



# Keynote

## STRUCTURED DERIVATIONS IN PRACTICE: EXPERIENCES FROM THE E-MATH PROJECT

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Structured derivations is a new method for presenting mathematical arguments. It is a further development of Dijkstra's calculational style reasoning, and can be used for all kinds of mathematics: proofs, calculations, geometric constructions, etc. It combines the three main proof paradigms, equational reasoning, forward reasoning (Hilbert style) and backward reasoning (Gentzen style), in one single proof format. The use of structured derivations in high school mathematics education has recently been piloted in the E-math project (an EU project 2011 - 2013). The project has created new mathematics textbooks based on the systematic use of structured derivations. These textbooks cover the whole national mathematics curriculum for first year in high school, in Finland, Sweden, and Estonia. The textbooks have been implemented on a new software platform for interactive e-books created in the project. This platform has special support for displaying and writing mathematics on a computer. The new math e-books have been piloted in 15 high schools in 2012 - 13, with some 1 000 students participating in the pilots. The talk will present the main findings from the E-math project, and discuss conclusions that can be drawn from the pilots.