non-standard grips.

Pre-test standard versus non-standard grip

	Standard	Non-standard
Control	2	18
Intervention	1	19

Post-test standard versus non-standard grip

	Standard	Non-standard
Control	4	16
Intervention	7	13

However at post-test the number of standard grips had increased by 3 and the non-standard reduced by 3. As anticipated because of the small sample size, 2x2 chi-squared tests of independence indicated the differences in both the tables above to be non-significant ($p=0.548$ and $p = 0.288$, respectively). However, the change represented in the post-test table produced a moderately small effect size. ($w= 0.17$)

Conclusions

15 minutes of darts practise three times a week for six weeks increases children's progress on the words per minute written in a standardised test. A larger study might also in the future might also be able to show an improvement in the way children hold their pens. There does not, however, appear to be any effect on the discomfort children feel when handwriting at an early age. The results in this study need to be taken with caution as it is only a small pilot study.

The results show that there does not appear to be any effect on the discomfort children feel when handwriting at an early age. However, it is possible that the participants found the use of the Likert scale challenging and was not an entirely scientific way in which to record this information. An example which shows that the scale was not used entirely accurately is the use of 5 "hurts most" which show the face crying. No children cried during the writing task although several recorded their discomfort as such. Rather than measure comfort (a very subjective term), a future study might be able to scientifically measure pressure on pens to ascertain comfort levels. Alternatively, the use of the Likert scale could be improved perhaps using a scale of 1 to 3 and ensuring that the children have been taught to use Likert scales in the weeks preceding the experiment. ☹☹☹☹☹

A whole class discussion during the initial teaching of darts revealed that children correctly interpreted the word "grip" to mean "hold tightly" illustrating the anomalous nature of the phrase "pencil grip". The whole class determined to use the terms pen or pencil grasp or hold rather than grip in future. The children subsequently learned that they only had to hold lightly / balance the dart between finger and thumb to throw accurately. This was then used as a transferable skill to pencil hold using the middle finger to control the pencil. It is at this stage that the use of pens with similar indentations to the darts would have been useful to guide the children's fingers and thumb which would assist in learning to use standard pen holds.

In addition to the measured results, subjective teacher observations also noted that core stability and balance appeared to improve. Children who formerly found it difficult to stand steadily on one leg (during PE warm up activities) were able to do so after three weeks of playing darts. This is an area which could be measured in a future experiment through pre and post testing using a wobble board or walking along a line.

Finally, while the handwriting speed had increased it appeared that the handwriting itself remained consistent in terms of quality.

Contact email: f.bryant@cantab.net

References

Berninger, V.B., et al. 2006. Tier 1 And Tier 2 Early Intervention for Handwriting and Composing. *Journal of School Psychology*. **44**, pp.3-30.
 Cohen, M.R. 1997. Individual and Sex Differences in Speed of Handwriting among High School Students. *Perceptual and Motor Skills*. 1997. **84**, pp. 1428-1430.
 Rosenblum, S. et al. 2003. Product and Process Evaluation of Handwriting Difficulties. *Educational Psychology Review*. **15**(1), pp. 41-81.
 St John, S. 2013 Factoring in Fine Motor: How improving Fine Motor Abilities Impacts Reading and Writing. *Illinois Reading Council Journal*. **41**(4), pp.16-24.

Preliminary evidence for the impact of context-based learning on effort and achievement within extended writing.



Paul Briggs
The Blue Coat School, Oldham

Introduction

As STEM co-ordinator for the school I decided it would be of interest to see if applying a specific STEM context to a piece of extended writing would result in pupils achieving a higher level than if a context isn't applied to their work. Does working with topics that interest pupils and are relatively controversial have an impact on achievement?

Alongside this I decided to research into the perception by students of STEM subjects and their importance – will this change over the course of a context-based project?

Method

Participants

Initially it was decided that the research should be conducted with pupils identified as being middle achievers at KS2, along with Pupil Premium students. In order to do this, a suitable English class was chosen as it contained an appropriate student mix. A total of 29 students were in the class, with 10 pupils meeting the criteria for the intervention group.

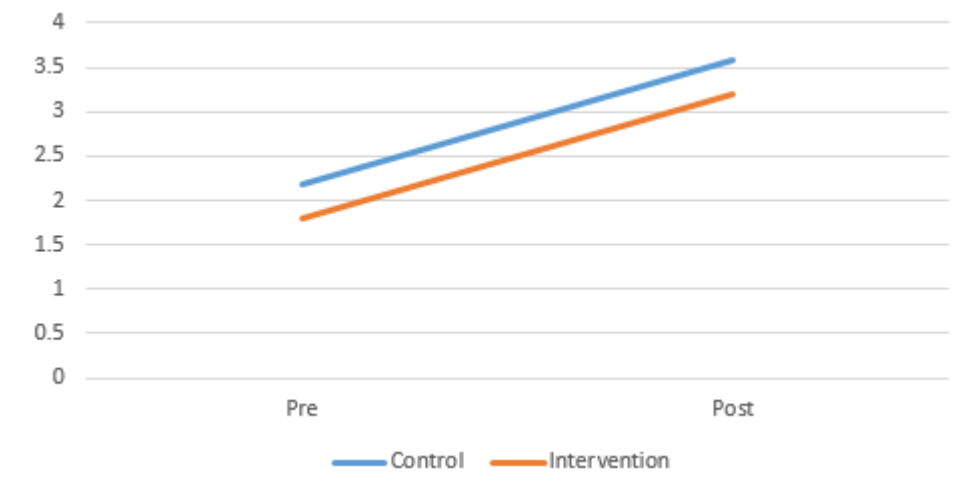
Procedure

A suitable series of STEM topics were then selected which met the following criteria:

- New or emerging technology,
- Potentially controversial in application,
- Wide coverage within different news types,
- Access to information is relatively easy,
- Topic will be interesting and exciting.

Results

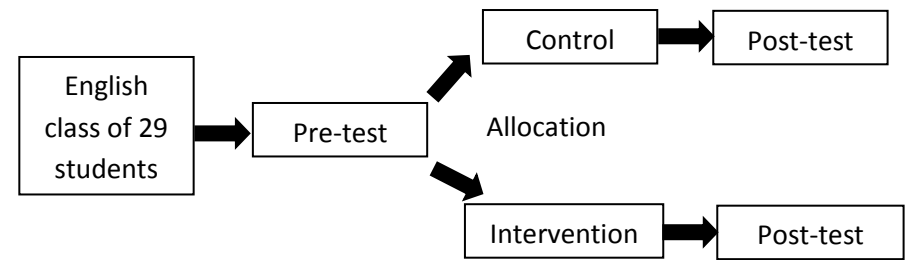
Gain scores were first calculated from the pre- and post-test data in the graph below. The results highlighted a very small negative ($d = -0.016$) effect. An independent sampled t-test showed no significant difference between the control and intervention groups ($p = 1.00$).



Research design

A between-subject design was used, utilising a pre- and post-test attainment comparison. An English set 3 class was used, with pupils being allocated to an intervention group based on their KS2 achievement, and their inclusion on the Pupil Premium list within the school, or the control group.

Control group – no intervention
Intervention group – the completion of an extended writing research project.



Around these topic areas, a generic research booklet was produced which would enable pupils to research the topic chosen and discuss their findings and thoughts on the topic, and at the same time produce a number of pieces of extended written work. Pupils were given a free choice of the topic chosen to attempt to ensure they selected a topic they were/could engage with.

Materials

All pupils were given a questionnaire at the start of the project regarding STEM perceptions, which has also been revisited on completion. The questionnaire also allowed pupils the opportunity to consider their perceptions regarding their level of ability to complete pieces of extended writing.

Achievement levels within their English class have been used to determine any progress made by comparing achievement at the start of the trial against achievement at the conclusion of the extended-writing project and used for comparison purposes.

Conclusions

The number of pupils involved in the activity, along with the relatively small time scale prevent the drawing of any concrete conclusions with regards to whether or not the activity seriously improved progress, but there were clearly small improvements seen in the intervention group. A further issue is whether the group would have naturally made the same progress without the intervention.

The findings from the assessment of the completed projects has highlighted a number of areas where the teaching of any extended writing task could be improved and better supported by teachers; the constant reinforcement of expectations running alongside the task would be one such appropriate method. Having pupils look at a piece of exemplar work and highlighting what has made it successful, in order to apply these things to their own is a second. Allowing pupils the space in which to further develop their work, to remove size constraints, is another way in which they would be enabled to access the higher levels available to them.



The effect of specialist art teaching on improving handwriting.

Researcher – Suzanne Hughes
St Osburg's Catholic Primary School & Blue Sky Teaching School Alliance

Introduction

In recent years, modern technology has dramatically changed the way we communicate through writing. However, despite the increased use of computers for writing, the skill of handwriting remains important in education and in everyday life. Time devoted to the teaching and learning of letter formation in the early years is vital as this is a crucial time to develop fine motor skills. The early years of schooling are critical for the teaching of handwriting and correct letter formation as once children have formed counterproductive habits in handwriting, such as poor pencil hold or inefficient letter formation, those habits can be difficult to change. Legible writing that can be produced comfortably, at speed and with little conscious effort will allow a child to concentrate more on the higher-level aspects of writing composition and content such as sentence structure, grammar and content. This is important when assessments are based on written work, particularly in time-limited written examinations, which remain as a major form of assessment from Early Years and continues through primary, secondary and further education. Without fast and legible handwriting, pupils may miss out on learning opportunities and under-achieve academically. Dr. Virginia Berninger, a professor of educational psychology at the University of Washington, reports that, after studying students in Grades 2, 4, and 6, those who used handwriting wrote more words, wrote words faster, and expressed more ideas than those who used keyboarding. If the children are taught

Research design

A quasi-experimental design was used in which, prior to exposure to the same treatment (a specialist art skills programme), pupils were divided into two groups based on results from a handwriting ability test.

- IV Level 1 – Pupils who scored below the median on a handwriting ability test
- IV level 2 – Pupils who scored above the median on a handwriting ability test

Method

Participants

11 boys and 17 girls took part in the study. All children were in the same class and all were exposed to the same intervention. 14 EAL 10 PP

Procedure

Children took part in a pre-handwriting timed test. Children were timed in writing 'the quick brown fox jumps over the lazy dog'. For two minutes. These were then marked for accuracy of handwriting. Letters needed to be accurately formed.

All children then took part in 6 hours of specialist art teaching over the course of a number of weeks. During the teaching, the children were taught fine brush skills along with observation drawing. They were also taught pencil control.

After the six hours, children were given the same handwriting test and were again marked against accuracy of letter formation.

Materials

'Dash Handwriting test' - Inclusive, whole class, adapted to suit age range. Children were timed in writing 'the quick brown fox jumps over the lazy dog'.

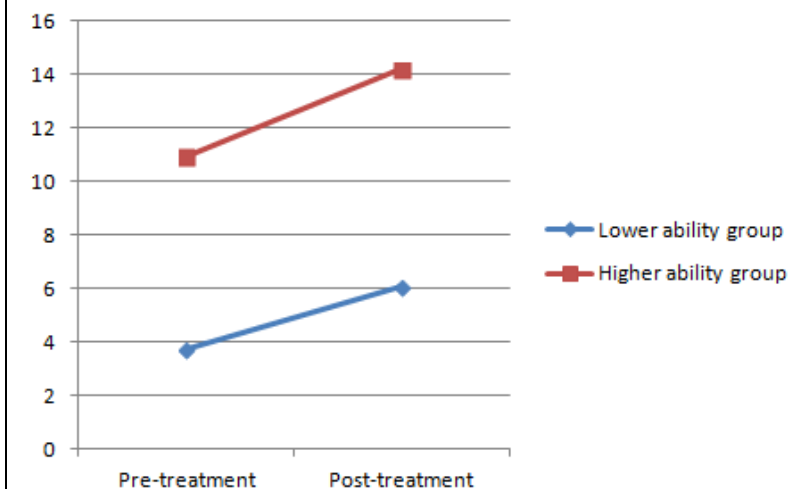
Pencils

Fine brushes

Results

Gain scores were first calculated from the results in the graph below.

Handwriting test pre- and post-treatment means



As anticipated, because of the small sample size, a Mann-Whitney U test indicated a non-significant difference ($p = 0.149$, two-tailed) in the gain made by the lower ability group (median gain = 1) compared to the higher ability group (median gain = 2). There was, however, a moderately small positive effect size difference in progress ($r = 0.166$) for the higher ability children suggesting that they may have benefited more from the intervention.

This said, 14.28% of pupils in the lower ability group made exceptional progress resulting in post-treatment handwriting scores above the average for the higher ability group.

Conclusions

This small scale pilot study suggests that exposure to an art course has a greater effect on the handwriting skills of higher ability learners than pupils with lower ability. However, a larger replication would be necessary to establish the findings. The specialist teaching of art would also need to be over a longer period of time and consistent.



National College for
Teaching & Leadership

© Crown copyright 2016

This publication (not including logos) is licensed under the terms of the Open Government Licence v3.0 except where otherwise stated. Where we have identified any third party copyright information you will need to obtain permission from the copyright holders concerned.

To view this licence:

visit www.nationalarchives.gov.uk/doc/open-government-licence/version/3

email psi@nationalarchives.gsi.gov.uk

write to Information Policy Team, The National Archives, Kew, London, TW9 4DU

About this publication:

enquiries www.education.gov.uk/contactus

download www.gov.uk/government/publications

Reference: NCTL-20001-2016



Follow us on Twitter:
[@educationgovuk](https://twitter.com/educationgovuk)



Like us on Facebook:
facebook.com/educationgovuk