Informatics *versus* Information Technology

How Much Informatics is Needed to Use Information Technology

Part II

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My school experience, I

10 years in a high school with extended informatics curriculum

http://www.loiv.torun.pl

My observations, I

- Informatics classes students are much more interested in studying other subjects than students specializing in humanities or languages
- They also perform well in competitions and Olympiads in other subjects

My school experience, II

7 years in the Academic *Gimnazjum* and High School run by the Copernicus University in Toruń

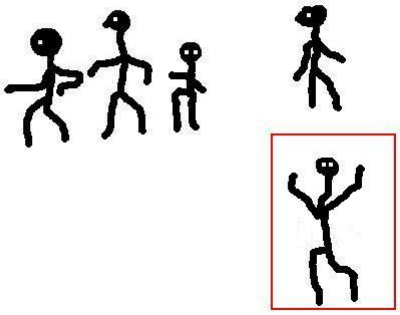
My observations, II

- Students are specializing in different subjects – algorithmic problems contribute to their motivation and logical thinking
- They are challenged by algorithmic problems, have fun and feel satisfaction finding and presenting solutions

My school experience - conclusions

- Informatics education may in general improve knowledge acquisition and skills, regardless of the subject
- When informatics education begins in middle school, students have a chance to achieve excellent results in high school
- Two levels of informatics education should be offered: basic and advanced

Informatics lessons - how to win?



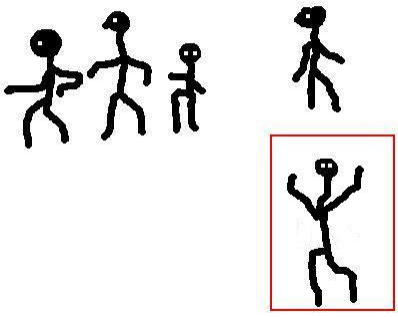
Informatics lessons: 2 units, 45' each

- 10' of 'warm up' – 'face-to-face' with technology
- Introduction of a new topic, problem, technique (e.g., algorithm, data structure, programming construction); demonstration (or simulation); discussion on a choice of a right algorithm and data structure; computer implementation of solutions, testing solutions
- Elements of competition: find a solution and send it to the e-learning platform within a given period of time (or by a given deadline), whose program runs faster, calculate the number of operations performed.

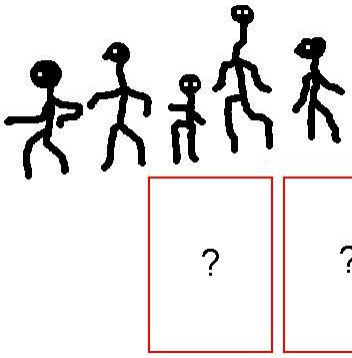
Informatics teacher role

- Usually different teachers (instructors) run a class, for a semester or so, and the topic is restricted to a given section of algorithmics, programming language, application software (Office, Open Office)
- Moodle, e-learning platform is used to support students activities in school and when they are doing homework

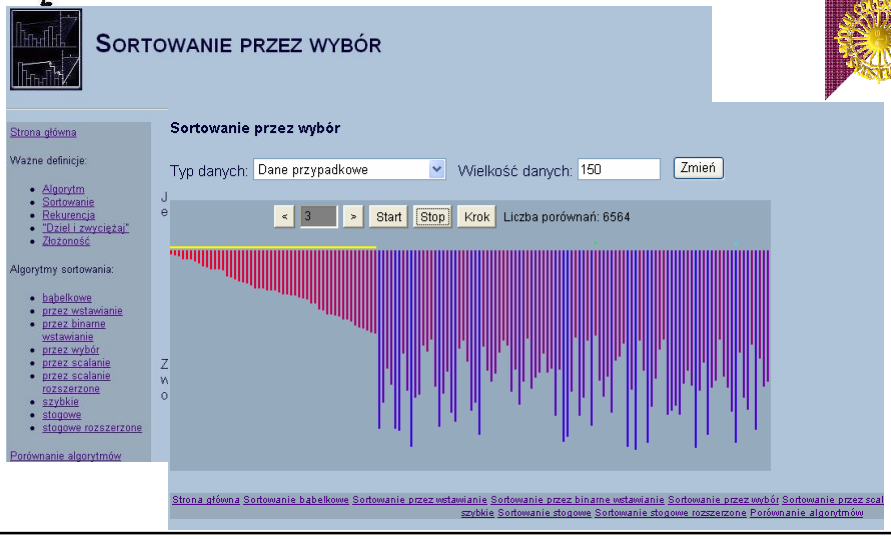
Example of 'alive' demonstration



Example of 'self study' problem



Example of computer demonstration: selection sort



Other forms of students activities in informatics

- Additional classes on more advanced and difficult algorithms, computer networks (Cisco Network Academy)
- Special interest groups – preparation for competitions and the Olympiad in Informatics
- Classes and instructions supported by e-learning platform Moodle.

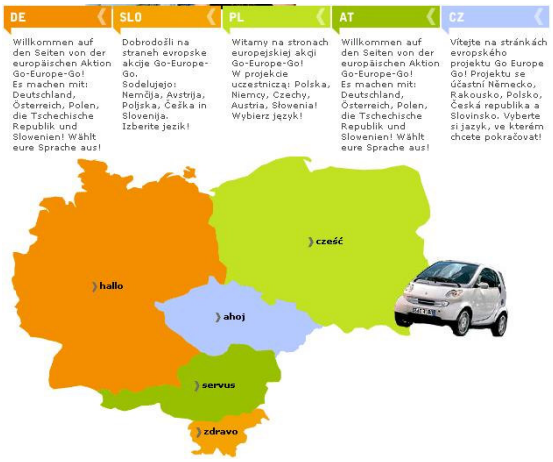
e-learning platform Moodle

http://moodle.gimakad.torun.pl

Arousing interests in informatics
International project: Pupilpower Plus

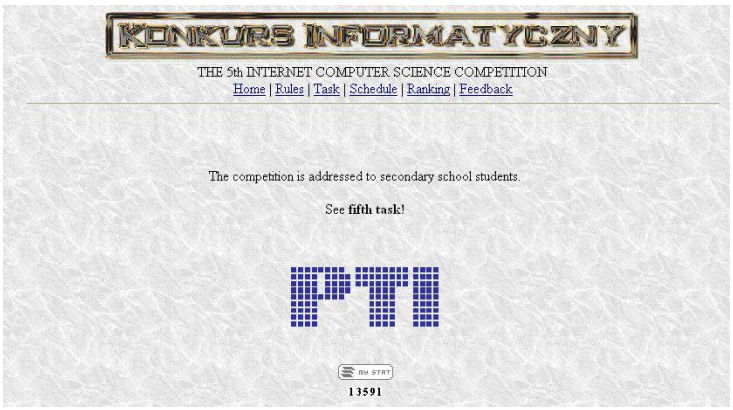
http://www.gimakad.torun.pl/ppplus

Arousing interests in informatics
International project: go-Europe-go



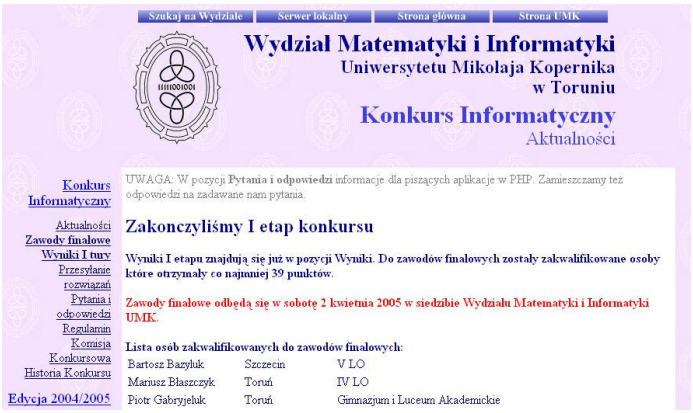
http://www.go-europe-go.net

Developing interests in informatics
Competition: Problem solving in Pascal or in C++



http://www.gimakad.torun.pl/konkurs_inf

Developing interests in informatics
Competition: Problem solving in Java or in PHP



http://www.mat.uni.torun.pl/ki

Developing interests in informatics
Olympiad in Informatics

http://www.oi.edu.pl

Developing competences and confidence in using ICT by teachers of other subjects

- Personal use of ICT in teaching, e.g. for preparing and coping electronic materials for students
- Communicating through electronic channels (e-mail, discussion groups) with students, other teachers, school staff
- Supporting instruction through e-learning platform (Moodle) for producing and exchanging advanced materials, collecting homework or results of off-class activities

Conclusion

It is suitable and possible to introduce elements of algorithmics and logical thinking early in school education and thus

contribute to all school subjects

Conclusions

Determine the scope of informatics education and its 'implementation' so that students are able:

- to enhance the use of ICT in other school subjects; informatics and information technology may appear as elements of problem solving in various areas, disciplines and school subjects;
- to identify their interests and ability in developing further informatics education, by choosing a right specialization in high school