



ICT as a part of curricula in the Czech educational system



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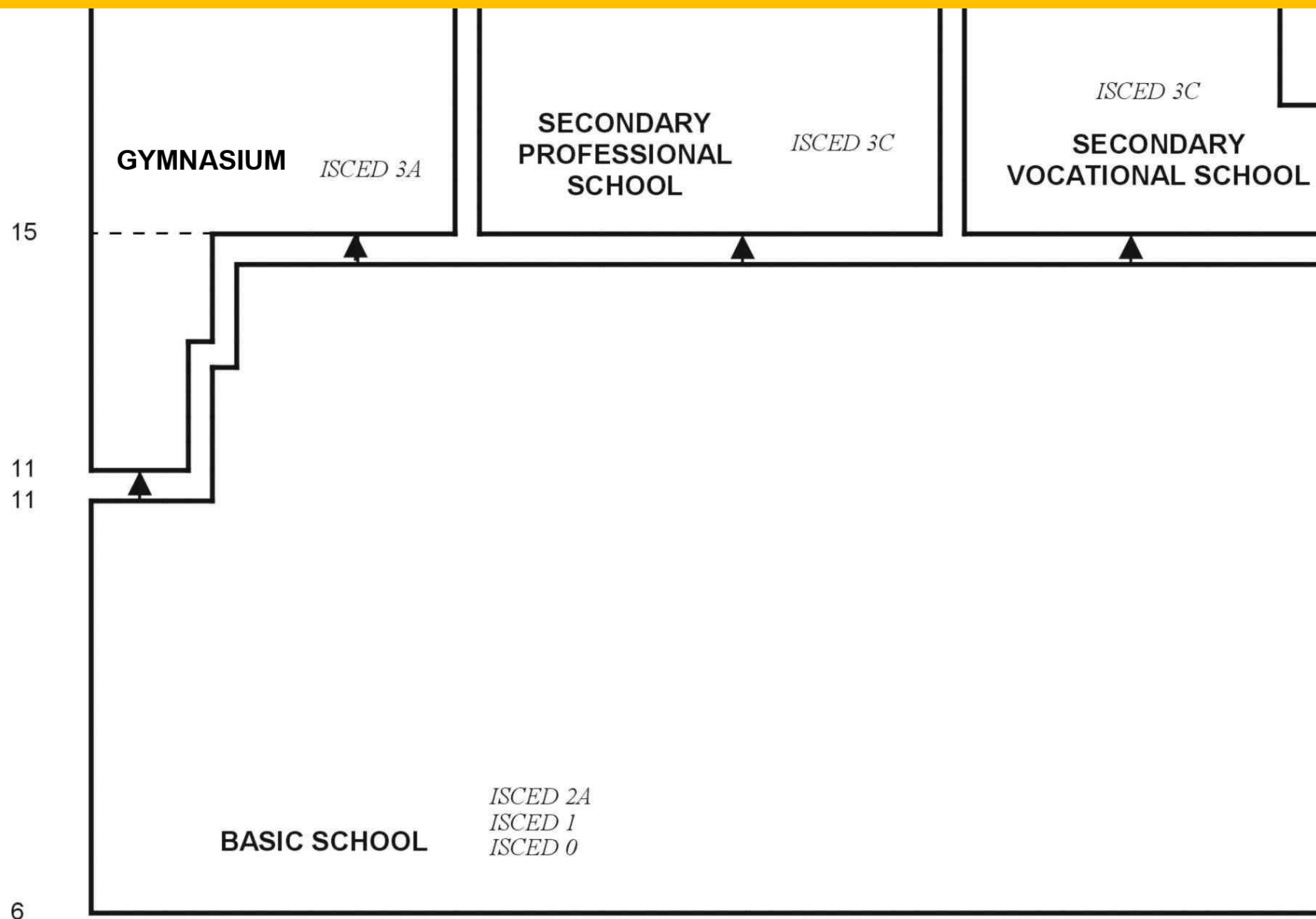
“Informatics Fundamentals and Computer Fluency”
Druskininkai, 11. 5. 2011

Content

- Position of informatics in the Czech school system
- Proportion of informatics and ICT
- What kind of task is difficult for czech students?
- The role of Beaver contest



Diagram of the education system of Czechia



Czech education system

compulsory education (since 2007)

Educational areas	Educational fields	Minimum number of hours	
		1 st stage	2 nd stage
		years 1-5	years 6-9*
Language and language communication	Czech language and literature	35	15
	Foreign language	9	12
Mathematics and its application		20	15
Information and communication technology		1	1

source: <http://www.msmt.cz>

before 2007 – no compulsory ICT

Comparison Czechia - Slovakia

Educational plan for informatics (ICT) -minimal

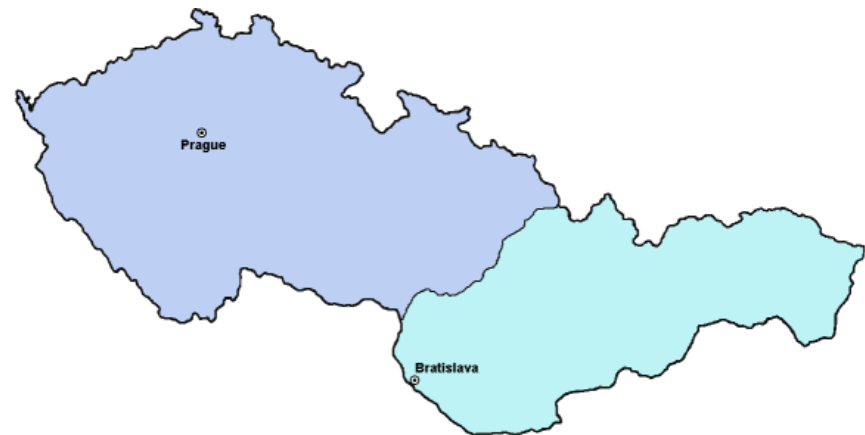
Level	primary	lower second.	upper second.
Czechia	1	1	4
Slovakia	3	2,5	3

Difficult to rearrange

Age of start of learning ICT

Czechia: 5-th grade (mostly)

Slovakia: 2-nd grade



Comparison Czechia - Slovakia

educational content - ICT

Czechia

- Basic computer operation
- Searching for information, communication
- Information processing and utilization

–To use algorithmical thinking in interaction with computer (1/2 of 1 of 10 aims)

Slovakia

- Information around us
- Communication via ICT
- Processes, problem solving, algorithmical thinking
- Principles of ICT
- Information society

source: Framework (state) educational programme

State high-school graduation exam

- Started in Czechia 2011
- 2 levels (basic, **higher**)
- Informatics - compulsory & elective from 2012
- Catalogs of required knowledge
- Themes:
 - Basic of informatics and theory of information
 - Hardware and computer nets
 - Software
 - Man, society and computer technologies
 - Using internet services
 - Computer text handling and creation of shared content
 - Computer graphics, presentation of informations and multimedia
 - Data bulk handling, number data handling
 - Spreadsheet
 - Using databases
 - Algorithmisation and basics of programming

Graduation exam: algorithmization

- **1. Algorithmization of the task, characteristics of algorithm**

- ☐ to explain the term of algorithm and basic characteristics of it
- ☐ to algorithmize an easy task.

97 %

basic level

- **2. Basic program and data structures**

- ☐ to use basic program structures (command, input and output, conditional statement, cycle for, while, until);
- ☐ to define procedures and functions;
- ☐ to explain concepts: variable, identifier and data type, declaration of variable, area of validity, to distinguish between basic types of variables and lists (fields);
- ☐ to use basic mathematic, relation and logical operators;
- ☐ to explain the concept of syntax of programming language
- ☐ to explain principles of object-oriented programming.

3 %

higher level

- **3. Survey of existing methods of program creation**

- ☐ to describe a function of interpreter and compiler;
- ☐ to present a digest of used programming languages;
- ☐ to explain a principle of program building in a visual environment;
- ☐ to describe controlling a program flow by events

Difficult tasks for Seniors

Máme řadu písmen, která obsahuje mezery a jedno **X**. Kurzor myši (značený |) je umístěn na začátku řady.

| _ _ _ _ _ _ _ _ _ _ **X** _ _ _ _ _

Pozor, při psaní na příslušném místě mezeru nebo znak přepisujete!

Jsou dány následující instrukce:

Dokud není kurzor před X

{piš 0}

Dokud není kurzor na začátku řady

{piš X a posuň kurzor o dvě místa doleva}

Jak bude vypadat horní řada po provedení těchto instrukcí?

Tvoje odpověď:

- ☐ XXXXXXXXXXXXXXXXXXXX000000|
- ☐ |0XXXXXXXXXXXXXXXXX _ _ _ _ _
- ☐ |_00000000000000 _ _ _ _ _
- ☐ 0000000000000000XXXXXX|
- ☒ Žádná odpověď

Tasks where:
some code, symbolics,
representation appears

Results

- ICT education at Czech schools
 - more oriented to use (exploit, consume) technologies
 - basic of informatics underestimated
- Consequences
 - grounds of informatics: negligible
 - graduated without programming skills
 - graduated (university studies applicants) do not know that does informatics mean, what themes are informatical
 - surprized from theoretical level of computer science

The role of Beaver contest

- One challenge more:
- to show teachers which problems have informatical background
- Nowadays: the contest is technically stabilized
- We are focused on task creation:
 - story
 - looking more about computers

Thank you for attention



Comparizon CZ-SK-LT

- 1-st separate comp. CZ-SK 2009
- 2-nd separate comp. CZ-LT 2010
- In both: one phenomenon
- Almost all tasks: Czech students checked „no answer“ often
 - lazy, unsure?
 - have smaller heart?
 - cautious?
 - do not risk (understand rules)?