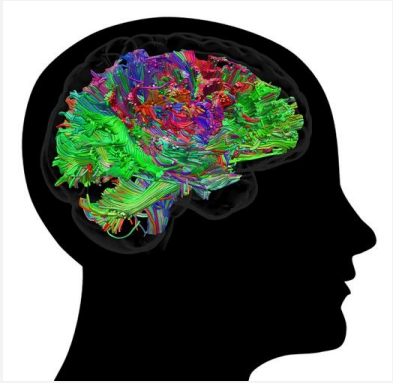
TEAN May 2021

The Learning Sciences in Initial Teacher Education – responding to the Core Content Framework

Kendra McMahon, Lisa Howarth, Darren McKay, Alison Lee, Emma Asprey, Emma Arblaster & Kerry-Anne Barber.



Henrietta Howells, NatBrainLab. CC BY

Design-Based Research
Dual outcomes:

- Designed interventions/materials
- Principles and guidelines

(DBR see e.g. Anderson & Shattuck, 2012)

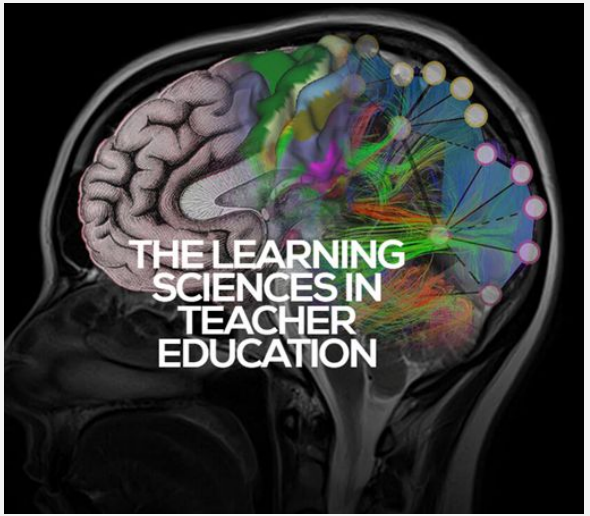
wellcome

BATH SPA UNIVERSITY

Value of Multidisciplinary project team

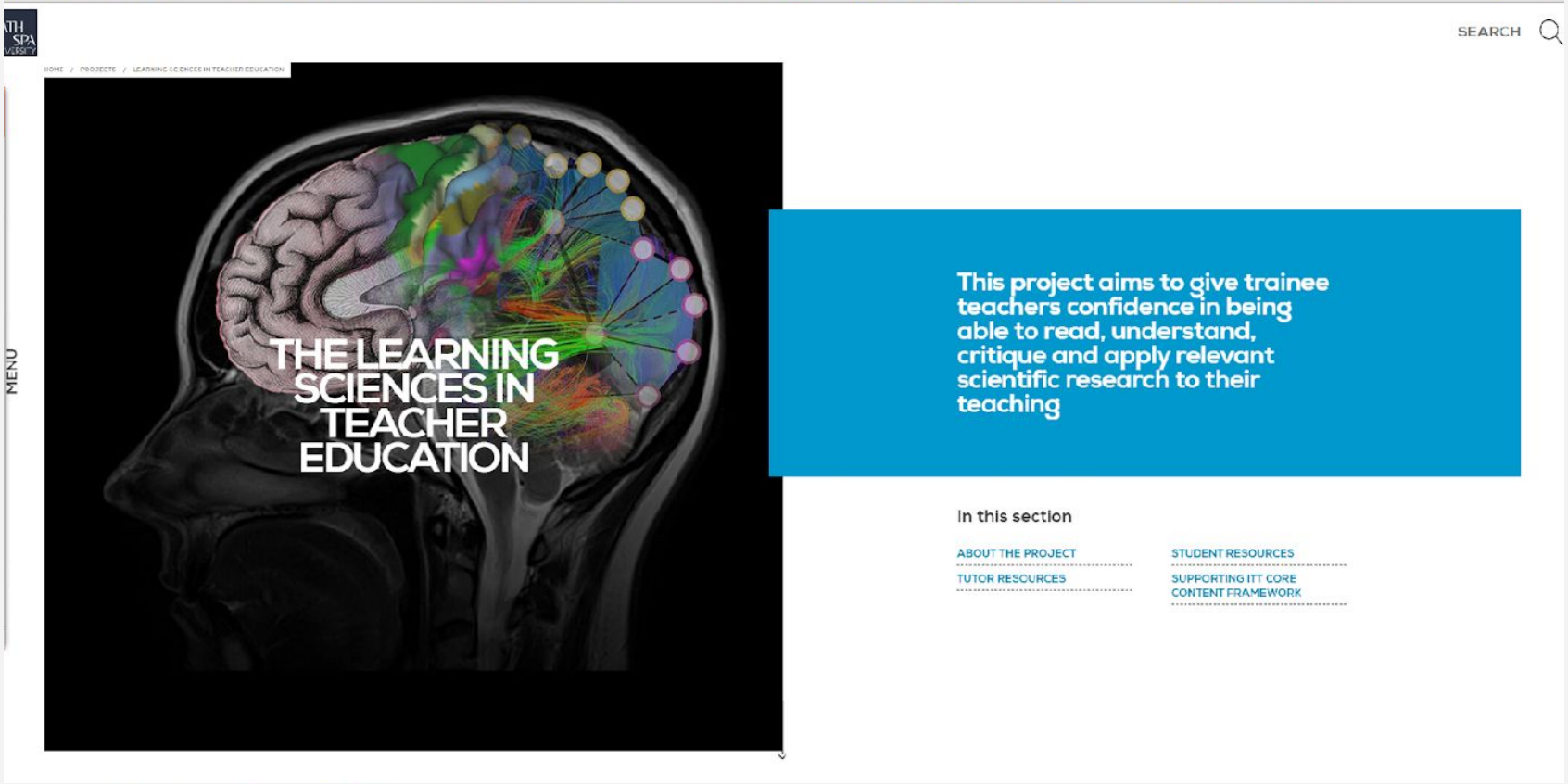
Emma Arblaster - PGCE tutor English, SEN
Emma Asprey - PGCE tutor computing
Kerry-Anne Barber - PGCE tutor - science
Pat Black - Head of ITE
Pete Etchells - Biological psychology
Alison Lee - Clinical neuropsychology
Kate Humphreys - Educational neuroscience
Lisa Howarth, PGCE tutor - Educational neuroscience
Darren McKay PGCE tutor - science, professional studies
Kendra McMahon - Science education
Lynn Salter - PGCE tutor Maths

McMahon and Etchells (2018)

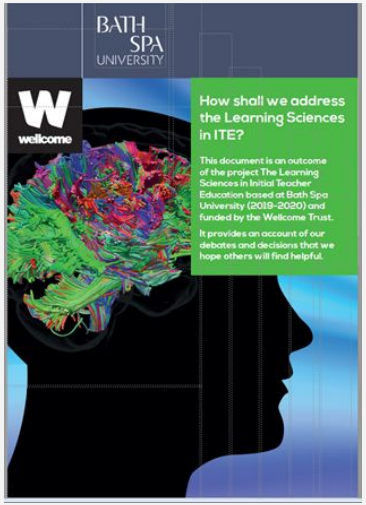


Collaboration with Paul Howard-Jones & Annette Garrett-Cox, University of Bristol

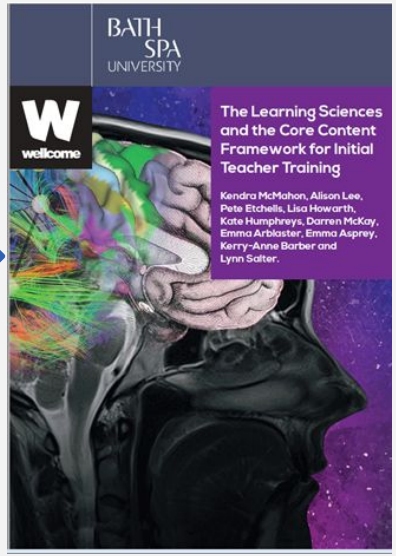
Project website - The Learning Sciences in ITE



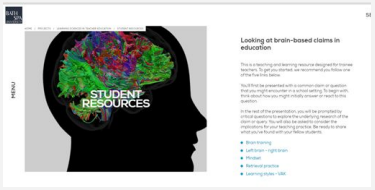
Supporting ITE Core Content Framework



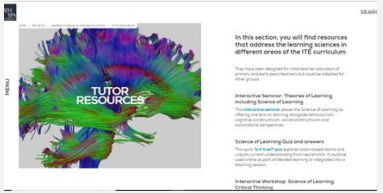
[How shall we address the Learning Sciences in Initial Teacher Education?]



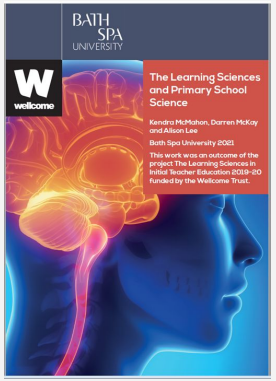
[The Learning Sciences and the Core Content Framework]



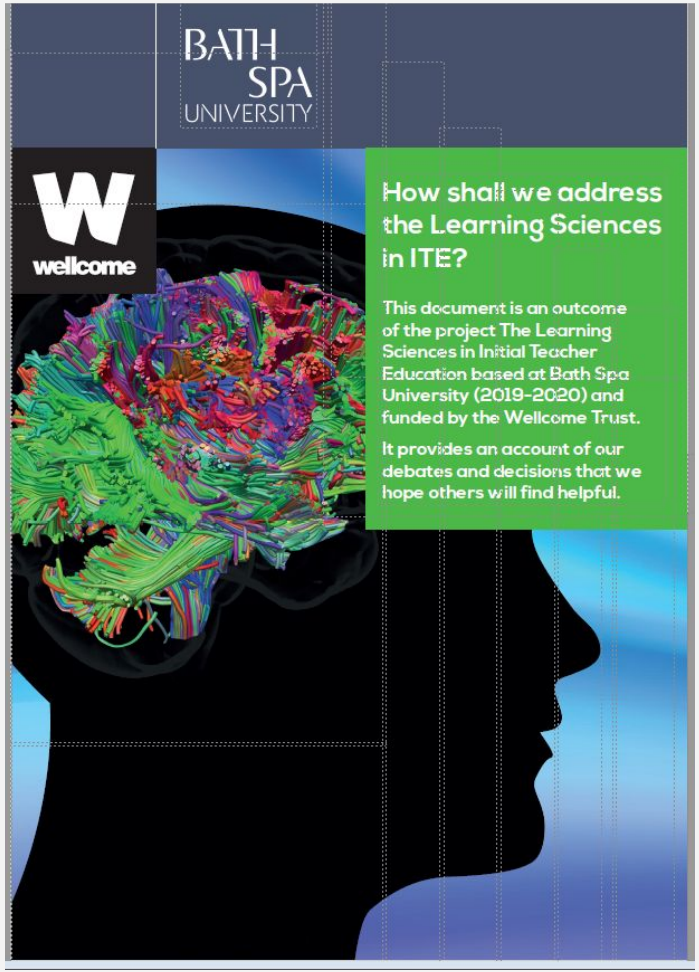
[Student Resources]



[Tutor Resources]



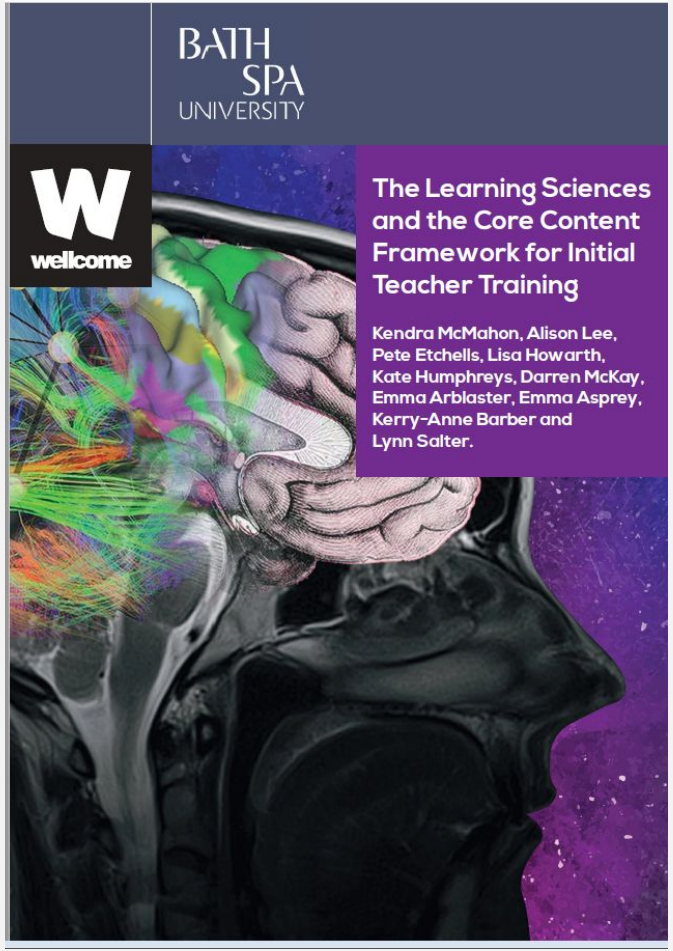
[The Learning Sciences and Primary Science]



How shall we address the Learning Sciences in Initial Teacher Education?

- Be open to the possibilities of new insights
- Maintain a critical viewpoint and beware the ‘seductive allure of neuroscience’
- Take a broad view of the Learning Sciences - not just cognitive psychology
- Scientific accounts of learning offer useful lenses to complement, not replace, other educational perspectives
- Integrate the Learning Sciences across specific areas of the Primary ITE Curriculum where most relevant

supporting-itt-core-content-framework



The Core Content Framework for ITE and the Learning Sciences

supporting-itt-core-content-framework

CCF 2.1

Learning involves a lasting change in pupils' capabilities or understanding.

Interpreting the Statement

We can distinguish between implicit learning (like the way we pick up social norms, or early language learning) and explicit learning. Both kinds of learning will be going on in our classrooms, but this statement is referring to the kind of formal, explicit learning we aim for in schools, which is not the same as the implicit, informal learning that we naturally do all the time. One definition is that 'learning is any relatively permanent change in behavioural potential which accompanies experience…' (Kimble 1961). Some learning is visible but other learning is invisible and it can be a challenge to try and see how our pupils' learning is progressing. For learning to have occurred the change needs to be more than just a fleeting change, it needs to be a sustained change. There is
any one 'Learn how to' stateme

External Links

Memory and Learning MOOC (7 minutes)
The Learning Scientists Forgetting (7 minutes)
Paul Howard Jones Neurons and Learning Brain (3 minutes)

Going Further

Changes in capabilities could be physical (balancing, catching a ball, the fine motor control for handwriting) or cognitive - being able to do a task they couldn't before. This kind of learning can be seen in behaviour. A change in understanding is harder to describe and conceive - it involves the learner having a sense of something being more meaningful in that it has connections with ideas that were not previously connected. The depth of understanding could be viewed as the extent to which ideas are held in relation to other ideas (which links with statement CCF3.7). Neuroscience supports a constructivist view of learning and knowledge by showing how connections between brain cells are changed by experiences.

'Learn that' Statement from ITT Core Content Framework

Explanation within CCF terms of reference (connect with practice 'know how' CCF statement)

External links such as video clips to develop the explanation

Different perspectives within the Learning Sciences

Key questions to include in teaching

Questions for Practice

In what ways might a physical view of learning as changes in the connections between brain cells impact on our understanding of learning?

How does the concept of neuroplasticity relate to constructivist views of learning?

How might knowing about neuroplasticity be helpful for children?

References

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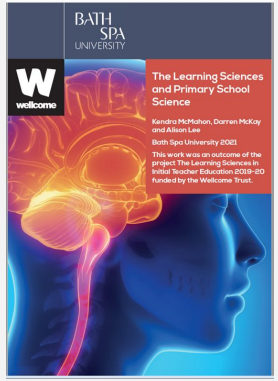
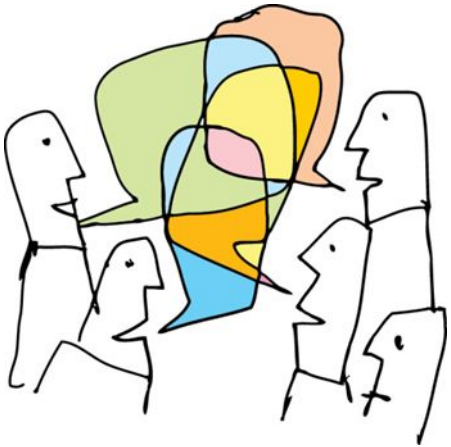
Back to CCF table

Integrating the Learning Sciences across specific areas of the Primary ITE Curriculum

- Professional Studies – Interactive seminar including scientific lens on learning, neuromyths quiz, critical thinking about brain-based claims (all updated)
- Science - Cognitive psychology and neuroscience and primary science education (new document), workshop materials on scientific literacy and brain within the whole body
- SEND – Lecture embedded – every brain is different
- Assignment 1 - How children learn

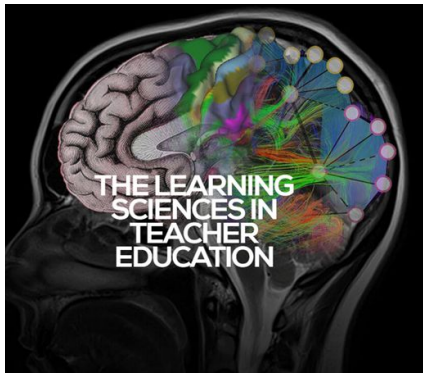


How shall we address the Learning Sciences in ITE ?



Do get in touch – any of us
or k.mcmahon@bathspa.ac.uk

Project website - The Learning Sciences in ITE

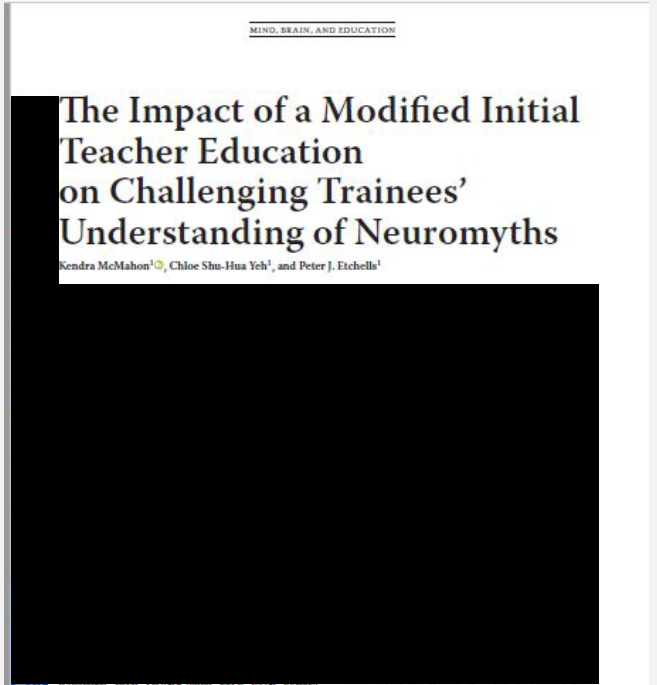


Researching the project's impact

Part 1

- Unsettling belief in neuromyths - a shift to uncertainty
- Evidence of criticality

  "Don't believe everything you read about the brain just because they have a picture of a brain scan and tell you that scientists say....."


MIND, BRAIN, AND EDUCATION

The Impact of a Modified Initial Teacher Education on Challenging Trainees' Understanding of Neuromyths

Kendra McMahon[1], Chloe Shu-Hua Yeh[1], and Peter J. Etchells[1]

Part 2 - analysis in progress

- Tutor views (9 HEIs)
- Trainee views
- Trainee essays on learning (2017-2020)

Some ITE tutor views

‘..it seems that there is a bigger body of research where we are learning what we can find out about learning from that kind of research.’

‘Its a bit of a non-negotiable - its in the core content framework so we have to do it and we have to do it properly.’

‘...if I had an issue with that, [] is that it is compartmentalising this framework of learning into a scientific domain.’

‘Anything that’s new, that could impact on education, needs to be interrogated’

‘I see the ideas as a way of weaving, making meaning, with the content we are already delivering.’

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