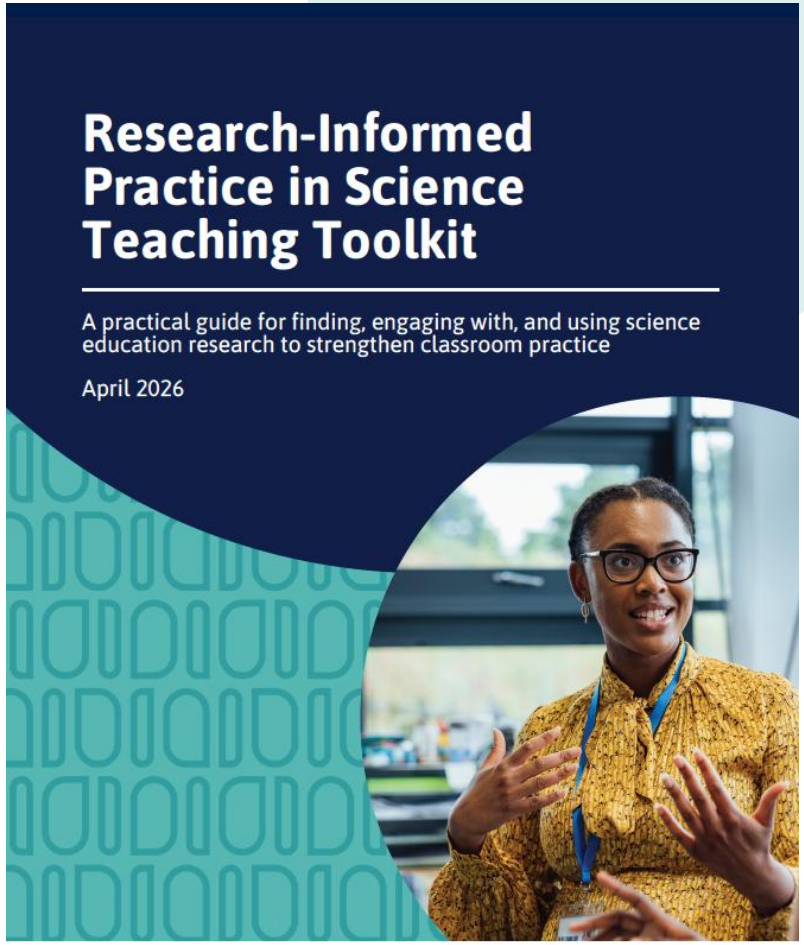
Wonyong Park
Carys Hughes
Carole Kenrick
University of Southampton

Marianne Cutler
Association for Science Education

Evidence into Practice

A Toolkit for Research-Informed Science Teaching



ASE Teacher Developer Conference 2026

Opening Poll: Where Do Your Ideas Come From?

Choose up to three sources that most often shape your teaching, curriculum, or CPD decisions.

1. Department colleagues
2. Exam board materials
3. CPD providers
4. Subject associations
5. Research summaries
6. Professional journals
7. Social media / networks
8. School or MAT policy
9. Trial and error

💬 **What makes a source feel trustworthy?**

The Role of Teacher Educators in Translating Research

TEACHER EDUCATOR WORK

- Help teachers judge claims rather than simply receive them
- Turn generic ideas into topic-specific science pedagogy
- Create routines for collaborative implementation and evaluation
- Protect teachers from over-claiming, fads and decontextualised advice

Study Snapshot: What the Evidence Base Is

107
completed responses

15.8
mean years teaching

Survey (national)

- Nationally distributed across all four UK nations.
- Completed sample is England-dominant; not nationally representative.

Interviews (qualitative)

- 10 interviews to date
- School teachers, heads of department, FE and teacher educators
- Used to understand mechanisms of research use

Teachers Value Research — Usability Is the Bottleneck

93.5%
agreed evidence works with teachers' practical knowledge

83.2%
agreed research deepens understanding of science pedagogy

80.4%
agreed research can improve student outcomes

70.1%
agreed research needs practitioner-friendly formats

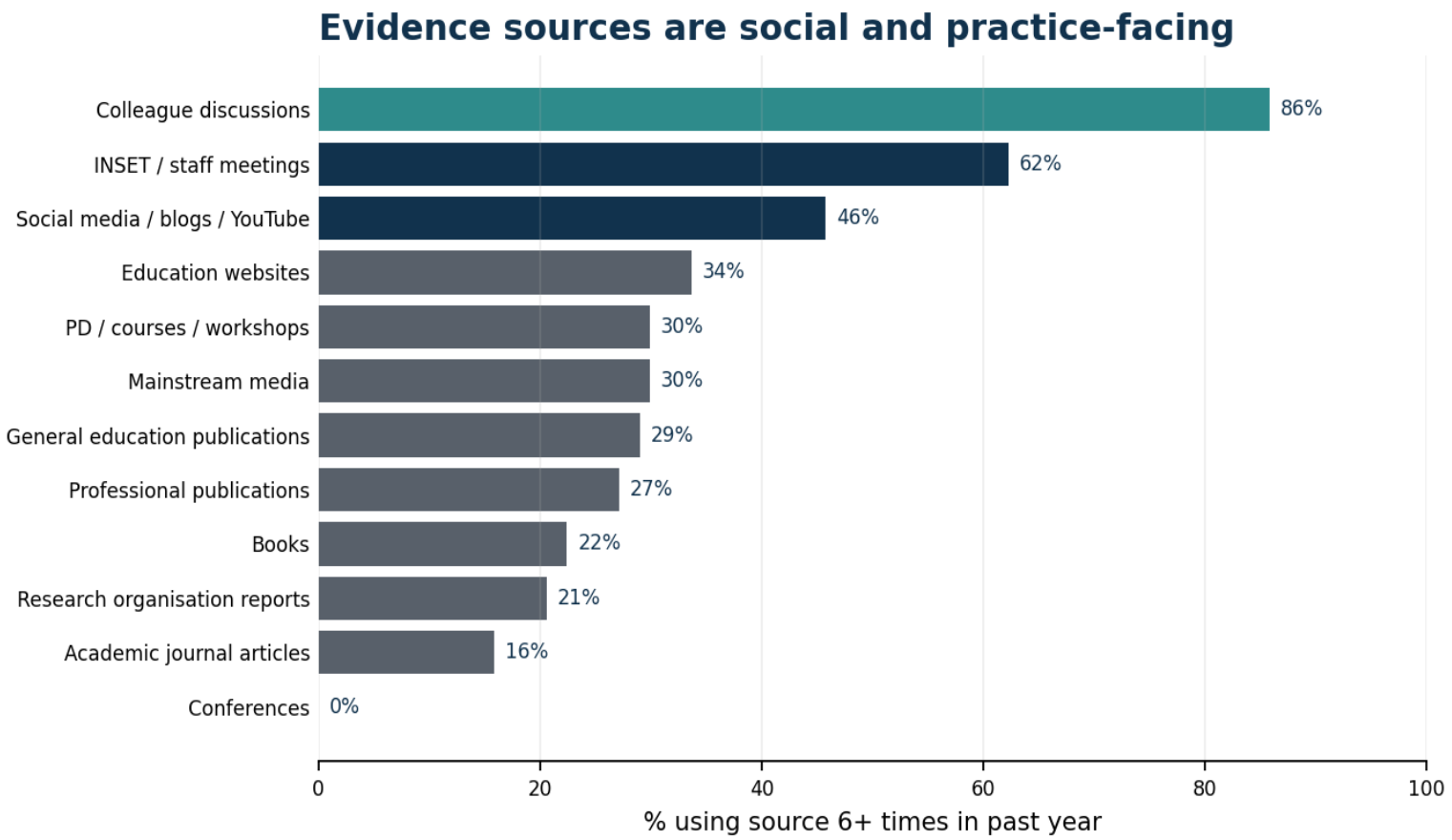
The central problem is not anti-research scepticism.

It is whether evidence arrives in forms that are accessible, science-specific, classroom-ready, context-aware and collectively workable.

"Research evidence is most useful when combined with teachers' practical knowledge."

"Teachers need embodied examples."

Evidence Reaches Teachers Through Ecologies

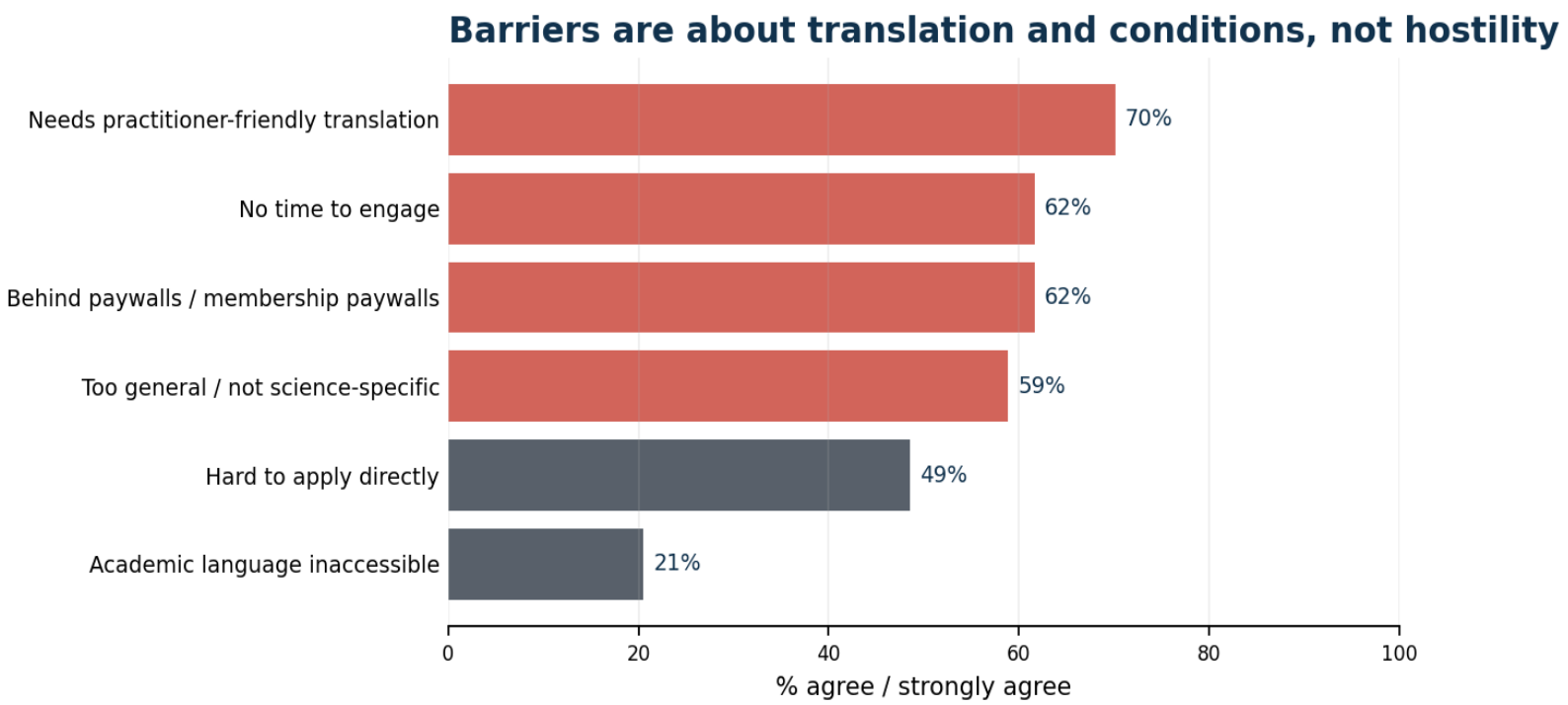


Research reaches teachers through multiple mediated pathways, not direct journal access. Colleagues and associations are the dominant channels.

Implication for Teacher Educators

- Use collegial discussion as the delivery channel
- Make research visible in staff meetings, mentoring and subject-specific CPD
- Connect teachers to professional associations and curated sources
- Do not assume journal access equals evidence use

Barriers Are Structural, Not Attitudinal



Key Insights

- Time and access are material conditions
- Translation must preserve disciplinary substance
- Generic accessibility is not enough if teachers cannot enact it next lesson
- Language is less salient than applicability and fit

Science-Specificity in Evidence

"The problem with Rosenshine is there is not enough physics in it."
Interview participant

EXAMPLES TEACHERS ASKED FOR

- Misconceptions and conceptual progression: electricity, forces, energy, cells
- Abstract models and representations: atomic-level explanations, fields, systems
- Practical work with conceptual purpose, not just engagement
- SEND, lower attainers, non-specialists and less science-capital-rich classes

IMPLICATION FOR TEACHER EDUCATORS

Match every research claim to a specific topic, year group and class need. Generic principles are a starting point, not an answer.

What Predicts Self-Reported Evidence Use in Practice?

1. Value Beliefs

Teachers who see stronger value in research report more practice use

2. Formal Engagement

Written source engagement still matters when mediated well

3. Barrier Reduction

Barriers have a clear negative association with use

4. Class-need Relevance

Remains important after statistical adjustment

Key Insights

- Teachers who see stronger value in research report more practice use
- Formal / written source engagement still matters when mediated well
- Barriers have a clear negative association
- Class-need relevance remains important after adjustment

Implications for Teacher Education

Claim	Content	Context	Enactment
What exactly is being claimed, and what is the evidence?	Which science concept, representation or misconception is involved?	Which pupils, specification, resources and constraints matter?	What will the teacher do, and how will they know whether it helped?

Practical move: Ask trainees to adapt one research claim into a topic-specific lesson segment and explain the evidence-quality caveats.

Six evidence-informed strategies for integrating research into science teacher education

1. Curated Synthesis

Use curated syntheses and practitioner-facing summaries of science education research.

2. Explicit Modelling

Model evidence use explicitly — show how you select, evaluate and apply research in your own teaching.

3. Structured Discussion

Create structured space for critical dialogue around research claims and their classroom implications.

4. School Partnerships

Link ITE programmes with school research leads and evidence-engaged science departments.

5. Science-Specific Focus

Prioritise science education research — generic pedagogy evidence often does not transfer directly.

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Prioritise science education research — generic pedagogy findings often do not transfer directly.

All six strategies address the core barriers identified in the study: time, access, and science-specificity

Activity 1: How Do I Currently Use Research?

Think of one recent teaching, curriculum, assessment or CPD decision.

What was the decision?

Choose something concrete and recent.

What sources shaped it?

People, policies, CPD, summaries, research, resources.

Where was research?

Direct, indirect, absent — and does that matter?

What helped or got in the way?

Time, access, science-specificity, confidence

Breakout output: one pattern or question to bring back to the whole group.

Activity 2: Interrogate a Claim

CLAIM TO TEST

"Retrieval practice improves learning, so every science lesson should begin with a five-question retrieval quiz."

What exactly is being claimed?

Identify the research claim and the implementation claim.

What evidence would we need?

Design, context, age group, outcome and subject relevance.

What is science-specific here?

Models, causal reasoning, vocabulary, equations, practical knowledge.

What still needs professional judgement?

Pupils, curriculum point, workload, routines, purpose and timing.

Rewrite the claim in a more research-informed way.

Self-audit: How do I currently use research?

Use the table below to reflect on where your teaching ideas currently come from, and the role research plays in shaping them.

Source of teaching ideas	How often do I use this? (1-3)	How much do I trust it? (1-3)	To what extent is research part of it? (1-3)	Notes or examples
My own classroom experience				
Conversations with colleagues				
Department or school policy				
CPD sessions or training				
Social media / blogs / podcasts				
Textbooks / published teaching resources				
Academic articles / books / summaries				
Professional associations / subject communities				
Other				

Mapping Research Insights onto Existing Practice

Step 1 – Research Principle

Principle/topic:

Trusted source(s):

Key takeaway:

Step 2 – Lesson/Routine

Topic/year group:

Sequence position in scheme of work:

Key learning intentions:

Step 3 – Evidence Alignment Audit

Where is there alignment?

Where is there tensions?

Questions:

Step 4 – Implications

What does this analysis help you understand about the lesson and the principle/topic?

Step 5 Going Forward

One thing to watch out for next time this lesson is taught:

Ideas to share with colleagues about this lesson:

Evidence-Informed Planning Protocol — Lesson or Scheme of Work

This is an example of a framework to support consistent, research-aligned planning across your science department. It can be applied to single lessons or whole topics.

Quick Tips:

- Use this collaboratively when developing or reviewing lessons or schemes.
- Connect each section to research sources your department trusts.
- Keep notes brief—this is a thinking scaffold, not a written assignment.
- Revisit completed frameworks when refining curriculum resources.

1. Identify the Key Learning Intentions

What should pupils know or be able to do?	
How does this build on prior knowledge?	
Common misconceptions to anticipate	

2. Evidence-Informed Explanations & Representations

Key explanation(s) — concise and accurate	
Models, diagrams, analogies to use (aligned with department conventions)	
Points where cognitive load should be reduced	

Departmental Evidence Exchange Cycle — Meeting Template

Quick Tips:

- Rotate the lead teacher each half term.
- Keep the "action" about alignment, not new initiatives.
- Avoid jargon.
- Link to current curriculum.
- Copy and paste Rotation Log each time, so that you can track discussions

1) Pre-Meeting Preparation (lead teacher / rotating role)

Research source chosen	
Why selected (1 sentence)	
Key idea(s) to summarise (bullet points)	

2) Meeting Agenda (10–15 minutes)

A. 3-minute Research Share — plain-English summary, what matters, useful diagram/model	
B. 5-minute Department Discussion — choose 2–3 prompts What does this research *confirm* about what we already do? What questions or issues does it raise for our context? Which parts of the curriculum does this connect to most strongly? Are there implications for how we model, explain, assess, or sequence concepts? Are misconceptions relevant to this evidence visible in our pupils' work?	
Discussion notes (bullet points)	

Whole-Group Reflection

What surprised you?
Patterns in your own practice or in the research findings.

What will you do differently?
One specific change to how you use or teach with evidence.

What do you still need?
Resources, time, support, colleagues, or expertise.

Thank You

Evidence into Practice: Using Research to Teach Science

Wonyong Park
University of Southampton

Carys Hughes
University of Southampton

Carole Kenrick
University of Southampton

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Find out more

https://www.ase.org.uk/resources/research-informed-practice-in-science-teaching-toolkit

Access the Toolkit & Resources

Scan the QR code or visit the session page for the full toolkit, references, and activity sheets.