Further Reading


The COACTIV project is being conducted in collaboration with Prof. Dr. Werner Blum (University of Kassel), Prof. Dr. Michael Neubrand (University of Oldenburg) and Dr. Alexander Jordan (University of Bielefeld).

Contact

COACTIV Study
Dr. Mareike Kunter
Phone: 030-82 406 209
Fax: 030-82 499 490
E-mail: lehrer@mpib-berlin.mpg.de
www.mpib-berlin.mpg.de/coactiv/index.htm

The Max Planck Institute for Human Development, Berlin, was founded in 1963 as an interdisciplinary research establishment dedicated to the study of human development and education. It is part of the Max Planck Society for the Advancement of Science, one of Europe’s leading basic research organizations.

© Max Planck Institute for Human Development
Lentzeallee 94, 14195 Berlin
11/2007

Contact
Press and Public Relations Department
Dr. Petra Fox-Kuchenbecker
Phone: 030–82 406 211
E-mail: fox@mpib-berlin.mpg.de
Putting Mathematics Teachers to the Test

There are countless ideas of what makes a "good teacher"—probably as many ideas as there are students. The COACTIV project was initiated at the Center for Educational Research of the Max Planck Institute for Human Development (Director: Prof. Dr. Jürgen Baumert) to approach the matter from a scientific perspective. Looking specifically at lower secondary mathematics teachers, the study addresses questions such as the following:

• What are the characteristics of successful teaching?
• What distinguishes teachers who succeed in their profession?
• How can the quality of instruction be improved?

Findings showed that the participating teachers differed markedly in a number of respects. In particular, teachers with high pedagogical content knowledge were found to provide higher quality instruction; they put more emphasis on insightful learning processes and gave their students more individual learning support. At the same time, instructional quality was also found to be associated with noncontent-related aspects of teacher competence such as the ability to cope adaptively with the demands of the profession.

Study Design

The COACTIV study (Professional Competence of Teachers, Cognitively Activating Instruction, and the Development of Students’ Mathematical Literacy) is an extension to the longitudinal German PISA 2003/04 assessment and is being conducted in cooperation with the University of Kassel (Prof. Dr. Werner Blum), the University of Oldenburg (Prof. Dr. Michael Neubrand) and the University of Bielefeld (Dr. Alexander Jordan). For COACTIV, both the PISA students and their mathematics teachers were assessed twice at a 1-year interval. The mathematics teachers were tested on their content knowledge and pedagogical content knowledge. The content knowledge section of the assessment investigated how well teachers understand the material they have to teach. In the pedagogical content knowledge section, they were asked to describe as many ways as possible of communicating that material to their students (e.g., by setting certain tasks or presenting specific examples). In addition, teacher characteristics such as motivation and resilience were assessed.

Informing Teacher Training

The COACTIV data confirm that teachers need to be able to access various aspects of teacher competence to succeed in their challenging profession. Follow-up studies will provide further insights into these findings.

Autumn 2007 saw the start of the COACTIV-R study, which shifts the focus to the 2-year phase of teaching practice that is compulsory for all teacher candidates in Germany. COACTIV-R aims to investigate the aspects of professional competence that student teachers develop during this period and to identify the components of their training that best foster this development.

The findings of the main COACTIV study and its follow-up studies will inform initial and in-service teacher training and thus contribute to the enhancement of students’ learning conditions.