
Advancing Educational Neuroscience: engaging brains and building networks

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Science of Learning Seminar

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Advancing educational neuroscience: Why bother?

- Just because it is there
- It is a ‘moral obligation’
- There is significant potential to bring about better understanding of and improvements in learning and teaching.

Advancing educational neuroscience: Why bother?



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Advancing educational neuroscience: Why now?

Education is about enhancing learning and neuroscience is about understanding the mental processes involved in learning. The common ground suggests a future in which educational practice can be transformed by science just as medical practice was transformed by science about a century ago.

Royal Society 2011 Brainwaves module 2

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Advancing educational neuroscience: What do we know?

- Capacity for learning is a lifelong activity
- Interventions to address cognitive decline during aging including dementia
- Insights on adolescence: high capacity v emotional immaturity
- Improving how and when learning might be most effective
- Addressing specific learning difficulties
- Improvements in personalisation of learning

Based on OECD 2007 Understanding the brain

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Advancing educational neuroscience: What do we know?

- ...teachers' desire to implement interventions based on neuroscience is evident, but it is running ahead of the evidence base.

Wellcome Trust 2014 Teacher and Parent Survey

- And there is no 'silver bullet'

Advancing educational neuroscience: Some challenges?

Brainwaves - 3 challenges:

- charges of reductionism and determinism
- inappropriate exploitation of neuroscience
- building a common language – *“knowledge needs to go in both directions”*.

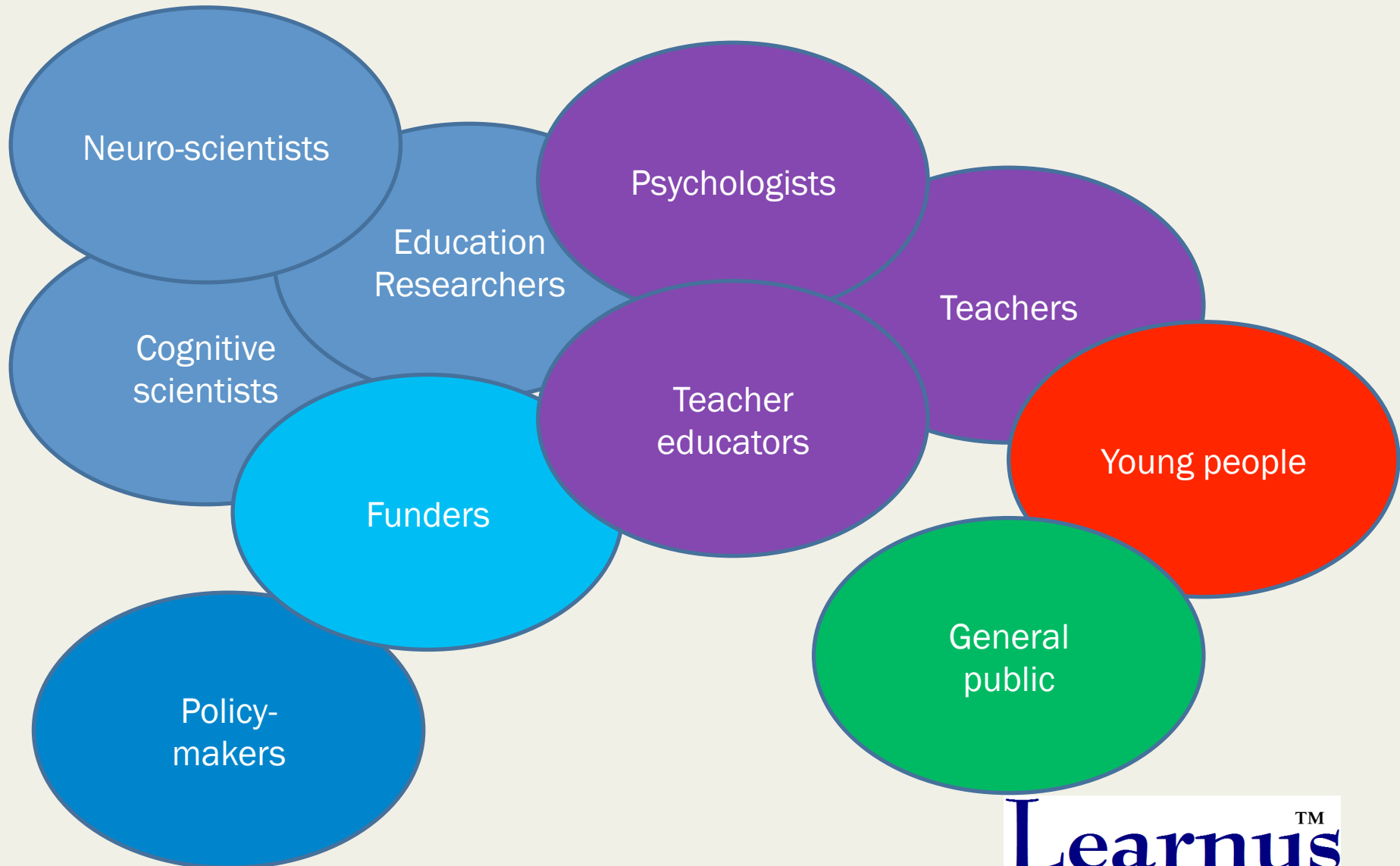
Advancing educational neuroscience: **Some challenges?**

- Moving from ‘correlation to causation’
- Avoiding unrealistic expectations and false claims
- Preventing authentic research and its potential impact being undermined
- Building expertise and resources

Advancing educational neuroscience: **Some challenges?**

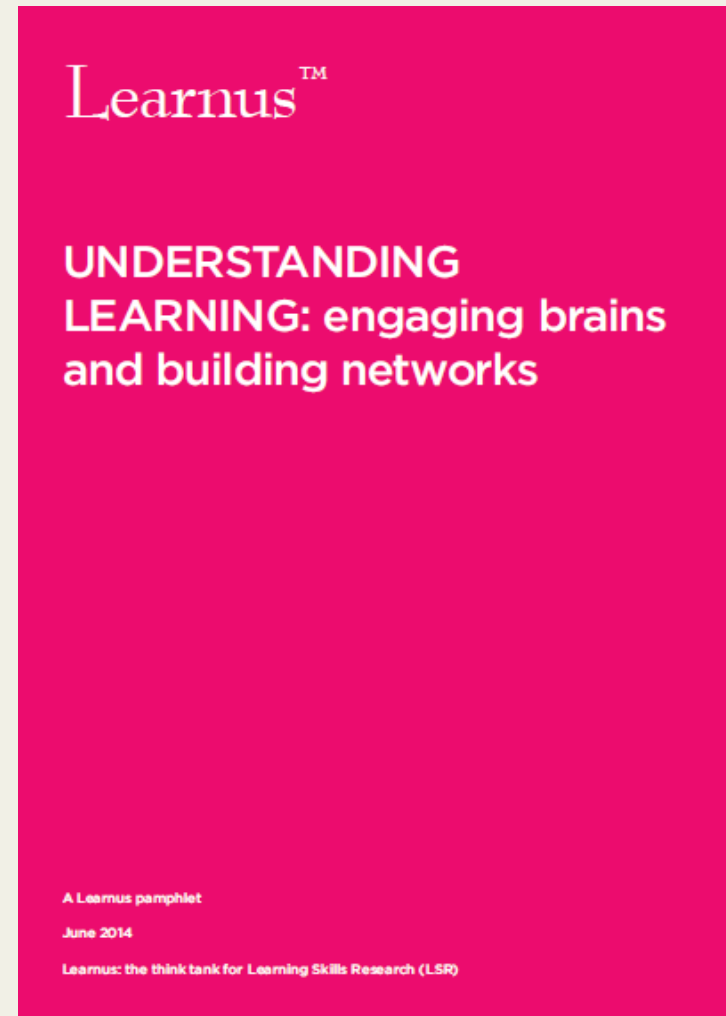
- Adopting holistic approaches to learning that recognise interdependence and interplay between:
 - the body and mind
 - the emotional and cognitive
 - analytical and creative
- Improving the communication and dialogue between the different communities.

Advancing educational neuroscience: Who is involved?



Advancing educational neuroscience: Making a start?

Learnus is a community dedicated to bringing educators and those 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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Advancing educational neuroscience: **Making a start?**

- LEARNUS is facilitating dialogue between different professional communities
- LEARNUS is developing partnerships with leading organisations
- LEARNUS is taking the messages into schools

www.learnus.co.uk

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Advancing educational neuroscience: Making a start?

- Build on existing strengths:
 - Research groups/centres, e.g. CEN, Cambridge, Bristol, Oxford groups
 - EEF / Wellcome Trust funding initiative
 - Findings of existing reviews, e.g. Royal Society Brainwaves
 - Existing recommendations

Advancing educational neuroscience: Making a start?

Example recommendations:

- neuroscience should be used as a tool in educational policy;
- teacher education should contain a component of neuroscience;
- neuroscience should inform adaptive learning technology;
- knowledge exchange should be increased.

Royal Society 2011 Brainwaves module 2

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Advancing educational neuroscience: A roadmap?

Needs to take a strategic approach to:

- Strengthening communication and dialogue between communities
- Achieving consensus on priorities
- Establishing mechanisms for translation / transformation of research into practice
- Developing policy based on the importance of evidence and its use

Advancing educational neuroscience: **A UK-wide network?**

- Key element of any roadmap
- Multi-disciplinary centres of excellence
 - Research
 - Providing an interface between researchers and practitioners
 - Meeting point for different communities
- International links and partnerships