

Symposia

Problems in teaching Physics in primary and secondary school, as seen by young Polish she-teachers

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In recent years, in spite of the availability of information on Internet and educational TVs, Physics became one of the less popular subjects in Polish schools. Reasons are numerous, and should be searched first of all in the system of Physics teacher training. Questioning young teachers is one of the way to gain the relevant answers.

The problem lies not only on the side of pupils but also on the teacher's side. Teaching is frequently run with little interest - mainly textbook reading during lessons instead of real experiments [1] or multimedia teaching methods [2]. Lesson are schematic, with no innovative scenarios, like role playing, reporting, competitions and so on.

A negative perception of Physics creates a kind of negative feedback – Physics lessons are reduced to the very minimum - 4 hours in total in the lower-secondary 3-year cycle. A way of overcoming this difficulty would be making Physics interdisciplinary, i.e. teaching Science, with elements of Biology, Geography, Astronomy, instead of Physics alone. Unfortunately, no Polish university prepares teachers to such a role.

Another problem are poorly equipped laboratories, usually possessing only old experiments, with no explanations or teaching instructions. We started working to overcome this problem, starting from electromagnetism [3] and computer guided experiments [4].

Some changes, like introducing elements of the Structure of Matter are to be considered positive. Teaching only kinematics, with mathematical formulae, essentially to be remembered, is boring. Innovative textbooks are, however, required [5]. A list of experiments to be done in schools has been recently announced by the Ministry of Educations. Again, explanations and scenarios are needed [6].

- [1] See, for example, interactive lessons http://dydaktyka.fizyka.umk.pl/nowa_strona/?q=node/142
- [2] A. Karbowski, P. Miszta, G. Karwasz, Multimedia textbook on electromagnetism, <http://dydaktyka.fizyka.umk.pl/TPSS/flashFizyka/Elektromagnetyzm.swf>
- [3] M. Sadowska, Electromagnetism, lesson scenarios, http://dydaktyka.fizyka.umk.pl/TPSS/Pliki/Elektromagnetyzm_scenariusze_lekcji.pdf
- [4] M. Sadowska, Experiments with PASCO system, http://dydaktyka.fizyka.umk.pl/TPSS/Pliki/Pasco_instrukcje.pdf
- [5] G. Karwasz, K. Rochowicz, M. Sadowska, Toruń textbook for Physics, Part I, Gimnasium, Mechanics http://dydaktyka.fizyka.umk.pl/TPSS/Pliki/Porecznik_1.9.pdf
- [6] K. Gołębiowski et al., 14 experiments for gimnasium, Instructions http://dydaktyka.fizyka.umk.pl/nowa_strona/?q=node/143