

Effective teaching methods design thinking at TUL

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DT4U - Design Thinking Workspace
of interdisciplinary ideas for potential implementation
at Lodz University of Technology



“Design Thinking and Problem Based Learning as an innovative learning strategy”



Lodz University of Technology

STRONG POSITION IN RANKINGS

- **4th BEST TECHNICAL UNIVERSITY IN POLAND**
Perspektywy magazine university ranking
- **4th MOST FREQUENTLY SELECTED UNIVERSITY**
according to Ministry of Science and Higher Education report
- **INTERNATIONAL DOCTORAL SCHOOL OF TUL GETS LUMEN AWARD (LEADERS OF UNIVERSITY MANAGEMENT AWARD) FOR INTERNATIONALIZATION**
organized by the Perspektywy Education Foundation and PCG Polska



1 535 academic staff



18 698 students,



698 Ph.D. students



98 000 graduates



45 fields of study, **9** faculties, **3** colleges,
International Faculty of Engineering (IFE),
International Doctoral School (IDS)



EFFECTIVE



EDUCATION



What does the **candidate** expect?



What does the **student** expect?



What does the **graduate** expect?



data analysis

**WHAT ARE THE FACTORS A CANDIDATE GUIDES
CHOOSING THE STUDIES?**



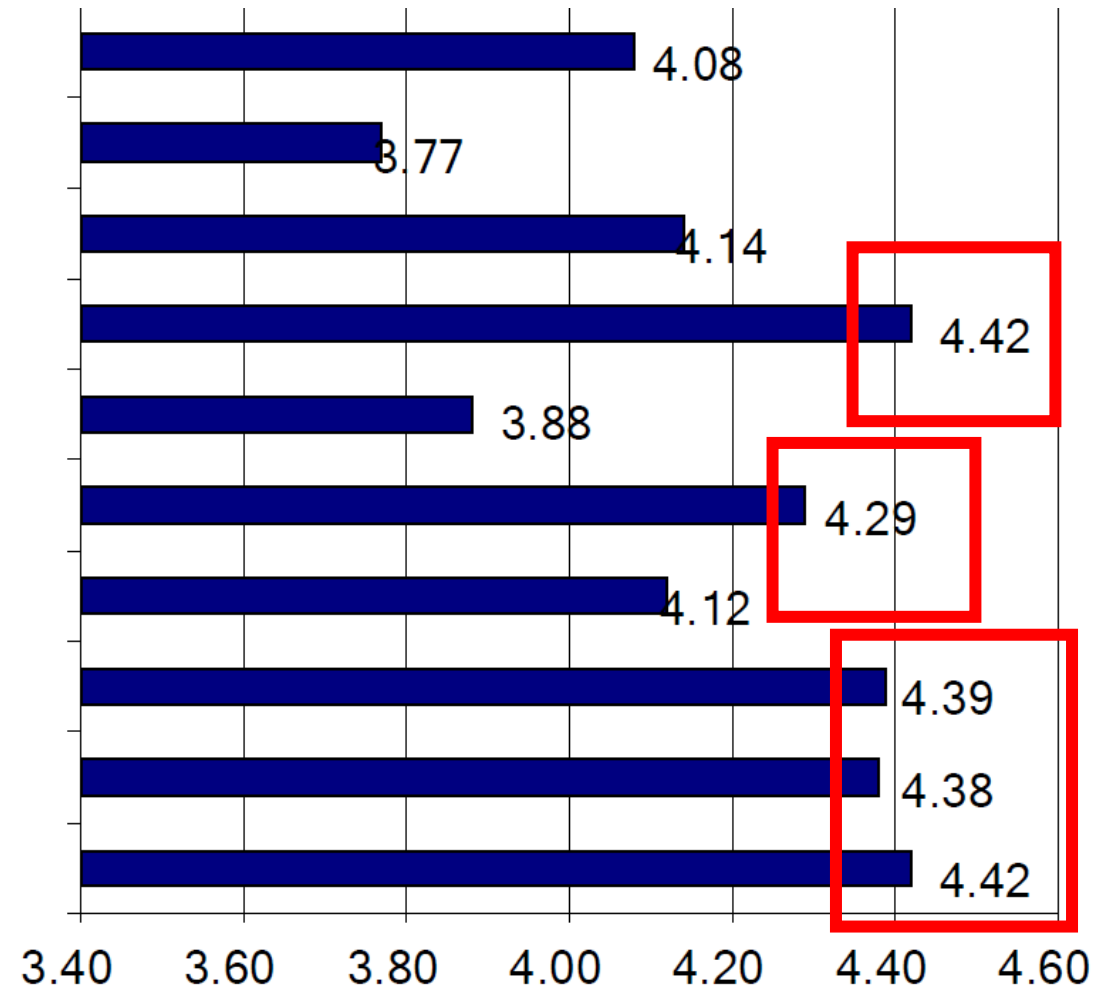
- ✓ **Do I find a job, and how much will I earn?**
- ✓ **Are this studies difficult? Will I handle it?**
- ✓ **Are this studies interesting?**

data analysis

WHAT DOES THE STUDENT EXPECT TO LEARN?

„What kind of skills do you consider important?“

- Technical skills** (professional field related skills to accomplish specific tasks etc.)
- Virtual collaboration skills** (ability to work productively in a virtual team/environment)
- Information, media and technology skills** (ability to obtain and process information)
- Thinking skills** (critical, analytical, strategic thinking, etc.)
- Entrepreneurial skills** (flexibility, opportunity seeking, risk-taking etc.)
- Learning skills** (ability to learn independently; curiosity and drive for continuous learning etc.)
- Intercultural skills** (command of more than one language, work in culturally diverse teams etc.)
- Interpersonal skills** (ability to work in a team, ability to manage conflicts, networking etc.)
- Personal skills** (self-confidence, positive attitude, strong work ethics etc.)
- Communication skills** (ability to listen, express and present ideas, ability to persuade, to negotiate etc.)



What does the **candidate** expect?



What does the **student** expect?



What does the **graduate** expect?



What does the **employer** expect from **graduate**?



data analysis

THE USEFULNESS OF THE COMPETENCE OF THE GRADUATE IN THE EYES OF THE EMPLOYER

„ Skills and competencies expected of graduates who applied for a job in your company / organization”





What kind of competences are valuable for employers?



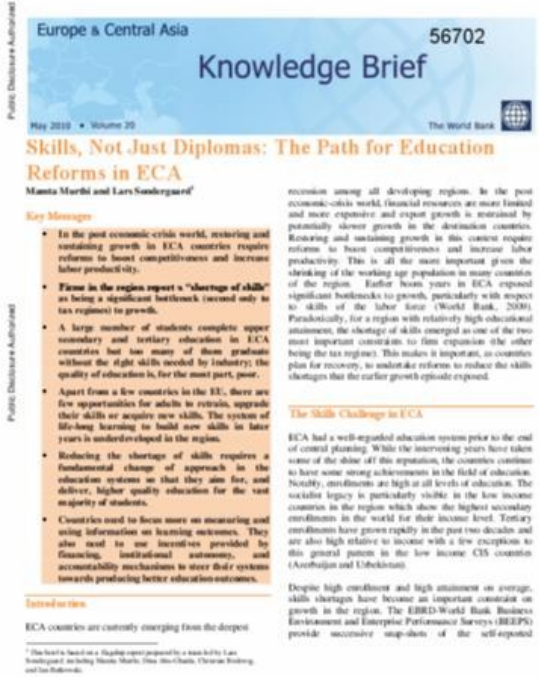
the ability to use knowledge in practice,



ability to solve problems,



ability to work in a group.



World Bank report "Skills, Not Just Diplomas"



specialized knowledge and skills

but

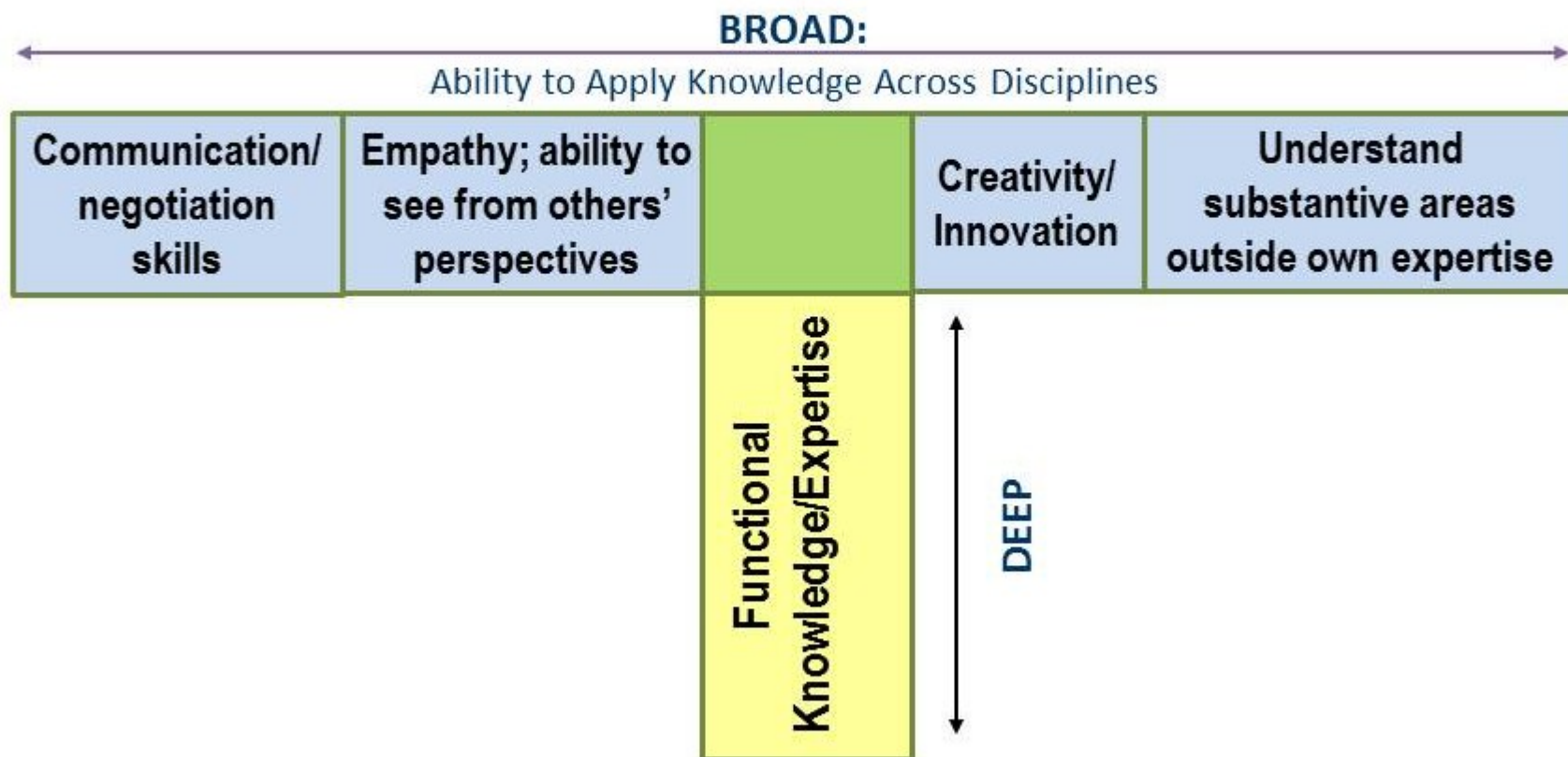


the growing role of general education, which is necessary to identify and solve problems embedded in a complex socio-economic reality

*“Wir brauchen keine Fachidioten
Wir brauchen Persönlichkeiten”*

K. Hernault (Siemens)
SEFI'03 – plenary session

The T-Shaped Professional: Talent Needed for Future



Satisfied student is working graduate!



THE UNIVERSITY SHOULD EDUCATE SO AS TO ENSURE STUDENT COMPETENCE, WHOSE SIGNIFICANCE HE IS NOT ALWAYS AWARE, AND WHOSE EMPLOYER NEEDS, USING ALL AVAILABLE TOOLS AND METHODS

Effective teaching methods



HOW TO TEACH EFFECTIVELY?

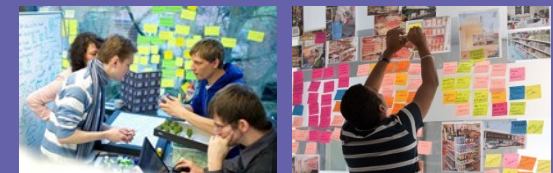
Changes in the "structures" of the study programmes



The new approach to conduct "traditional" subject



Teaching methods based on engaging, discovering and realizing – LEARNING BY DOING



HOW TO TEACH EFFECTIVELY?

Changes in the "structures" of the study programmes



The new approach to conduct "traditional" subject



Teaching methods based on engaging, discovering and realizing – LEARNING BY DOING



TEACHING METHODS – PROJECT



Give the pupils something to do,
not something to learn;
and the doing is of such a
nature as to demand thinking;
learning naturally results.

- John Dewey



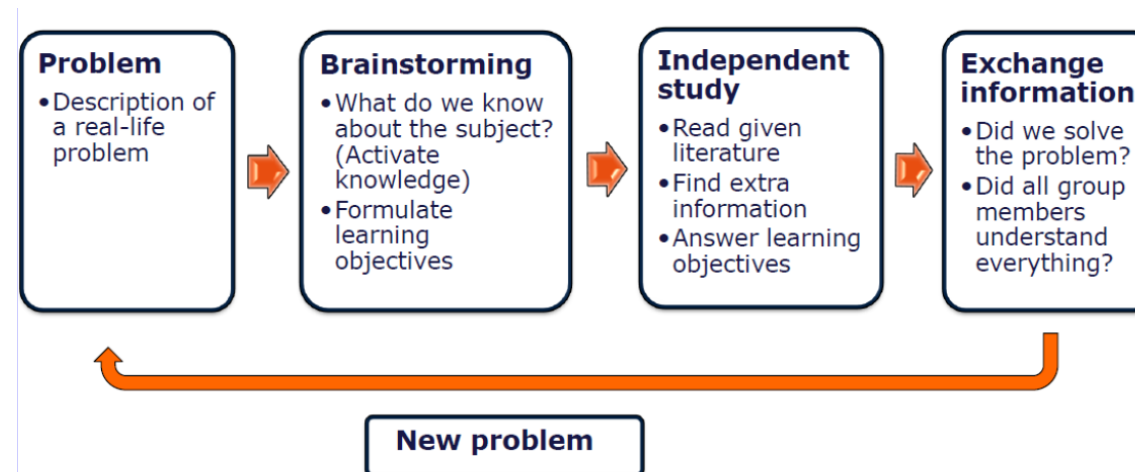
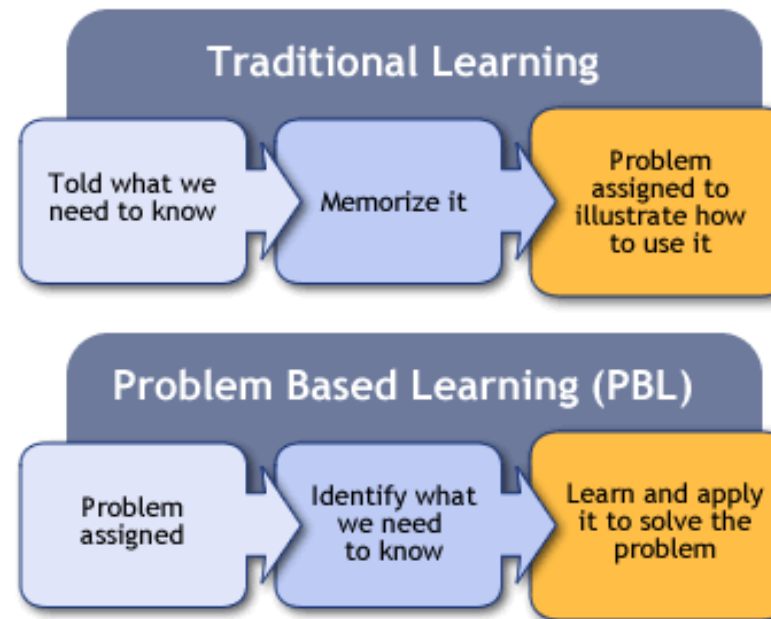
Tell me, and I'll forget.
Show me, and I may remember.
Involve me, and I'll understand
- Chinese proverb



implementation

WHAT DO WE HAVE AND APPLY AT TUL ?

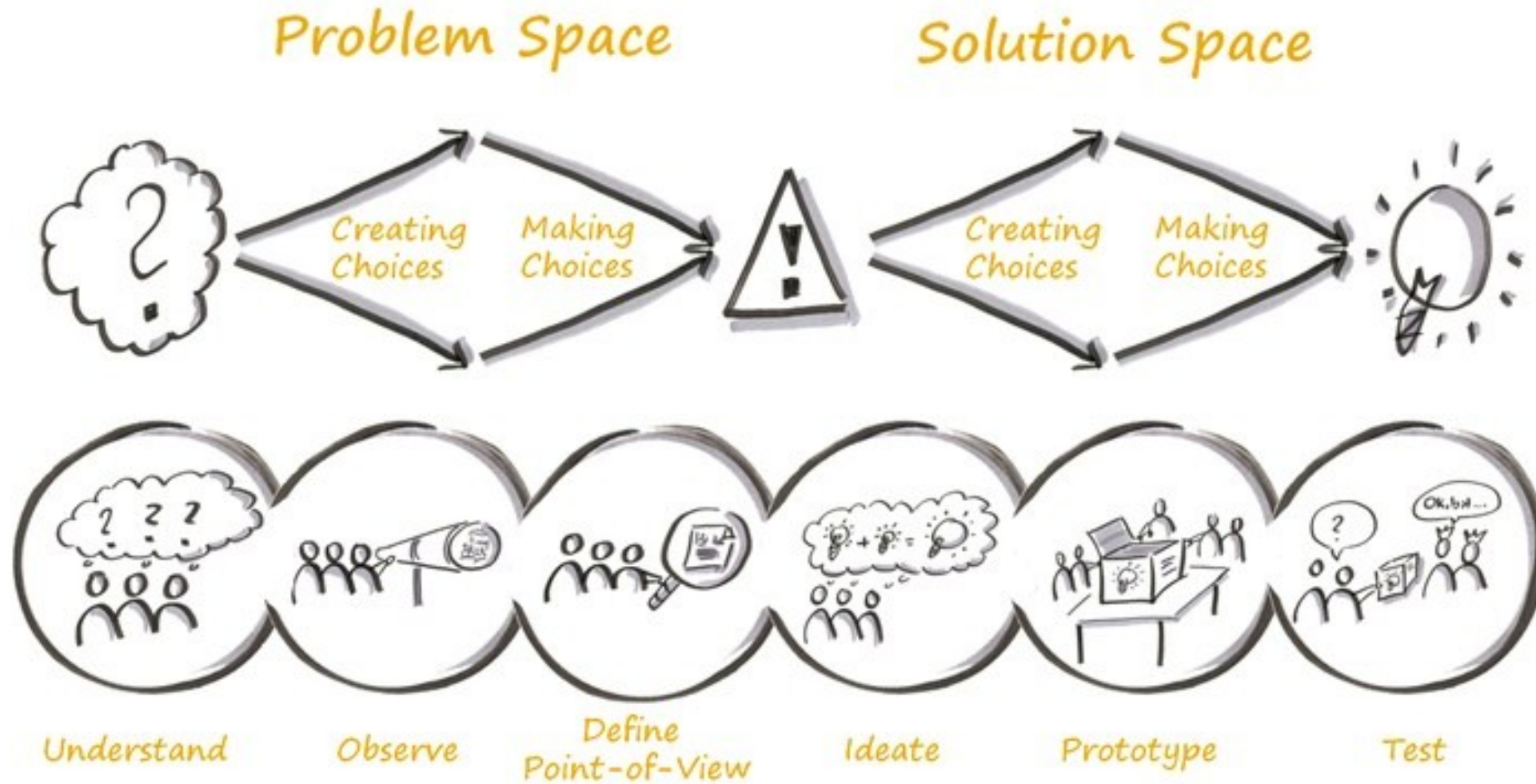
TEACHING METHODS – PROJECT – PBL



implementation

DESIGN THINKING AT TUL

TEACHING METHODS – PROJECT – Design Thinking



Info-Graphic of Design Thinking Steps and Mindset at SAP.
Derived from Tim Brown, IDEO & HPI/D-School, Potsdam.
Illustrated by Tobias Hildenbrand, SAP

The educational experiences associated with the introduction of design thinking elements in 2010-2013 at TUL

- Informatics (I and II level)
- Computer Science (IFE) – (II level)
- Telecommunications & CS – (I level)

I level:

- Competence project
- PBL Team Project

II level

- Problem Based Workshop
- Team Project



Dorota
Bociąga



Robert
Banasiak



Krzysiek
Jastrzębski



Dorota
Kamińska



Ola
Jastrzębska



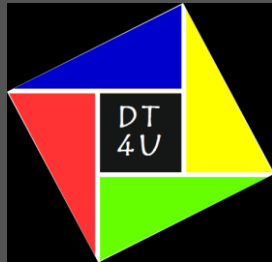
Ania
Laska



Monika
Malinowska
-Olszowy



Kasia
Znajdek



DT4U TEAM



Laurent
About



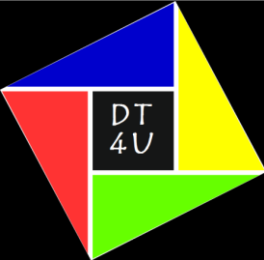
Andrzej
Romanowski



Jacek
Nowakowski

*Graduates of Stanford University (USA) or
University of California, Berkeley (USA)*

DT4U at TUL - Design Thinking Workspace of interdisciplinary ideas for potential implementation at Lodz University of Technology



2012...

- an idea and first draft of DT programme for students at TUL

2013...

- DT4U workspace was ready
- programme was ready
- TUL's Children's University cooperation



2014...

- DT as compulsory subject at TUL programme
- new DT workspaces
- workshops for best students, trainings for teachers
- DESTINE Project



2015...

2015...

- DT as compulsory subject at TUL programme on 1st and 2nd study cycle
- PBL Projects with DT on IFE
- national and international cooperation



...
need for development



Erasmus +
2014 - 2020 programme for
education, training, youth
and sport



**DiamonDT Project - Development of Innovative
AcadeMy ON the basis of DT teaching**

2016...

- international cooperation
- social and business projects
- developing academic staff – DT workshop for teachers of TUL





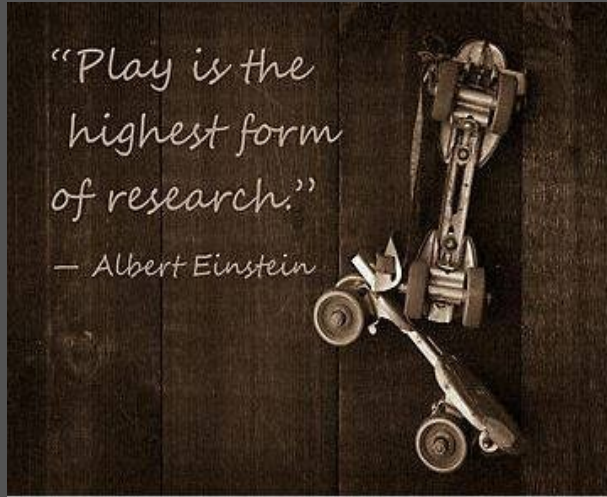
POLISHOPA

DESIGN THINKING CONFERENCE
BYDGOSZCZ 2016



LEARNING BY DOING

design thinking = think, play, participate, learn



- Education based on teamwork, creativity and projects realization

competences
valuable for
employers

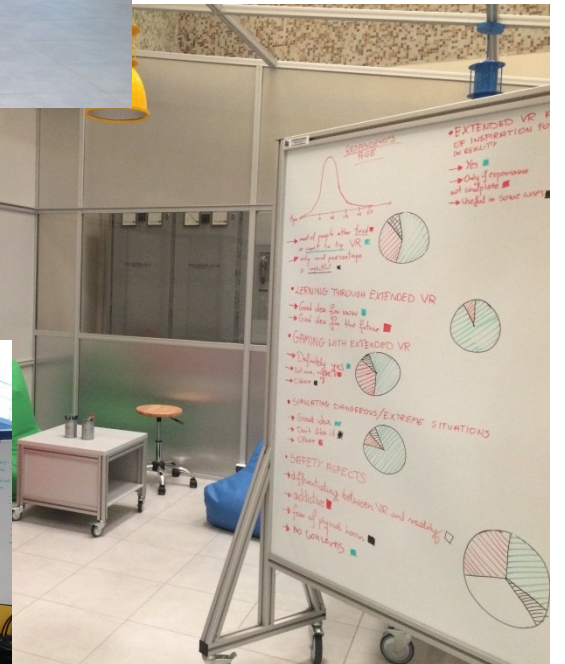
Communication and learning
skills, team building, project
work, self-organisation

- Classes activating students to learn, share knowledge and think outside the box

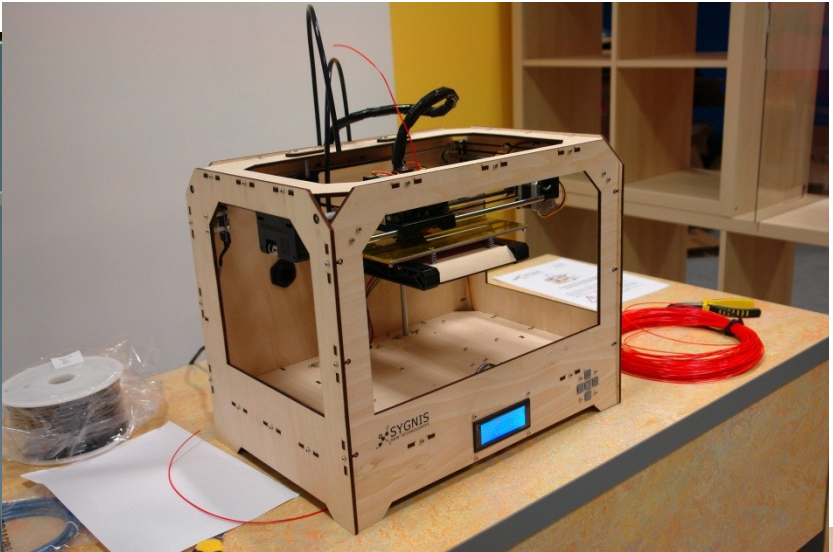
learning by
doing

Action learning
Case teaching
Peer learning

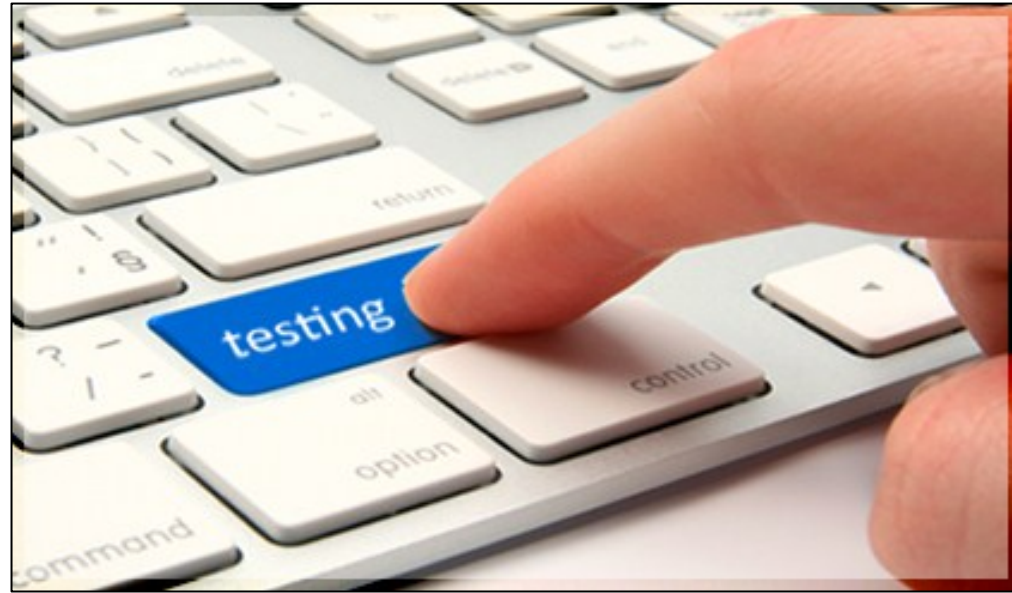
Project...



Prototyping ...



Testing...



Welcome to cooperation



EDUCATION IS THE MOST POWERFUL WEAPON WE CAN USE TO CHANGE THE WORLD

- Nelson Mandela



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