SHORT COMMUNICATION

MATHEMATICS EDUCATION IN CHINA TODAY: FOUR PROBLEM AREAS

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ABSTRACT. The realization that an educated citizenry is essential to China's modernization has led to the national goal of nine years of compulsory education for all students by the year 2000. Among the many and varied problems encountered in efforts to educate the masses are those existent in mathematics education. The authors identify and discuss four critical areas - educational theory, technology, instruction, and assessment of teaching - which are of immediate concern in the mathematics education of primary and secondary school students in China.

INTRODUCTION

China is a country that enjoys a long history and a splendid culture. Prior to the establishment of modern China in 1949, however, educational opportunities for the masses were extremely limited, with as much as 80% of the population being illiterate. During the past four decades, education has undergone massive changes, from the nationalization of the school system and Chairman Mao's goal of serving ordinary people and the cause of socialism to virtual eradication of educational opportunity during the Cultural Revolution (1966–1976). During the Cultural Revolution, prejudice against knowledge and skilled workers was encouraged by government policies and attitudes. Schools were abandoned, books and teaching materials were destroyed, teachers were persecuted – the education of a whole generation was essentially lost.

The era since the Cultural Revolution has been a time of massive rebuilding of China's educational system. The Chinese government makes specific mention of the importance of education in China's Four Modernizations: industry, agriculture, national defense, and science/technology. With the recognition that an educated citizenry is essential to China's economic progress, the goal of nine years of compulsory education for all students by the year 2000 has been adopted.

Students ages 7–12 attend elementary school (grades 1–6); ages 13–15, junior middle school (grades 7–9); and ages 16–18, senior middle school (grades 10–12). Ninety-four percent of all eligible students are currently enrolled in elementary schools, and about two thirds of these students will enter junior middle school. Twenty-seven percent of junior middle school graduates will complete senior middle school, and about ten percent of

these graduates will enter institutions of higher education. An alternative to the senior middle schools is the career school, which has developed rapidly in recent years to respond to China's economic needs by preparing students to enter specialized jobs in business and industry. Students in career schools number about half those in senior middle schools.

Current governmental policies clearly indicate that progress is being made toward the elimination of prejudice against knowledge and skilled workers and that respect for teachers and learning is being promoted. However, the problems existent in such a large-scale educational system that must function with limited resources against a backdrop of widespread illiteracy among the masses are not easily resolved.

The open-door policy which now exists has allowed for and encouraged Chinese educators to seek ways to improve their educational system through interaction with educators in the Western world. This article has resulted from such interaction. The major author, a Chinese mathematician and mathematics educator, studied in the United States during the 1988-89 academic year. He visited American elementary and secondary schools and studied issues related to theory and application in mathematics education. He, with the assistance of his coauthor (see Author Notes), has identified four critical areas - educational theory, technology, instruction, and assessment of teaching - which are of immediate concern in fostering the mathematics education of primary and secondary school students in China. Each of these areas is discussed in the following sections.

EDUCATIONAL THEORY

Chinese education does not derive its pedagogy from a cohesive body of educational theory; rather, educational practices are heavily influenced by the political ideology of the times. Most teachers under age 50 know only the late Chairman Mao's educational ideas and theories, while older teachers are grounded in Russian educational theory during their teacher training programs. Almost no one has been influenced by Western educational theorists – the work of Piaget, Bruner, Skemp, Ausubel, and other theorists who have helped to give guidance to mathematics educators in the Western world is virtually unknown. In reality, the instructional practices of many teachers are lacking in theoretical guidance.

TECHNOLOGY

Computer-assisted instruction (CAI) and computer-managed instruction (CMI) in Chinese schools were begun in 1982. Except in Tibet, all