



Wyższa  
Szkoła  
Informatyki  
i Umiejętności



# Chemistry Is All Around Network 'How to make your students feel Chemistry with Chemistry'

Wyższa Szkoła Informatyki i Umiejętności w Łodzi (WSInf)  
Poland

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Education and Culture DG

Lifelong Learning Programme

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## Student's Motivation to Learn Chemistry

### • **Intrinsic motivation - Internal factors**

- self-education,
- satisfaction,
- learning for the sake of fulfillment,
- need to broaden horizons and deepen knowledge



### • **Extrinsic motivation – External factors**

- approval of the teacher and parents;
- good grades; and good results during exams
- choice of teaching methods and a coursebook
- personality of the teacher and his/ her attitude (teacher-student rapport)





## Polish reality after the educational reform

- 130 hours of Chemistry in Junior Secondary School (age 13-16)
- 114 hours of Chemistry education in Senior Secondary School – Basic Level (age 16-19)
- 152 hours of Chemistry education in Senior Secondary School – Extended Level (age 16-19)

### New Core Curriculum Objectives:

1. To teach and learn chemistry concepts and broaden knowledge of education needed at further stages of education
2. To teach and enable students to plan, analyse, solve tasks/problems, perform experiments, interpret their results and evaluate
3. To learn the responsibility for student's own health and natural environment





## The role of the school

1. Supporting students in developing their intrinsic motivation by teaching them how to use different sources of information
2. Teaching students how to evaluate and critically assess the resources
3. Acquainting students with demonstrations and experiments; performed at school and home by both teachers and students
4. Teaching students to plan and design their own chemical research with the follow-up interpretation based on the gained knowledge
5. Establishing contacts with chemical industry, plants and factories in order to visualize the significance of chemistry and show its interconnectedness with other disciplines of science –





## The role of the teacher

1. Motivating students to learn on their own (showing usability of the chemical knowledge in life)
2. Presenting chemistry in context (real-life applications)
3. Creating good rapport with students (patience, nice personality etc.)
4. Adapting teaching requirements to students needs and abilities
5. Selecting appropriate materials for lesson preparation, facilitating students interest and logical thinking (online, interactive materials, DVDs etc.)
6. Establishing contacts with chemical industry experts to help students understand more difficult concepts
7. Fair grading and approval of students progress





## The role of the parents

1. Motivating students to learn on their own (showing usability of the chemical knowledge in life)
2. Presenting chemistry in context since the early childhood (real-life applications; objects floating on the water surface, rusty car, foamy shampoo)
3. Encouraging children's interest in science – participating in events organized by science and academic institutions, universities and polytechnics
4. Comforting in distress; supporting and trying to develop talents and interests at home





## The role of the coursebook

1. Preparation of students for continuation of their chemistry education at further levels of education
2. Preparation of students for their final tests in chemistry
3. Clear and student friendly – containing obligatory core curriculum content, interesting facts about chemistry and ecology
4. Visualization of theoretical material by experiments, demonstrations and illustrations preferably in the form of an interactive coursebook
5. Emphasis on the role of chemistry in real, everyday life and implementation of practical applications of chemical processes
6. Enabling teachers to work with students at different levels of abilities (basic and extended levels) – developing talents
7. Facilitation of students' own work, inspiring, motivating and stimulating for creative thinking and analysis
8. It should consolidate the knowledge and review covered material





## Developing Chemistry Talents

1. Extended chemistry Syllabus (more than 4 hours per week)
2. Chemistry Oriented Special Interest Group at schools
3. Special teaching methods – projects, experiments, hands-on activities learning by doing
4. Preparation for local, regional and international competitions in Chemistry
5. Thematic trips and excursions (industry, research laboratories, sewage treatment, water purification stations etc.)
6. Participation in chemical industry fairs and other events
7. Participation in EU projects and special programmes oriented for developing students interest in science, chemistry in particular







## The role of Universities and Polytechnics

1. Frequently organized workshops, thematic lectures and seminars
2. Facilitating students' interest in chemistry by organizing experiments and demonstrations for students of junior and senior secondary schools
3. Meetings and talks with chemistry industry representatives (presentations, lectures, discussions)
4. Practical classes in University laboratories supporting regular school classroom activities
5. University representatives visiting schools with offers of chemical studies





## Teacher Training

1. Chemistry offered as a course of study at 16 universities and 6 technical universities in Poland – University of Poznan, UMCS in Lublin, Technical University in Lodz, University of Warsaw
2. I –cycle programme (undergraduate) and II–cycle programme (postgraduate) offered for chemistry lovers
3. III-cycle programme (doctoral studies) available for researchers and scientists
4. A wide variety of interesting specializations facilitating employment in sectors such as food processing, cosmetics, industry, pathology labs etc.
5. Special courses offered for prospective teachers – methodology of teaching as a regular curriculum





# The role of Universities and Polytechnics

Na wiedzę zawsze jest PoRa - Mozilla Firefox

Plik Edycja Widok Historia Zakładki Narzędzia Pomoc

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www.pora.edu.pl

Często odwiedzane Mozilla Firefox Start Pa... INBOX Home Page, LETS: Lan... Homepage - ONAIR Wyższa Szkoła Informa... Advanced search WSInf - Logowanie LetsGo Kokpit - Wyższa Szkoła...

O projekcie Informacje archiwalne Nagrania Wykładów Zdjęcia z Piaskownicy Migawki Dla Babci i Dziadka Wspomnienia Maratonu Plakaty dla szkół

Projekt edukacyjny  
**Na wiedzę zawsze jest PoRa**  
został wykonany jesienią 2011 r. dla uczczenia setnej rocznicy przyznania Marii Skłodowskiej-Curie drugiej nagrody Nobla.

Projekt realizowała Fundacja Uniwersytetu Warszawskiego siliami Wydziałów Fizyki i Chemii UW. Projekt finansowany był przez Ministerstwo Nauki i Szkolnictwa Wyższego.

Celem Projektu było upowszechnianie podstawowej wiedzy o prawach fizyki i chemii oraz przekonanie możliwie szerokich kręgów odbiorców, że poznawanie praw przyrody może być udziałem każdego, że jest to zajęcie interesujące, wciągające i dające wiele satysfakcji.

W ramach projektu

- przygotowano i wygłoszono 8 wykładów popularnonaukowych,

oraz zorganizowane zostały:

- "Naukowa piaskownica" - cykl warsztatów dla dzieci,
- "Uniwersytet babci i dziadka" - cykl warsztatów i wykładów dla seniorów,
- Maraton jądrowy na terenie głównym UW,
- warsztaty dla uczniów - gimnazjalistów i licealistów,
- konferencja dla nauczycieli przedmiotów przyrodniczych.

Dorobek Projektu nadal owocuje:

- wykłady zostały zarejestrowane i są udostępniane szerokiej publiczności,
- opracowana zbiór plansz popularnonaukowych jako pomoc

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Zapraszamy do obejrzenia nagrań wideo 8 wykładów popularnonaukowych zrealizowanych w ramach Projektu.

Jednym z nich jest wykład pt.: *Promieniotwórczość na granicy światła jąder atomowych*, który wygłosił profesor Zenon Janas.

W ramach Projektu wykłady wygłosili profesorowie: Bogdan Skwarzec (UG), Andrzej Kajetan Wróblewski, Krzysztof A. Meissner, Marek Demiański, Zygmunt Szefliński, Zenon Janas, Jacek Pawełczyk i Jan Królikowski z Wydziału Fizyki Uniwersytetu Warszawskiego. Wszystkie wykłady są dostępne na naszej stronie internetowej.

Zapraszamy także do obejrzenia galerii zdjęć z warsztatów dla młodszych i dla starszych.

Wszystkim chętnym zostanie wkrótce udostępnione pliki z

atom węgla  
• elektronów  
• protonów w jądrze  
•  $r = 70000 \text{ fm}$

jądro atomu węgla  
•  $r = 3 \text{ fm}$

44:34 vimeo

2011 Pol. Marii Skłodowskiej-Curie

motivation C... State-of-Art C... NADANIA N... Microsoft Po... CHEMISTRY Adobe Acrob... Na wiedzę za... PL 18:48





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Thank you for your attention

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