

**Educators must strive to see that basic changes in education do not make our students regress but rather progress.**

## Forward to the basics

by Carl S. Johnson

Attainments in 1957 by a competitive foreign power in the atomic and space sciences—with the Russian launching of Sputnik I—produced a threat to our national survival. This launching of Sputnik I on Oct. 4, 1957, ignited the smoldering embers of a changing curriculum (especially in mathematics and science) into a raging fire of academic revolution that swept across the entire country.

The immediate reaction of our people was a more serious national look at our schools. This was partly realistic and yet it was also done partly as a search for a scapegoat by a country's people who had a guilty conscience. Educators began to work harder to revise their instructional offerings in an attempt to meet society's changing needs and demands. A major thrust of curriculum reform in mathematics and other areas has been to improve course offerings by bringing the content up to date, stressing recognition and solution of problems rather than learning pat answers, and emphasizing principles rather than facts.<sup>1</sup>

In the last few years some of the findings of the National Assessment of Educational Progress Study<sup>2</sup> has been viewed by many as a signal that we should "return to the basics." This "return to the basics" is being heard more and more in meetings of the PTA, school boards and even among educators. But the real question is not a "return to the basics," but rather, "forward to the basics." What we considered to be some of the "basics" in mathematics a few years ago are no longer considered "basic" today. Some new concepts of the "basics" are considered here.

**First "Basic"**—The inexpensive pocket calculator will revolutionize the teaching of mathematics as much or more than any of the new teaching methods or materials produced in the "new math" era of the late 50s

and early 60s. One of the "basics" in the past has been to develop a student's competency in working with fractions. While working with fractions is still important, the main idea in the past was to have a student perform the various operations mentally and then write his results on paper. Now, after a few simple examples illustrating what one is to do mentally in the calculation, most of the operations will be performed on the pocket calculator. The emphasis is changing from actually doing or performing the operations with pencil and paper, to determining what mathematical operations one should perform on the calculator and when to do so.

**Second "Basic"**—One of the tenets of the "new math" was that teachers should eliminate unnecessary drill. Many teachers went one step further and eliminated all drill completely. This is one of the main reasons for the poor achievement test scores of students in mathematics in the past ten years, especially in the area of computational skills. Drill or repetition is still very important in the teaching of mathematics today. However, drill only becomes important in mathematics when students are taught to think and analyze what they are doing and why they are performing certain tasks, as they go through the drills.

**Third "Basic"**—Another new "basic" in mathematics involves learning to work with our new system of measurement—the metric system. For reasons of uniformity in measurement with a large percentage of the earth's population, and to facilitate trade, industrial growth, etc., the United States is now in the process of changing to the metric system. Teachers of our youth must have special help not only to extend this knowledge in this area of mathematics, but also to learn the most logical order of teaching the metric system.

**Fourth "Basic"**—The developmental learning theories set forth by the Swiss psychologist, Jean Piaget, can be considered another "basic" to which we should move forward. Piaget holds to the belief that only when a child acquires a certain needed ability can he learn a particular concept.<sup>3</sup> He has sought to note a child's societal experiences and his maturational level, so that he can ascertain the order in which he acquires certain intellectual abilities. Educators must consider and put into everyday use the knowledge of psychologists such as Piaget, in order to provide optimum learning experiences for their students.

Thus, it is no longer "back to the basics," but rather, "forward to the basics." Although the new "basics" in mathematics and in education such as those which have been mentioned above are important, surely there will be other new "basics" in the future as we continue to live in a world of growing technology. The "basics" of mathematics will continue to change as our world changes. It behooves us as educators to strive to see that these basic changes do not make our students regress in their learning; but rather, that they progress forward to utilize their learning potential to its fullest capacity.

### References

- <sup>1</sup>Carl S. Johnson, "An Analysis of the Required Mathematical Preparation for Secondary School Mathematics Teachers in the United States." Unpublished Doctor's Dissertation, Kansas State University, 1973, p. 9.
- <sup>2</sup>Jeanine Bays (ed.), "Poor Math Skills Hurt Consumer," *National Assessment of Educational Progress Newsletter*, 8, No. 4 (August, 1975), pp. 1, 3.
- <sup>3</sup>Jon L. Higgins, *Mathematics Teaching and Learning*. Worthington, Ohio, Charles A. Jones Publisher, 1973, p. 66.