



University of Siauliai, Lithuania
International Scientific - Practical Conference
**INFORMATION & COMMUNICATION TECHNOLOGY
IN NATURAL SCIENCE EDUCATION – 2013**

24 - 25 October 2013

**„Ontodidactics of Physics –
past, present and future”**

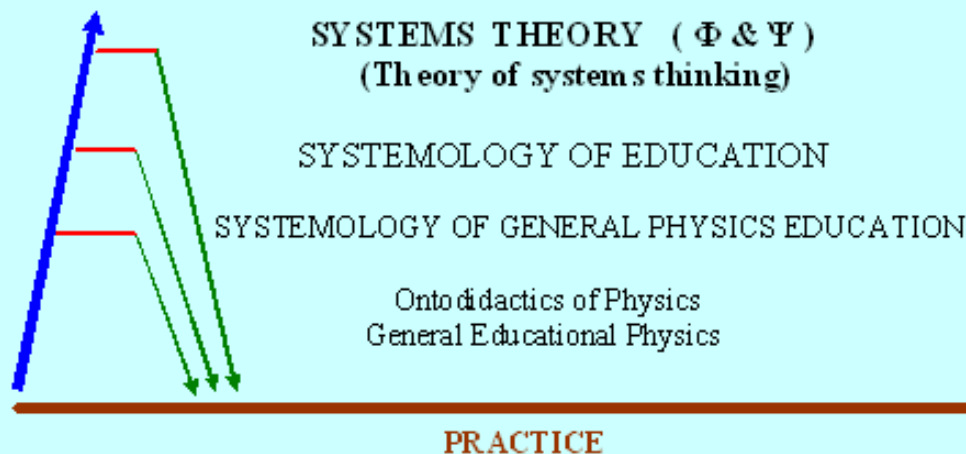


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My recent fields of research and development



Main guidelines of the report

Along with very popular and progressive use of computer technologies in Education today **we need also serious systemic changes within the content of secondary school physics** as well as other Natural Science and Technology Education (NSTE) subjects.

Ontodidactics as general theory of principal innovative approach in education means development of new content and methodology corresponding to remarkable changes in our modern life.

Science Education always must be scientific – general Philosophical and Psychological background of fundamental and applied scientific research must considerably innovate modern NSTE. Basic guidelines for Physics subject content reconstruction for upper secondary schools are reported and discussed.

P A S T



Ю.И. Соколовский
(Новосибирский университет)

**ОНТОДИДАКТИКА –
АКТУАЛЬНОЕ НАПРАВЛЕНИЕ
ИССЛЕДОВАНИЙ**

**Онтодидактика -
это переработка учебного
материала по существу
в интересах преподавания**

A.Broks, A.Voitkans. INNOVATIVE SYSTEMS APPROACH IN GENERAL PHYSICS EDUCATION. Proceedings of 6th IOSTE Symposium for Central and Eastern Europe „Science and Technology Education in Central and Eastern Europe, Tartu, 2006 (pp.134-141).

Traditional didactics, following principle of advance from simple to complex, today must be supplemented with ontodidactics, following the principle of transition from complex to simple. It means the step to higher level of generalization when starting new stage of education or developing qualitatively new structure of educational content.

A.Broks. SCIENCE EDUCATION AS LIFE EXPERIENCE FOR LIFE. – Proceedings of 6th IOSTE Symposium for Central and Eastern Europe „Science and Technology Education in Central and Eastern Europe: Past, Present and Future”, Siauliai, Lithuania. – Siauliai University Publishing House, 2007 (pp.26 – 30).

A.Broks. ONTODIDACTICS WITHIN THE DEVELOPMENT OF MODERN NATURAL SCIENCE AND TECHNOLOGY EDUCATION. – Proceedings of 7th IOSTE Symposium for Central and Eastern Europe „Science and Technology Education in Central and Eastern Europe: Past, Present and Future”, Siauliai, Lithuania. – Siauliai University Publishing House, 2009 (pp.31 – 35).

A.Broks. PHILOSOPHICAL AND PSYCHOLOGICAL BASIS OF GENERAL SCIENCE EDUCATION. – Report in 8th IOSTE Symposium for Central and Eastern Europe „Science and Technology Education in Central and Eastern Europe: Trends and main tendencies in the 21-st century”. Riga, Latvia – University of Latvia December 2nd, 2011

P R E S E N T

Projects – implementation of general theories in particular practice :
development and implementation of innovated
Physics Subject content and methodology in upper secondary schools
following just one basic guideline -

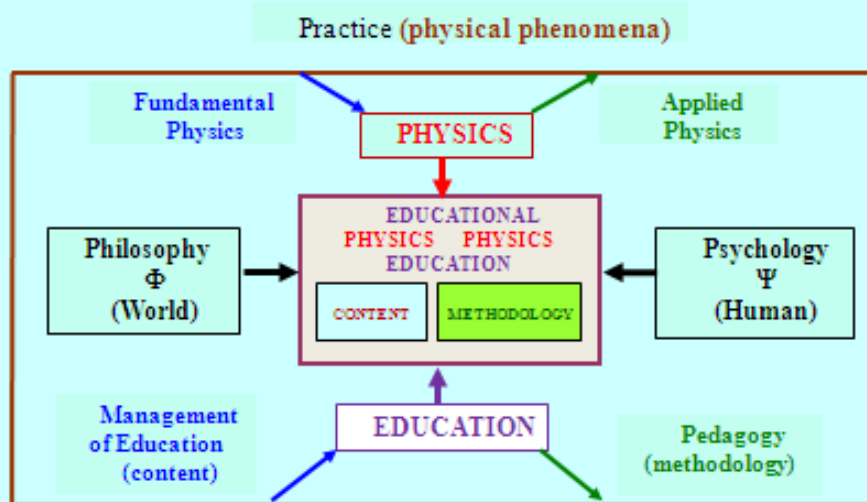
Science Subjects must be studied scientifically !

PHYSICS content - scientific THEORY of real world's bodies and
it's interaction motion (studies for our real life practice – to satisfy
our actual needs)

PHYSICS methodology - fundamental and applied SCIENTIFIC
RESEARCH of physical phenomena

EDUCATIONAL PHYSICS – *general and professional*
educational scientific research of physical phenomena (creation
of theories and use of them within the development of new
technologies)

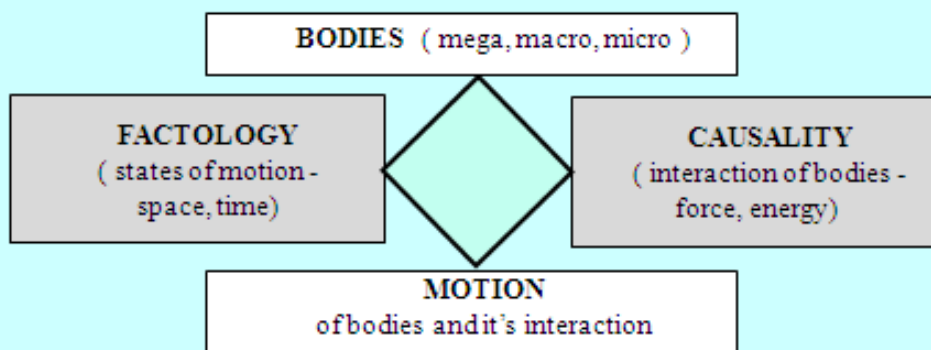
Genesis of Educational Physics / Physics Education



Education as life experience for life

Square of Physics general Concepts

(scientific research of physical phenomena
– unity of content and methodology)



FUTURE

General Physics programme in upper secondary school

Introduction (*world, human, physics*)

What does it mean «physics»? General **content** and **methodology**

Part I Macroworld Physics

* Mechanics
(motion of bodies, media, excitations within media)

* Heat
* Electricity
* Radiation

(generators and receivers, propagation of radiation)

Part II Microworld Physics

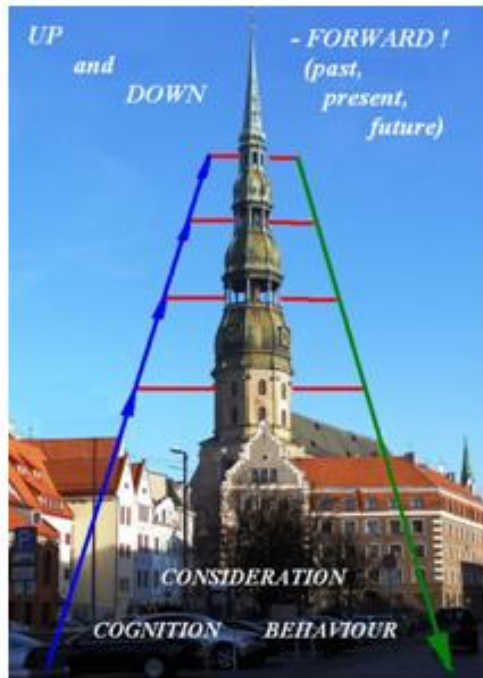
Part III Megaworld (cosmos) Physics

Factology Causality



Conclusion (*human, society, physics*)

Why do people need physics? General problems of science and technologies progress within the development of modern life and education.



LIFE EXPERIENCE
(knowledge, attitudes, skills)

for LIFE
(cognition, consideration, behavior)

Thank you very much
for your attention!
Yours Uncle Andris