

## Peter Baptist



Peter Baptist studied mathematics and physics and has a Diploma in mathematics, and a PhD and Habilitation at [Würzburg University](#). He worked as a teacher at a Gymnasium in Bayreuth and at a comprehensive school in Hollfeld. He got professorship/chair at Erlangen University and at [Technical University of Dresden](#). Since 1994 he has held the Chair of Mathematics and Mathematics Education at [Bayreuth University](#).

His research activities include: Optimization Theory, Elementary Geometry, History of Mathematics, Teaching and Learning of Mathematics, Dynamic Mathematics Software [GEONExT](#), Development of Dynamic Worksheets and Learning Environments.

He was responsible for the improvement of teaching and learning of mathematics in [SINUS and SINUS-Transfer projects](#), Nation-wide projects that involved more than 1800 schools in Germany.

### Demo Abstract:

#### *Towards New Teaching of Mathematics - What Do We Learn from SINUS?*

First we have to realize, there is not a single way of successful mathematics teaching. But we know for sure if learning is to be successful students must get the chance to go individual ways in their learning process.

There are certain basic guiding principles that ought to be characteristic for our teaching:

- Less focus on passing factual knowledge to students, more focus on independent problem solving.
- Less focus on mere computing and manipulating formulas, more focus on understanding.
- Not only focus on acquiring particular math skills and results, but also focus on the necessary learning processes and strategies.

The implementation of these guiding principles leads to an experimental access to mathematics. We introduce mathematics in the context of carefully chosen problems. In the process of trying to solve such problems the students develop mathematics. We follow the American mathematician Paul Halmos who demands: “Don’t preach facts, stimulate acts.” That means: The teacher is not an entertainer, the student is not only a consumer. We do not present ready to consume mathematics. Teachers must help students to understand the concepts of mathematics, not just the mechanics of how to solve a certain problem.

“Stimulating acts” means to encourage students to develop their own informal methods for doing mathematics. We ask them to explore, to observe, to discover, to assume, to explain, to prove.

This sequence of activities exactly describes what we understand by Experimental Mathematics. We do not start with formulas or rules, we get them at most at the end of the learning process.

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SINUS and SINUS Transfer were the largest school development projects in Germany (more than 1800 schools took part). With these programs, improvement in the quality of maths and science education was initiated, tested and systematically spread between 1998 and 2007.