Workshop

MATHEMATICS, ALGORITHMICS AND HISTORY: AN INTEGRATED APPROACH IN TWO CLASSROOM EXPERIMENTS

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In 2009, algorithmics was explicitly introduced in the new mathematics curriculum for the first year of secondary education in France. This introduction was extended to the new curricula for the second and third year published in 2010 and 2011. In the latter, the intentions of the curricula developers regarding algorithms are clearly stated: algorithms should be part of a problem-solving approach integrated in the other topics of the mathematical curriculum (analysis, geometry, statistics and probability, logic) and they could also be connected to other disciplines.

Algorithmics is therefore not meant as an independent sub-part but as a spiral work throughout the high school mathematics curriculum. Having this in mind, we had the idea to integrate history of mathematics in this approach to algorithmics. The following article presents two classroom activitites based on the reading of original sources and experimented with first and third year students in two different classroom contexts. The first activity is a computer-assisted exercise session meant as an introduction to the chapter on quadratic functions for first-year students and based on a problem by Al Khwarizmi. The second activity is a guided research session based on Heron's method for the approximation of the square root of a number. It was intended for third year students enrolled in the scientific section (Terminale S) as a conclusion to the chapter on sequences and limits and was carried out in small groups. After describing the pedagogical intentions and conceptual process, we review the activities and summarize the pupils' work. We end up with an assessment of these two classroom activities from both pupils' and teacher's standpoints. In particular we try and assess the relevance, in these two cases, of the use of historical material and of the introduction of a historical perspective in teaching mathematics.