The Cambridge Handbook of Multimedia Learning
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Cambridge University Press

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I was recently informed, by an academic based in a psychology department, that most people at my institution (the Institute of Education in London) do not really study learning. They do sociology. The real stuff of learning is what goes on in people's heads. This came as something of a surprise, not least because relatively few colleagues refer to themselves as sociologists.

Most of the people I work with research literacy and semiotics. In recent years, the study of how people make sense of texts has increasingly focused on new media, and the significance of globalisation and new technologies for communication. A group of researchers have been working on the concept of multimodality, to describe the way in which semiotic principles function across different modes of representation, including image, sound, and physical action (Jewitt 2006; Kress and Jewitt 2003; Kress & van Leeuwen 2001; Kress & van Leeuwen 1996). This work is based in social semiotics, a theory of language and learning which emphasises that communicating and understanding are social processes. Learning is about understanding how to act as members of social groups (linguistic, cultural, professional etc.) and adopting their culture, modes of thought and action, their beliefs and values.

Studying the social and studying the psychological is complementary. The ability to learn implies certain things about the internal make-up of the individual. But it is also true that cognitive processes take place as a consequence of activities and relations in contexts. They function to realise social processes. However, the question of how to identify the markers of learning is disciplinary and therefore institutional, establishing the respective territories of academics in social science and cognitive science. The academic who informed me that learning is a domain of psychology rather than of the social was making a claim about the importance and value of his department compared to others.

A similar claim is made in 'The Cambridge Handbook of Multimedia Learning' which describes its aims in terms of "establishing what works (i.e., to determine which features of a multimedia lesson affect learning), to explain how it works (i.e., to ground research in cognitive theory), and to consider when and where it works (i.e., to explore the implications of research for practice)"(ix). The fact that this is a 'Cambridge handbook' suggests that it will touch of most issues relevant to 'multimedia learning'. The scope of the book positions 'multimedia learning' within the field of cognitive science. As someone who researches multimodal, multimedia learning using social semiotics, social theory, cultural studies, and bits of sociology, this is somewhat irksome. A more appropriate title might have been 'The Cambridge Handbook of Cognitive Theory About Multimedia Learning'. This is not a criticism of the book's general content, but of its claim to offer "comprehensive coverage of research and theory in the field of multimedia

learning" (ix). The field is much bigger, and much more controversial, than that covered in the book.

Although the book is aimed at cognitive scientists (by 'practice', it means I think the practice of cognitive scientists, rather than teacher practitioners), I will focus on aspects of the handbook likely to be of interest to people studying learning as a social practice. In this respect, the book offers a lucid, highly methodical review of cognitive science literature which is likely to be of value for anyone working on inter-disciplinary research projects, particularly those that include software development.

Perhaps the most interesting aspect of the book is the confidence shown by academics studying and developing educational technology, who have sometimes struggled to move out of staff and professional development, and establish their work as a research-based discipline. This is demonstrated in the rigorous critique of methodologies and findings to date. Chapter 4 (by Richard E. Clark & David F. Feldon) sets the tone for a number of subsequent chapters. Entitled 'Five Common but Questionable Principles of Multimedia Learning', it punctures a number of well-established myths, including: that multimedia learning yields more learning than live instruction or older media; that it is more motivating that other instructional delivery options; that it maximises learning for more students by accommodating different learning styles; and that it facilitates student-managed constructivist and discovery approaches that are beneficial to learning.

The chapter provides a fascinating critique of research methods, and also points to somewhat ironic findings. In comparisons of courses, student interest in 'multimedia' based pedagogies has tended to be negatively correlated with end-of-course achievement. On the basis of this, the authors suggest that adding 'motivational' multimedia to increase achievement can in fact have the opposite effect. One hypothesis is that when students express greater interest in multimedia educational content, this is because they think it will be easier to pass, and so make less effort. This makes rather salubrious reading for researchers and policy-makers who have advocated the use of 'educational games' in order to make curriculum content more 'motivating'.

The premise of this chapter, however, as with many others, is that courses using 'multimedia learning' can be compared on a like-for-like basis with those that do not. It does not acknowledge that the method of teaching shapes what is to be taught – the choice of mode and media transforms what counts as knowledge rather than just delivers knowledge in a different package.

This issue is touched upon in Chapter 24 (by Jennifer Wiley and Ivan K. Ash) on the use of software packages in the teaching of history. The authors argue that history has always involved multimedia learning, since it is concerned with analysing texts from different sources and in different forms. They then go on to present two contrasting conceptions of history. History as Collective Memory is "the traditional view of history education, which proposes that the goal of history instruction is to provide learners with a base of historical knowledge that is deemed important by authority figures who guide educational policy" (p. 376). Under this goal of history education, students' prime task is memorisation.

History Education as Disciplinary Knowledge is an approach based on teaching skills of inquiry, interpretation, argumentation, like those used by professional historians. The authors argue that the use of multimedia products fits into the second conception of history education, as it facilitates the presentation of different, conflicting sources of evidence and places emphasis on the student constructing a view of history rather than memorising it. They cite examples of research projects which made historical records available electronically to school students. The chapter concludes that although there is some indication that the use of this product improved achievement, "we cannot definitely attribute better history learning in these contexts to the presence of multimedia or its use in the classroom" (p379).

Such a statement is admirably restrained, given the obvious sympathies the authors have for a conception of History Education as Disciplinary Knowledge and for pedagogical devices which they think encourage this. What is somewhat frustrating is that an interesting discussion about alternative conceptions of history education, and by extension alternative conceptions of historical 'truth', becomes concerned with questions of effectiveness which simply cannot be answered by the measures the authors use (as they themselves recognise). "Better history learning" is related to what is to count as "history". Poster (2005) has argued that digitization is changing history as an epistemological domain. This is in part what Wiley and Ash's case studies seem to suggest, and for this reason their work is fascinating, although more explicit discussion of the problems raised by measuring 'effectiveness' when domains of knowledge are being transformed by the spread of multimedia technologies would have been useful.

Lloyd Rieber's chapter on "Multimedia Learning in Games, Simulations and Microworlds" is written with remarkable caution: "I fear I am far less confident that many of my co-authors about the robustness of the research evidence, especially when we move from the laboratory to the field (p.551). He notes that generalisations about the results of multimedia research do not always bear up well in the world of classrooms and workplaces. It is this kind of conclusion which perhaps opens up scope for collaboration between social and cognitive scientists. Despite the editor's worthy efforts to give 'multimedia learning' a scientific basis, the use of multimedia in classrooms is not informed primarily by cognitive theory. But this does not preclude those working in the world of schools or studying social practices from engaging in a more productive dialogue with cognitive science.

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