If those who lead the nation's schools and colleges could agree that knowledge, competence, and understanding are the purposes of education, there would be better hope of resolving many pressing educational issues. Educational textbooks and journals have thousands of references to knowledge, skills, and attitudes as the intended or expected outcomes of education, but what our schools teach and what our students learn are difficult to recognize as the educating of knowledge, competence, and understanding. Many educators are too embarrassed to speak and write of education as the development of human minds and moral character. We no longer make meaningful distinctions between believing and feeling, and we talk glibly about cognitive skills, information-processing models, and artificial intelligence without the benefit of critical thinking.

The intent here is to summarize briefly some of the thought and discussion that has been given to knowledge, competence, and understanding as educational outcomes. Many friendly critics of education apparently believe that knowledge is knowing that, competence is knowing how, and understanding is knowing why? We often act as if such distinctions are meaningful, and the general public often responds to educational crises in terms of what college graduates should know, do, and feel.

KNOWLEDGE IS KNOWING THAT!

Distinctions between knowing that and knowing how are often made. Gilbert Ryle in *The Concept of Mind* (1949) distinguishes between substantive knowledge that is quickly imparted and procedural knowledge that must be inculcated over a period of time. Substantive knowledge is conceptual,
cognitive, linguistic, and symbolic (involving words and numbers); it is the answer to questions that usually begin with Who, What, When, Where?

Benjamin Bloom's (1956) taxonomy of cognitive objectives defines knowledge as the recall of specifics and universals, methods and processes, and patterns, structure, or setting. Related cognitive abilities are comprehension, application, analysis, synthesis, and evaluation. Writing at a time when behavioral concepts were dominant in education, Bloom and his colleagues are more interested in learning behaviors than forms of knowing. Comprehension, nonetheless, is the means by which knowledge is often detected, assessed, or measured. Knowledge is often the object of cognitive skills, such as application, analysis, synthesis, and evaluation.

More recently, Howard Bowen (1977) has presented a taxonomy of educational goals in terms of cognitive learning, emotional and moral development, and practical competence. Cognitive learning includes the verbal skills of reading and listening with comprehension, organizing and presenting ideas in writing and speaking, and acquiring a second language. Also included in Bowen's discussion of cognitive learning are quantitative skills, substantive knowledge, rationality, intellectual tolerance, and intellectual integrity.

Mortimer Adler (1982) classifies the goals of education as the acquisition of organized knowledge, the development of intellectual skills, and the enlarged understanding of ideas and values. Language, literature, the fine arts, mathematics, natural science, history, geography, and social studies are the areas of organized knowledge that should be acquired in school. Reading, writing, speaking, and listening, along with calculating, problem-solving, observing, estimating, and critical judgment are the intellectual skills schooling should develop.

From such authorities we can glean much that should be useful in education. Knowledge is acquired or learned through formal instruction, from others through observation and inference, and from self-observation. Knowledge can be derived and enhanced from the application and use of cognitive skills such as thinking, reasoning, and reflection (mental operations that Ryle and behavioral psychologists do not admire). Our command or mastery of knowledge is often judged by the ways in which we express or use the knowledge we have at our disposal. As a result, knowledge is amenable to measurement by tests of recognition and recall but more often trusted when measured in ways that call for comprehension, application, analysis, synthesis, and/or evaluation.

Knowledge is often distorted in recall and in use. As every student knows, much knowledge can be acquired through memorization (a learning skill that is often regarded as the antithesis of education). Knowledge is more likely to be retained when it is well organized. And just as it is helpful to think of information as organized data, it is helpful to think of knowledge as a higher level of organized information.