



Interactions between researchers, policymakers, and teachers

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Learnus[®]
Understanding Learning

**Centre for
Educational
Neuroscience**



Outline

- Learnus's mission
 - A vision?
 - Challenges
 - Reasons for optimism?
 - Systemic gaps still exist around innovation
 - The Building Impact Groups Project
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The mission of Learnus

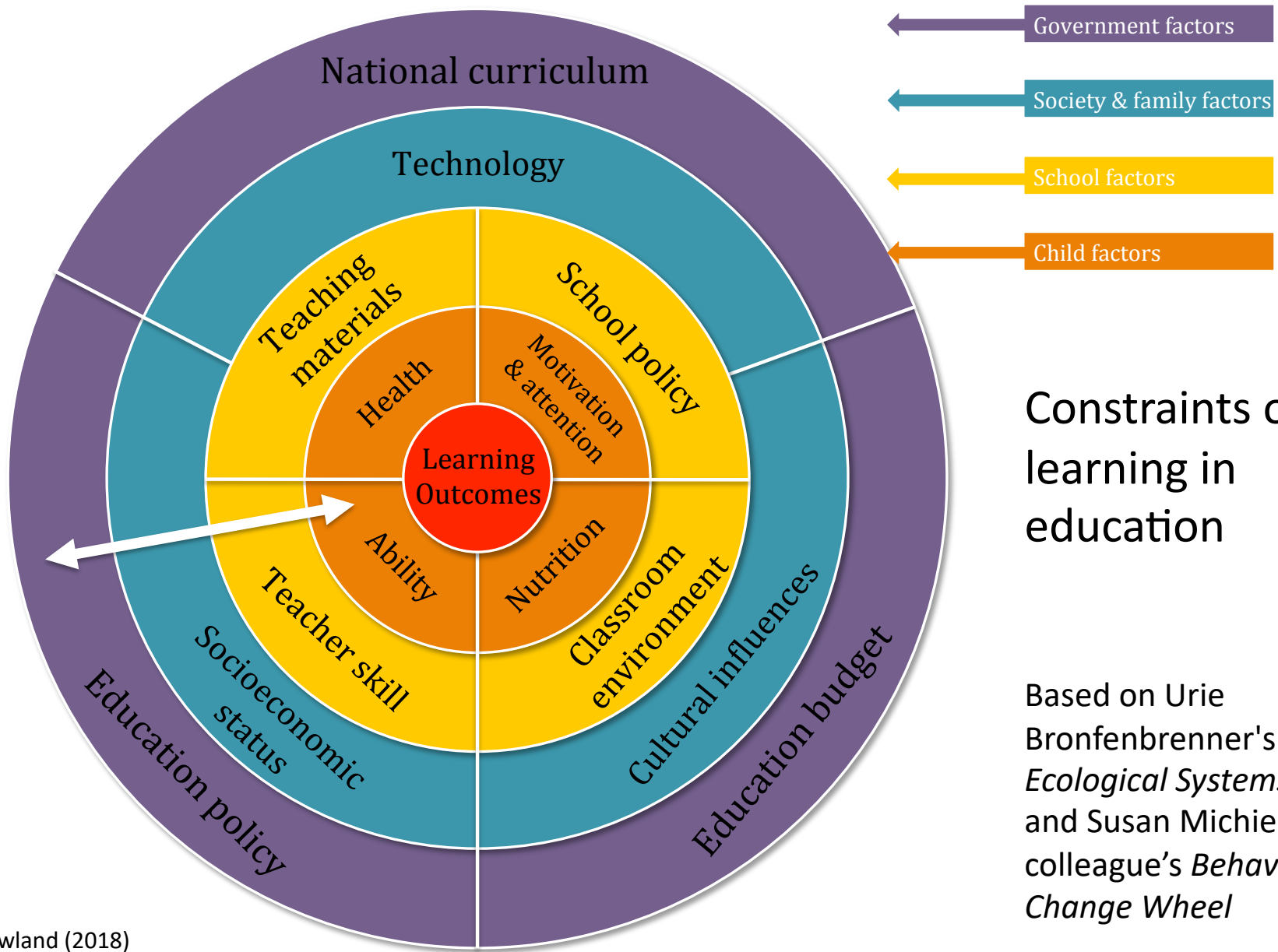
- *Learnus is dedicated to bringing educators and researchers who specialise in the study of the brain, the mind and behaviour together in order to use the insights gained from high quality research to improve and enrich learning for all*
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A vision?

- Continuous dialogue between educators and researchers
 - Science of learning as R&D support to teachers
 - Research literacy and how learning works embedded in teacher training, updated by CPD
 - Classroom challenges and policy priorities update research agendas
 - Accumulation of evidence base through evaluation and gatekeepers to inform practice
 - Basic research contributes to innovation through co-creation of new learning activities with teachers
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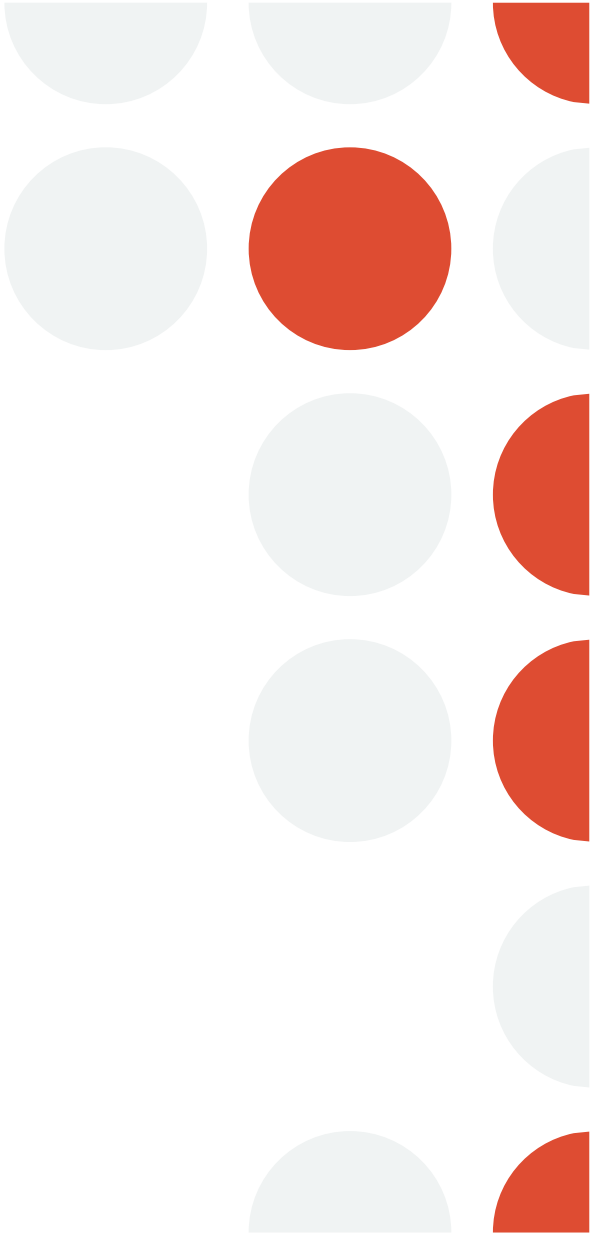




Constraints on learning in education

Based on Urie Bronfenbrenner's *Ecological Systems Theory* and Susan Michie and colleague's *Behaviour Change Wheel*

Challenges



Challenges

FREE INSIDE Food Magazine

THE OFM

SUMMER SPECIAL

Beach shacks, cafes, perfect pubs... 67 great places to eat in the sunshine

Recipes from Cornwall and Nigel Slater's summer greens

Rose Ayling-Ellis
Strictly, singing and what comes next
in the magazine

The Observer

From £2.03 for subscribers
www.observer.co.uk
Sunday 18 June 2023
£3.80 (IR €63.80)

Just an ex-MP: Sunak's allies pour scorn on beaten Johnson

- PM sees predecessor as political irrelevance
- No 10 attempts to move on from dramas

Toby Helm & Michael Savage

Close allies of Rishi Sunak last night dismissed Boris Johnson in contemptuous terms as "just an ex-MP" of no particular importance, as the former prime minister's political power base appeared to collapse as Westminster. In a clear attempt to move on from the Johnson era after last week's devastating privileges committee report into Partygate, Sunak supporters

ers made it clear the prime minister now regarded Johnson as a political real threat.

The portrayal of Johnson risks irritating supporters of the former prime minister, who insist that Sunak reined controversies and rule-breakers investigated by the committee. Like Johnson, Sunak was fired over an event at Downing Street.

Speaking to the *Observer*, a senior source said that although the committee found Johnson had deliberately misled parliament and directed abuse at its members, Sunak had not found the time to read its full report.

The source added that Downing Street would not be thrown off course by the antics of a predecessor: "Ultimately, this is someone who is just an ex-MP. There are times when you have to cancel business, but last week was not such a time."

The comments came after Johnson called on his own tiny band of remaining MP allies not to vote against the recommendations of the privileges committee when they are put to the House of Commons tomorrow.

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Now English classes hit by worsening teacher crisis

Anna Fazackerley

Schools in England are struggling to recruit English teachers, with hundreds still trying to fill vacancies in time for September, as headteachers warn they have reached crisis point.

Secondary heads say they have become used to advisers for maths, science, computer science and design technology teachers failing to attract any suitable applicants. But many have been shocked to find that it is now a similar battle to find teachers for English – traditionally a subject that buoyed recruitment numbers.

They warn that if the government does not tackle low pay, overwork and the pressure of inspections by Ofsted, growing teacher shortages will mean spiralling class sizes and children falling behind because they do not have the right specialist subject knowledge.

The national executive of the National Education Union agreed this weekend to stage two further days of strike action over conditions and pay. These will take place on 5 and 7 July, and sixth form colleges. Members are calling for an above-inflation pay rise and assurances that money will not come from existing school budgets.

Dr Mary Bousted, joint general secretary of the NEU, called on education secretary Gillian Keegan to meet the union urgently, saying it was "in her hands" to avert the action. "There

Continued on page 18 >>

'In my early career, I had to stop myself apologising to the audience'

Mark Rylance

The actor answers readers' questions on self-doubt, exploring his spiritual side... and his favourite member of One Direction. (New Review, pages 9-13)

Challenges

- Current priorities for teachers*:
 1. Workload
 2. Funding cuts
 3. Student behaviour

* YouGov poll commissioned by Learnus 2022



Challenges



Professor Rob Coe

Senior Associate

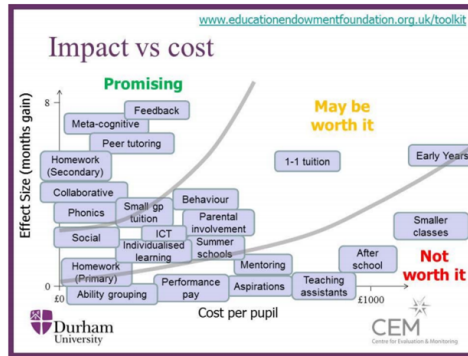
Before 2011, if you did or advocated RCTs in education you were part of a marginalised tiny minority within the research community, struggling to get funding or even get work published in mainstream journals.

When I spoke to groups of teachers it was always a hard sell to make the case that education research had anything to offer a classroom practitioner.

If you tried to persuade them that something intuitively obvious but in conflict with solid evidence (eg, learning styles or class size) might be wrong, you pretty much lost the argument consistently.

Challenges

Relevance?



Professor Rob Coe
Senior Associate

But EEF's RCTs have typically evaluated manualised programmes, which require schools to purchase particular resources or training ... rather than relating to the everyday choices that teachers have to make when planning their lessons and supporting their students.

Challenges

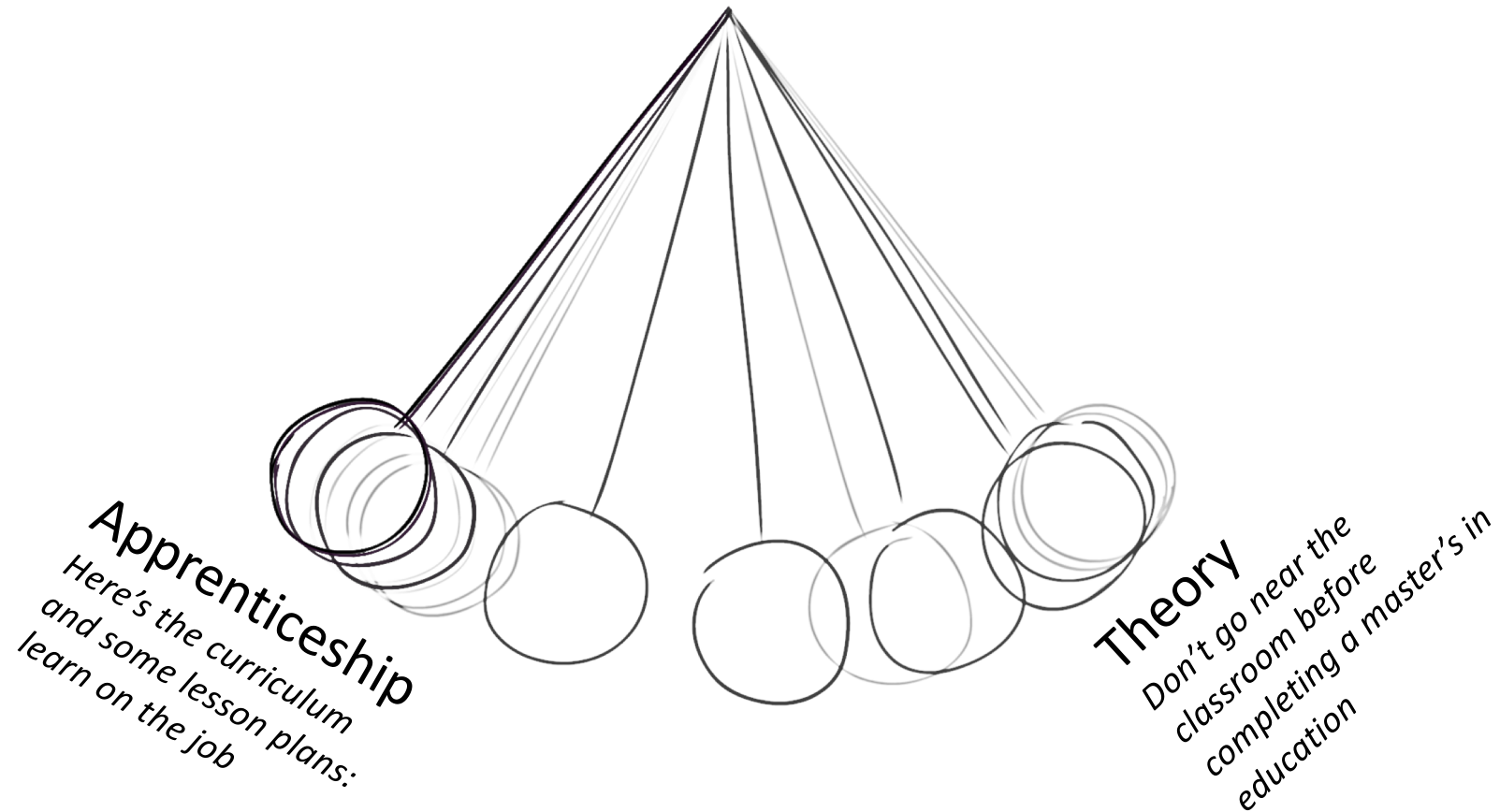
- Are RCTs the best way to evaluate?
 - Lack of theory (of cognitive development, of how learning works, of what is good evidence) in teacher training
 - Research not used to innovate effectively or in form teachers can/want to use (lack of dialogue and co-creation)
 - Translation haphazard and piecemeal
-



Reasons for optimism?



Teacher training



Early Career Framework

January 2019

ITT Core Content Framework

Cognitive science content now specified in teacher training goals

How Pupils Learn (Standard 2 – Promote good progress)

Learn that...	Learn how to...
<ol style="list-style-type: none"> 1. Learning involves a lasting change in pupils' capabilities or understanding. 2. Prior knowledge plays an important role in how pupils learn; committing some key facts to their long-term memory is likely to help pupils learn more complex ideas. 3. An important factor in learning is memory, which can be thought of as comprising two elements: working memory and long-term memory. 4. Working memory is where information that is being actively processed is held, but its capacity is limited and can be overloaded. 5. Long-term memory can be considered as a store of knowledge that changes as pupils learn by integrating new ideas with existing knowledge. 6. Where prior knowledge is weak, pupils are more likely to develop misconceptions, particularly if new ideas are introduced too quickly. 	<p>Avoid overloading working memory, by:</p> <ul style="list-style-type: none"> • <i>Taking into account pupils' prior knowledge when planning how much new information to introduce.</i> • <i>Breaking complex material into smaller steps (e.g. using partially completed examples to focus pupils on the specific steps).</i> • <i>Reducing distractions that take attention away from what is being taught (e.g. keeping the complexity of a task to a minimum, so that attention is focused on the content).</i> <p>Build on pupils' prior knowledge, by:</p> <ul style="list-style-type: none"> • <i>Identifying possible misconceptions and planning how to prevent these forming.</i> • <i>Linking what pupils already know to what is being taught (e.g. explaining how new content builds on what is already known).</i> • <i>Sequencing lessons so that pupils secure foundational knowledge before encountering more complex content.</i> • <i>Encouraging pupils to share emerging understanding and points of confusion so that misconceptions can be addressed.</i> <p>Increase likelihood of material being retained, by:</p> <ul style="list-style-type: none"> • <i>Balancing exposition, repetition, practice and retrieval of critical knowledge and skills.</i>

Promising!

...although content is based on a 1980s instructional design theory promoted by education researchers (“cognitive load theory”). It did not come from cognitive scientists...

No cognitive scientists or educational neuroscientists served as expert advisors for the Early Career Framework

Acknowledgements

The Early Career Framework was developed in consultation with the following members of an Expert Advisory Group and in collaboration with a wide range of teachers, school leaders, academics and experts:

Roger Pope (Chair)	Education South West
Becky Francis	UCL Institute of Education
Marie Hamer	Ambition School Leadership and Institute for Teaching
Jon Hutchinson	Reach Academy Feltham
Stuart Lock	Advantage Schools
Reuben Moore	Teach First
Cat Scutt	Chartered College of Teaching

A wider advisory group made up of the following members provided further support and challenge:

Lucy Blewett	Primary Advantage
Sam Freedman	Ark Education Partnerships Group
Stephen Munday	Teaching Schools Council, The Cam Academy Trust
Hannah Nemko	Dame Alice Owen's School
Hamid Patel	Star Academies
Emma Rennison	Outwood Grange Academies Trust
Caroline Spalding	The Bemrose School
Andrew Warren	Teaching Schools Council ¹
David Weston	Teacher Development Trust

The content of the framework and its underpinning evidence has been independently assessed and endorsed by the Education Endowment Foundation (EEF).



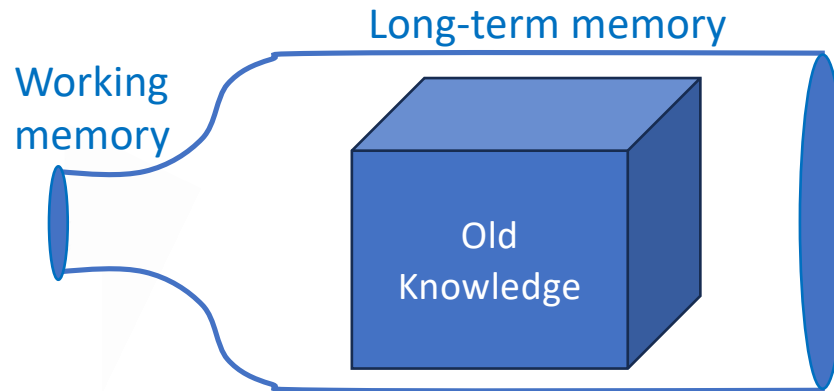
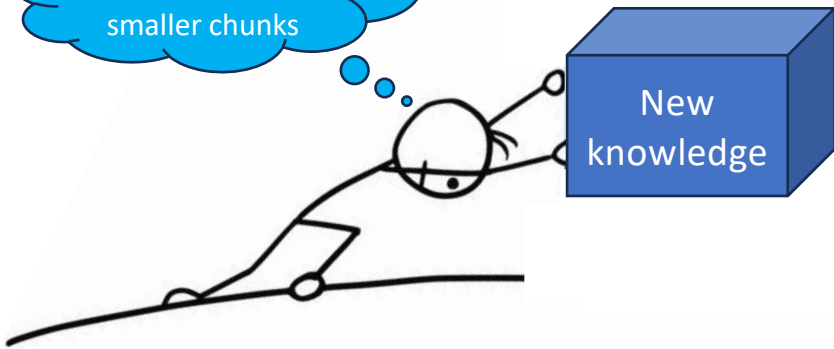
¹ As of 7 January 2019, Andrew Warren started a new role as West Midlands Regional School Commissioner, and is no longer a member of the advisory group.

“Cognitive load theory”

Student’s mind

Teacher

Maybe I should break it into smaller chunks



All these differ between children

You may want to add...

Executive function skills change with age (attention, inhibiting, maintaining, shifting)

Children’s knowledge structures change with age

Children are active seekers of knowledge, not passive recipients

Emotions are important for learning (curiosity ✓ anxiety ✗)

Social context is important (peer learning vs peer distraction)

Adolescence happens (peer approval, risk taking, vulnerability, metacognition)

Reasons for optimism?

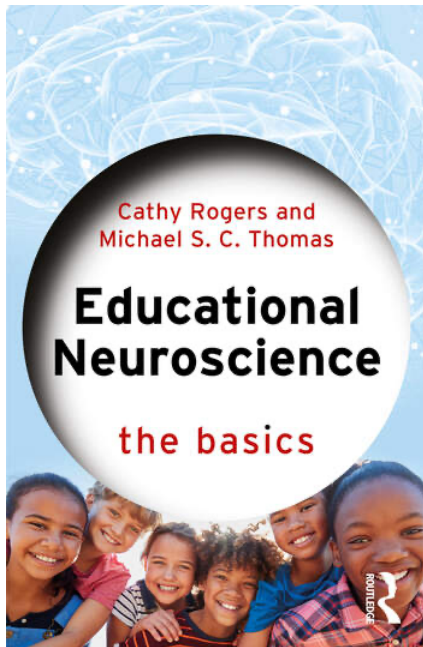
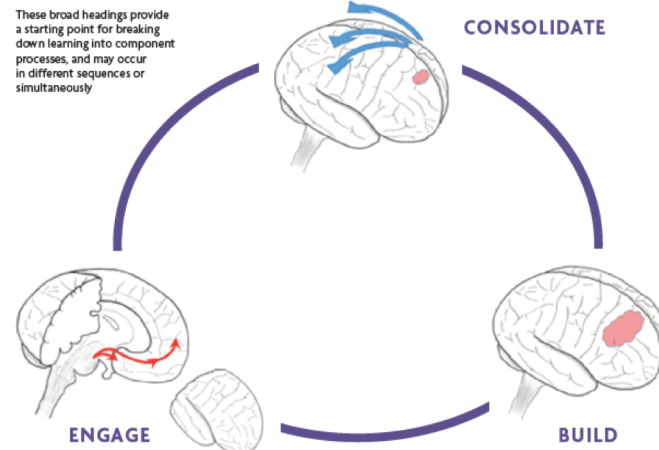


FIGURE 1: BROAD CATEGORIES OF LEARNING PROCESSES



These broad headings provide a starting point for breaking down learning into component processes, and may occur in different sequences or simultaneously

NeuroSENse

Addressing Neuromyths in Special Educational Needs and Disabilities



Policy brief

January 2023

Towards inclusive schools: enabling all students to flourish

Key messages

Inclusion is mandated practice, but its application in schools is patchy and children with SEND are disproportionately likely to be excluded and bullied.

Achieving inclusion in schools requires a shift in attitudes and teaching practices away from individual efforts to correct "deficits" or provide accommodations for specific students, towards universal approaches that facilitate access to learning for all students.

The process for developing inclusive practices requires schools to co-produce inclusive policies with parents, staff and students, including those with lived experience of neurodivergence.

Growing evidence shows a neurodiversity approach can support all learners to feel they belong to their school community in a way that meets their needs and enables them to flourish.

All children have a right to an inclusive education: to feel that they belong to their school community in a way that enables them to flourish. Yet too many children—especially those who don't fit the typical learner profile—are excluded from classrooms, treated as failures or ignored. Students with special educational needs and disabilities (SEND) are six times more likely to be excluded than their peers and more than twice as likely to be bullied. For any child, negative school experiences can undermine well-being, achievement and life prospects. Schools can and should do more to be inclusive and ensure all learners get the education they need and deserve. In December 2022, as part of the Global Scientific Conference on Human Flourishing, the University of Cambridge convened a multistakeholder meeting to consider where the system for inclusion falls short and what school leaders can do to reshape learning environments for all students to thrive.

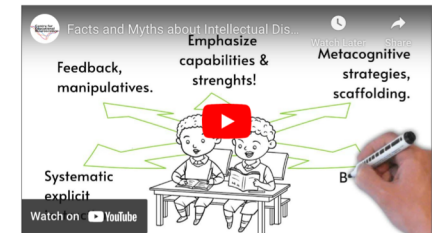
System shortcomings

Inclusion for children with SEND is mandated practice in the United Kingdom. The system for achieving it is partially informed by diagnostic labelling and aimed at securing additional support. Some children will have needs that cannot be accommodated in a mainstream setting and will require specialist provision. For those who don't, the Special Educational Needs and Disability Code of Practice dictates that every school must have a system to identify children in need of support and to assess, monitor and secure appropriate support for any SEND they may have.¹ Schools receive a delegated budget for this.² But the system suffers from several major failings:

1. Unsustainable funding model.

Fuelled by a growing awareness of learning differences and a focus on early identification, the number of students with SEND is huge and rising. In 2022, there were an estimated 1.4 million state students with SEND, 1 in 25 schoolchildren had a Education, Health, and Care Plan.³

Local authorities across the country had huge shortfalls in SEND funding as they struggled to keep up with demand. By 2021, the national deficit in dedicated schools' budgets was more than £1 billion.⁴ With these numbers, even significant increases in SEND funding are unlikely to reach all those in need.



Reasons for optimism?

- YouGov poll commissioned by Learnus 2022
- Majority of teachers open to educational neuroscience
 - if its concrete application in the classroom can be explained
 - and it is fitted into training / CPD without increasing workload

Teachers' attitudes
towards educational
neuroscience

Learning Skills Research
business.yougov.com

YouGov

“the majority (76%) of those who are aware of educational neuroscience have found its insights useful in their teaching. The majority also agree that it is relevant to their professional development and over half believe it would be possible to implement in their classroom, a smaller proportion (39%) feel that it underpins the future of teaching.”

Reasons for optimism?



Education
Endowment
Foundation



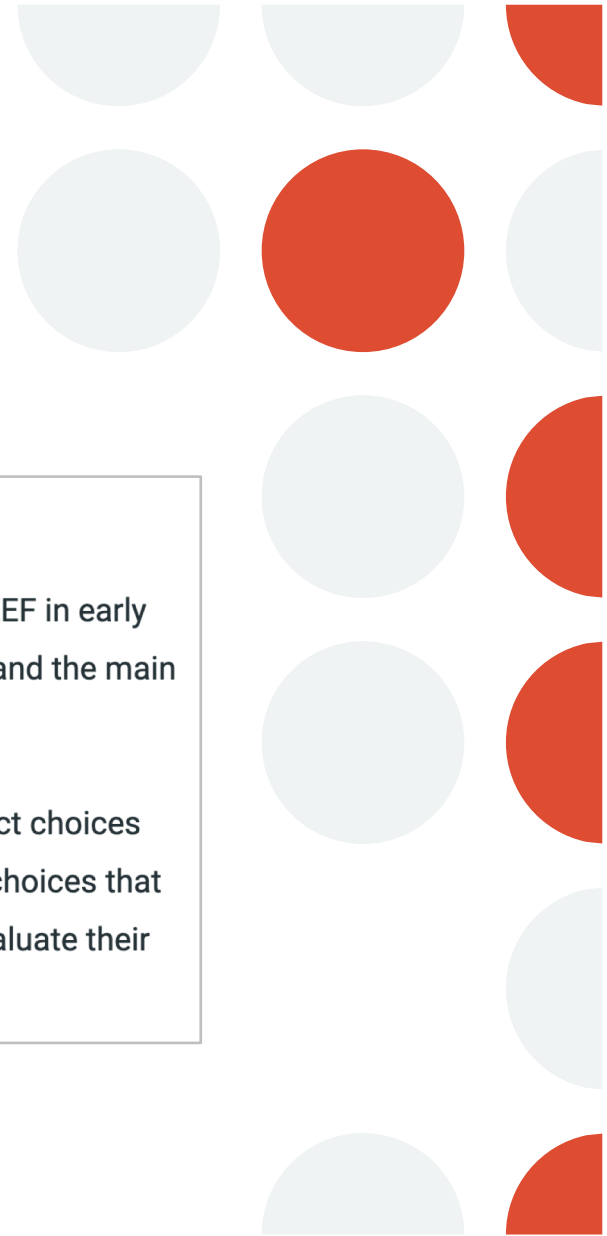
Professor Rob Coe

Senior Associate

A new EEF approach: Teacher Choices Trials

Teacher Choices trials is a strand of work begun by EEF in early 2019. This is the reason I joined the EEF in February and the main project I have been working on.

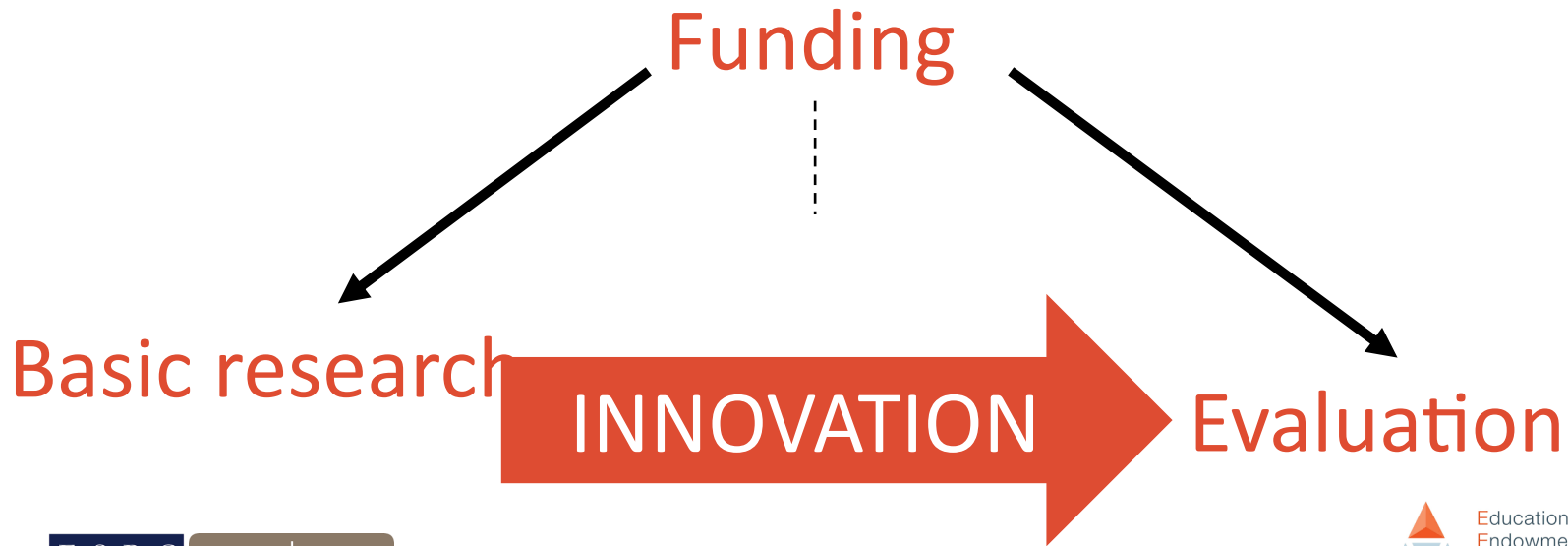
The aim is to identify and evaluate the impact of direct choices teachers make in their own classrooms. If there are choices that make a difference, then we want to find them and evaluate their impact robustly.



Systemic gaps still exist



Systemic gaps still exist



<https://ukinnovationhub.ukri.org/>

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Support and funding to help turn your ideas into reality

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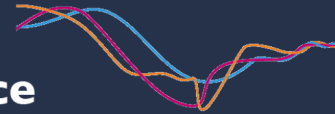
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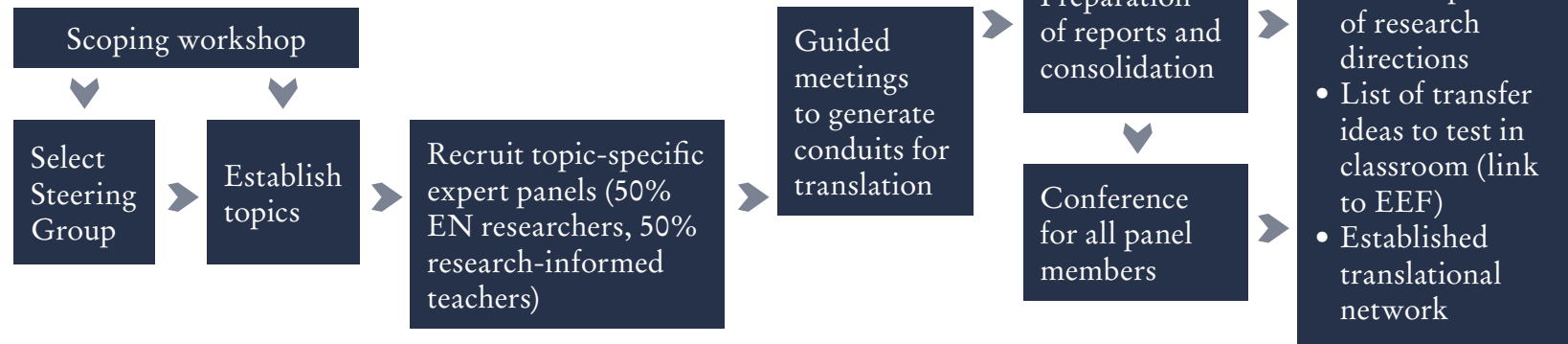
The Building impact Groups (BiG) project

a stepping stone to the future of education



The process:

An innovation hub for education



The product:

- Roadmap of research directions
- List of transfer ideas to test in classroom (link to EEF)
- Established translational network

Indicative list of topics

- Reading / spelling
- Handwriting
- Numeracy (arithmetic)
- Science
- Social Emotional Development
- Classroom behaviour
- Adolescent behavior (risk taking, peer relations, mental health)
- Concept development (analogy, reasoning)
- Writing skills
- Creativity
- Citizenship and metacognition
- Physical education skills, motor skills
- Brain health (diet, pollution, stress, sleep, fitness)
- Technology use (ICT, screen time, online learning)
- Disorders (SEN Pedagogy)
- Giftedness

Structure for Guided Meetings

(70-minute model)

- **Guidance from Chairperson** (5 minutes) for ground rules of meeting
- **Initial thoughts** (10 mins) overview of topic and teacher discussion of the topic to start thinking about what it means in the classroom
- **Presentation** (20 mins) by academics of latest research on the topic and current open questions
- **Discussion** (25 mins) of whether the research resonates with what happens in the classroom, what new things could be tried/evaluated in the classroom, what new questions could be investigated by researchers
- **Summary** (10 mins) key outcomes to take forward

EN = educational neuroscience
EEF = Education Endowment Foundation

Q&A

