

**EDUCATION OF CHEMISTRY
AT THE 1ST INDEPENDENT HIGH
SCHOOL
IN BRATISLAVA, SLOVAKIA**

From general education to key competences
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The 1st Independent High School in Bratislava, Slovakia

- 1991 - established High School
 - 4 years studying program (Czechoslovakia)
- 1994 - 8 years studying program
- 1996 - school program for Science (10 – 14 year old)
- 2006 – major change in school program, allowed by Minister of Education, Science, Research and Sport



The school program basics

1. Pedagogical and psychological art of the teacher forming the curriculum
2. Basic content
3. Connection with the real life
4. Complex view
5. Study specialization in general education

Teacher as the creator of curriculum

- Basic content
 - major problem to choose concepts
 - necessary condition
 - sufficient condition
 - for next level education and self education in the field
- Cognitive abilities - key competences

Basic knowledge content at 1st Independent High School

HOW

- Creation of images
- Imagination, abstraction
- Associations

WHAT

- Structure of substance atoms, Periodic table
- Chemical change
- Minimalized memorizing of element characteristics, which can be derived from periodic table

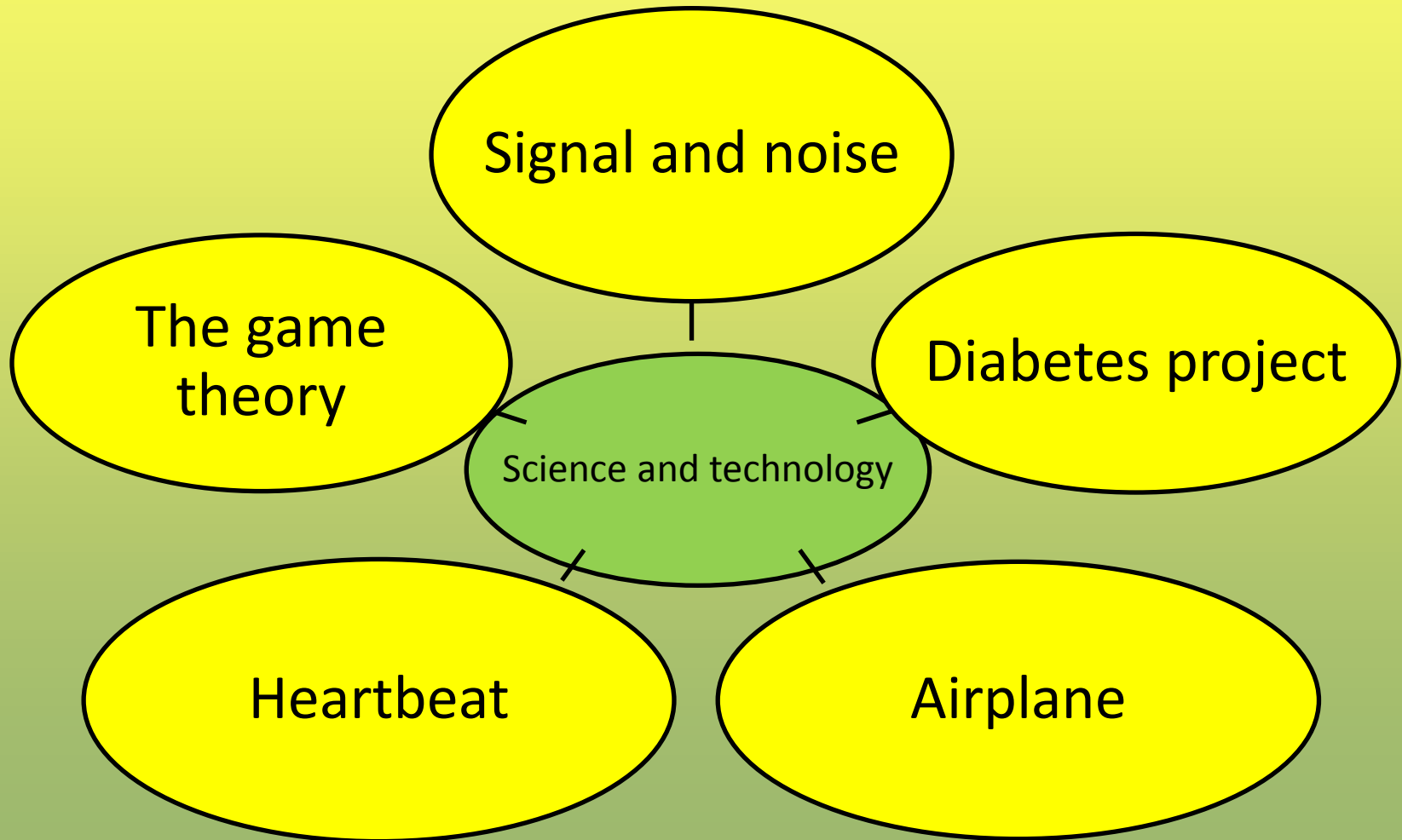
Connection with real life

- Boom of science and technologies
- NOT follow the science disciplines

- Choose the real content
- Study relations
- Train the abilities (problem solving methods)

Complex view

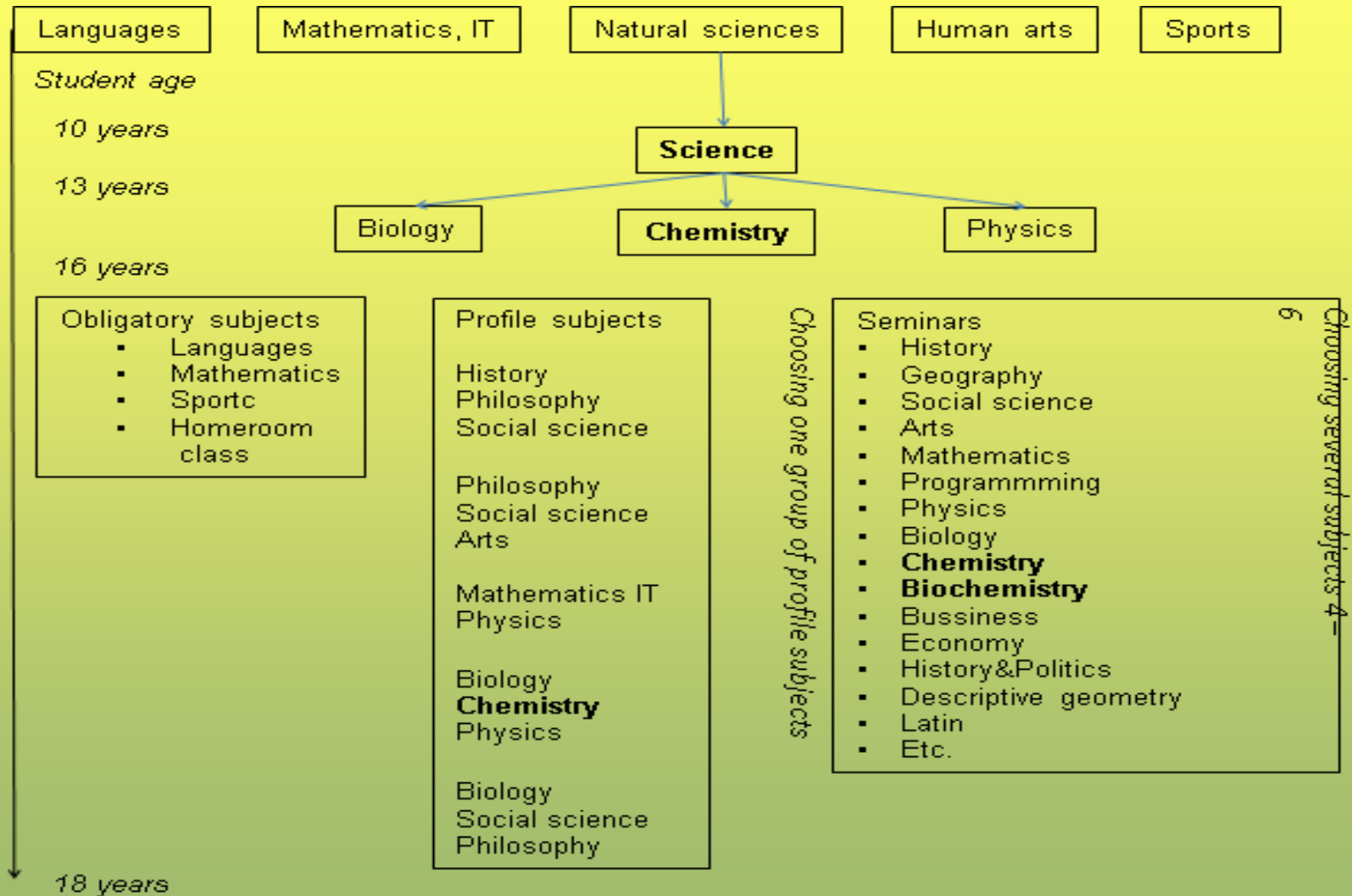
Integrated Thematic Education (Susan Kovalik)



Water pollution project

- Three students age 15
- 15% of final grade in all the subjects
- Chemistry, Biology, Geography, Informatics, German I
- June – set up by consultants (teachers, later external)
- July, August (holidays) – sample picking, preparation
- September – Theory and analyses
- October – written output (45 pg. approx.)
- Presentation (120 min. education for the rest of the class)

Specialization



Key competences training

- **Competencies can not be upgraded to the content**
- **They can be motivation**

- **Importance of key competences**
 - Active learning process, problem solving
 - Responsibility for own learning process
- **Task should not be attractive but motivating**

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THANK YOU FOR YOUR ATTENTION.

Themes per year of education

- **Chemistry of 8th grade** – popular real life problems: environmental (gases, ozone,...), water, food, acids and bases, bathroom (soap), narcotics
- **Three years of Chemistry** (9th – 11th grade kvarta - sexta)
 - atomic structure
 - reactions
 - substances (similar to the themes in 8th grade)
- **Chemistry profile** (12th grade, septima)
 - organic chemistry
- **Seminar of Chemistry 1** (12th grade, septima)
 - comprehension of atomic structure, reactions, inorganic chemistry
- **Seminar of Chemistry 2** (13th grade, oktava)
 - comprehension of organic chemistry
- **Seminar of Biochemistry** (13th grade, oktava)