Education and Neuroscience: Current funding developments

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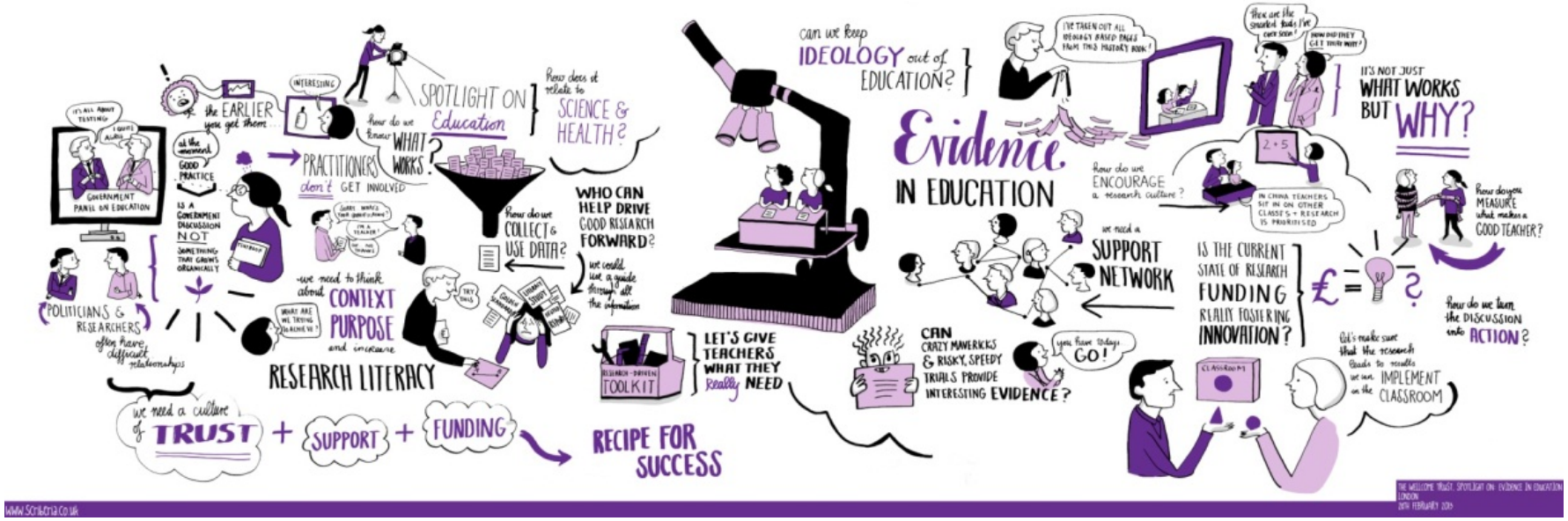
Securing the evidence base in education



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Education & Neuroscience Initiative

Wellcome Trust and

Education Endowment Foundation

Vision

- Build research and expertise at the interface between neuroscience and education
- Support the responsible transfer of technologies, resources or practices based upon neuroscience into education
- Ensure that educators can make informed choices based upon the best available evidence that will ultimately enhance educational outcomes

Improving our sector understanding

- Survey of current practice
- Literature review: examining evidence about education initiatives that are, or purport to be, based upon neuroscience
- Expert comments: examining the readiness of neuroscience to shape education and making judgements about which areas are most likely to yield testable and fruitful educational interventions

Nature Reviews Neuroscience

Neuroscience and education: myths and messages

Paul A. Howard-Jones

Published online 15 October 2014

Myth*	Percentage of teachers who "agree" (rather than "disagree" or "don't know")				
	United Kingdom ($n = 137$)	The Netherlands ($n = 105$)	Turkey ($n = 278$)	Greece ($n = 174$)	China ($n = 238$)
We mostly only use 10% of our brain	48	46	50	43	59
Individuals learn better when they receive information in their preferred learning style (for example, visual, auditory or kinaesthetic)	93	96	97	96	97
Short bouts of co-ordination exercises can improve integration of left and right hemispheric brain function	88	82	72	60	84
Differences in hemispheric dominance (left brain or right brain) can help to explain individual differences amongst learners	91	86	79	74	71
Children are less attentive after sugary drinks and snacks	57	55	44	46	62
Drinking less than 6 to 8 glasses of water a day can cause the brain to shrink	29	16	25	11	5
Learning problems associated with developmental differences in brain function cannot be remediated by education	16	19	22	33	50

*The table shows some of the most popular myths reported in four different studies from the United Kingdom[1], The Netherlands[1], Turkey[4], Greece[2] and China[7]. In all studies, teachers were asked to indicate their levels of agreement with statements reflecting several popular myths, shown as "agree", "don't know" or "disagree". The table shows the percentages of teachers within each sample who responded with "agree".

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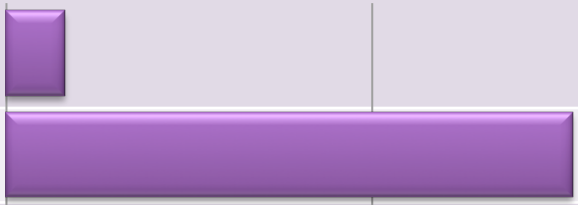
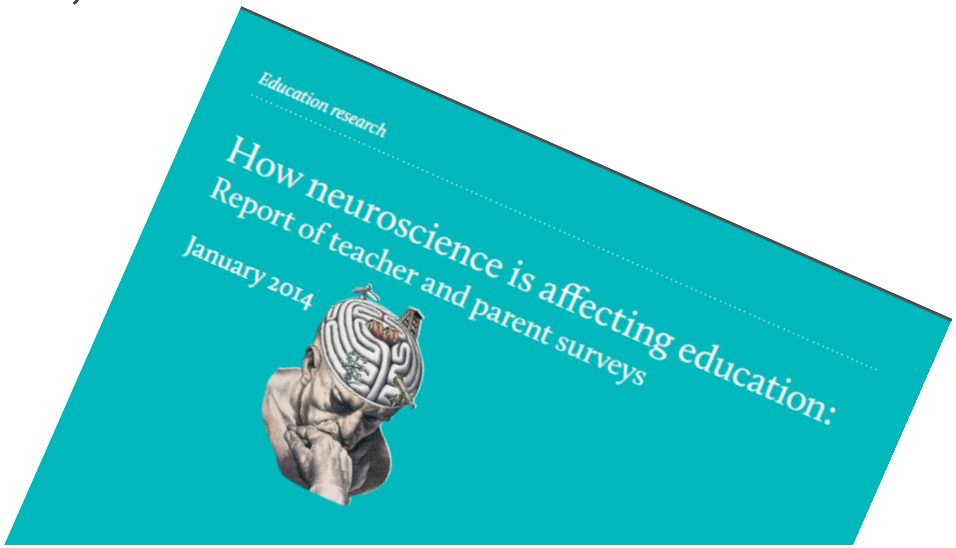
Ben Goldacre tweeted this table: 790 retweets – now been made open access

(1) Survey of current practice

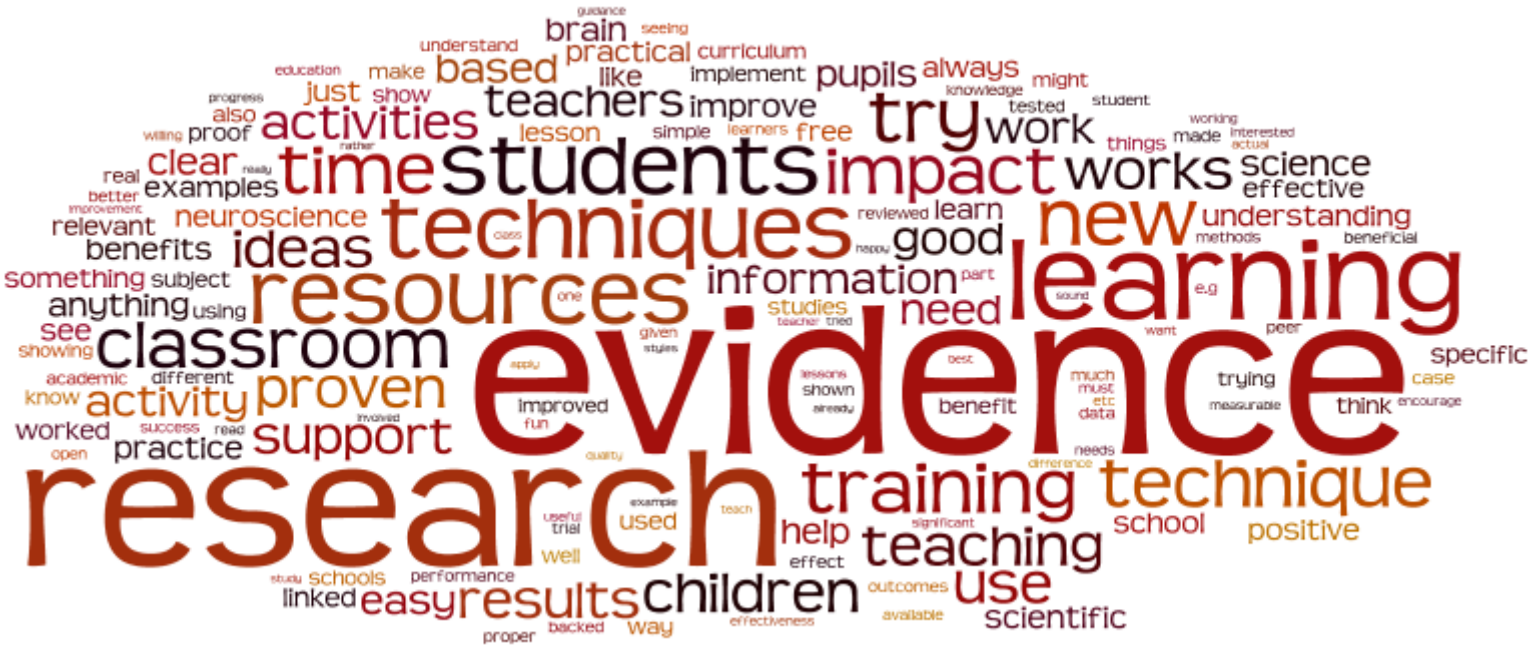
Do you think knowledge of how the brain works should be included in teacher training? (1142 respondents)		Percentage of responses
Yes, in initial teacher training		8%
Yes, in both initial teacher training and as on-going CPD		77%
Yes, as on-going CPD		10%
No, it should not be included		1%
Don't know		3%

How neuroscience is affecting education

- More than nine out of ten teacher respondents said their understanding of neuroscience influences their practice.
- More than eight out of ten said they would collaborate with neuroscientists doing research in education.
- In general, teachers learn about interventions from schools and other teachers, rather than from scientific or academic sources.



What would encourage you to try out a new activity or technique linked to neuroscience?



Literature review: examining evidence about education initiatives that are, or purport to be, based upon neuroscience

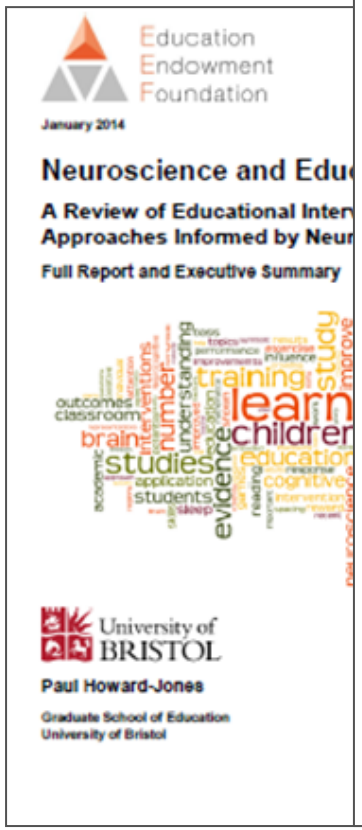


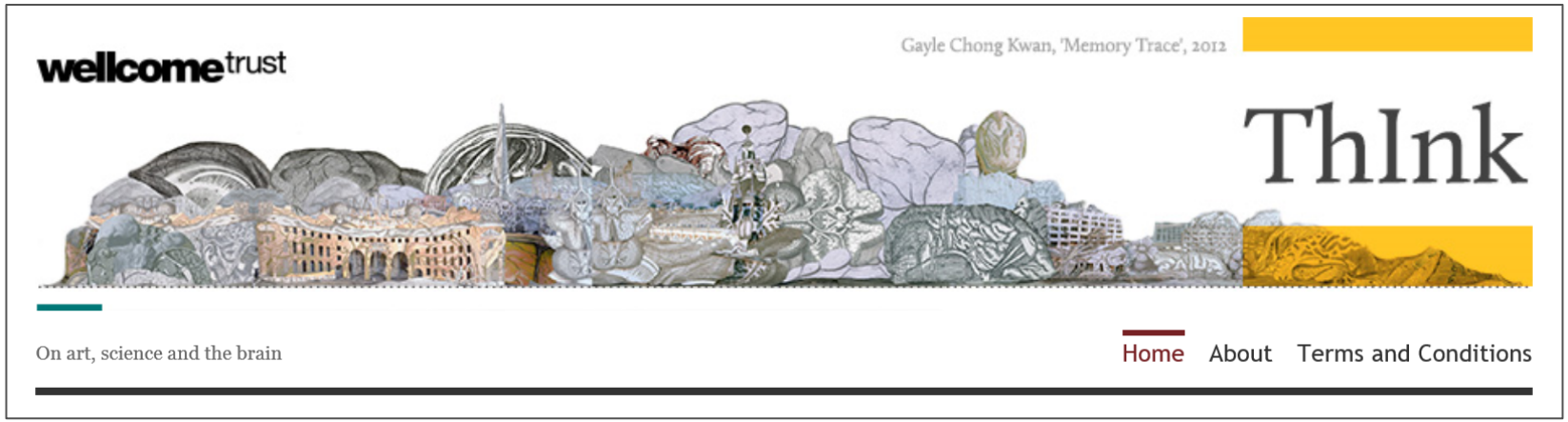
Table 1: Criteria for rating the strength of evidence for the educational effectiveness of interventions and approaches informed by neuroscience

Strength of evidence for educational effectiveness	Rating
There are either mixed experimental results or limited present evidence for the transfer to students' educational learning outcomes.	Low
There are convergent experimental results for outcomes known to influence students' educational learning outcomes, and/or some evidence for impact on students' educational learning outcomes.	Medium
Multiple studies report convergent findings of positive impact on students' educational learning outcomes.	High

Table 2: Criteria for rating the distance to application for educational interventions and approaches informed by neuroscience

Distance to application	Rating
Significant challenges exist in terms of the development of knowledge and understanding, and/or in terms of the design and production of state-of-the-art specialist resources, and/or in terms of ethical issues.	Distant
Application is likely to require some limited bridging studies, and/or limited specialist resourcing (e.g. specialist software) and/or training.	Moderate
The intervention could be applied immediately.	Near

ThInk blog: Exploring the link between Education and Neuroscience



http://thinkneuroscience.wordpress.com/

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Education & Neuroscience Initiative

- Launched a funding round to test education interventions based on neuroscience in January 2016.
- Closed in April with 87 applicants.
- Projects needed to have promising evidence of impact, be scalable and affordable, and benefit disadvantaged students.
- Successful applicants are paired with independent evaluators – emphasis on randomised controlled trial design.

Six Funded Projects

Fit to study

A study to look at the effect of medium to high cardiovascular activity on academic attainment, using brain imaging to investigate the correlation between them.

Professor Heidi Johansen-Berg (University of Oxford)

Spaced learning

A trial on the effectiveness of repetition and spaced learning, a method of teaching that delivers a unit of work three times interspersed with alternative activities.

Alastair Gittner from the Hallam teaching School Alliance in partnership with Stocksbridge High School.

Learning counterintuitive concepts

This study aims to test the benefit of training pupils to suspend their pre-existing beliefs when it comes to solving mathematical or scientific questions, for example correcting the seemingly logical notion that a heavy object will fall faster than a light one.

Professor Denis Mareschal (Birkbeck, University of London and the Institute of Education)

GraphoGame Rime

A project that will look at how developing phonological awareness through ‘rhyme analogy’, using the GraphoGame Rime computer game, can affect how children learn to read.

Professor Usha Goswami (Director of the Centre for Neuroscience in Education)

Teensleep

A trial of later school start times, along with a sleep education programme, to assess their impact on teenagers' educational achievement. Some participants will wear non-invasive bio-telemetric devices to provide additional physiological data.

Professor Russell Foster (Oxford University)

Engaging the brain's reward system

A project to examine the effect of uncertain reward on attainment - an element of chance in the anticipation of a reward is highly engaging and may help people learn – an interesting contrast to the traditional emphasis on consistency when using rewards and incentives in education.

Dr Paul Howard Jones (Bristol University)

The Telegraph

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Teenagers to start school at 10am in Oxford University sleep experiment

Thousands of GCSE students will start lessons an hour later to see if it improves their exam results

Teenagers in year 10 and 11 will be allowed to start school at 10am to see if it improves their GCSE scores Photo: PA

By Sarah Knapton, Science Correspondent
12:01AM BST 09 Oct 2014

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48 Comments

Tens of thousands of children will start school at 10am in a ground-breaking new experiment by Oxford University to see if later classes can improve exam results.

GCSE students from more than 100 schools across England will take part in the four-year project based on scientific evidence which suggests teenagers are out of sync with traditional school hours.

A pilot study at Monkseaton High School in North Tyneside in 2009 found

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Can anti-dyslexia game boost poor pupils' reading?

news | Published in TES magazine on 17 October, 2014 | By: Helen Ward

Comment:
Last Updated: 18 October, 2014
Section: news

Professor says existing phonics programmes fail disadvantaged

Children from poor homes should learn to read using techniques developed to tackle dyslexia, rather than focusing exclusively on current programmes of synthetic phonics, according to a University of Cambridge professor.

Usha Goswami, director of the Centre for Neuroscience in Education, said that existing phonics programmes failed to take into account the difficulty that some children had distinguishing individual sounds.

Last week, she was awarded £365,000 to explore whether poor children could improve their reading skills more rapidly by using a computer game that tests awareness of longer sounds within words, which was originally developed to help dyslexic pupils.

The money from the Education Endowment Foundation (EEF) and the Wellcome Trust will fund a randomised controlled trial with 400 six- and seven-year-olds, to see if playing the game for 10 minutes a day significantly improves their reading skills.

Current phonics programmes encourage children to identify phonemes, the smallest units of sound, which are put together to make up syllables. But a level of sound between phonemes and syllables – called onset and rime – is missed out. This is what the game encourages children to focus on.

"A syllable is a package of sounds," Professor Goswami said. "If you break the word into the smallest unit of sounds, cat becomes c-a-t. But [using onset and rime] it becomes c-at. Synthetic phonics, if you do it exactly by the book, doesn't teach this level."

She added: "The computer game was developed for dyslexic children but [its use] suggests it should also be helpful for disadvantaged children generally, who typically have impaired language and reading skills. And indeed, the game should be helpful for all children in terms of teaching English phonics."

The government has pushed the use of synthetic phonics in primary schools by introducing a phonics check at age 6 and funding resources and training. Ofsted has also sharpened its focus on phonics in routine inspections.

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If you want to get ahead, have a lie-in

An experiment that allows some lucky teenagers to start school an hour later than usual will prove what we idlers have long suspected – the key to success is plenty of sleep

Tom Hodgkinson
The Guardian, Thursday 9 October 2014 16.03 BST
Jump to comments (142)

'Boffins are giving teenagers an extra hour in bed not because they think the teenagers will enjoy it, but because they reckon it will make them do better in their exams.' Photograph: Alamy

The news that lucky teenagers at 100 British schools are to be given a lie-in as part of a scientific experiment will cause jubilation among those concerned, both the children and their parents. I know from bitter experience that getting a grumpy, monosyllabic, growling 14-year-old out of bed in the morning is extraordinarily painful.

I blame social conditioning. Somewhere in the recesses of our mind we still harbour a fantasy that our children will leap out of bed at 6.30 every morning, full of good cheer, ready to tackle the challenges of the day with aplomb. Early rising, or "scraping the ice off the windscreen on a winter's morning", as David Cameron put it in his uninspiring speech about hard work at the Tory party conference last week, is meant to be a good thing.

Next steps

- Finalise project details and support delivery and scalability testing if efficacy testing proves beneficial
- Engage with other funders
- Dissemination

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