

DIFFERENT VIEWS OF KOREAN AND GERMAN TEACHERS BELIEFS ABOUT MATHEMATICS

Jeeyi Kwak, Kristina Reiss

Department of Mathematics, Carl von Ossietzky University of Oldenburg, Germany

Since the eighties in mathematics didactics, a branch of research so-called Beliefs ("Mathematische Weltbilder") is developed.(cf. Törner, 1998) Results of the "Beliefs"-research have showed a further possible reason of the difficulty in proving and solving the mathematical tasks.(Pehkonen, 1995) According to Pehkonen, the competence of the problem solving does not depend on the students' mathematical knowledge or mathematical competence, but also on the beliefs about mathematics. In his opinion, beliefs about mathematics should be included as an explaining factor, which influenced on problem solving.

Our research aims are to find the role of beliefs in problem solving, specially related with proving as followed:

(1) Are beliefs the factor for the mathematical competence of proving? (2) Do the teachers Beliefs about mathematics influence student to develop their Beliefs about mathematics? (3) How differences do Korean and German teachers have in Beliefs about mathematics?

We asked 58 Korean and 27 German middle school teachers and 192 Korean and 659 German 7th grade students. We used the questionnaires of Klieme(2001) who refined and categorized the questionnaire of Grigutsch(1996). We have identified them as three broader categories, Application, Formalism(Exactness) and Process(Process as creativity). The view of German students about mathematics is dominated with the fact that mathematics is Formalism(F), Application(A) and Process(P) in the order named, the view of Korean students is similar as them, however, we can find quite different of their value. For German students, $A=0.30$, $F=0.54$, $P=0.21$, for Korean students, $A=0.58$, $F=0.63$, $P=0.55$. While Korean students and teachers both have similar views about mathematics, German teachers have quite different view from students. We did not identify a significant effect concerning the influence of Beliefs about mathematics on mathematical competence of both Korean and German students.

REFERENCES

- Grigutsch, S. (1996). Mathematische Weltbilder von Schöler*lern. Struktur, Entwicklung, Einflussfaktoren. Duisburg: Universitöt.
- Pehkonen, E. (1995). Vorstellungen von Schöler*lern zur Mathematik: Begriff und Forschungsergebnisse, *Mathematica didactica*, 18 pp.35-65
- Törner, G. (Ed.) (1998). *Current State of Research on Mathematical Beliefs VI*. Proceedings of the MAVI Workshop. Duisburg: Schriftenreihe des Fachbereichs Mathematik der Universitöt.
- Thompson, A.G. (1992). Teachers beliefs and conceptions: a synthesis of the research. In D.A. Grouws (ed.), *Handbook of Research on Mathematics Teaching and Learning* pp. 127-146. New York, NY: Simon & Schuster.