Investigations of Technology for Teaching Mathematics in Lithuania

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The first papers on PC software use in teaching mathematics (TM) in Lithuania were published at the beginning of the last decade of the XX century. Since that time investigations, presented in the proceedings of conferences, papers of journals, and methodical literature, discovered some ways of changes from traditional "pencil and paper" teaching to a mixture of technology and traditional teaching. We can distinguish six groups of investigations:

- Declaration of computer algebra systems' (CAS) possibilities in TM in general;
- Integration of technology into the teaching of specific topics of mathematics;
- The use of statistical software in TM;
- Animation tools of CAS;
- Programming possibilities in CAS;
- Exploration of Open Source CAS.

Many papers state *the fact of software use in TM*, referring to some CAS (Derive, Maple and Mathcad use at the Vilnius College, J. Saldauskienė and V. Virkutis 2002, 2005; Mathcad use at the Kaunas University of Technology, S. Petraitienė et al. 2002, Main possibilities of Derive, Maple and Matlab, J. Lipeikienė 2002; Virtual mathematics learning environment in Web CT, R. Novikienė and N. Čiučiulkienė 2006; Use of CAS in secondary schools, S. Turskienė 2002, 2004).

The majority of articles are intended to the *applications of CAS in specific topics of mathematics*: Teaching of numerical methods with CAS, A. Domarkas et al. 2001; Software suitable for geometry teaching, J. Lipeikienė 2000; V. Dagienė 2001, V. Dagienė, E. Jasutienė, 2007; Approximation of functions in computer classes, V. Dabrišienė and R. Šileikienė 2006; Calculating of factorials with computer, J. Sušinskas and J. Mačys 2008; Visualization of functions, I. Žilinskienė 2008; Experiment planning with Mathcad, V. Pekarskas 2009.

As regards the investigations on *statistical software use in TM*, papers and methodical literature present the investigations of Statgraphics, Statistica, Excel, SSPS and SAS use (V. Rudzkiene et al. 1994; V. Sakalauskas 1998; V. Janilionis 2000; L. Bikulčienė et al. 2004; L. Griniuvienė and J. Lipeikienė 2003; T. Leonavičienė 2007; V. Čekanauskas and G. Murauskas 2000, 2002, 2009).

Animation as one of the most valuable tools of visualization was investigated in the papers of D. Girnytė 2004; J. Lipeikienė 2005; J. Lipeikienė and A. Lipeika 2006;

Possibilities of programming and visual programming in CAS are discussed in the papers of S. Turskienė, 2004, 2005.

A variety of *Open Source CAS* was investigated in the works of J. Lipeikienė 2006, J. Lipeikienė and A. Lipeika 2007, A. Domarkas 2009, N. Zimnickienė and J. Pralgauskis 2009.

The present paper gives a review and discussion on a spectrum of investigations in Lithuania, presents exhaustive references, and compares the investigations in Lithuania with the corresponding investigations in Europe. In Lithuania there is a lack of

- research on the technology impact on teaching mathematics;
- evaluations of good practices from the point of view of teachers;
- evaluations of good practices from the point of view of students.