Ironically, the enthusiasm for the Internet has fed a new wave of paper publications (or books) on the use of computers in education. However, few of these publications stand out for their potential to translate contemporary learning theory into classroom practice. Although there has been a proliferation of books on the use of new educational technologies, many of these publications are simply feeding the current Internet euphoria. Typically, these books offer large sections of undigested “techno babble” devoted to describing the latest educational web sites. There are very few books offering a pedagogical conceptualization of the Internet that might lead to an enduring transformation in teaching practice.

There is another group of publications that more closely resemble the standard textbook category. These books adopt a logical structure that is usually based around the various hardware and software applications. Despite being logically sequenced, the account of the literature in these books is often technocentric. They focus on the technology itself and fail to link the different technology applications with contemporary learning theory. Moreover, these books rarely operationalize theory and research in meaningful contexts for teachers. Unfortunately, this type of technocentric thinking still dominates the academic literature. It is fair to conclude traditional textbooks lack not only flair and imagination, but also commitment toward an integrated and problem-centered curriculum.

Learning With Technology by Jonassen, Peck and Wilson (1999) and Teaching With Technology by Norton and Wiburg (1998) are two notable exceptions. These books offer a refreshing approach to educational computing based on an original framework recognizing that hi tech schools need high tech teachers (Cuban, 1998). The different frameworks describe the type of designs and environments in which technology can amplify sound principles of learning and teaching. Although the two books propose different frameworks, they each share an orientation toward constructivist learning theory. In the past, constructivism has been loosely defined in the educational technology literature. However, this criticism cannot be levelled at either book. The reader is left with no doubt about the blend of constructivist theory that underpins each publication. A real strength of both publications is their attempt to translate the implications of constructivism into the regular context of the classroom.
Learning With Technology

Jonassen, Peck, and Wilson’s (1999) Learning With Technology is about how teachers can use new educational technologies to create meaningful learning environments. These are environments in which the authors maintain computer technology is most effectively used as a cognitive tool. In this regard, an important distinction is made between students constructing knowledge with technology, as opposed to merely obtaining information from computers. This dichotomy is based on the metaphor of tool and it provides a clear indication of the authors’ main beliefs about constructivism and technology. To the authors’ credit, these beliefs are made explicit in the first chapter.

Chapter One outlines the main assumptions about learning and the role of technology in the teaching process. These include the view that knowledge is constructed not transmitted. Furthermore, knowledge construction is embedded in meaningful activity that is anchored and indexed by context. This view is further supported by reference to the situated cognition literature. The authors also contend that meaning is in the mind of the knower. Accordingly, they argue there are multiple perspectives on the world. Of course, this claim is quite contentious and remains subject to considerable debate (Phillips, 1995). At least Jonassen, Peck and Wilson (1999) acknowledge that not all meaning is created equally. That is, the validity of meaning is determined by the social beliefs that exist in a learning environment at a particular point in time. Less contentious is the view that meaning making is promoted by cognitive conflict and that knowledge construction requires articulation of thinking. In short, the authors maintain that the goal of education at all levels is to engage students in meaningful learning.

This goal is linked to a model previously developed by the authors outlining five interdependent attributes of meaningful learning: (a) active, (b) constructive, (c) intentional, (d) authentic, and (e) cooperative. Each attribute is used throughout the remainder of the book as a structure for describing, and criteria for evaluating, the potential of new educational technologies. There are chapters devoted to learning by doing, learning by exploring, learning by reflecting, learning by constructing, and learning by visualizing with technology. This latter chapter is noteworthy for its relatively inclusive definition of educational technology. It includes a comprehensive section on the use of video and television. The book contains some excellent examples of both computer and video technology being used for meaningful classroom projects.

While the potential of the Internet is addressed in several chapters, a specific chapter is devoted to the creation of technology-supported learning communities. Chapter Five draws upon the work of Jean Lave on “communities of practice” and discusses how different Internet technologies -- chat, email, listserv, bulletin boards -- can be used to create powerful new tele-learning communities. The community metaphor is elaborated through a number of well-known tele-learning projects. These are adequately described and the reader is invited to find more information about the different projects by following various web links. The chapter is very informative. Nevertheless, its breadth is at the expense of depth and the chapter fails to deliver an organising structure for the different Internet activities (see for example Harris, 1998). For this reason, the writing is a little disjointed and some of the ideas need further development.

The final chapter, Learning by Reflecting: What Have We Learned?, reflects on the constructivist literature and provides a rubric for teachers to assess the specific outcomes within a meaningful technology-supported learning environment. Until recently, the issue of assessment has been largely ignored, in part because many teachers are still intent on learning how to use the technology, as opposed to using the technology to learn. The view that teachers need to move beyond their comfort zone and take risks with the technology is reflected in this rubric. Accordingly, meaningful learning is linked to authentic assessment. The proposed rubric is in keeping with the book’s overall theme and is designed to improve learning, rather than sort students for traditional purposes. It returns the reader to the five attributes of meaningful learning and offers teachers and researchers alike a starting point to assess what is happening in the classroom.

The significance and potential transfer of this rubric would be enhanced if the authors bridged the attributes of meaningful learning to similar literature; for example, a link could be made to the ACTIVE acronym proposed by Grabe and Grabe (1998). The book would benefit from an index of authors. In addition, the book would benefit from wider recognition that educational technology is a social practice. In other words, it fails to acknowledge the non-neutrality of the technology. There is no attempt to question which students are likely to benefit most within a technology-supported learning environment. As the title suggests, the book’s main focus is on learning.

Teaching With Technology

In contrast, Norton and Wiburg’s (1998) Teaching With Technology adopts a slightly broader perspective. This book places schooling, curriculum, and technology within a larger socio-cultural context in which technological transformations that have occurred in modern society. A strong emphasis is placed on the role of technology in
shaping new socio-cultural contexts and the implications of these contexts for learning and teaching in the twenty-first century. The book is based on a vision that teachers must design the types of learning experiences needed by students in a rapidly changing world. The term design is used throughout the book as a metaphor that refers to the intellectual processes teachers use to intentionally plan appropriate learning experiences for their students. In this regard, the art of design and pedagogical knowledge of teachers is at the heart of this book.

The authors begin by introducing the challenge of teaching with technology in today’s ever-changing society. Chapter One argues that society has moved from a print-dependant, industrial age to a postmodern era deeply influenced by electronic media. This view is supported by the inclusion of some powerful vignettes, along with a combination of the educational change, innovation and reform literature. The authors draw on the experience of older technologies to demonstrate two main points. First, they show the increasing importance of electronic technology in the lives of today’s students. Second, the chapter proposes three stages of innovation that characterize the gradual adoption and enculturation of a new technology. Of course these stages are open to conjecture and no doubt people like Larry Cuban (1986) and Michael Fullan (1999) would consider them overly simplistic. However, few people are likely to dispute the authors’ thesis; teachers need to redesign the classroom to meet the challenge of preparing today’s student for tomorrow’s world.

Chapter Two adds further flesh to this thesis. It demonstrates why, in light of contemporary developments in cognitive theory, many of the old learning models and instructional design principles are inappropriate. The chapter questions the traditional efficiency model of technology instruction by contrasting the main tenets of behavioral theory with recent advances in human cognition. An important distinction is developed between the nature of learning in and outside of school, and the work of Resnick (1987) highlights the limitations of traditional classrooms.

The authors’ thesis is built on a tripartite alliance between (a) new models of intelligence, (b) constructivist learning theory and (c) the power of today’s electronic technologies. In short, Chapter Two links new technologies to new theories of learning. Although the section on human intelligence adds another dimension to the teaching with technology equation, the discussion on constructivism is rather descriptive and less convincing than the aforementioned book. However, the relationship between constructivism and technology is well crafted through a mix of personal narrative and educational theory.

At the same time, it is surprising the book makes little use of Vygotsky's work in illustrating the significance of tools in a highly symbolic world. There is considerable scope for the authors to develop this section further. As an aside, the book would benefit by including references at the end of each chapter. This criticism is a little pedantic given the chapter adequately describes the opportunities that technology affords for constructivist notions of learning. It clearly lays a sound pedagogical foundation for the designs that follow.

Subsequent chapters use this metaphor to explore designs for literacy, problem solving, knowledge, community and assessment. In addition, there is a chapter devoted to information and the virtual classroom. Each of these chapters introduces new concepts and theories that complement Teaching With Technology and potentially extend the reader’s understanding of the academic literature. A real strength of Teaching With Technology is the link between metacognition, situated cognition, anchored instruction and problem-based learning. In this regard, the book goes beyond Joannaseen, Peck and Wilsonis (1999) text. It acknowledges the role of domain specific knowledge in designs for learning, and generally draws upon a more eclectic range of literature. This is evident in the chapter devoted to learning communities where the discussion relating to online collaboration extends to diverse students, questions of equity and the promotion of democracy through technology.

On the other hand, Norton and Wiburg (1998) do not fully discuss the range of collaborative tele-learning experiences available to teachers. The emphasis on web quests tends to deflect attention away from some of the other potentially more engaging tele-learning opportunities. Accordingly, it would have been appropriate to include the internet activity structures proposed by Harris (1995). The web quests provide a context for the acquisition of information skills and knowledge, but the example (The Zerkonians are Coming) is hardly an authentic learning experience. Arguably, this web quest fails to situate cognition in a meaningful context that might lead to the construction of generative knowledge.

In conclusion, Teaching With Technology would be a valuable addition to any teachers’ professional library. The book has wide appeal – despite the technocentric cover and overreliance on North American vignettes. Its greatest strength is the emphasis on designs for learning rather than the technology per se. In like-manner, Learning With Technology is focused on the learner and the construction of meaningful knowledge with technology. The book does not give pride of place to the technology as it clearly locates the new technical developments within learning theory, albeit constructivism. Although an accompanying web site supports neither book, the Jonassen, Peck and Wilson (1999) text provides many practical examples of learning with technology. And these examples have a real
international flavor. The book is suitable for a wide audience and should be essential reading for all teachers, undergraduate and graduate students alike.

References


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