NATURAL DIFFERENTIATION – AN APPROACH TO COPE WITH HETEROGENEITY

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Teachers in their classes always have to cope with heterogeneity, and that by no means is a new problem. For example German publications from the 70s onwards have included many suggestions for several kinds of differentiation which is expected to be a possible solution. How can it be then that after forty years differentiation is still called a ›mega issue‹?

Is it just because the range between slower/faster learners or low/high achievers has expanded over the years? The span of proficiency indeed can spread over three grades. Or could it be that traditional kinds of differentiation are considered as helpful, but not sufficient – and if this is the case, we should ask why? Additionally, differentiation or individualization continues to be a popular catchcry whose meaning remains mostly unexamined in terms of effective classroom practice, while still expected to serve as an universal secret weapon for optimizing students' proficiency in math classes.

This lecture will focus on these and related questions by examining such crucial issues for (primary) mathematics education in heterogeneous classes as: Standards for Mathematical Practice (here focusing on Reasoning), Standards for Mathematical Content (here focusing on Arithmetic), Social Learning with and from each other, and Heterogeneity (different levels of reasoning). The lecture will discuss some theoretical concepts in particular, Substantial Learning Environments (Wittmann 1984/1995/2004) and Natural Differentiation (Wittmann 2012; Krauthausen/Scherer 2010/2014). These concepts formed the basis for a European Union project (NaDiMa: Natural Differentiation in Mathematics Education; 2008-2010) from which some results and classroom examples will be presented.

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