An invaluable foundation for better bridges

Paul Howard-Jones

Graduate School of Education, University of Bristol, UK

This is a commentary on Blakemore and Frith (2005).

In justifying their book, Blakemore and Frith point out that the brain has often been neglected in discussions on education. But most educators are already aware of a variety of entrepreneurial and misinformed attempts to apply ‘brain-based’ ideas in the classroom. In my view, it is this frequent misrepresentation of the brain, rather than lack of representation, that provides the greatest justification for this work. Education’s apparent vulnerability to ‘brain-based’ unscientific notions has, in turn, prompted equally unhelpful reactions against involving neuroscience in education at all. This work is a helpful and refreshing contribution to a debate that needs to be better informed. Each chapter deals with a different area of education and explains those neuroscientific insights that Blakemore and Frith believe may be relevant to education. The friendly and often comic illustrations support a highly readable text, make technical concepts and jargon more digestible and produce a work that is accessible to a broad readership.

Most in education would probably disagree with the comment made by Michael Gazziniga on the back of the work, ‘… when it comes to learning, it’s all about the brain’. But, in fairness to Blakemore and Frith, this work never tries to establish that the brain is the only, or even the main, component of learning. On the contrary, they provide many examples of how learning is a complex phenomenon that arises from social and biological processes and their interaction. In identifying how educators should think about the brain, Blakemore and Frith’s gardener analogy is very helpful and is likely to become something of a stalwart metaphor. Blakemore and Frith represent the evidence as it stands and are understandably cautious about making direct recommendations to educators. However, this leaves the reader with the problematic process of transferring neuroscientific insights into educational practice. For example, it is suggested that the teacher’s values, beliefs and attitude to learning could be as important to the learning process as the material being taught. Should teachers’ values, beliefs and attitudes be developed, assessed and monitored? And do neuroscientists and educators share the same understanding of these concepts?

There are three striking things about the potentially valuable findings for education that have been drawn together in this text. The first is their number, and this makes it difficult to imagine that cognitive neuroscience will not have a future role to play in education. The second is the strange way they are distributed across the educational landscape. These findings have not emerged from interdisciplinary programmes intended to provide an integrated and accessible perspective on education or, indeed, any particular educational issue. They are usually the outcomes of experiments or studies intended to further our fundamental understanding of brain function. This makes for a rather random clustering of results in some areas pertinent to education but with...
other areas relatively neglected. This is one way in which the incompleteness of our knowledge about the brain and learning can reduce the apparent coherence of educational messages from neuroscience. For example, it has often been asserted that the scheduling of items within an educational curriculum should attend to what is known about sensitive periods (OECD, 2002, p. 77). In Chapter 2, Blakemore and Frith successfully undermine some of the arguments for a selective focus in the earliest years, through unpacking the evidence of early synaptogenesis and pruning, the concept of sensitive (rather than critical) periods of development and research reporting environmental effects upon rats. They conclude that ‘overall, the research does not support the argument for a selective educational focus specifically on children’s earliest years’. Educational research has already demonstrated the importance of the earliest educational experiences and environment to later achievement (Sylva, Melhuish, Sammons, Siraj-Blatchford & Taggart, 2004) but Blakemore and Frith’s critical appraisal should be generally welcomed, since the neuroscientific evidence is clearly incomplete and often over-interpreted.

However, having debunked the main ‘too late’ arguments in the early years, the next chapter reviews some age-related differences in the neural correlates of grammar learning before asserting a ‘finite time for the most efficient type of grammar learning’. So, while the neuroscientific evidence for early sensitive periods appears not yet strong enough to apply, here we have evidence for later sensitive periods that may result in a clear implication for education. This is one small example of how even the most accurate, reasonable and scientific interpretation of current evidence can provide an unbalanced message to educators. I don’t believe that Blakemore and Frith are saying that sensitive periods are more important for pre-adolescent children than they are for infants, but the fact that more convincing evidence exists for that age group may produce that impression. Thus, the educationally relevant landscape emerging from neuroscience can appear strangely fragmented. This is one reason why it cannot provide any universal map of how education can proceed but only contribute to a broader dialogue. The final thing that strikes you is that, despite the plethora of findings of educational relevance, there are so few studies attempting to bridge the gap between suggestive scientific findings and classroom application.

The future role of neuroscience in education continues to be contested. Given the dominance of social context in education, some believe that nothing can be contributed by a science just beginning to contemplate the complexities of social interaction (Davis, 2004). Others are already comfortable in redefining education in terms of brain development alone (Koizumi, 2004). Blakemore and Frith do not tackle this question directly but, by indicating a number of areas where useful insights have already arisen, implicitly sketch out areas where future interdisciplinary research may be most beneficial. Among other areas, they identify plasticity, developmental disorders, imitation and the role of factors including sleep and nutrition. It is, however, interesting to note that even among neuroscientists, there is not clear agreement as to the educational significance of these different areas. For example, the potential usefulness to education of unconscious learning processes has been described as ‘neuromyth’ (Goswami, 2004), yet Blakemore and Frith suggest that a reciprocal dialectic between implicit learning and explicit teaching may be a more efficient way of supporting learning.

Blakemore and Frith succeed in maintaining scientific accuracy while writing for an audience that includes non-specialists in neuroscience. The slightly provocative sub-title ‘lessons for education’ suggests that, as an example of education itself, the work may be accused of following a transmission model: here are some interesting facts from neuroscience that neuroscientists feel educators should grasp. The work does not seek to engage with current educational research but can be said to reflect sensitivity to educational issues at ground level, and no doubt this sensitivity derives from both authors’ long-standing interest and involvement in education. It does not attempt a two-way dialogue of the type called for by Geake and Cooper (2003), but it will undoubtedly inform this emergent discussion.

Concerns have been expressed that it is too early to look for educational insights from neuroscience and that this would be a bridge too far (Bruer, 1997). From an educational viewpoint, neuroscience is already being drawn upon and bridges are being built, although these are often unsatisfactory in their scientific basis. Blakemore and Frith have produced an authoritative work that highlights very effectively the most relevant findings from neuroscience, communicates these in non-technical terms and debunks some of the myths that already abound. By making such knowledge accessible to teachers, teacher-trainers and students of education, their work will undoubtedly improve the quality of bridge-building in the future.

References


Received: 9 April 2005
Accepted: 11 July 2005