How Should We Think About Thinking And Learning?

What can we learn by looking at these works together? What new light is shed on classroom practice? How do these works contribute to analytic teaching?

My understanding of analytic teaching is that it is based on the work of John Dewey. An important observation of Dewey was that in teaching we should know our subject matter well enough so we might observe students learning. If this approach is to be effective, it means that we must know something about the nature of learning as well as about the subject matter which we are teaching. What is implied here is a deep curiosity, based on knowledge and with a sense of wonder about the world. In a recent issue of *Harvard Educational Review* (May 1986), Vivian Paley underscores the need for curiosity in teachers. She defines this curiosity in part with the title of her article: "On Listening to What the Children Say." She discusses her growing interest in learning from the student: learning about how they think, learning about the relationship between the world of the classroom and the child's out of school world, learning about what is important to the children she is teaching. This curiosity, this willingness to learn from students is found in three of the four works under discussion here. The work of the group of Scholars from the University of Turku, and the work of Betty Edwards both exemplifies educators who learn via practice. Howard Gardner's book is a different kind of book, it is a history and a call to action; however, it also based on the type of curiosity discussed above. It is fueled by Gardner's attempt to ask questions and to listen carefully to the answers of scholars in diverse fields in order to better understand the thinking process.

Gardner made two important contributions for teachers who are interested in issues related to Philosophy for Children and analytic teaching. First, his discussion of the contribution of psychology, linguistic, anthropology, artificial intelligence and neuroscience are all based on questions of philosophy, in fact on questions of epistemology. My own sense of some of the issues raised in *Harry Stottlemeier's Discovery* has been greatly enhanced by reading Gardner. Though *The Mind's New Science* is no substitute for course in epistemology, psychology, linguistics, etc., it provides a review of those fields which are accessible to most readers and at the same time raises question which concern scientists, professional philosophers, teachers and the public at large.

Gardner takes all or most of his agenda for a cognitive science from philosophy. This perspective has a great advantage to those teachers in Philosophy for Children programs. It gives us a common ground for exploring cognitive science and, because Gardner goes on to bring the other disciplines into the discussion as well as bringing philosophy up to date on issues of cognition, our knowledge is expanded in ways which might stretch us but should not break us. The current research may also contribute to our ability to listen to our students, to question their assumptions and, in general, to lead a better discussion on issues of "how we think". *The Mind's New Science* might sharpen our curiosity about what our students have to say. Careful observation and listening to philosophical discussions of students can provide insight into student thinking especially when coupled with a perspective on some of the philosophy and cognition (See the *Analytic Teaching* issue on transcript analysis).

Drawing on the Artist Within is, as Crane states in her review, more than a book about learning to draw or teaching others to draw. It is a book about the creative process and based on some of the research mentioned in Gardner's work. What might interest readers of *Analytic Teaching* is Edwards' discussion of the language of art of drawing as well as her extensive review of the literature of creativity. Edwards integrates her knowledge of art with knowledge of teaching and her understanding of her own creative process coupled with "book" knowledge of creativity. Much of what she explores invites us to first come to grips with our own artist, and next to bring forth the artist in our students. We are invited to do this not to train another Van Gogh but to further our understanding of students and their thinking processes while giving them another opportunity to both better understand the material being presented and to express that understanding in a fuller, more comprehensive way. Edward offers us tools for teaching. Tools that many of us did not know we could use and which some of us barely knew existed.

Toward an Interactionist Theory of Cognitive Dysfunction and *The Research Project on Interactive Formation of Learning Difficulties* point us in a different direction. These works point us not to student nor to task nor to teacher; they point us to interaction, to that place between student, teacher and task. Jerome Bruner's work on how children learn to talk might be instructive here. Bruner observed and documented with hundreds of hours of videotape that it is the mother *and* the child that teach the child the mother tongue. The child and the mother initiate questions by looking, pointing and by the use of words. The mother and the child engage each other in a complex dialogue of meaning. Bruner sees language learning in much the same manner as to the researchers at the University of Turku see teaching and learning, that is, as a process of interaction. Even though many teachers would agree that teaching and learning are an interactive process, our teacher training often directs us toward one side or the other of this interaction and provides few tools for understanding teaching and learning as an interactive process. The two works under discussion here provide that beginning place for understanding interaction between task and teacher. Equally as important, these works point to some ways in which teachers might take an active role as classroom researchers, ways in which teachers might actively contribute to understanding the teaching/learning which goes on in their classrooms.

In summary, right brain and left brain, knowledge of epistemology and its contemporary expressions in cognitive science, the interaction between student, teacher and task

all contribute to the understanding of the teaching/learning process. Perhaps we will never have the "total picture", never be able to unravel all the problems of learning, define all the qualities of good teaching. These works alone and together shed some light on the process of learning/thinking. Perhaps more importantly, they stimulate us to think about possibilities.

Richard Morehouse