SOME HIGHLIGHTS FROM ICME-6

Sherralyn Craven

Central Missouri State University

The largest contingent ever of mathematics educators met in Budapest, Hungary to attend the sixth International Congress on Mathematical Education (ICME) during the week of July 27 through August 3, 1988. Language, cultural and educational differences did not seem important as problems and possible solutions were discussed.

One such problem is the shortage of mathematics teachers. It should be pointed out that the shortage that exists is no longer just at the secondary level. Colleges and universities are also experiencing such a shortage of mathematics teachers. In fact, within the next ten years, this shortage will probably surpass that of the secondary schools. Some of the causes mentioned for this shortage are:

1. Low salaries as compared to industry.
2. Discouragement of students from entering the profession.
3. Negative attitude of society towards education.
4. Teacher stress.
5. Teacher "burnout".

Thus, the shortage of mathematics teachers might be alleviated by eliminating these causes.

Some schools are now implementing salary differentials to attract and retain mathematics teachers. These salary differentials may take the form of extra pay for "coaching" students, paying for professional memberships and attending conferences, or providing reduced loads. One participant of the conference explained that his country's teachers are encouraged to teach in two schools, each at full pay but reduced loads. Examples of substandard teaching may discourage students from entering the teaching profession. It was felt that it is necessary to upgrade the quality of those entering the profession to make it more professionally attractive to prospective teachers. The negative attitude towards education, according to some participants, could be alleviated by the development of quality programs. In addition, other educational/vocational opportunities should be developed as alternatives to traditional liberal arts education. It appeared that the United States still lags behind other countries in providing multi-faceted educational opportunities. It was the general opinion that teacher stress could be reduced by providing some freedom from paperwork and other mundane tasks. Also, teachers should be given time to participate in creative activities in order to provide them with challenges. Teacher burnout can possibly be avoided by assigning beginning teachers upper level courses commensurate with their training. Thus, the beginning teacher will know that *every* teacher will at times be responsible for lower level courses.

Another idea discussed at the conference was the possibility of retraining others to become mathematics educators. The general opinion was that greater success would be attained if these individuals were already trained as mathematicians. Of course, careful research must be undertaken before any of the above solutions are implemented.

During the training of mathematics teachers, we need to instill in them that one key to success in mathematics is hard work! Calculators and computers play an integral part in industry. Yet mathematics teachers, particularly at the university level, have not integrated this technology into the classroom or curriculum. In particular, the calculus textbooks continue to have more material added with no attempt being made to delete material. Also, it was noted that if one compares current calculus textbooks with those of the past, considerable algebra and other elementary topics are *not* included in earlier texts. This stems from wanting students to start with calculus when in reality they need a better background in algebra. There are also those who advocate having a two track system in university mathematics, one for mathematics majors and another for mathematics education majors. Those who advocate this proposal indicate there should be an education specialist teamed with a mathematician so that future teachers have an outstanding role model to emulate. The majority of the conferees, however, seemed to be in favor of a one track system with all mathematics being taught by "outstanding teachers".

It was the general consensus that the process of problem solving should be an integral part of all curricula. Mathematics teachers should work with teachers from other areas in order that problem solving, as a topic, is integrated throughout the curriculum. The problem solving process should begin in kindergarten and proceed through the university course of study.

Assessment and placement have become worldwide topics. It is accepted that assessment is necessary but the method of such assessment seems to be a matter of controversy. There is concern that some educators equate assessment with placement. Assessment measures how successful the student has been in achieving certain objectives. On the other hand, placement determines the level of proficiency the student has achieved. It was agreed that for assessment, objective tests would not be appropriate. Interviews, teacher evaluation, discussion questions, and examination of the student's work need to be incorporated into the process of assessment. It was emphasized that assessment should be undertaken only by using random sampling techniques, rather than assessing the entire student population. This random sampling will allow for protection of the teacher from administrators with less than ethical standards and also will take into consideration diverse methods of teaching.

Research by classroom teachers is another area that needs to be addressed by colleges and universities. Sometimes university teachers are so engrossed in conveying subject matter and methods of teaching that they fail to have time to do research. This is in part due to the lack of recognition of pedogogical research at the university level. Thus, future teachers are not provided experience in classroom research. If this is carried to the extreme, classroom research may become a lost art. Of course, release time and resources must be made available for the implementation of this research. An attempt is now being made to organize a working group, with representatives from several countries, so that this topic will be discussed more fully at ICME-7.

Thus, much preparation is needed during the next four years before ICME-7 convenes in Quebec City, Canada in 1992. Why not make plans now to participate in ICME-7.