DESIGN THINKING

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ICT-INOV
MODERNIZING ICT EDUCATION FOR HARVESTING INNOVATION

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CONSIDER A SOLUTION TO THE PROBLEM

«how can we save premature infants in India, where incubators are scarce»

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DESIGN FOR INNOVATION

In the future, all problems will be design problems

Education
Health
Eradicating poverty and hunger
Clean and affordable energy
Sustainable food production
Sustainable business
Responsible natural resource management
Clean water
Equality and justice
Sustainable cities
Responsible consumption
Infrastructures
Work for all

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THE PROBLEM SOLVERS OF TOMORROW

Must develop innovation and problem solving skills

Creativity

Critical thinking

Autonomous work

Collaboration

Flexibility

Lateral thinking

Emotional intelligence

Open mindsets

Establishing associations

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PROBLEM-BASED AND ACTIVE LEARNING

Based on a problem

Inspired by real-life

Usually open-ended

Collaboration in teams

Projects, visits to sites of interest, simulations, digital tools

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DESIGN THINKING

We try to understand the **real problem**

Real needs, experiences, feelings

Try to see the world from the point of view of the user

Taking into account that users may not be able to express their needs

E.g. The first car (Ford)

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DESIGN THINKING, PROBLEM DISCOVERY

Observation of the user in their environment

Empathy, putting ourselves in the user's shoes

Immersion, e.g. live in the users' environment to understand their experiences

- To design a solution for a small village, we may need to live there for a few days

We understand lateral needs

Functional and emotional elements of a solution

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HOW DO WE OBSERVE?

We observe the users in their everyday life

Unconscious acts

E.g. Using an object as a door stop

E.g. Labelling the spaghetti of computer cables under the table

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HOW DO WE OBSERVE?

Observe a group of non-characteristic users

E.g. To design effective kitchen tools

- Observe children, who need usability
- Observe chefs, who need easy cleaning

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HOW DO WE OBSERVE?

Observe different situations

E.g. Observe activities in the pits of a car race

- Specialists in high precision situations
- How can we get ideas for organizing an emergency room in a hospital?

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HOW DO WE OBSERVE

Try to understand the real, actual problem

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FIND A SOLUTION TO THE PROBLEM

«how can we bring electricity in sub-Saharan Africa, where there are no supply lines to villages»

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DESIGN THINKING

Can help address difficult problems

To which no solution may appear to exist at first glance

With accurate definition of the problem statement and understanding of real needs

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DESIGN THINKING IN ICT

Example:

How has the internet changed the world?

This is related to communication of groups

Half of the world does not use the internet

If everyone did use it, how would they use it?

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WHO USES DESIGN THINKING

Entrepreneurship, design of commercial products that address customer needs

Social entrepreneurship, design solutions to societal challenges

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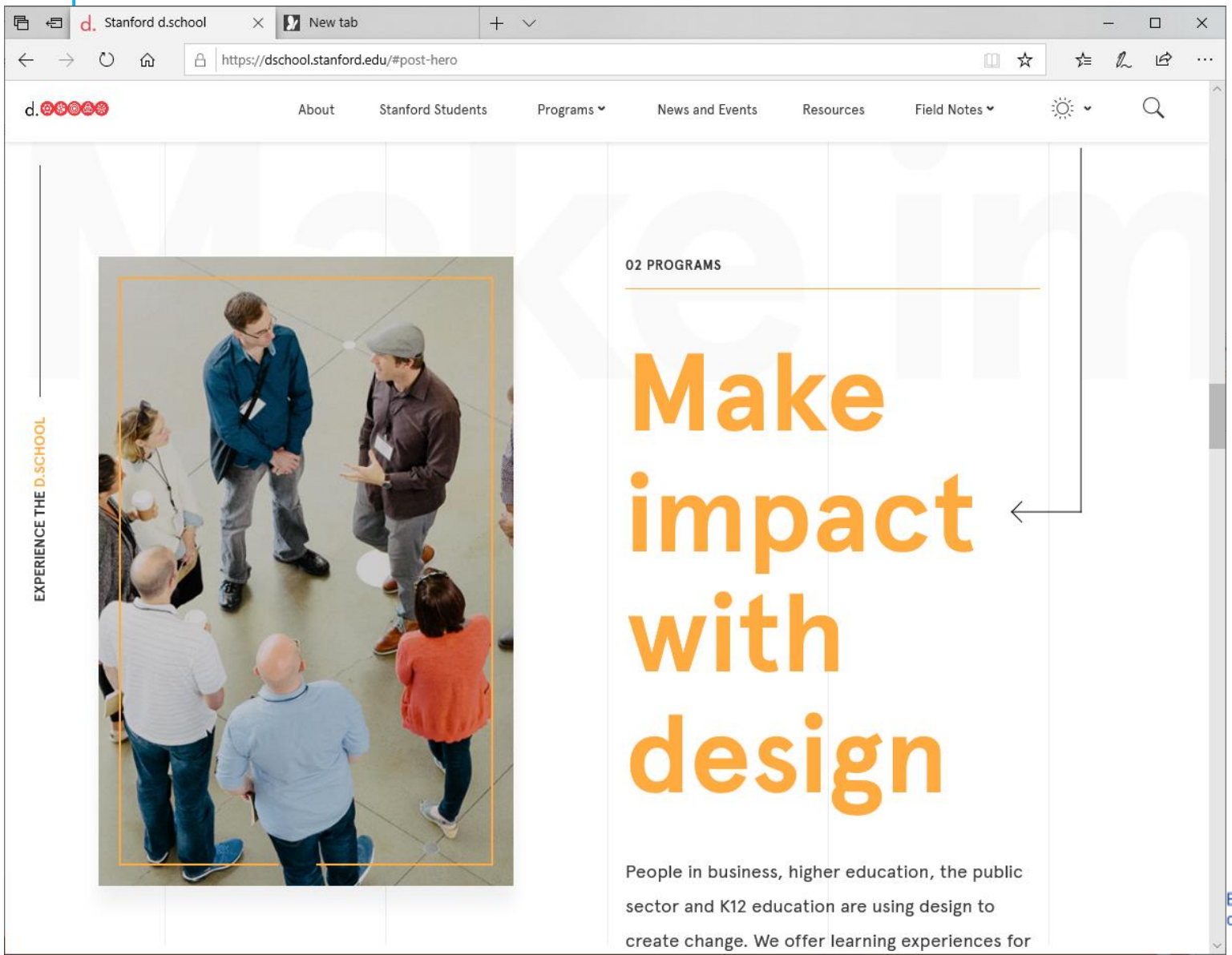

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AIRBNB

The company was not always successful

They used design thinking

They understood that customers did not rent the apartments because they could not understand what they were about to rent from the website descriptions

They improved

- Photos (precision cameras)
- Descriptions

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MALNUTRITION IN DEVELOPING NATIONS

Some families had well-fed children, event if they were poor

What contributed to that?

They collected small organism in rice plantations

- E.g. shrimp

Which provided adequate protein

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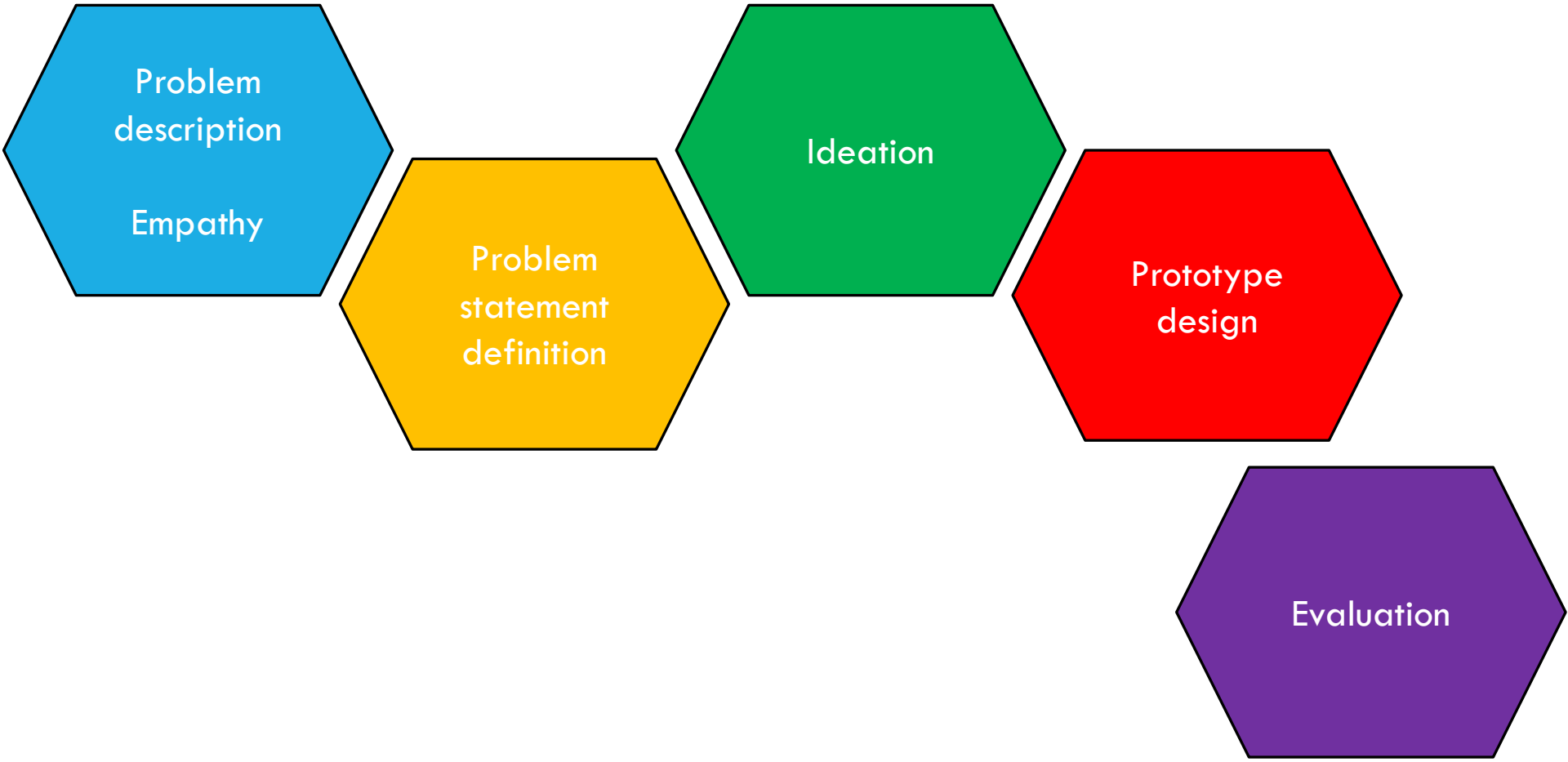

DESIGN THINKING STEPS

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THINK AS A BEGINNER

Often, we enter the design process thinking that we know the solution

We miss opportunities!

Points:

Don't judge the ideas of others

Question everything, even things we believe we understand

Be curious

Discover patterns that may lead to a solution.

Listen. Really!

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0. PROBLEM DISCOVERY

Research

Description with images, text, videos

Recognition of patterns

Empathy

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1. EMPATHY

The problems are not ours; they are those of the users

To understand the problems

We observe the users in their environment

We engage with the users, interviews

We try to live as they live for a while

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2. PROBLEM DEFINITION AND RE-DEFINITION

Define the problem that we need to solve - from the user's perspective

What are the real needs?

What is the user's experience

What is our point of view

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3. IDEATION

Generate alternative design solutions

Concepts and ideas evolve

From mainstream to extreme

The goal is to create a broad solution space – quantity and diversity of ideas

From this broad repository of ideas, we can select one for prototyping

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HOW TO SELECT AN IDEA FOR PROTOTYPING

Brainstorming

Select one solution from three categories

- The most logical
- The most attractive
- The most out-of-the-box

Select an idea that can be turned into a prototype

- Physical
- Digital
- But always interactive

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4. PROTOTYPING

Not necessarily digital - may be constructed from paper

Includes some of the ideas that we have noted on our wall

It is more successful if users can interact with it

It helps start the conversation towards potential solutions

Helps test ideas quickly

Helps understand the users

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5. EVALUATION

User feedback

Introduce discardable prototypes into the user's life

Observe the user's experience and reactions

Be prepared to be wrong

Ask questions?

- How do you feel?
- What are you thinking?

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OBJECTIVE

«To introduce design thinking to ICT students for promoting innovative and entrepreneurial thinking»

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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

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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RESULTS

Innovative learning through design thinking and gamification

Infrastructures

Digital collaboration platform

Instructor training

Community building through international collaboration

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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
file:///C:/OLD%20SONY%20VAIO%20LAPTOP/Current%20SVN%20%20main%20folder/Courses%20Μαθηματα/Τεχνολογια%20στην%20Εκπαιδευση%202018/dschool_bootleg_deck_2018_final_sm+(2).pdf

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

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