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Quality in Practice-oriented Research in Science Education

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The 17th biannual Symposium on Chemical Education firstly organized in 1981 took place again at the University of Dortmund, Germany. This year conference was jointly organized by Bernd Ralle (University of Dortmund, Germany) and Ingo Eilks (University of Bremen) and participants came from 11 different European countries and Israel. Papers were presented by Herbert Altrichter (University of Klagenfurt, Austria), Jan van Driel (University of Leiden, The Netherlands), Ingo Eilks and Ilka Parchmann (Universities of Bremen and Kiel, Germany), Fritz C. Staub (University of Zuerich, Switzerland), John K. Gilbert (University of Reading, UK), Rachel Mamlok-Naaman (The Weizmann Institute of Science, Rehovot, Israel), John Oversby (University of Reading, UK), Nicos Valanides (University of Cyprus), Karl Brachtl (Europagymnasium Klagenfurt,

Austria), Astrid M.W. Bulte (Utrecht University, The Netherlands), Franz X. Bogner and Christoph Randler (University of Bayreuth and University of Education Ludwigsburg, Germany), Uri Zoller (Haifa University, Israel), Michael Schallies (University of Education Heidelberg, Germany), Ani Epitropova (University of Plovdiv 'Paisii Hilendarski', Bulgaria), and Declan Kennedy (University College Cork, Ireland).

The presentations and the accompanying discussions focused on new approaches and projects in practice-oriented research in science education and investigated their potential contributions towards solving existing problems in science education and improving the quality of science teaching based on research evidence. The Symposium addressed the main issue that was identified during the previous Dortmund Symposium, that is, the need to invest on pre- and in-service teacher training and professional development of teachers, because teachers are unanimously considered as the main catalyst for change and quality improvement in science teaching and learning. Most of the presented projects involved teachers in the design and implementation of curriculum reform and research as a better way of professional development of teachers. Contributions that were identified and discussed arose from different approaches, such as, Action Research and other similar approaches, Developmental Research or Content Focussed Coaching. It was intensively discussed how to include teachers into these processes and how to secure quality in their professional development and what could be the future effects of this orientation. These aspects had been discussed along research addressing the monitoring of these effects as it was illustrated by projects of research and curriculum development. These projects are mainly oriented towards more student-centred, context-based instructional approaches based on constructivistic principles. The outcomes of several international studies, such as TIMSS and PISA, provide the impetus for sustainable educational changes and innovations that promise to transform the realities that continue to be dominant in the classrooms all over the world and support the design and implementation of really powerful learning environments based on the outcomes of innovation and research-oriented practices.

The participants beyond the activities of the Symposium also participated and enjoyed several social events, e.g., the visit of the 'Zeche Zollern II/IV' in Dortmund. The former Zollern II/IV colliery was the first industrial monument in Germany getting an official status as site of 'cultural heritage,' and offered an impressive surrounding for the conference dinner. The German Research Community (DFG), the Degussa Company, the German Chemical Industries Association (FCI) and the Universities of Dortmund and Bremen mainly funded the symposium. A book of proceedings with all contributions will be published in late summer this year. Further information is available at www.chemie.uni-dortmund.de/groups/dc1/SS2004.htm.