ICT-INOV
MODERNIZING ICT EDUCATION FOR HARVESTING INNOVATION

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OBJECTIVE

«To develop the innovation capacity of Computer Science and Engineering students through design thinking and gamification approaches»

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WHY ICT-INOV

It is difficult to consider any aspect of life that is not affected by ICT

- Education
- Health
- Government
- Entrepreneurship
- Entertainment
- Socialization
- Communications

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WHY ICT-INOV?

Technology is an innovation sector, will drive growth in the coming years

For each job in an innovation sector, 5 jobs are created in other sectors

Lack of 900.000 ICT engineers in Europe, maybe revised

While youth unemployment is 24%

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WHY ICT-INOV?

Technology evolves rapidly

Today's innovative products will be obsolete in 5 years

The most important skills developed by university are soft skills

Such as innovative thinking, which helps turn ideas into action

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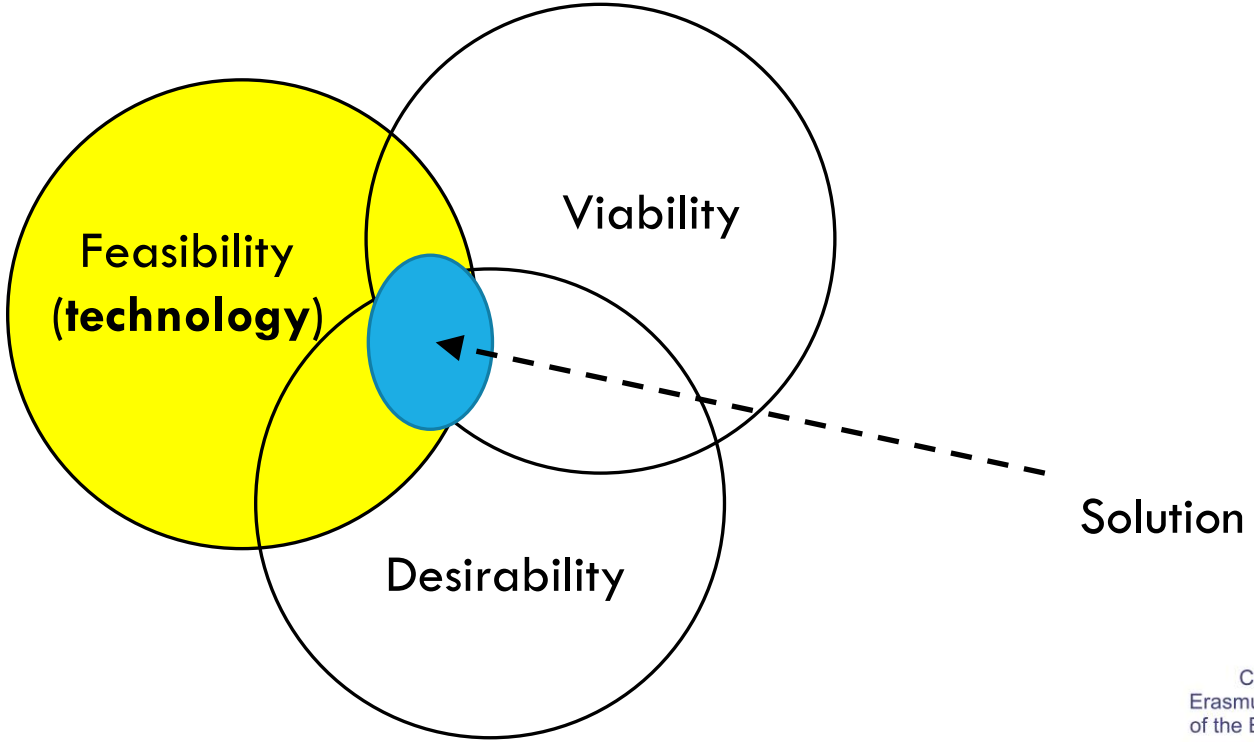
TECHNOLOGY IS PART OF MANY SOLUTIONS



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DESIGN THINKING

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FIND A SOLUTION TO THE PROBLEM

"How can we help premature babies in developing nations, given the lack of incubators"

(Stanford D.School)

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USER-CENTERED DESIGN

In user-centred approaches, design takes into user needs and desires

Mostly research takes place through questionnaires or interviews

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DESIGN THINKING GOES FURTHER

Designers strive to understand the **actual, real problem**

To see the world from the user's standpoint, design solutions from the user perspective

To take into account **needs, desires, and feelings**

Consider that users may not be able to express their needs

- E.g. The first car story by Ford (Tim Brown, Change by Design)

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DESIGN AND INNOVATION

In the future, all problems will be design problems (Tim Brown, Change by Design)

- Education
- Health
- Poverty
- Energy
- Sustainability
- Natural resources management

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UNDERSTANDING THE PROBLEM

Designers put themselves “in the users’ shoes”

They observe, empathize

They live in the user’s environment to experience needs first-hand

- E.g. To design solutions for a small village, the designers live in the village for a few days

This allows understanding **latent needs**

- That users may not be able to express
- It allows understanding of **functional** and **emotional** aspects

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UNDERSTANDING THE PROBLEM

Observe users in their everyday activities

Observe unusual, subconscious acts that demonstrate a need

- E.g. users use a book as doorstop (Tim Brown, Change by Design)

These show latent needs that users solve with simple hacks

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UNDERSTANDING THE PROBLEM

Observe a group of non-characteristic users

- E.g. To design kitchen utensils observe
- Children, who need ease of use
- Chefs, who need easy cleaning of utensils

How can we get ideas for maximizing usability?

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UNDERSTANDING THE PROBLEM

Observe different situations

- E.g. The pits for tire changing in formula 1, a team of specialists working in high precision conditions

- How can we get ideas for designing an emergency room?

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ANOTHER DIFFICULT DESIGN PROBLEM

"How can we bring electricity to sub-Saharan Africa, where no power distribution lines exist"

To introduce a solution, think about how inhabitants will use electricity

- To light a house?
- To power a TV?

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THE VALUE OF DESIGN THINKING

By understanding the **real**, as opposed to perceived, needs

Designers can solve difficult problems, even if a solution does not appear to exist at first sight

- E.g. Consider the example of incubators

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DESIGN THINKING AND ICT

"50% of the world does not use internet. How can we bring internet to everyone?"

To introduce a solution, think about how the internet will be used

- For communication, education, else?

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WHO USES DESIGN THINKING

Entrepreneurship: For designing commercial products

Social entrepreneurship: For designing solutions to complex social challenges

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COMMERCIAL EXAMPLE: AIRBNB

AirBnb was not always successful

- Users did not rent the apartments

They used design thinking to upgrade services

They hypothesized that the problem was unclear pictures

The used a professional camera to capture clear pictures and improved the text

- A simple adjustment made all the difference

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ANOTHER DIFFICULT DESIGN PROBLEM MALNUTRITION IN SOUTH EAST ASIA

Malnutrition was widespread

Designers observed that some very poor families had well fed children

They observed everyday practices

- Villages collected rice from the rice fields
- They also collected small organisms, such as shrimp, providing protein

Designers taught all parents this technique with excellent results

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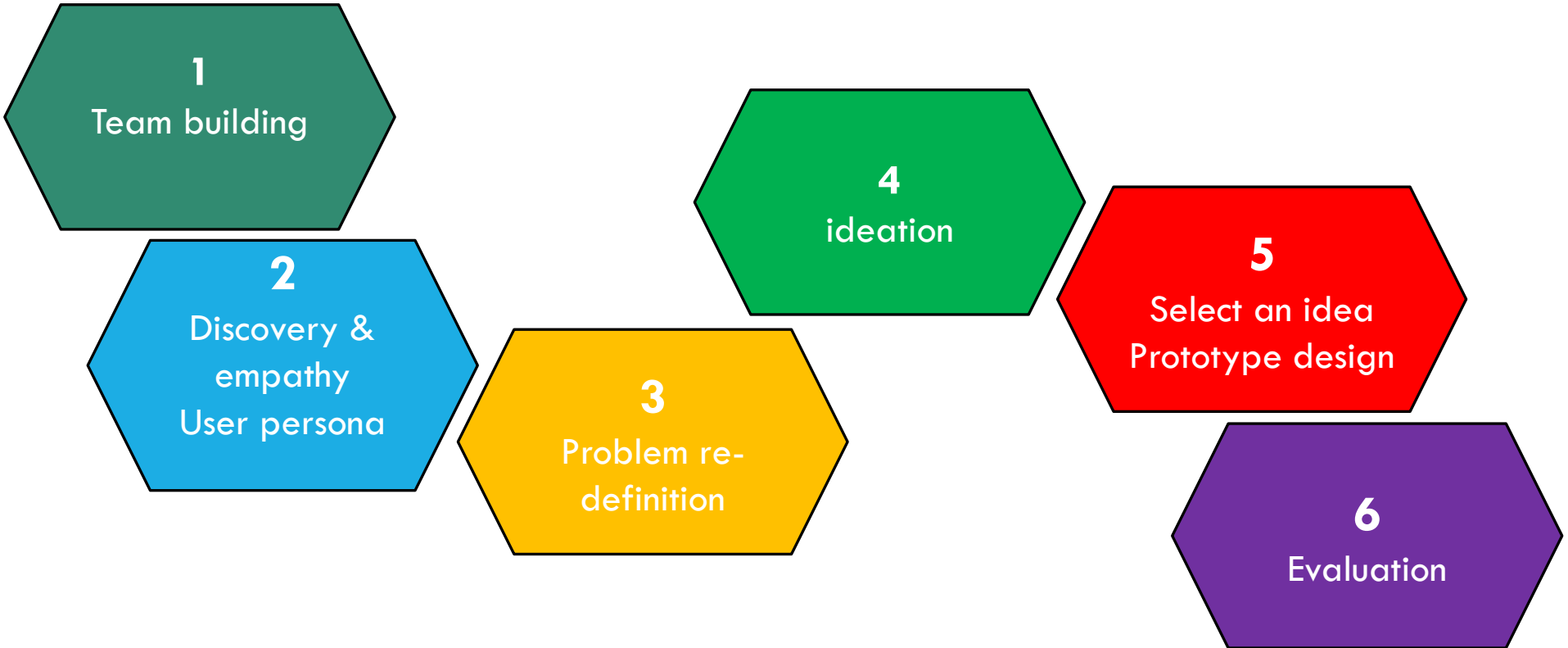
DESIGN THINKING STEPS



ICT-INOV LEARNING INTERVENTION

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ICT-INOV RESULTS

Innovative learning through design thinking and gamification

Infrastructures

Digital collaboration platform

Instructor training

Community building

TARGET GROUPS

Students

Educators

Educational organizations

Industry and society

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PARTNERS

University of Thessaly, GR

Tallinn University, EE

Porto Polytechnic, PT

EU Track, IT

University of Malaya, MY

UNITEN, MY

Hanoi University, VT

Von Neumann Inst, VT

ISRA University, PK

NUCES, PK

Kathmandu University, NP

Tribhuvan University, NP

SOURCES

Stanford d.school

https://dschool.stanford.edu/resources/design-thinking-bootleg

https://dschool.stanford.edu/#post-hero

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