From the Editor

Herding Cats in the Midst of the Swinging Pendulum

Historians adamantly adhere to the notion that the best way to understand the future is through understanding the past. This is based, at least in part, on the fact that history tends to repeat itself. A corollary to this in education is the analogy of the swinging pendulum. When I began my teaching career some 33 years ago, the pandemonium that resulted from Soviet leadership in the space race, as manifested by the successful launch of the satellite Sputnik, had begun to ebb. The pendulum had started to swing away from highly structured curricula, based to a large extent on behaviorist theory. It also began swinging away from the concomitant emphasis on mathematics and science.

As the pendulum continued its cyclical journey past the midpoint, emphasis was increasingly placed on a more flexible form of education, perhaps in some respects a reincarnation of the original ideals of a liberal education; that is, an education that liberates the mind from the toil of everyday life. The emphasis was on the humanities and social sciences. Personal development, creativity, and self-expression were highly regarded. The leisure time purpose of industrial arts that some thought was the most significant impediment to a legitimate and defensible curriculum, grew in prominence and acceptance.

In many forward-looking schools, students were given the opportunity to custom-design their own educational experiences by selecting from a menu of "modular" courses of varying lengths that would best meet their personal interests. "Open" school designs, in which there were no walls separating classes, were constructed. Due to lofty idealism that was not properly tempered by practical reality, the pendulum began to swing the other way. It was accelerated by the poor performance of United States students on internationally standardized tests in mathematics and science. This led to, among other things, an emphasis on standards of learning and achievement test performance.

The pendulum has probably not yet reached the full extent of its swing toward a highly structured, accountability-driven curriculum. Elective courses in art and music are still struggling for enrollment, for example. But if we believe in the tenets of historians, in due time the pendulum will reverse its direction and begin, once again, its inevitable travel in the opposite direction.

The swinging of the pendulum from one philosophical extreme to the other provides balance of thought and well being to our social and political systems, just as the swinging pendulum provides a balance of forces and allows a clock to operate properly. One of the differences, though, in today's swinging pendulum is the computer. It will no doubt uniquely and dramatically influence the outcome of the cycle. Though the research evidence is somewhat contradictory at the present time, there is little doubt that educators will begin to reach

consensus on the most effective ways in which to use computers for teaching and learning.

Technology education has embraced computer use in a variety of different ways, arguably with more divergence than any other subject in the school. Computers have most certainly enabled us to do a variety of new and exciting things that we have never been able to do before; they are interactive and "hands-on." For many of the other subjects in the school, computers have resulted in a more active and individualized learning environment. But from a relative perspective, computers in technology education have resulted in a more sedentary, passive experience for students. For example, computers play a pivotal role in nearly all of the modular programs that are sweeping across the U.S. and other countries as well. In many of these programs, the students remain largely seat-bound for the majority of the instructional time. In this issue, Gustafson, Rowell, and Guilbert describe the perceptions that elementary students have about structures. The technology now exists that enables students to design, build, and test such structures in the virtual reality of the computer without ever leaving their seats. "Activities" of the past are rapidly becoming "passivities."

The excitement that has resulted from the use of computers is refreshing and engaging. But the dynamics of the change causes one to ponder. As we continue to discard the tools that we used in the past in favor of computers, are we ignoring some of the fundamental developmental needs of the students we serve? Is there something to the hesitancy in curriculum change that the teachers in Finland exhibited, as reported by Alamaki in this issue? Have we put technological content in such a primal position that we are ignoring process, the dichotomy that Lewis addresses herein? Is there something very unique that occurs developmentally when students work with real tools and materials? Are such experiences tantamount to successful, meaningful problem solving, as Atkinson's (1999) work in the last issue suggests? Could it be that those experiences contribute significantly to the development of the individual, but have virtually nothing to do with technology education as we have defined it nor the outcomes we think we are achieving? And if all of this is true, is there an age at which such activity is no longer appropriate?

Some wag might one day soon think about how sedentary life has become with the proliferation of the computer into every aspect of our existence, from school to the work place, from religion to entertainment. That person might think about the unique sense of satisfaction that comes from creating something with one's own hands, and that this is a fundamental need of humans. That person might further become concerned about how people spend their leisure time in this electronic age. As history repeats itself, the wag might even reinvent the other six Cardinal Principles of Secondary Education (1918) without even realizing it!

One of the administrators with whom I worked described the management of college professors as analogous to trying to herd cats. Perhaps the elements of our content, as well as our methodology, are akin to the cats. And, like cats, there are more of them every time you turn around. There is a limit, though, to

how many cats we can take with us on that swinging pendulum. We have to decide which ones we will choose. We may decide to continue to leave in the closet the cats representing worthy leisure time activity, psychomotor skill development, consumer literacy and other vestiges of our past. But one way or another, someone will see to it that all the cats will somehow get to the other side as the pendulum swings.

References

Commission on the Reorganization of Secondary Education of the National Education Association (1918). *Cardinal Principles of Secondary Education.* Washington, DC: U. S. Government Printing Office, 7-16.

Atkinson, E. S. (1999). Key factors influencing pupil motivation in design and technology. *Journal of Technology Education, 10*(2), 4-26.

JEL