Is Mathematics for the Left Brain?

Drawing on the Right Side of the Brain is a drawing-instruction book, first published in 1979. In her book, Betty Edwards, Professor of Arts at California State University, builds on the then novel theory that the two halves of the brain function differently. The left hemisphere is responsible for verbal, abstract, symbolic activities. The right hemisphere serves for synthetic, holistic, intuitive perception and information processing. Under normal circumstances, the left hemisphere is the more active of the two. The book offers a series of exercises designed to subdue the rational, left side of the brain while firing up its right, imaginative part. The book carries the subtitle of A Course in Enhancing Creativity and Artistic Confidence. In the preface to the second edition (1989), the author describes how surprised she was to discover that, in the 10 year period following publication of the book, ... individuals and groups working in fields not remotely connected with drawing have found ways to use the ideas in my book. A few examples will indicate the diversity: nursing schools, drama workshops, corporate training seminars, sports-coaching schools, real-estate marketing associations, psychologists, counselors of delinquent youths, writers, hair stylists, even a school for training private investigators. Conspicuously absent from this list are school teachers, and math teachers in particular. I do not believe the above passage is the result of a purposeful statistical study and do not intend to draw farfetched conclusions from it. It just made me ponder whether, holistically speaking, a similar approach may work for math instruction. Drawing is an R-mode (R for right) activity. Now, what can be said about mathematics? Mathematics is verbal for it's a language, and it is abstract for in its heart one finds proofs and axiomatizations. It is symbolic, rational, logical, and, nowadays, it is very digital. These are all indications that mathematics is firmly entrenched in the analytic domain of the L-mode (L for left) way of thinking and perception. On second thought, if the L-mode prevails for most people, why is innumeracy so pervading? After all, the left, analytic hemisphere of the brain is dominant more often than not. So it must be that mathematical thinking is R-mode. It's math instruction that has come to depend on the L-mode. If this discrepancy is the source of widespread innumeracy, should math instruction not exploit more of the R-mode facilities? I take at the face value the fact that Edwards' book has been used in the circles far removed from the art of or the need for drawing (nursing schools, corporate seminars). When you teach creativity as a stepping stone for drawing, you teach a skill that can be applied elsewhere, even outside the classroom. This leads to a criteria for evaluation of the current math instruction methods. Does anything taught in the math classroom prepare students to face aspects of reality not directly related to math? Students who have taken B. Edwards' course have also learned to see the world differently and to better use their mental powers. Is this true of math instruction? Unfortunately, I think, not. Even more so when math instruction emphasizes the "real world problems": most of these problems are dull and have limited utility anyway. It appears possible to learn drawing for drawing's sake and acquire a more universal skill along the way. It should be possible to perform the same feat in math classrooms. I assume math instructors would be proud to be nurturing their students' imagination. One of the arguments against New Mathematics was that its heavy formalism had little to do with how mathematicians really work. Humanistic Mathematics presents it in a humane way with a human context. One aspect of which is how the real mathematicians do it. No, not every one was born to become a mathematician, but that is besides the point. Future biologists dissect worms and frogs in biology labs as do future engineers and literary agents. Without creativity and imagination mathematics would not be possible. As Edwards' experience demonstrates (see also books by E. de Bono), these skills can be taught. I suspect that good math instruction should foster students' creativity in a deliberate manner and as a part of curriculum. (The article is an adaptation of a 1998 MAA Online column Modes of Thinking.)

About the Author

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