Education: the key to the energy dilemma

By WILLIAM J. COAD

Few will deny that education is a fundamental ingredient in the solution of the vast majority of social problems. Ideally, an educated society is virtually devoid of ignorance. As such, it has an understanding of the interrelationships between the natural laws that dictate its course. Education instills in man's mind a curiosity that hungers for answers to these phenomena that are not readily understood. This curiosity generates explanations for what were previously considered mysteries, and so the cycle continues. An educated society, like an educated person, considers the unknown a challenge to be conquered rather than a threat to be feared.

Historically, totalitarian societies have succeeded temporarily by controlling all education systems and institutions. Such success has inevitably been short-lived, because to maintain the strength of the society, they had to continue to educate. Even though the content of the education programs was controlled, as the population became educated their curiosity and hunger for knowledge led them to question their society. This curiosity born of education thus becomes the first thrust to topple a totalitarian state's dominance.

Today, the world society is in the midst of an extremely complex and potentially dangerous problem—that of an accelerating consumption of nonreplenishable energy resources. Highly industrialized nations are totally dependent on enormous consumptions of these resources for economic survival. Densely populated nations depend on energy to maintain agricultural economies. Many resources are owned by nations other than those who have a survival need for them. The world is thus close to sitting on a powder keg. The United States government has talked of such wishful solutions as "energy independence," a term coined to give the population peace of mind by thinking that we can get by with what we have. Three years later, however, we are importing more and domestically producing less than the years preceding "Project Independence."

How do these two observations tie together? The proposition is that if there is one key to the jigsaw puzzle of the so-called energy crisis, it is education!

The United States government currently is spending billions of dollars trying to cope with the energy dilemma, and the lack of success of these efforts is apparent to anyone who has been observing the continuing upward climb of the consumption curves. The reason is, stated bluntly, that when it comes to energy, the populace is ignorant. They can be easily misled by news releases, television commercials, and best-selling books written by self-proclaimed authorities, who offer impractical solutions.

If it is accepted that the energy dilemma is a just national issue, then the federal government should channel a large portion of the funds appropriated for solutions into the educational field. We must become an energy educated society. These efforts should not be limited to those in the sciences, but open to all citizens in all areas of interest. If such a thrust were made today, within a very short period of time (say five years), the United States would be the world leader in energy management.

The proposed programs for energy education should address all concepts from the basic definitions, understanding where the energy to brighten the light bulb comes from, and a simple knowledge of how it was transformed from, say, coal into light, to the enormously complex problems of energy economics and socio-political implications.

Energy economics should be taught in elementary schools, as required courses for all students in secondary schools, and as required courses for bachelor degrees in arts and sciences. For those specializing in sciences directly related to energy, such as mechanical engineering, physics, and geology, specific courses in energy economics as related to these disciplines should be required; and economics and political science programs should offer specific courses in energy economics.

Those who have completed their formal education could avail themselves of the required knowledge through adult education programs, educational television, and other such vehicles.

The federal government could serve as a catalyst in this effort through such agencies and organizations as the Department of Health, Education, and Welfare and the National Science Foundation. The programs could (and should) be tailored to fund the development of programs, courses, and textbooks, *not to provide them.*

A population with an understanding of the concepts of energy source and conversion, factual limitations, and impact of continued excesses would not find it necessary to turn to self-proclaimed leaders or to Washington for a solution to their inevitable problem, but would, with understanding, naturally develop their own solutions.

On this page each month, the author shares his engineering philosophy by exploring a wide range of topics, ranging from fundamentals to new frontiers, as they relate to building environmental systems. Mr. Coad is vice president of Charles J. R. McClure & Associates and affiliate professor of mechanical and aerospace engineering at Washington University, St. Louis, Mo.