Abstracts

Klaus Rödler: The cultural history of the number as a fresh impetus for an inclusive mathematics education in primary school

The solidified calculation by counting, the lack of thinking in the part-whole concept and the disregard for the cardinal meaning of our place-value-numbers still represent the typical features of pupils with arithmetical difficulties. Twenty years of didactic research and innovative practice have failed to solve this core problem of mathematics education. The additional task of inclusive education equally raises the question why numbers and the calculations they perform seem to impose in-superable obstacles for a part of the student body.

"Calculating-through-acting" ('Rechnen-durch-Handeln') is the attempt to address this problem in a new way by interpreting numbers and calculations from a cultural-historical perspective in a broader sense. By taking the phylogenesis of numbers with their developmental stages seriously and thereby identifying both hurdles and solutions, the course develops the framework for an inclusive specialized didactics of computational learning.

Marc Sauerwein: Teaching mathematics in international classes: Activity theoretical facets exemplified by exploring figurate numbers

Based on the practical challenge of teaching mathematics in an international class, a teaching unit for the introduction of algebra has been developed. Algebra is not only meant as the manipulation of equations but in a more holistic way as the language of algebra enabling us to express general relations in the form we are used to. The approach is inspired by an historical epistemological analysis of Kvasz and centers figurate numbers. In the article we sketch the involved design research project and consider aspects of activity theory with special focus on the specific context of an international class.

Ysette Weiss: Thoughts on the digitization of mathematics classroom from the point of view of the tool-concept

The use of digital tools seems to be especially likely for mathematics teaching since algorithms have a principal meaning in mathematics and are essential for digital technology. However, decennia of persistent attempts to use the computer in order to foster mathematical understanding have shown to be especially successful when a basis of conceptual understanding of the notions that are to be developed has been laid earlier. At the hand of several examples we show that algorithmic approaches to learning processes are not the consequence of introducing digital tools. The reduction of the features of learning to mechanistic, machine-readable processes can already be found in programmed instruction and now reinforced in its modern realizations in e-learning. In this context, we will focus briefly on the recent unreflective promotion of technical developments with digital tools as means to support learning.

Denise Temme: Human movement as activity

How the success of a dance movement does manifest itself? The question may seem trivial, since dance prescribes certain techniques as ideal movements that can be considered as a measure of success. But what if the dance does not dictate a particular movement? And what if every movement can be dance? Pina Bausch defines the dance as follows: "It can be almost anything dance. It has to do with a certain consciousness, with a certain inner, physical attitude, with a very high degree of preciseness." How does it concretize the measure of success for this case? What does the preciseness refer to?

Margarete Liebrand: Reflections on the relationship between didactics and learning psychology

The topic „didactics" of teaching and learning is raising questions like these: How do learning and development relate to each other? What means "being a subject of learning" when learning happens in and through the world? What about "the purpose", the "what" and the "how" of learning, when learning actions have to be performed by oneself? The bracket that connects these questions when thinking in terms of the activity theory is its pointing to this problem: How can didactics be thought of in thinking in processes? What does a mediation of the development in learning and of

learning involve if it is regarded as processual? What does a teaching of learning mean if the individuals acting in it do so as persons whose actions are aimed as preserving their identity as well as their coming out in constructing their personality?

I intend to reflect these questions in a sharpening of terms. They mainly concern the exploration of the relationship between teaching and learning or between didactics and learning psychology.

Dorothee Roer und Renate Maurer-Hein: When two active subjects meet … An activity theory view of interaction in social work

This article takes Alexej Leontiev's conception of the human being as a starting point to propose an activity-theoretical interpretation of interpersonal events and apply it to the specific (dramatic) structure of interaction between social work professionals and the recipients of their services. We describe how societal conditions give rise to a contradictory process that inevitably develops in a non-transparent, and thus destructive, fashion and undermines the intended objectives. We conclude by examining whether and under which conditions it might ultimately be possible to create – at least to some extent – dialogical-participatory relationships between the protagonists.