Preface to *How to be Smart*, by Thomas R. Cuba, Ph.D.

Putting the thoughts and techniques contained in this book into context is necessary in order to understand why this guide was written and where its value lies. During the lifetime of the author, technology has not only advanced; it was invented and then has advanced. It wasn't until his senior year in college that simple calculators were allowed in the classroom. The argument made at the time was that such a machine was nothing more than an electric slide rule. And the argument was accurate. The early calculators added, subtracted, multiplied, divided, and could be used for logarithmic determinations.

Within that context, the author observed and participated in the growth of technology, using more of it each and every day during his career as an ecologist. Throughout that career, he occasionally has taught for a term or two at the 8th grade level, high school level, collegiate level, and one graduate level course. An observation common to the views provided by those posts is that the students don't know how to take notes in class, study, or sit for an examination. Textbooks are only read as a last resort. In each and every instance, the students don't know how to learn. There is no need to ask why the change has occurred; it is only necessary to correct the educational system.

As with any change, whether it be growth or decline, some attributes of life, society, or, as in this case, our state of education, are added while others are lost. In his experience as an educator, the author has come to acknowledge the many things students are being taught in lieu of being educated.

In our current life context, we often hear older people bemoan that people younger than 30 years of age cannot give change without the cash register telling them how much money to return. In the author's own experience, one college sophomore was asked to divide 800 by 4. The task was unable to be completed without the assistance of the calculator that now comes as standard equipment on most cellular telephones.

The advances during the evolution of technology are largely in the nearly instantaneous access to both information and data. The losses center about the ability to know whether or not the information or data is accurate and complete. In short, the losses are in the ability to think.

Machines (computers) are doing more and more of our thinking for us. Our technology-based educational system now emphasizes the techniques of how to use the technology rather than for what the technology is being used.

In most cases, we are sacrificing accuracy for speed. We use the technology to calculate mathematical answers instead of learning what it is that is being calculated. We use a spell-checker instead of learning to spell, and we use websites to check our grammar instead of learning to write. Truncated online dictionaries seldom present the etymology, pronunciation, and multiple nuanced meanings of words. Our answers to almost everything are given to us by

browsers. The latter practice has become so common that the names of browsers have become verbs in our everyday language. Even language has fallen to technology and we use online translators instead of learning a language. We use the graphing function on our machinery instead of learning to graph. We use Global Positioning (GPS) instead of learning to read a map. In one instance, the author was told by a student who was absent from a field trip that the trip was missed because the GPS was down. The saddest part of that excuse was that the student was an older college student who had already served in the military.

We type instead of writing, not in addition to writing. We use "Impressionistic" definitions instead of "Definitive" ones. Impressionistic definitions normally include the phrase, "It's <u>like</u> ..." and don't include an actual definition. The result is that people have an impression of what a word might mean and not a complete understanding. One of the most valuable attributes in our language is that, when used properly, a person can write out the instructions for how to build something as complex as a jet aircraft, and another person can build a jet aircraft. That ability is in jeopardy when words have impressionistic meaning.

We are taught to recognize words, not read them. We use trick algebraic processes instead of learning the relationship among numbers and sets. Even in classes such as History, we are often taught what happened, not why it happened. The erosion of our educational foundation is not limited to the classroom. In society, we are more often taught how to become a parent, instead of how to be a parent.

To maintain our superiority over machinery and technology, we need to know enough to know - or suspect - that the machine is wrong. Admittedly, the information may be wrong because another person entered the wrong information, either as data or as a step in the programming. Sometimes that erroneous entry is accidental and sometimes it may be with the intent of misleading the consumer. In either case, the burden of accepting or rejecting information and data offered by machinery must remain ours.