



Welcome to the first edition of the St Edmund Arrowsmith teaching and learning newsletter. Since September colleagues who are part of researchEDDIES have been engaging with a wide range of educational research. They have been working together to write inquiry based research questions, targeting specific groups of students, undertaking peer to peer coaching and training and supporting each other in their ongoing professional development. In this edition of the newsletter you will find useful articles, written by colleagues, about the impact of their current developments which we hope will inspire you to ask questions and find out more about the work of researchEDDIES2.



“ 3, 2, 1 coaching experience is non-hierarchical offering real opportunities for risk taking. ”

**Lydia Burke Assistant Learning
Co-ordinator & Teacher of Technology**

I have found being part of the research group very beneficial. Not only does it give the opportunity to reflect on personal teaching practice but also provides the opportunity to visit other departments to observe approaches within their subject. The grouping is non-hierarchical. This gave us the opportunity to self-direct and self-reflect supported and coached by other colleagues. Group research and planning of lessons to be observed is a great tool for self-improvement and trialling ideas, allowing risks to be taken. The most rewarding part for me was coming away from the observations questioning how I could make that work in my lesson. The observation of others is inspiring and informative, allowing the adaptation of pedagogical approaches to fit one's own practice.

This year we have had a great opportunity to be involved in ResearchEddies2 and would like to share some of our experiences from being involved in the school-led initiative. The overall focus is not only to deliver research-led teaching but to share strategies that will help improve the learning experiences of the pupils within our classes. This scheme involves being in 'coaching' groups and targeting a group/class we teach that we want to try new strategies/approaches and monitor the impact that it has on our identified pupils. The process started with each staff member deciding what research they would like to undertake and which pupils to focus on. From that we then grouped together with colleagues who have agreed the same research focus and these then formed our 'coaching' groups. In our groups, the idea is that we will undertake developmental lesson observations but only after being involved in the planning of feedback processes as well. The notion of 'coaching' is sometimes misinterpreted, so sessions done with the ResearchEddies2 cohort have really emphasised the importance and value of coaching as a strategy to improve learning experiences at all levels.

We were then introduced to the coaching '3,2,1' experience. This is where we plan a lesson as a group of three, bouncing ideas off each other and agreeing on how each member's lesson may go. We then undertake two developmental lesson observations and as a result teach one lesson (hence plan 3, observe 2 and teach 1). After the observations had taken place we then had a 'coaching feedback' session where we tried to facilitate the staff member to reflect on the lesson/strategy and see where they need to move on from that point with their research-led teaching. Here is what we thought about the process:

Dave Morgan Head of Physical Education, Sport & Dance

This process is far from the formal lesson observations that we have during the year. It is non-threatening, non-burdensome and is actually quite enjoyable. I would like to see the school adopt this approach as an everyday practice. The benefit from having the platform to share practice and encourage development has really ignited us to get out of our 'comfort zone'. The emphasis on 'risk-taking' in order to move teaching forward is crucial if we want to instill the desired attitude/approach to learning from pupils. The idea of colleagues feeling comfortable enough to observe and be observed by their peers is refreshing and we have already seen an improvement in our approach to planning and teaching through both the research and the 3,2,1 coaching experience."

“ Being in the 'stretch zone' is a key part of developing your practice. ”

Quizzing in Maths

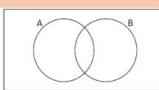
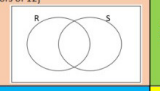
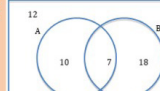
At the conclusion of a topic across Years 7-9, we have been writing 'end-of-topic' low-stakes quizzes to check and see how much the pupils have learned/remembered. Since the quizzes are at the end of a topic, usually one lesson after completing the current section of the scheme of work, 'forget' some of the need to retrieve these are hoping to use the in the near future.

We also have a inter-awards pupils points over a number of topics lesson questions score awarded for the previous points for the previous a topic taught 'way back'. to use retrieval skills previously taught topics.

Both methods endeavour to remember have been taught. Furthermore, it also allows the teaching staff to have an idea of the topics that pupils have struggled with, which in turn allows in-class intervention if necessary.

Martin Travis - Assistant Head of Maths

Knowledge Retrieval Quiz

1.  Shade the region A ∩ B	2. Simplify $9a + 4c - 5a + 7c$	3. Work out $\frac{2}{3} - \frac{2}{5}$	4. Simplify $4x^2 + 3x + 9x^2 - 5x$
5. Work out $\frac{3}{7} + \frac{5}{9}$	6. Complete the Venn Diagram for the numbers 1 to 10. R = (Numbers that are 5 or less) S = (Factors of 12) 	7. Expand and Simplify $(4x+2)(2x-3)$	8.  How many people in A ∪ B
9. Expand & Simplify $(3x+3)(2x+4)$	10. Place in order from smallest to largest $\frac{3}{4}, \frac{2}{3}, \frac{1}{6}, \frac{1}{2}, \frac{5}{12}$	11. Simplify $t^3 + t^3 + t^3$	12. Expand and Simplify $(x+2)(x-3)$
<div style="display: flex; justify-content: space-around;"> This topic 1 point Last topic 2 point Previous topic 3 points Wayyy back! 4 points </div>			

this causes the pupils to skills taught and hence they skills to answer the quiz. We quizzes with Year 10 classes

leaved past-topics quiz that for getting things correct covered. The most recent one point, then two points are lesson; we move onto three topic; and finally four points for Again, this causes the pupils to think back over the four

encourage the pupils to the skills and techniques they

A new perspective

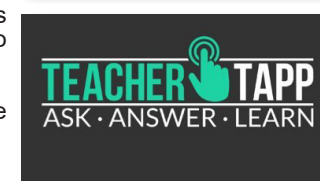
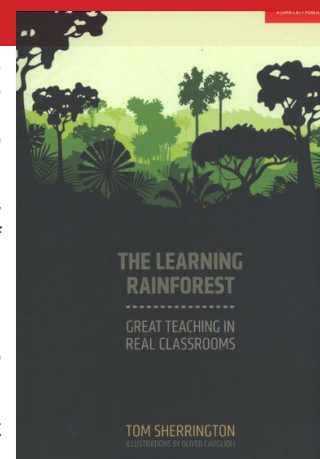
Being a part of ResearchEddies2 has been the ideal way to get involved in life at a new school. It can be daunting to start somewhere new, especially at a school with such a large staff, but joining the research group has been a brilliant way to get to know new people and work with staff outside of our own departments. Working as part of such a warm and welcoming cross-curricular group is a fantastic way to throw yourself into school life and be a part of something that is beneficial to both departments and pupils alike. Engaging with research has opened up new ideas and methods of delivering to our classes; there is a wealth of information and research out there and it is exciting to find something that is brand new, or just a slightly different way of delivering something we already do. The group observations have been an integral part of the evaluation process by helping each other to see how knowledge can be delivered in different ways and adapted for different subjects. This is also the ideal opportunity to see lessons in different subjects and think a bit more outside of your own subject 'bubble' - which is often the safest place to be!

The session on coaching conversations that we took part in was beneficial in highlighting how to feedback to our peers in a supportive way, exploring how we can improve our own lessons through a professional dialogue.

The Learning Rainforest is a brilliant book and comes highly recommended. It explores a variety of different methods for engaging students, Tom Sherrington's work on retrieval practice is especially practical and useful for revision strategies in content heavy subjects. TeacherTapp has also been a fun way to engage with research on the go. It delivers three multiple choice questions to your phone at 3.30pm every day. The more questions you respond to the more the app learns about you and delivers research articles. These are short and easy to read articles, often taking no more than three or four minutes to read, so it's ideal for busy school days.

We have loved being part of ResearchEddies2 so far this year and we're looking forward to how this can shape our teaching in the future!

Sarah-Louise Hind Teacher of English & Kelcie Connelly Teacher of RE



Research & Retrieval

As part of the Research Eddies initiative I, along with Kelcie Connelly, Sarah Hind and Paul Masheder, have been researching and exploring the theory of Retrieval Practice. Whilst the concept of Retrieval Practice is not in itself new, the research behind it is.

I have been investigating the theories developed by Pooja K. Agarwal, Ph.D., an American lecturer and cognitive scientist, who has been conducting research on how students learn since 2005. In her words "If this is the first time you're hearing the phrase retrieval practice, I'll give you a simple definition: It's the act of trying to recall information without having it in front of you. So if, for example, you're studying the systems of the human body—skeletal, muscular, circulatory, and so on—you could do retrieval practice by attempting to list those systems without looking at the list; you'd just try to recall them from memory. Then when you've listed all you can remember, you'd open up your book or notes and check to see if you got them right." (Retrieval Practice: The most powerful learning strategy you're not using: 2017).

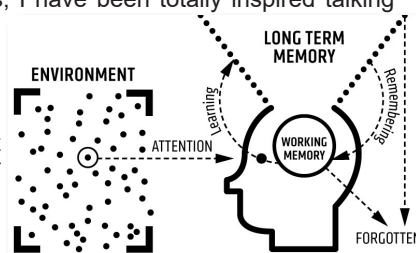
Our brains are amazing! Despite what we might think, we never forget what we have learnt. What we have learnt is always stored in our brains, but we just might not be able to recall it. The aim of Retrieval Practice is to regularly retrieve information thus ensuring that it is secure in our long-term memory and in a place where it can be more easily retained and retrieved. I found the concept of Retrieval Practice, and the practical classroom strategies which I have researched and developed, to be incredibly beneficial in my classroom. As teachers, we are constantly trying to pack our students' heads with information, but it is often only on the final assessment, exam or test when we ask them to retrieve this information - with varying degrees of success.

Having studied the theories behind it, and implemented many of the teaching strategies, I am now asking my Year 11 English Literature students to retrieve their learning, daily. I am finding that they are more readily able to recall key information and quotations, and this has resulted in a marked improvement in their outcomes. Retrieval Practice strategies work especially well for the English Literature GCSE, as students are expected to learn vast quantities of contextual information and quotations. The breadth of the Literature curriculum is daunting for some and studying for the exam is a bit like preparing to run a marathon. Retrieval Practice has given the students more confidence with the realisation that they can remember the information needed. In addition, it has built resilience through the continual low-stake testing and quizzing which is part of the process.

LIGHTENING THE LOAD

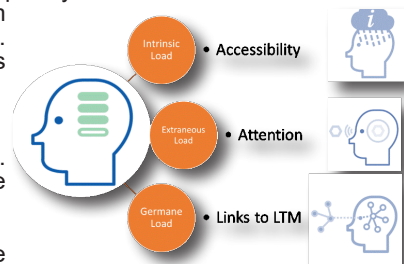
It was my second visit to St Mary's Catholic Academy Research School in Blackpool. On both visits, I have been totally inspired talking to colleagues about leading educational research and excited about applying what I have learnt in my practice. Moreover, I also relished the potential to share this with colleagues across school. The focus of the training day in Blackpool was Memory and the Science of Learning. I already had some understanding of memory and learning but I was intrigued to learn more about how this could be applied to the classroom.

The training day, led by Simon Cox, Director of Research at St Mary's, began with a reflection of what learning is. I think it is always interesting, as teachers, to reflect on what learning is. Considering our profession revolves around learning, do we actually know what learning is? Besides which, more importantly, what are the most effective ways to learn? These questions then led us down an enlightening journey through models of memory and Cognitive Load Theory.



Cognitive Load Theory is a widely adopted, evidence informed theory of how we learn and how we, as teachers, can reduce demand on pupils' working memory. Cognitive Load Theory is made up of three aspects that affect learning: intrinsic load, extraneous load and germane load. Intrinsic load is related to the complexity of concepts being learnt. Extraneous load is related to the complexity of instructions and attention. Germane load is what affects building schema and making links to long term memory. The input from Simon and colleagues allowed us to reflect for the implications of Cognitive Load Theory on our practice. Our aim as teachers is to reduce intrinsic load, reduce extraneous load and enhance germane load. Ideas of how to put this into practice in the classroom included:

- Chunking, goal-free questioning, use of worked examples and scaffolding to reduce intrinsic load.
- Avoiding split attention, use of dual coding, avoiding unnecessary distractions to reduce extraneous load.
- Building on prior knowledge, constructing schema and building retrieval strength to enhance germane load.



The afternoon's practical tasks allowed us to reflect on what we can put into practice to increase germane load in our classroom. This was based around the Learning Scientist's six strategies for effective learning: spaced practice, retrieval practice, elaboration, interleaving, concrete examples and dual coding.

Our main strategy focus for effective learning was retrieval practice:

"Retrieval practice is a strategy in which calling information to mind subsequently enhances and boosts learning. Deliberately recalling information forces us to pull our knowledge 'out' and examine what we know [...] by trying to recall information, we exercise or strengthen our memory, and we can also identify gaps in our learning."

From research: Cognitive Load Theory, Learning Difficulty and Instructional Design - J. Sweller (1999)

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3 Practical Strategies for COGNITIVE LOAD THEORY

STRATEGY 1 'Element Interactivity'
Tailor teaching according to the pupils' existing knowledge & skills.
1- Use retrieval practice to identify what pupils already know & can recall.
2- Limit the amount of new learning to be introduced.

STRATEGY 2 'Worked Example'
Teach new content or skills using concrete worked examples.
1- Use a concrete example to introduce new learning.
2- Get pupils to explicitly make connections between the example & prior learning.

STRATEGY 3 'Redundancy Effect'
Cut out inessential information.
1- Summarise new learning in a single visual or sentence.
2- Chunk new learning & allow pupils to move through it at their own pace.

Use a 'mind map - brain dump', 'Everything I know about...'

OPTIMISED LOAD vs OVERLOAD

Ways to include retrieval practice in the classroom included: quizzes; tests; creating or completing concept maps; students writing everything they can remember about a topic (free recall); Using flashcards to self-test; completing exam past papers. However, the key message was that retrieval practice should always be carried out without access to notes or previous work in order to strengthen retrieval.

One exciting aspect of retrieval practice that was discussed on our training day was that the possibilities for application inside and outside of the classroom are endless. It is something tested, proven and concrete that staff, and pupils, across the school can implement every lesson, every day to enhance learning.

Following the training day in Blackpool, I have shared with numerous colleagues and departments the content regarding Cognitive Load Theory and strategies for learning. These have now been widely adopted across multiple departments with great effect. Staff and pupils across the school are now really seeing the benefit of applying principles of Cognitive Load Theory to their learning and it is evident for all to see the power of retrieval practice.

Kieran O'Callaghan Assistant Learning Co-ordinator and Teacher of Science

I have gathered much of my research online and found podcasts to be a valuable source of material. Research does not necessarily mean reading weighty tomes (although we have a wealth of useful reference books in our group). Research can be easily conducted by reading blogs, online articles and listening to podcasts in your car.

Some of the strategies I have used include:

- Flashcards
- Retrieve (don't cheat)
- Re-order (interleave)
- Repeat (at least three times)
- 'From memory' annotations (Cover, write, look, check, correct and add)
- Annotate a blank poem/extract of text from memory in red pen
- Return to master copy of annotations to see if you have missed anything. Add any missed information in green
- Knowledge Organisers
- Fill in a blank knowledge organiser from memory in red
- Refer back to populated knowledge organiser and add any missed information in green
- Recall Grids
- What can you remember from today? Yesterday? Last week?
- Multiple Choice Tests

- Low-stake testing with self-marking Metacognition Sheet
- On a scale from 1 (very unclear) to 4 (very clear), how would you rate your overall understanding of today's class?
- What are two things you learned in today's class?
- On a scale from 1 (not confident) to 4 (very confident), how confident are you that the two things you just wrote down are correct?
- What concepts from today's class did you find difficult to understand?
- Specifically, what will you do to improve your understanding of the concepts that were difficult?

Research reference list:

<https://www.retrievalpractice.org/>
<https://www.cultofpedagogy.com/retrieval-practice/>
<https://www.learningscientists.org/retrieval-practice>
<https://www.teachertoolkit.co.uk/2019/04/23/retrieval-practice-for-revision/>

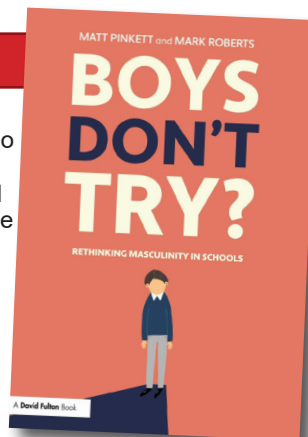
BOOK REVIEW – BOYS DON'T TRY

Do you smile more at certain pupils? 'Boys Don't Try?' Matt Pinkett and Mark Roberts

I had an argument last night. I was right, of course, but it wasn't acknowledged by my opponent. "You'll have to do your homework tonight because you're out for the next two nights....no, you can't do it after you get home. JUST GO AND DO IT!" I'm sure that many of you will recognise this as a mainstay of your domestic situation. At least, I hope it isn't just me. If I'm completely honest, I really wanted to read this book first and foremost because I am the mother of two 'lazy' boys. I was as hungry for this book as I was for 'Toddler Taming' all those years ago, when I was convinced that I would find the answers to all my parenting ills.

That said, I have always been interested in how boys learn and what I can do to improve their outcomes. I have read several blogs by Mark Roberts before this book was published and he described his strategy for teaching boys earlier in his career that I recognised only too well: teach them English through their own experiences; give them competitions to get them fired up; believe that banterous, witty put-downs will ingratiate them; and timetabling male teachers to teach all male classes. What he (and I) found to our cost, is that trying to 'hoodwink' boys into learning does not work. Learning is hard work. We shouldn't be trying to make them do it by stealth.

This book aims to look at the ways we can change our culture and practice surrounding boys' education so that they AND GIRLS have a hugely positive experience of education which in turn, allows them to have the greatest number of choices in their future, regardless of background.



The first point the writers make is that boys are simply a more sensitive barometer of excellent teaching and learning in the classroom. Where girls might self-motivate, many boys will not. Where girls may fill in any gaps in their knowledge away from the classroom, boys are more likely to leave the gaps where they are. Roberts begins then by reminding us of your friend and mine, Rosenshine who states that the following are indicators of effective teaching:

- beginning the lesson with a brief review of previous learning;
- providing models and examples, with scaffolds;
- including opportunities for guided student practice;
- checking for understanding, using lots of questions;
- ensuring that students obtain a high success rate (approximately 80%).

We should all be self-reflective about the culture in our classrooms. Roberts and Pinkett go further and suggest we should carry out peer-to-peer observations solely to concentrate on our approach to gender in the classroom.

They suggest that we ask a trusted colleague to focus on:

- Voice: does your tone and volume change when you speak to boys and girls? What language do you use to communicate with different pupils?
- Attention: which groups get more of your time? Do you direct equal amounts and types of questions at boys and girls?
- Body language: do you smile more at certain pupils? Is it clear from your gestures that you like some pupils more than others? What clues does your body language give about the ways in which you react to disruptive behaviour?
- Behaviour management: do you escalate sanctions more quickly for boys? Are you more likely to apply sanctions for certain types of disruptive behaviour but ignore others? Are these aligned with gender stereotypes?
- Interaction with pupils: how do you tackle relationships in the classroom? Do you tolerate male pupils talking over female pupils? Do you allow boys to take a back seat during group work? Are boys always given 'leadership' roles? Do boys get to go first? Do you tackle sexist attitudes?

Roberts also treats his reader to his findings of observing a teacher who has fantastic outcomes for boys and noted that the teacher had skilfully ensured the pupils were doing the following:

- retrieval practice;
- completing homework (including content they hadn't looked at for a while);
- putting full effort into their work (high challenge for all);
- gaining an appreciation for their subject (from the enthusiasm the teacher displayed for their subject);
- concentrating and listening to instructions;
- treating each other with respect (affectionately 'daft' humour but not 'banter');
- sexist attitudes were challenged (the teacher was a role model for ALL pupils, not just for boys).

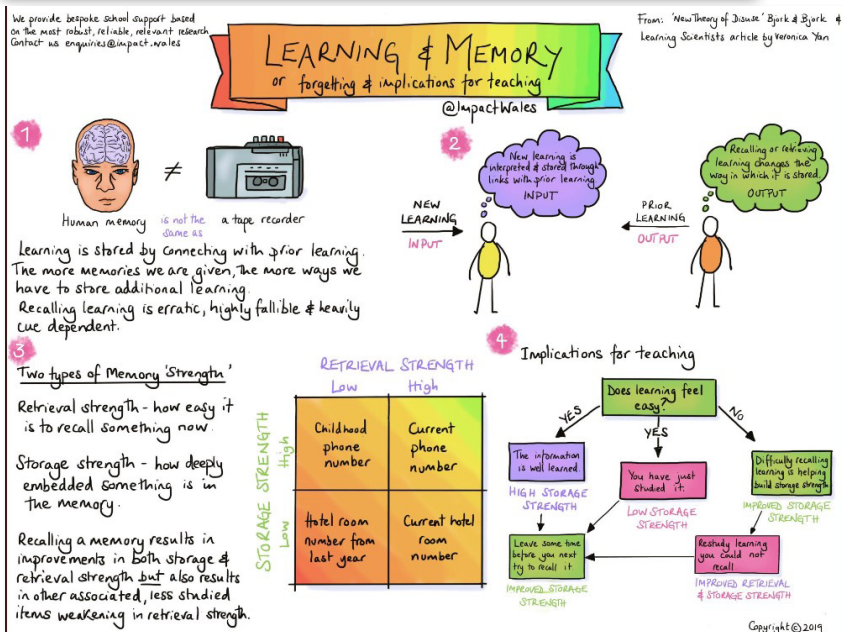
Moreover, Roberts and Pinkett also challenged the culture in schools can be stacked against boys and how they behave. How many of us have actually considered the messages we give our boys through our interactions with them? I know that I have been guilty of double-standards when dealing with boys and girls: where I am prepared to give certain girls the benefit of the doubt, I escalate sanctions against certain boys immediately. In order to develop positive relationships with boys, the following are suggested:

- don't make discussions public;
- depersonalise behaviour;
- find quick wins;
- focus on productivity;
- display confidence and humility.

I didn't find there to be anything ground-breaking about this book. As I suspected, there is no magic formula for teaching boys (or raising them as it turns out). But it did make me think. It did make me reflect on the possible inequalities in my classroom, it reminded me that boys need high challenge and expectations and it allowed me to also emit a small but definite 'whoop' for the classrooms practices that I'm getting right. Most importantly, it made me realise that when we get it right, everyone benefits, not just boys.

I'm going home now to have an argument about homework.

Cath Hollins Assistant Head of English and SLE



Coming Soon...

CLT (cognitive load theory) training inset day - January

Teacher development clinics - Spring and Summer terms

Pupil learning clinics - Spring and Summer terms