

# Conclusion

## Plurality versus Synthesis

In the introduction to this book, two different visions of e-learning research were compared and contrasted. One envisions research in this fledgling field as being technology-oriented and as contributing to improvements in the accessibility, effectiveness, and efficiency of learning. The other, which is central to this book, sees e-learning research as “multivocal,” as encompassing a plurality of “separate voices, each with its own potentially productive tale to tell...” (Conole & Oliver, 2007, p. 5). The variety of research methodologies and also subjects for research presented in the chapters in this book illustrate what it means for e-learning to be undertaken as a multivocal enterprise.

At the same time, the many voices constituting “multivocal” research are not always all in harmony. Some use different vocabularies to articulate separate standpoints, resulting in quite different or even contradictory (but internally consistent) accounts of principles and priorities important to the field. Accordingly, the approaches to research in e-learning presented in this book are not entirely or necessarily mutually compatible: they tend to be as they are associated with different presuppositions or ways of knowing and understanding the myriad phenomena related to this rich subject matter. However, this does not mean that these multiple approaches and understandings are not profitable or productive. Multivocal approaches to e-learning research can, among other things, enrich practical understanding (for example, of the use of blogs in the writing classroom); these approaches can contribute to improvements in practice (for example, through the kinds of “effects of increased awareness” listed in chapter seven); multivocal research can also illuminate unexpected or improvised applications (as was done in the study of students “epistolary” orientation to online discussion); finally, this kind of research can also democratize questions of access and efficiency (for example, by asking about “efficiency and accessibility for whom?” as was done in the two previous chapters).

In addition, this multivocal approach—and its emphasis on politics, history and culture—reveals an important aspect of technology that is ignored in many e-learning discussions. This is the influence of

technology on theory and research. Chapters three, four and nine, for example, all make the case in different ways that technology is not simply something that we study, develop and control. Technology is something that also shapes and influences *us* as researchers. Whether it be the “epistolary” form of the online posting, the hypothesis of mind as machine, or the metaphor of the closed world, technology affects research: Previous technologies shape the way that current technologies are interpreted and used; new and conspicuous technologies provide powerful metaphors for understanding epistemology and the mind; and computerized systems provide discursive tools for conceptualizing solutions to educational as well as political problems. Our relationship as researchers to computer technology is not a one way street: Technologies shape and influence research and development in unexpected ways—through historical, cultural, discursive, and other forms of influence and transference.

As indicated in the introduction, this kind of methodological plurality—encompassing cultural, historical, and other approaches—is *not* the dominant or most widely promulgated approach to e-learning. This is why the book advocates a “re-thinking of e-learning research.” This conclusion makes the case that the re-thinking of e-learning research as multivocal is both practical and timely. The more dominant position in this field is exemplified by the definition of e-learning research cited in the introduction: as a technology-oriented activity aimed at achieving practical improvements. This definition, formulated by educational technologist Rob Koper, implies that there is only one knowledge form that can legitimately be used to investigate e-learning activities, technologies, and practices. This kind of knowledge is instrumental, causally oriented, predictive, and natural-scientific in nature. At the same time, this knowledge is seen by Koper and other researchers as situated within a greater whole, as a part of a much larger coordinated research enterprise, one that also focuses on natural-scientific, causally oriented knowledge. It is this greater epistemological or investigative whole, that is generally identified as a “new” and “interdisciplinary” “science of learning.” This new “learning science” emerged from the United States in the 1990’s, and has recently been gaining in dominance internationally (Rourke & Friesen, 2006):

This is a new kind of science, with the goal of providing a sound scientific foundation for education. [It is] centrally concerned with exactly what is going on in a learning environment, and exactly how it is contributing to improved student performance... [It is] based on research emerging from psychology, computer science, philosophy, sociology, and other scientific [*sic*] disciplines. (Sawyer, 2006a, pp. 2, 10, 15)

Many who refer to themselves as “learning scientists” see this new, interdisciplinary scientific endeavor as combining different “strands” of research to “create more coherent and useful theories that better illuminate how, when, where, and why people learn” (Bransford, Brown, & Cocking, 2006, p. 227). Learning scientists also see this type of research as forming part of a larger “synthesis,” “hybrid,” or a “synergistic” theoretical whole (Bransford et al., 2006; Sawyer, 2006a, p. 13). As was the case with Koper’s definition of e-learning research, learning scientists recognize only one form of knowledge as being ultimately of value in this research. As the name “learning science(s)” suggests, this is the instrumental, causal, and predictive knowledge proper to the natural sciences.

The preeminence of this “instrumental” knowledge form is illustrated by characterizations of what learning science is and what it is likely to become. As Sawyer (2006b) explains, learning science affirms the “controlled” natural-scientific “experiment” as representing the “gold standard” for evidence or “for evaluating what works best to improve learning” (p. 575). Sawyer also explains that learning scientists see their research enterprise as gradually “becoming more like” what he describes as “big science” (p. 576). This refers to “complex, difficult and expensive [research that is] almost impossible for any one scholar to do alone” or over a short period of time. It is a kind of inquiry, moreover, that is undertaken by sizeable teams of “software developers, teacher educators, research assistants [and other] scholars” (p. 576) collaborating in the context of multiyear research projects: “Because it requires such a massive human effort,” this type of research, Sawyer continues, “has tended to occur at a small number of universities where there is a critical mass of faculty and graduate students” (p. 576). In the American context, this has come to mean a few large, top-ranked research-intensive universities (e.g., Stanford, Carnegie Mellon, and the University of Washington).

The multivocal approach to e-learning research advocated in this book is intentionally very different. It understands valuable research in e-learning as something that can occur in a wide variety of contexts and through a wide variety of means. These can include the critical analysis of policy or other documents, the content analysis of sets of online communications, or even informal qualitative or hermeneutic interviews over coffee. They can include research that is undertaken as a part of a course; as a semester-long project; or for a paper, thesis, or dissertation. This multivocal research, moreover, can also be undertaken alone (as illustrated in the authorship of many of the chapters of this book) or collaboratively (as illustrated in chapter seven). At the same time, all of this does not mean that the kind of research advocated here is simple, easy, or always straightforward. It generally requires that the researcher be conversant with more than one disciplinary body of knowledge and research method or set of heuristics. What is important, though, is that this research doesn't *have to* be an expensive multiyear project undertaken by large interdisciplinary teams with the latest instrumentation and at the largest universities. And given the humble economies of scale that are often found in many educational and research contexts, questions of expense, size, and complexity of research projects is not just a matter of theory or design. They can make the difference between some research activity and none at all.

If the "learning sciences" in general, and related conceptions of e-learning in particular, can be said to focus on "technical," "instrumental," and scientific knowledge, then the multivocal research explored and demonstrated in this book counters this by placing emphasis on *both* "practical" and "emancipatory" knowledge forms. While this book certainly does not reject or exclude technical or scientific knowledge, its epistemological concerns lie elsewhere: in political and critical knowledge (on the one hand) and in the practical, everyday, interpretive, and hermeneutic methods (on the other). Of course, its critique of "e-learning myths" and of the political history of e-learning corresponds to the critical and emancipatory. Its investigations of narrative, genre, conversation, and the experience of "lived number" rest squarely on pragmatic and hermeneutic foundations. At the same time, the discussion of no "significant difference" results (in

chapters one and two), the heuristics of content analysis (in chapter three), as well as the use of empirical economic and other sources (in chapter eight and elsewhere), represents a significant use of “technical” and/or “instrumental” knowledge.

The multivocal understanding of research illustrated here, in other words, definitely includes—rather than just critiquing—the voice or knowledge type of the natural sciences. But, of course, unlike the learning sciences, it does not seek to establish a “synergy” or even an integrated hierarchy of different knowledge forms, with the “gold standard” of the controlled scientific experiment at the top. Instead, this alternative understanding of research sees different knowledge forms as related in ways that are complex and contradictory: different knowledge claims are motivated by different human and political interests that are in mutual tension or explicit conflict. This book has correspondingly not attempted to mask these differences and contradictions. Chapter four (on “psychology and technology”), for example, presents a sustained examination of the tensions and “conflicts of interest” between psychology and important developments in the related areas of anthropology, artificial intelligence, and in everyday technology.

Multiple ways of knowing and multiple definitions of what counts as evidence also imply a plurality of ways of judging and evaluating investigative findings. To cite Jerome Bruner (1986) again, each knowledge form has its own “operating principles,” “criteria of well-formedness,” and “procedures for verification” (p. 11). Each research methodology and each account of e-learning research, in other words, brings with it particular criteria by which its results can be judged. These criteria, however, are closely tied to the epistemological or philosophical presuppositions or foundations that underlie a given research approach (which is the principal reason why philosophical foundations have been emphasized in this book). Differences in philosophical and research presuppositions have been illustrated in Bruner’s distinction between logico-scientific and narrative knowledge forms; but these differences are also found in other methodologies for e-learning research discussed here. For example, experiential evidence (see chapter six) and the way it is treated and evaluated is quite different from the evidence associated with content analysis (see

chapter three): Experiential evidence that is generated through hermeneutic-phenomenological research takes the form of written descriptions, which are often gleaned from interviews and observation, and are developed and validated through reading and rewriting processes. Content analysis, on the other hand, involves specific names, events, or figures of speech present in textual and other media. This second type of evidence is gathered through processes of counting and coding content elements and can be validated through tests of “coder reliability.” These differences, in turn, are extended further in the way that communication and other foundational or philosophical understandings are articulated in each method. In content analysis, communication is understood (often implicitly) as the transmission of information or content elements through the medium from writer to reader or producer to audience. In the case of hermeneutic phenomenology, communication is understood as the cultivation of a shared atmosphere or disposition. That is why evidence and its validation is undertaken through the development of descriptions that evoke “atmospheres” or “dispositions” of different kinds. Each approach and set of understandings, though, is rigorous in its own way and answerable to its own stringent criteria.

### **The Practicality of “Multivocality”**

There are a number of reasons why the multivocal approach advocated and illustrated in this book is both practical and important for e-learning research at this point in its development. As noted above, this type of research can be viable and practical in terms of expense, scale, and related logistical considerations. Other grounds for its utility and practicality become obvious when it is compared to existing scientific, experimental “gold standard” research. As indicated earlier, the “gold standard” for research in the learning sciences is provided by rigorously implemented experimental research designs (ideally) involving fully randomized test populations and strict controls for confounding variables. This implies that in a rigorous study of this kind, there should be two randomly selected groups of students, one that is offered a treatment (typically in the form of an in-

novation in media or technology), and another that receives no treatment.

At the same time, it is widely recognized – even by learning scientists themselves – that rigorous experimental research designs and controls are difficult if not impossible to realize in authentic educational contexts:

A genuine control is impossible. Practical difficulties in separating [control and treatment] groups often result in contamination of designs. Educational issues are complex with many variables involved. Therefore, experimental designs with limited numbers of [variables] result in oversimplification because they deal with only a few of the relevant factors. Particular types of innovation are not precisely reproducible so generalisation can be misleading. (Kember, 2003, p. 89)

In actual educational contexts, in other words, students are organized in cohorts, according to schedules and programs that are deliberate and structured, making random selection difficult. At the same time, students in these settings are investing time, effort, and often money to learn. This can place the definition of control groups in conflict with the priorities of both the students and the institution. Speaking more generally, the terms “education” and “learning” designate the widest range of age groups, activities, methods, practices, and settings, making generalization about the effect of a particular technique or technology open to question.

In addition to the practical difficulties presented by the experimental “gold standard,” there is also the question of what such experimental research has already produced. This was discussed in some detail in the first and second chapters in terms of media comparison studies and the widely reported yet controversial “no significant difference” phenomenon: The fact is that hundreds of studies, undertaken over dozens of years “document no [statistically] significant differences...in student outcomes between alternate modes of” or innovations in “education delivery” (Russell, 2008). The repeated, inconclusive character of these results presents strong arguments against the continued implementation and reproduction of such studies.

As indicated earlier, there is no clear consensus of learning scientists and other advocates of scientific approaches in e-learning on how

to address these challenges. Some researchers call for more rigorous, better-funded, and larger-scale experimental research (e.g., Lou, Bernard, & Abrami, 2006). Others—especially those associated with the learning sciences—have argued for the adaptation and augmentation of “gold standard” designs with other methodologies. Some have at times advocated the use of approaches like ethnomethodology (Koschmann, Stahl, & Zemel, 2007) and even phenomenology (e.g., Erickson, 2007). Either implicitly or explicitly, they make the case that these methods can be combined with the experimental designs of “learning science” to form a kind of “hybrid methodology” (e.g., Barab & Squire, 2004; Sawyer, 2006a, p. 13). Experimental constructs such as controls and dependent and independent variables, however, are still given priority in these new, multimethod hybrid designs. The existence of contradictions or even mutually exclusive differences among approaches, voices, or knowledge types remain little discussed or acknowledged. The fact that, for example, both hermeneutic phenomenology and ethnomethodology are based on a repudiation of the detached, objective stance or epistemology expressed in terms such as “experiment,” “variable,” or “control” is passed over in conspicuous silence.

One notable exception to this silence is provided by McCarthy and Wright in their book *Technology as Experience* (2004; see also chapter seven, above). These authors see the synthesis of research methods with mutually exclusive preconditions and presuppositions as problematic. They argue that it leads to “the problem of watered-down concepts in service of design” (pp. 45–47). They focus on the specific concept of “communities of practice” – and the “dialectical tensions” internal to it – to show how interdisciplinary, hybrid, design-oriented research forms can significantly “weaken” the richness and complexity of the concepts constitutive of them. The term “community of practice,” they argue,

is used in research concerned with technology and education...[in such a way that its] dialectical tension is minimized and [its complexity reduced]... to the point where individual experience is rendered irrelevant. From our perspective, what appears to be lost when this happens is the...[ability to authentically bind] concepts together in practice...without which the concepts...float free and meaningless[ly]. (p. 46)

Like this book, McCarthy and Wright recommend and deploy an approach to researching technological engagement that uses multiple methods and orientations. In both cases, however, any new, overarching methodological synthesis is avoided and deliberate attention is paid to the individual, theoretical integrity of each method. In this way, it is possible to circumvent a “watering down” or dilution of concepts, heuristics, and traditions. The diversity and integrity of individual methods can be preserved, and these methods can then be utilized in their undiluted strength to tackle difficult research problems and questions.

What is needed in the world of new and proliferating e-learning practices are research approaches that are multiple and variable, and that recognize their heterogeneity explicitly. As argued in the introduction, the brief history of e-learning has been one in which its forms, technologies, and practices have expanded and propagated widely and even wildly. In just over a decade, the field has moved from mechanical matters of effective bulletin board communication and Web page construction to questions and issues that are vastly more complex, such as the online construction of meaning and identity; the educational response to self-organizing and open online communities; and the challenge of authentically interdisciplinary inquiry into these phenomena. Dealing with this plurality of proliferating issues, technologies, and practices calls for approaches to research that are similarly flexible, multiple, and differentiated.