

STUDENTS' ABILITY TO COPE WITH ROUTINE TASKS AND WITH NUMBER-SENSE TASKS IN ISRAEL AND IN KOREA

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Despite the importance of number sense, it seems that emphasis of the mathematics curriculum in elementary school is on computational algorithms and procedures. Number sense can be developed (e.g., Markovits and Sowder, 1994) but in order to do this students should explore a variety of tasks requiring number sense as an integral part of their mathematics studies. Reys et al. (1999) compared number sense proficiency of students aged 8 to 14 years in Australia, Sweden, United States and Taiwan. They found, as expected, that the performance levels on the items varied across the countries, but also that regardless of country variable, students exhibited low performance on the number sense tasks. Reys and Yang (1998) investigated the relationship between computational performance and number sense among sixth and eighth grade students in Taiwan. They found that students' performance on questions requiring written computation was significantly better than on similar questions relying on number sense.

In our study we compare the way 250 sixth grade students from Korea and Israel cope with routine tasks and with tasks requiring number sense. The comparison turns to be interesting since Korean students keep doing very well on international tests, while Israeli students are ranked much lower on the list (e.g., Mullis, et al., 2000). A written questionnaire containing 24 open-ended tasks with 12 routine tasks and 12 number sense tasks was developed and given to the students.

Preliminary results show that Israeli students performed better on the routine tasks than on the number sense tasks. Many students did not use number sense on the routine tasks, thus ending with incorrect responses. For example, on $2372 : 8$ students got more than 2372, without paying attention to this unreasonable answer. Korean students also performed better on the routine tasks. In comparison with Israeli students, they performed well both on the routine and on the number sense tasks. However, Korean students had a tendency to use standard algorithms on the number sense tasks, as long as they were applicable, which might result in correct answers without good number sense.

References

- Markovits, Z. & Sowder, J. (1994). Developing number sense: An intervention study in grade 7. *Journal for Research in Mathematics Education*, 25 (1), 4-29.
- Mullis, I. V.S., Martin, M. O., Beaton, A. E., Gonzalez, E. J., Kelly, D. L., & Smith, T., A. (2000). *TIMSS 1999 international mathematics report*. Boston, MA: Boston College.
- Reys, R. E. & Yang, D. C. (1998). Relationship between computational performance and number sense among sixth and eighth grade students in Taiwan. *Journal for Research in Mathematics Education*, 2(2), 225-227.
- Reys, R., Reys, B., McIntosh, A., Emanuelsson, G., Johansson, B., & Yang, D. C. (1999). Assessing number sense of students in Australia, Sweden, Taiwan, and the United States. *School Science and Mathematics*, 99(2), 61-70.