

GUIDE TO IMPLEMENT FRUGAL INNOVATION COURSE

Teachers' Pack
For
Higher Education



*Promoting low tech
sustainable solutions*

Our project will introduce,
adapt and mainstream
frugal innovation into our
entrepreneurship
education processes.



www.frugalinnovation.how

TABLE OF CONTENT

WHY IT IS WORTH TO TEACH ABOUT FRUGAL INNOVATIONS?	3
BENEFITS OF FRUGAL INNOVATION COURSE	5
MODULES AND THEIR LEARNING OBJECTIVES	6
HOW TO USE THE GUIDE	8
MODULE 1. THE BUSINESS CASE FOR FRUGAL INNOVATION	9
MODULE 2. MARKET OPPORTUNITIES FOR FRUGAL INNOVATIONS IN CROATIA, HUNGARY, IRELAND, POLAND AND THE UK	17
MODULE 3. Creative problem solving	24
MODULE 4. NEW MARKET DEVELOPMENT, HUMAN CENTERED DESIGN AND PROTOTYPING	33
MODULE 5. SUSTAINABILITY AND SOCIAL INCLUSION IN FRUGAL INNOVATION	40
MODULE 6. FINANCIAL PLANNING FOR INNOVATIONS	48
MODULE 7. MANAGEMENT OF FRUGAL INNOVATIONS	55

WHY IT IS WORTH TO TEACH ABOUT FRUGAL INNOVATIONS?

Frugal Innovation is both a mind set and a series of techniques that enables entrepreneurs to innovate despite resource constraints. The concept has emerged from developing markets, but, given the current climate of austerity and economic uncertainty across large parts of Europe, we too can benefit greatly by integrating Frugal Innovation to our entrepreneurship education and equipping new generations with new ways to innovate.

Our project does not seek to replace “traditional” teaching in innovation, but we do wish to make sure that students learn alternative, arguably more appropriate approaches to innovation. Frugal innovation offers the most coherent alternative framework, showing how early stage entrepreneurs/SMEs can grow faster by adopting flexible, low tech or “soft” approaches such as human-centered design and creative problem solving methods.



Our project responds to the needs of students, young entrepreneurs and existing business owners who understand the need for innovation in setting their business or making it grow, but are unsure how to proceed. They often have little money to invest in research or technology, are averse to risk, or lack a problem-solving mentality.

It also responds to the needs of VET and HE institutions in the entrepreneurship eco-system:

- it provides shared learning and collaboration spaces, vital given the complexity of the relationship between innovation and social/economic development;
- for enterprise focused VET institutions, it refreshes the innovation curriculum, strengthening key competences and offering entrepreneurs skills of more practical use in the “real world”;
- for universities, it reinforces links to regional development and provides high-quality materials for teaching innovation as a transversal competence;
- for development agencies, it contributes to diversification, growth and resilience of local businesses.



BENEFITS OF FRUGAL INNOVATION COURSE

For students

Frugal Mindset	Learning Skills	Life Skills
<ul style="list-style-type: none"> ▪ Understanding of frugal innovations ▪ Impact of frugal innovations on business, society and the environment ▪ Learning about frugal innovations case study 	<ul style="list-style-type: none"> ▪ Critical Thinking ▪ Creative Thinking ▪ Collaborating ▪ Communicating 	<ul style="list-style-type: none"> ▪ Creativity ▪ Initiative ▪ Social Skills ▪ Productivity

For teachers

Frugal Mindset	Learning Materials	Career
<ul style="list-style-type: none"> ▪ New knowledge and skills relevant to the demands of the contemporary economy ▪ Impact of frugal innovations on business, society and the environment 	<ul style="list-style-type: none"> ▪ Classroom course and interactive on-line course ▪ Case studies ▪ Activities ▪ Evaluation tools 	<ul style="list-style-type: none"> ▪ Professional development ▪ Inspiration for other courses ▪ Gaining new knowledge

MODULES AND THEIR LEARNING OBJECTIVES

Module	Learning objective
1. The business case for Frugal Innovation	<ul style="list-style-type: none"> Understanding the definition of innovations and frugal innovations Understanding the difference between typical approach to innovations and frugal innovations Know various terms defining frugal innovations Be able to explain frugal innovations examples Be able to explain features of frugal innovations
2. Market opportunities for frugal innovations in Poland/Hungary/Croatia/Ireland/UK	<ul style="list-style-type: none"> Understanding why frugal innovations are important in developing and advanced economies? Understand the need of environmental protection. Be able to indicate frugal innovations in various EU countries Be able to indicate sectors which demand frugal solutions Be able to understand business, social and environmental aspects of frugal innovations in terms of various countries
3. Creative problem solving	<ul style="list-style-type: none"> Understanding the creativity Be able to enhance creativity at individuals and groups Be able to indicate various sources of innovations Be able to explain and employ basis techniques boosting creative problem solving Understand and be able to employ design thinking Understand various methods of research
4. New market development, human centered design and prototyping	<ul style="list-style-type: none"> Understanding the elements of business environment Be able to define target market Be able to prepare a market analysis Understand human centered design Understand the meaning of prototyping Explain the roles of prosumers
5. Sustainability and social inclusion in frugal innovation	<ul style="list-style-type: none"> Be able to understand business, social and environmental aspects of frugal innovations Understand the role of the bottom of the pyramid market Understand the necessity of the environmental protection. Be able to explain global trends, like sustainability, CSR, circular economy etc.

	<ul style="list-style-type: none"> ▪ Be able to indicate examples of eco-friendly and social innovations
6. Financial planning for innovation	<ul style="list-style-type: none"> ▪ Understand how the crowdfunding works ▪ Understand the difference between crowdfunding and crowdsourcing ▪ Be able to write a successful business plan in applying for loans or credits? ▪ Understand the importance of managing cash flow ▪ Be able to indicate to opportunities to obtain external financing in their country
7. Management of frugal innovations	<ul style="list-style-type: none"> ▪ Understanding the meaning of E&I in the context of R&D ▪ Be able to explain how flex assets in order to become more frugal? ▪ Be able to indicate methods to shape consumer's behavior ▪ Understand how to create networks to be more frugal ▪ Be able to give examples of successful cooperation which result in frugal solutions

Dear Teachers,

The use of this materials is not obligatory. We proposed tasks, information and sources which are complementary to the content presented in the course. We leave you with a choice of which materials from this teachers' pack to use.

We hope that you will find them interesting and supportive.

Frugal Innovation Team

HOW TO USE THE GUIDE?

We will guide you through each module. As a teacher/trainer, you are provided with tools which can ensure the effective delivery of the training modules in the classroom.



DURATION

How much time should be spent on each module.



INTRODUCTION

Introductions will give you a quick overview of what to expect from each module.



LEARNING OUTCOMES

A summary of what knowledge and competences students should obtain in each module.



GLOSSARY

A summary of main terms which students should understand.



ACTIVITIES

Various activities which should help you to introduce the knowledge presented in each module your students



SOURCES

List of interesting books, articles, websites, videos, etc. related to each module.

MODULE 1. THE BUSINESS CASE FOR FRUGAL INNOVATION



The duration of this module estimated for 6 hours.



How to understand frugal innovations? Are they important for nowadays economies? What are the examples of successful frugal innovations?

These questions are crucial and therefore the module should provide answers on them.

Definition proposed by NESTA :

Frugal innovation responds to limitations in resources, whether financial, material or institutional, and using a range of methods, turns these constraints into an advantage¹.

is proposed as the main in the module. Nevertheless, we suggest to make in-depth theory overview on definitions with students. Such research should focus on both types of innovations: typical and frugal approach to innovations.

A theory background is necessary to focus on various aspects of innovations and to compare generic understanding of innovations and frugal one.

Constrains, social inclusion and environmental strands should be underlined while explaining the meaning of frugal innovations

¹ Nesta, <https://www.nesta.org.uk/feature/frugal-innovations/>



#1. Ask your students to read about typical approach to innovations. The definitions proposed by OECD² below might be useful for you to present to students:

An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations.

A product innovation is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics.

A process innovation is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software.

An organisational innovation is the implementation of a new organizational method in the firm's business practices, workplace organization or external relations.

- Business practices are routines and procedures for how work conducted.
- Workplace organisation includes organisational structure, distribution of work responsibilities
- External relations

A marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing. Draws on 4P's marketing model:

- Product design that does not change functional characteristics
- New sales channels or outlets
- New methods in product promotion or presentation
- Use of new pricing strategies

² Oslo Manual, 3rd Edition, OECD/Eurostat, Paris 2005

After reading these definitions, ask students to give examples of each innovation type which they have come across in their everyday life or at work.



#2. Ask students to give examples of innovations based on high-technology and on the contrary, innovations based on simple solutions. Try to encourage them to the discussion, which innovations are more important.

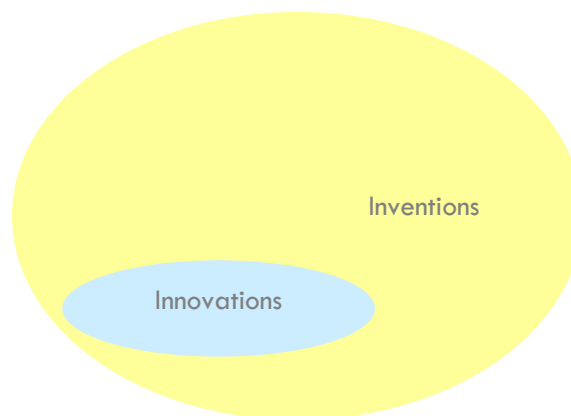
Such discussion would be a good base to introduce the terms of radical (breakthrough) and incremental (modernizing) innovations.



#3. When the meaning of a radical and incremental innovation are explained, students can learn about Schumpeter's waves of innovations and his definition of an innovation, as he was a precursor of the theory of innovations.



#4. Ask students to distinguish innovations and inventions. The graphics below might help you to explain the difference to students.

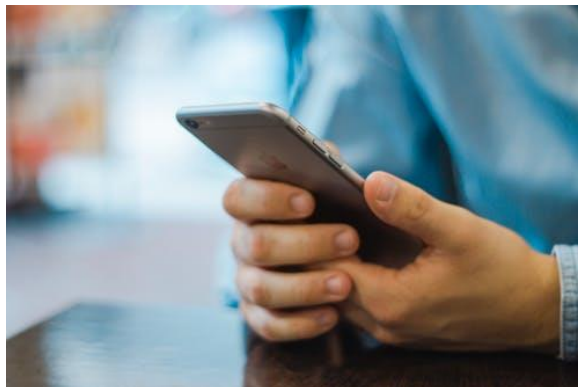




#5. Ask students to search for more definitions of innovations. Roger's, Kotler's, Mansfield's or Drucker's approach will give them a complementary overview on the specifics of innovations.



#6. When students understand the typical meaning of innovations, you can start to introduce the frugal innovation concept. Ask students about sophisticated products – whether they use all functionalities of such products. One of a good example of such product is a smartphone – do they know all functionalities of their smartphones? Do they use all of the functionalities? Are smartphones durable enough for everyday use?



#7. Follow the Frugal Innovation Module 1. Try to give time to students to get familiar with all examples and case studies presented in the module.



#8. Encourage students to talk about the advantages of cheap cars. You can use the example of Tata Nano (and why Tata Nano went of production) and other small and affordable cars.



#9. Ask students to work in groups in order to discuss which products from their surrounding could be transferred into frugal solutions (what should be changed, what should be simpler, what should be defeated, etc.).



#10. Ask students to work in groups in order to compare regular airline with low-cost airlines especially in the scope of eliminating many traditional passenger services. Ask students to make a list of advantages and disadvantages of such no-frills carriers.





Important terms (in an alphabetic order):

Catalytic innovation

Frugal innovation

Gandhian innovation

Grass root innovation

Inclusive innovation

Innovation

Jugaad innovation

Marketing innovation

No-frills innovation

Organizational innovation

Process innovation

Product innovation

Reverse innovation



Students:

- ✓ Understand the definition of innovations and frugal innovations
- ✓ Are able to explain features of frugal innovations
- ✓ Are able to explain frugal innovations examples
- ✓ Understand the difference between typical approach to innovations and frugal innovations
- ✓ Know various terms defining frugal innovations

Students are aware that limitations are no longer constrains. Limitations mean possibilities.



Sources:

To read:

Radjou, N., & Prabhu, J. C. (2014). Frugal innovation: how to do better with less (1st ed.). New York: PublicAffairs.

What is frugal innovation? Three defining criteria, Weyrauch, T. & Herstatt, C. J Frugal Innov (2017) 2: 1. <https://doi.org/10.1186/s40669-016-0005-y>, Springer Singapore

A conceptual analysis of foundations, trends and relevant potentials in the field of frugal innovation (for Europe). Interim report for the project "study on frugal innovation and reengineering of traditional techniques" – Study, Directorate-General for Research and Innovation , Fraunhofer ISI , Nesta, European Commission, 2016-08-04

Radjou, N., & Prabhu, J., Ahuja S. (2012) Jugaad Innovation: Think Frugal, Be Flexible, Generate Breakthrough Growth Jossey-Bass; 1 edition

Yasser Bhatti Y., Basu R.R., Barron D., Ventresca Marc J. (2018) Frugal Innovation: Models, Means, Methods, Cambridge University Press

P. Drucker, "Innovation and Entrepreneurship", New York, NY: Harper and Row, 1985.

E. M. Roger, "Diffusion of innovation", New York: The Free Press A Division of Macmillan Publishing Co., Inc. 1962, 1971, 1983

D. Smith, "Exploring innovation", Berkshire: McGraw-Hill Education, 2006.



To watch:

What is frugal innovation? What does frugal innovation mean?
frugal innovation meaning & explanation

<https://www.youtube.com/watch?v=Yq4rcGyb4g>

Frugal innovation in healthcare | The Economist

<https://www.youtube.com/watch?v=hmqaW4VSSHl&t=1s>

The Art of Frugal Innovation | Arun Cherian |

TEDxBocconiUMumbai

<https://www.youtube.com/watch?v=psduq4vYZmQ>

Frugal Innovation

<https://www.youtube.com/watch?v=DnQi7ndgx3Y>

MODULE 2. MARKET OPPORTUNITIES FOR FRUGAL INNOVATIONS IN CROATIA, HUNGARY, IRELAND, POLAND AND THE UK



The duration of this module estimated for 4 hours.



The aim of this module is to get students familiar with the real frugal innovations implemented in specific European countries as well as to provide knowledge about various scope of problems which create markets for frugal solutions.

Therefore, students will be analyzing:

- What does innovative economy mean?
- Which European economies have the best innovative performance? And which the worst?
- How to measure innovative performance?
- Why frugal innovations are important in developing and advanced economies?
- Why companies should focus on the bottom of the pyramid market?
- What is the innovation performance of the selected country?
- What are the examples of frugal innovations in the above mentioned countries?
- In which sectors demand / potential demand exceeds supply?
- Which sector demands immediate support or development?

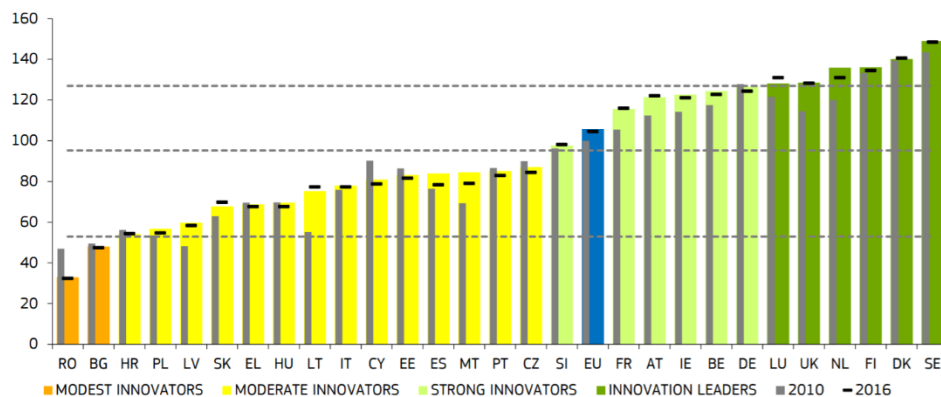
The awareness of students about the necessity of implementing frugal innovation not only in developing economies should rise after this module. They should also be more conscious about social and

environmental issues in advanced economies, which impose frugal solutions.



#1. Ask your students get familiar with the latest European Innovation Scoreboard.

Figure 1. Performance of EU Member States' innovation systems in 2018



Source: European Innovation Scoreboard 2018 – Executive summary, European Commission, 21/06/2018
<https://ec.europa.eu/docsroom/documents/30201>

Discuss with students which country is the most innovative and which is the modest?



#2. Talk with students about the indicators which were taken into account to prepare European Innovation Scoreboard.

Discuss with the students the framework conditions which creates countries' innovativeness according to the European Innovation Scoreboard.

In 2018 European Innovation Scoreboard captured the following indicators:

FRAMEWORK CONDITIONS

Human resources

1.1.1 New doctorate graduates

1.1.2 Population aged 25-34 with tertiary education

1.1.3 Lifelong learning

Attractive research systems

1.2.1 International scientific co-publications

1.2.2 Top 10% most cited publications

1.2.3 Foreign doctorate students

Innovation-friendly environment

1.3.1 Broadband penetration

1.3.2 Opportunity-driven entrepreneurship

INVESTMENTS

Finance and support

2.1.1 R&D expenditure in the public sector

2.1.2 Venture capital expenditures

Firm investments

2.2.1 R&D expenditure in the business sector

2.2.2 Non-R&D innovation expenditures

2.2.3 Enterprises providing training to develop or upgrade ICT skills of their personnel

INNOVATION ACTIVITIES

Innovators

3.1.1 SMEs with product or process innovations

3.1.2 SMEs with marketing or organizational innovations

3.1.3 SMEs innovating in-house

Linkages

3.2.1 Innovative SMEs collaborating with others

3.2.2 Public-private co-publications

3.2.3 Private co-funding of public R&D expenditures

Intellectual assets

3.3.1 PCT patent applications

3.3.2 Trademark applications

3.3.3 Design applications

IMPACTS

Employment impacts

4.1.1 Employment in knowledge-intensive activities 4.1.2 Employment fast-growing enterprises of innovative sectors

Sales impacts

4.2.1 Medium and high-tech product exports

4.2.2 Knowledge-intensive services exports

4.2.3 Sales of new-to-market and new-to-firm product innovations



#3. Ask students to list frugal innovations in your country. If you are in one of the country described in the course, please try to find more examples apart from those given in the course. If your country was not described, ask students to choose examples of frugal innovation they have come across or heard about.



#4. Talk with students about global problems, like:

- air pollution,
- global warming,
- overproduction of waste,
- health,
- plastic pollution,
- access to health care,
- shortened product life cycle,
- poverty.

Divide them into groups. Ask each group to conduct a brain storming in order to come up with ideas of frugal innovations solving a selected problem.



#5. Focus on your country or region. Discuss with students whether there are some sectoral, social, economic or environmental problems which should be tackled in your region or country. How frugal innovation could support to solve such problems?



#6. Watch about the examples of frugal innovations in India. Discuss with students whether similar solution would work in your country?

Indian Jugaad Innovation

<https://www.youtube.com/watch?v=nE-rvtg1TVk>





Important terms (in alphabetic order):

Advanced economies

Innovation performance

Developing economies

Pollution

Environmental protection

Poverty

European Innovation Scoreboard

Social inclusion



Students:

- Know the innovative performance of the European Union countries.
- Can explain European Innovation Scoreboard.
- Can give examples (case studies) of frugal innovation in Croatia, Ireland, Hungary, Poland and the UK
- Why frugal innovations are important in developing and advanced economies?
- Why companies should focus on the bottom of the pyramid market?
- What is the innovation performance of the selected country?
- What are the examples of frugal innovations in the above mentioned countries?
- In which sectors demand / potential demand exceeds supply?
- Which sector demands immediate support or development?



Sources:

To read:

EU Programme for Employment and Social Innovation (EaSI)

[https://eur-](https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:347:0238:0252:EN:PDF)

[lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:347:0238:0252:EN:PDF](https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:347:0238:0252:EN:PDF)

Poverty and Shared Prosperity 2018, The World Bank,

<http://www.worldbank.org/en/publication/poverty-and-shared-prosperity>

European Commission - Directorate-General for Employment, Social Affairs & Inclusion - Employment and Social Developments in Europe 2017

<https://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=8030&furtherPubs=yes>

Living conditions in Europe - poverty and social exclusion

https://ec.europa.eu/eurostat/statistics-explained/index.php/Living_conditions_in_Europe_-_poverty_and_social_exclusion#Policy_context

Liedtka J., Salzman R., Azer D., Design (2017) Thinking for the Greater Good: Innovation in the Social Sector, Columbia University Press

Sharma J., Effective Social Innovation: Planning Guide for Changemakers (Social Innovation Guide), Jyoti Sharma 2018

To watch:

Frugal Innovation in Healthcare: Doing Better with Less

<https://www.youtube.com/watch?v=jhF1Elh7wuU>

Work with what you have: Frugal Innovation Part 1: What is it?

<https://www.youtube.com/watch?v=w8DUyZyT6ow>

Work with what you have: Frugal Innovation Part 1: What is it?

<https://www.youtube.com/watch?v=STkYsvxcrLE>

Work with what you have: Frugal Innovation Part 3: How do I plan it?

<https://www.youtube.com/watch?v=ejACF2Ftjp8>

MODULE 3. Creative problem solving



The duration of this module estimated for 5 hours.



The most crucial knowledge which should be taught during this course, is related to the following issues:

- why creativity is important.
- how to enhance human creativity using techniques like brainstorming, brainwriting or nominal group technique.
- how to create a creative work environment.
- how innovation process works
- what the sources on innovations are.
- what design thinking is.

It is important to keep the module in a practical dimension, using a lot of case studies and exercise various techniques.





#1. Time for a warm-up. You need:

- ✓ 28-35 nails (7-8 cm /3 inches)
- ✓ 4 – 5 wood blocks
- ✓ a hammer

Hammer one of the nails into the center of the block of wood. Please remember that this nail shall be standing as straight as possible.

Divide the group of students into 4 or 5 smaller groups. Give each group a wood block with a hammered nail and 6 nails.

Challenge for students is to put all 6 nails on top of one nail which is hammered to the wooden block. None of the nail may touch the wooden block.

Students would probably say – “it is not possible”.



Nailed it - How to balance 6 nails on one nail - Party trick

<https://www.youtube.com/watch?v=jTela5VcZQA>

Discuss with students that challenges which seem to be impossible in the beginning, sometimes are quite easy, when we work in groups and use our creativity.



#2. Brainstorming. In this activity students will have a chance to compare two brainstorming techniques.

You will need two classrooms. Divide students into two groups and ask them to go to separate rooms.

Ask one group to generate ideas on how to make “Frugal innovation” classroom course more interesting using typical brainstorming. Remind them about the rules of this technique.

Ask the other group to generate ideas on how to make “Frugal innovation” classroom course more interesting using Nominal Group Technique.

When both groups are ready, compare the results. Ask students about advantages and disadvantages of the technique they used. Discuss these methods.



Analyze, what conditions must be provided to brainstorming participants to make this technique effective.



#3. Team building. Introduce to students a Hand Game.

You need a table or a floor. This game is for 10 up to 20 people.

Get the group to form a circle and ask students to put both hands on the table or on the floor / ground.

Ask students to stretch out their hands and to put the right hand placed between the hands by the right. This way a cross-circle is created.

Hitting the palm once against the floor shows the direction goes from left to the right. Hitting the floor twice means to alternate the direction and the person by the left should respond.

If someone fails (hits when it's not his/her time), then he/she cannot use the hand which missed.

Hand Game helps to develop focus in the team and to create engaged team.



Team building - The hand game

<https://www.youtube.com/watch?v=uJ3lGzsYdU4>



#4. Innovation process

Ask students to read about the story how Procter&Gamble developed a new toothpaste tube and how other company created an improved water bottle. Ask them to list the main phases of innovation process.



Show them the phases of innovation process presented in the module. Compare and discuss the phases.



#5. Ask students how they would imagine their ideal work place, which would stimulate their creativity. Talk about all factors which could influence creativity, like work hours, ability to go out of office and look for inspirations, the design of the office, facilities in the office etc. Compare students' expectations with how Mark Zuckerberg stimulates creativity in his company



#6. Analyze with students "Seven areas of opportunity for innovation" coined by P. Drucker. Ask them to present examples for each of the seven opportunities. Encourage them to find case studies from their local business environment and from the global business.



Examples like: an ice trade / frozen water trade, Audi A2 perceived as one of the great motoring disasters, demographic changes on different continents and more eco-conscious consumers could be helpful to illustrate these sources of innovations.



#7. This activity, on one hand, will help you to explain students, why design thinking is important, and on the other hand, will warm up for design thinking process.

Everyone needs a piece of paper (A4 preferably) and a pencil or a pen.



For the first round, ask students to draw a vase. When the drawings are ready, ask students to put them on the board.

For the second round, ask students to design a vase for people who enjoy having flowers in their homes. When the drawings are ready, put them all on the board.

Compare both approaches to the design of a vase. Underline how reframing the questions affected the solutions.



#8. Marshmallow Spaghetti Tower Challenge. The game which helps to explain the process of design thinking.

You need: scissors, spaghetti, tapes, strings and marshmallows.



Divide students into the groups (maximum 5 persons). Provide each group with 1 yard of tape, 1 yard of string, 20 pieces of spaghetti and one marshmallow. All groups should also have access to scissors.

Students have 18 minutes to build the tallest possible tower that can support a marshmallow.

The group which is first with the tower, wins!

Follow-up questions to facilitate discussion and further learning:

- ✓ Was it a difficult task? Would you be able to do it individually?
- ✓ Was there a leader in your team?
- ✓ Was there any expert in architecture or building?
- ✓ Did you feel everyone's ideas were well received during the activity?
- ✓ What could you have done better to enhance your ability to challenge the process?



Important terms (in alphabetic order):

Brainstorming

Innovation process

Brainwriting

Marketing research

Creative Work Environment

Nominal Group Technique

Creativity

Sources of innovations

Design Thinking



Students:

- Know techniques how to enhance human creativity
- Are aware that work environment influences creativity
- Can indicate innovation process phases
- Can list many types of sources of innovations.

- In the line with design thinking, are more committed to testing even the most basic ideas, and to start experimenting with very low fidelity prototypes.



Sources:

To read:

Lewrick M., Patrick Link P., Leifer L., (2018), The Design Thinking Playbook: Mindful Digital Transformation of Teams, Products, Services, Businesses and Ecosystems, Wiley

Curedale R.A., (2017) Design Thinking Process & Methods 4th Edition Paperback, Design Community College Inc.

Innovating for People Handbook of Human-Centered Design Methods, LUMA Institute, 1st edition, 2012

Hamme D., (2014) Customer Focused Process Innovation: Linking Strategic Intent to Everyday Execution, McGraw-Hill Education

Burns A.C., Veeck A., Bush R.F., (2016) Marketing Research (8th Edition) 8th Edition, Pearson

To watch:

Design Thinking and Innovation At Apple

<https://www.youtube.com/watch?v=ir3E-TEUk48>

Design Thinking Case Study

<https://www.youtube.com/watch?v=rWyClv8bico>

Design Thinking in 90 Seconds

<https://www.youtube.com/watch?v=vQytKCT563I>

Design thinking – what, how, why, when? | Paweł Żebrowski | TEDxSzczecinLive

<https://www.youtube.com/watch?v=Q80wUnju5YA>

MODULE 4. NEW MARKET DEVELOPMENT, HUMAN CENTERED DESIGN AND PROTOTYPING



The duration of this module estimated for 4 hours.



This module covers two main topics – new market development and human centered design.

In terms of new market development, after this course students should:

- ✓ Understand the elements of business environment
- ✓ Be able to define target market
- ✓ Be able to prepare a market analysis

As far as human centered design, students should:

- ✓ Understand and be able to implement human centered design
- ✓ Understand and be able to implement prototyping
- ✓ Be able to explain the roles of prosumers

These two topics are linked. Students should vary focused on the customers – their target market and to develop tailor-made products for them (human centered design) .



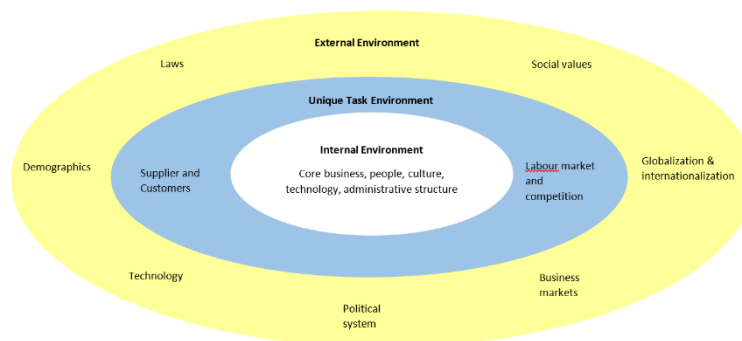
#1. Ask students whether they know any examples of global brands which were not successful entering foreign markets. You can use the example of Starbucks failure in Australia.



Ask students why this happened? What were the main reasons?
Could Starbucks avoid such failure?



#2. Divide students into smaller groups (maximum 4 persons). Prepare the list of companies from your country /region, which are well-known by everyone. Assign one company to each group.



Ask students to analyze and describe the external environment of selected company covering Unique Task Environment.

How does each element of external environment influence the company. Which have the biggest impact?



#3. Divide students into two groups. Groups will have the same task – to describe who buys cloths of a selected brand and also to provide details about each brand's target group. Create customer profiles



The brands are: H&M and Coco Chanel.



#4. Divide students into two groups. Inform them, they both groups run pizzerias. One pizzeria is located near the university building and the other one on the street with office centers.



Ask students to define their target groups. How does the target group influence the following aspects:

- ✓ Interior design
- ✓ Menu
- ✓ Opening hours
- ✓ Service
- ✓ Marketing



#5. Divide students into groups of maximum 4 people. Each group is responsible to prepare a market analysis for a bicycle producer for a different markets:

- ✓ Your country market
- ✓ Your neighbor country
- ✓ The Netherlands
- ✓ Croatia



Which country seems to be the most successful market for a car producer? Why?



#6. Ask students to redesign their mobile phone according to the needs of two groups: elder people (65+) and children (8-10 years).

Are they able to use human center design techniques in the classroom?

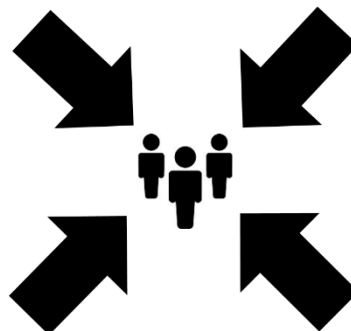
It should be their homework to observe these groups and ask questions when they are able to reach these specific target groups.



#7. Ask students to analyze various types of prosumers.

Do they have any experience as one of the prosumer? Which type?

Do they now initiatives like MyStarbucksIdea.com?





Important terms (in alphabetic order):

Customer's profile

Prosumers

External environment

Prototyping

Human Centered Design

Target group

Internal environment

Unique task environment

Market analysis



Students:

- ✓ Are aware of various market conditions resulting from external environment.
- ✓ Are able to prepare market analysis.
- ✓ Are able to define a target group.
- ✓ Are able to prepare consumer's profile.
- ✓ Know how to use techniques of human center design.
- ✓ Are aware about an important role of prosumers and know how to engage them.



Sources:

To read:

Winston W. (1993) Market analysis, Routledge

Dolnicar S., Grün B., Leisch F., (2018) Market Segmentation Analysis: Understanding It, Doing It, and Making It Useful (Management for Professionals), Springer



Truman O., Hague P., Cupman J., (2016) Market Research in Practice: An Introduction to Gaining Greater Market Insight 3rd Edition, Kogan Page;

IDEO (2015), The Field Guide to Human-Centered Design Paperback, IDEO.org / Design Kit

LUMA Institute (2012) Innovating for People Handbook of Human-Centered Design Methods, LUMA Institute

Stickdorn M., Schneider J., (2012) This is Service Design Thinking: Basics, Tools, Cases, Wiley

To watch:

Why Starbucks Failed In Australia

https://www.youtube.com/watch?v=_FGUkxn5kZQ

Why Walmart Is Failing In Japan

https://www.youtube.com/watch?v=32_fm92-EF8

Market Segmentation Why Market Segments Are Important

<https://www.youtube.com/watch?v=D8oVKRNSWBc>

Target Market vs Target Audience

<https://www.youtube.com/watch?v=UgbBtCEfWtE>

Customer Profile

https://www.youtube.com/watch?v=dc3QNf5_mo0

Principles of Human-Centered Design (Don Norman)

<https://www.youtube.com/watch?v=rmM0kRf8Dbk>

Design thinking for every endeavour | Robyn Richardson | TEDxCreativeCoast

<https://www.youtube.com/watch?v=TPXrheqhTCs>

MODULE 5. SUSTAINABILITY AND SOCIAL INCLUSION IN FRUGAL INNOVATION



The duration of this module estimated for 4 hours.



The most crucial knowledge which should be taught during this course, is related with the following issues:

- ✓ business, social and environmental aspects of frugal innovations
- ✓ the bottom of the pyramid market
- ✓ environmental protection.
- ✓ global trends, like sustainability, CSR, circular economy etc.

Student should rise their awareness that frugal innovations have a lot in common with eco-friendly and social innovations.





#1. Ask students about the pollution which affects their everyday life and their health. Do they know any solutions how to reduce specific pollution? Have they used any of the suggested solutions yet? Ask them if they think that eco-innovations are needed in nowadays world. Which eco-innovations are the most important in their opinion.



#2. Ask students to read the reports on global pollution, like:

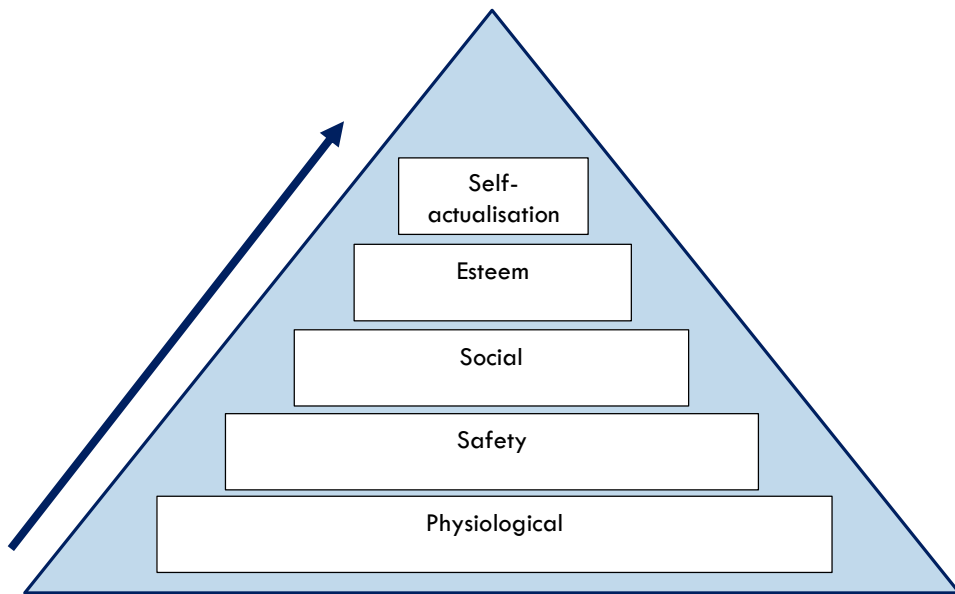
- ✓ Annual Report 2018, Putting the environment at the heart of people's lives, United Nations 2018 (<https://www.unenvironment.org/annualreport/2018/index.php#foreword>)
- ✓ WHO Global Ambient Air Quality Database (update 2018), World Health Organization, <https://www.who.int/airpollution/data/cities/en/>

What are the most important problems highlighted in these reports?





#3. Ask students about the hierarchy of needs proposed by Maslow. Do they agree with this hierarchy?



Maslow's hierarchy of needs

How can they relate this hierarchy with the needs of people who belong to the bottom of the pyramid market? How does it impact their purchase behavior?



#4. An example of social innovation – Paperfuge – a cheap, human-powered centrifuge which can spin biological samples at thousands of revolutions per minute. It can separate plasma from a blood sample, crucial for the diagnosis of infections including, for instance, HIV. It is made of paper, string and plastic, and unlike other centrifuges requires no electricity or complex machinery

(with expensive replacements) and only very little money (to cover the cost of the base materials).

(<http://www.socialinnovationacademy.eu/8-cool-examples-social-innovation-north-america/>).



Discuss with students why such solutions are important in the third world countries.



#5. Apartment/house sharing platforms, such as Airbnb, connect homeowners with people who need a place to stay when they're traveling. Discuss with students other forms of sharing economy. What are the advantages of sharing economy?





#6. Ask students to read about IKEA's ecological approach announced At the Democratic Design Days in Älmhult.

“Our ambition is to become people and planet positive by 2030 while growing the IKEA business. Through our size and reach we have the opportunity to inspire and enable more than one billion people to live better lives, within the limits of the planet” says Inter IKEA Group CEO, Torbjörn Lööf.

Commitments for 2030 include:

- Designing all IKEA products with new circular principles, with the goal to only use renewable and recycled materials
- Offering services that make it easier for people to bring home, care for and pass on products
- Removing all single-use plastic products from the IKEA range globally and from customer and co-worker restaurants in stores by 2020
- Increasing the proportion of plant-based choices in the IKEA food offer, like the veggie hot dog launching globally in August 2018
- Becoming climate positive and reducing the total IKEA climate footprint by an average of 70% per product
- Achieving zero emissions home deliveries by 2025*
- Expanding the offer of affordable home solar solutions to 29 IKEA markets* by 2025

https://www.ikea.com/us/en/about_ikea/newsitem/060718-IKEA-commits-to-become-people-planet-positive-2030



Ask students whether they know other global companies which are committed to ecological changes? What are these companies. What do they do for environment?



#7. Ask students to learn more about green innovations implemented by Toyota Motor Corporation. Can they explain the diffusion of a green trend in a car industry?



Important terms (in alphabetic order):

Bottom of the pyramid market

Circular economy

Corporate social responsibility

Cradle-to-cradle production

Eco innovation

Green Innovation

Product Demand Matrix

Prototyping

Sharing economy

Social innovation

Spiral economy

Sustainability



Students:

- ✓ Understand business, social and environmental aspects of frugal innovations
- ✓ Understand the role of the bottom of the pyramid market
- ✓ Understand the necessity of the environmental protection
- ✓ Can explain global trends, like sustainability, CSR, circular economy etc.
- ✓ Can indicate examples of eco-friendly and social innovations



Sources:

To read:

Horbach J. (ed.), Reif C. (ed.), (2018) New Developments in Eco-Innovation Research (Sustainability and Innovation) Springer; 1st ed.

Viki T., Toma D., Gons E., (2017) The Corporate Startup: How Established Companies Can Develop Successful Innovation Ecosystems, Vakmedianet Management

Sachs J.D., (2015) The Age of Sustainable Development, Columbia University Press

Elliott J., (2012) An Introduction to Sustainable Development (Routledge Perspectives on Development), Routledge; 4 edition

Albinsson P. A. (Editor), Perera B. Y. (Editor), (2018) The Rise of the Sharing Economy: Exploring the Challenges and Opportunities of Collaborative Consumption, Praeger

Weetman C., (2016) A Circular Economy Handbook for Business and Supply Chains: Repair, Remake, Redesign, Rethink, Kogan Page

To watch:

UN Global Environment Report: Climate change and pollution impacting human health

<https://www.youtube.com/watch?v=R6RYnY2r5bo>

Pollution to claim millions of lives prematurely by 2050, warns UN report

<https://www.youtube.com/watch?v=bZD28Ec3zmY>

WHO's Air Pollution and Child Health report & other topics - Daily Briefing (29 October 2018)

<https://www.youtube.com/watch?v=4mt7B4pot0g>

The Circular Economy: A Simple Explanation | Cillian Lohan | TEDxYouth@EEB3

<https://www.youtube.com/watch?v=cbm1MCTobVc>

The Latest Green Automotive Innovations from Japan

<https://www.youtube.com/watch?v=BXoxWsEPLms>

5 Incredible Eco-Friendly Innovations To Save The Earth

<https://www.youtube.com/watch?v=vl1dBBfjAxQ>

Green Innovations: Thinking Outside the Box

<https://www.youtube.com/watch?v=uFBL8AojOPY>

MODULE 6. FINANCIAL PLANNING FOR INNOVATIONS



The duration of this module estimated for 3 hours.



The most crucial knowledge which should be taught during this course, is related to the following issues:

- ✓ Why crowdfunding should be perceived as a way to raise money for original and innovative solutions
- ✓ How to write a successful business plan in applying for loans or credits?
- ✓ Are there any opportunities to use a special financial programmes dedicated to support innovative activities in my country or region?

Students should gain knowledge, that financing is possible and there are many ways to get money.





#1. Ask students to list the crowdfunding platforms which they know. It can be national or worldwide platforms.

Have they heard about innovative product which were introduced to the market thanks to the support of crowdfunding?

Have students ever tried to finance their idea through crowdfunding?



#2. Time to prepare a crowdfunding campaign. Divide students into groups of maximum 4 persons. Ask each group to think about an innovative product which they would like to develop and introduce thanks to the money collected through a crowdfunding platform.

Ask students to prepare a plan of such a crowdfunding campaign.



#3. Ask students, who remain in the same groups, to search for some interesting idea in various crowdfunding platform. What is the idea? Why did the group choose it? How to promote the pitch?



Does the key to success means capturing people's attention and curiosity?

What are the best practices in crowdfunding like Indiegogo or Kickstarter?

After research and considering the above questions, ask students to revise their plans of crowdfunding campaign.



#4. Ask students, who remain in the same groups, to write a business plan for the, which was prepared for the crowdfunding campaign. They may use the plan below:

- ✓ Executive summary
- ✓ Company description
- ✓ Market analysis
- ✓ Organization and management
- ✓ Service or product line
- ✓ Marketing and sales
- ✓ Funding request
- ✓ Financial projections
- ✓ Appendix

When business plans are ready, ask students to give business plans to other groups for reading.

Discuss the business plans.



#5. Ask students to make a piece of research on the possibilities of gaining money from national or regional programmes supporting innovativeness. Discuss the opportunities.



Important terms (in alphabetic order):

Business plan

Crowdfunding

Cash flow

Crowdsourcing

Credits

Loans



Students:

- ✓ Can indicate the most popular global and national crowdfunding platforms.
- ✓ Know how to promote their idea on crowdfunding platforms.

- ✓ Know how to benefit from crowdfunding and crowdsourcing.
- ✓ Can write a successful business plan in applying for loans or credits?
- ✓ Are there any opportunities to use a special financial programmes dedicated to support innovative activities in my country or region?



Sources:

To read:

Creating and Capturing Value through Crowdsourcing (2018), (ed.) Allan Afuah A., Tucci C.L., Viscusi G. Oxford University Press

Zoref L., Mindsharing: The Art of Crowdsourcing Everything (2015), Portfolio

Rose N., (2016), Equity Crowdfunding: The Complete Guide For Startups And Growing Companies Stonepine Publishing

Epstein M.J., (2017) Crowdfunding Basics In 30 Minutes: How to use Kickstarter, Indiegogo, and other crowdfunding platforms to support your entrepreneurial and creative dreams, In 30 Minutes Guides

Genadinik A., (2015) Business Plan Template And Example: How To Write A Business Plan: Business Planning Made Simple, CreateSpace Independent Publishing Platform

Kiyosaki R.T., (2011) Rich Dad's Cashflow Quadrant: Rich Dad's Guide to Financial Freedom, Plata Publishing; 2nd edition

To watch:

Crowdsourcing Innovation: Changing the world one idea at a time | Rob Wilmot | TEDxKraków

<https://www.youtube.com/watch?v=Y1GZoamtgHQ>

Crowdsourcing: How to Distill Innovative Ideas



<https://www.youtube.com/watch?v=Xct0seKq7yY>

Jeff Howe – Crowdsourcing

<https://www.youtube.com/watch?v=F0-UtNg3ots>

The 4 Types of Crowdfunding

<https://www.youtube.com/watch?v=Vqvomrib6x0>

First Steps Toward A Successful Crowdfunding Campaign by Emily Best (Seed&Spark Founder / CEO)

<https://www.youtube.com/watch?v=YRvu6e9Utd4>

MODULE 7. MANAGEMENT OF FRUGAL INNOVATIONS



The duration of this module estimated for 4 hours.



The main aim of this module is to present general rules of the management of frugal innovations. In some way this module constitutes a summary of the previous modules, nevertheless this part of the course highlights the following issues:

- ✓ The meaning of E&I in the context of R&D
- ✓ How to flex assets in order to become more frugal?
- ✓ Methods to shape consumer's behavior
- ✓ How to create networks to be more frugal?
- ✓ Examples of successful cooperation which result in frugal solutions





#1. Ask students how they understand R&D? Do you know any interesting R&D undertaken by universities or companies?

Example of R&D work – sharks' skin is an inspiration for scientists improve the aerodynamic performance of planes, wind turbines, drones, and cars. Sharks' scales are perfectly designed to decrease drag.



Are R&D departments necessary in each company?

What are the advantages and disadvantages of having such department in the company?

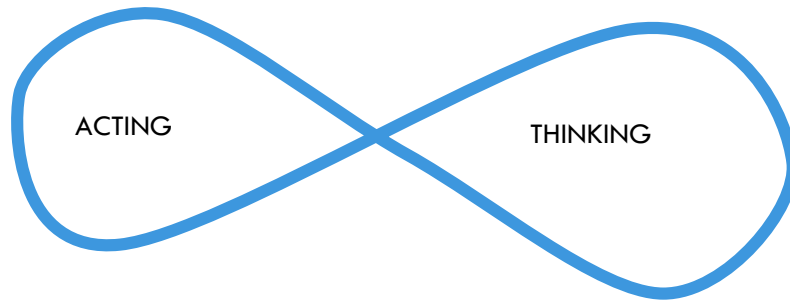


#2. Henry Ford said:

"Failure is only the opportunity to begin again more intelligently."

This should inspire to iterative methodology. A consistent feedback loop seems to be the best way to gain knowledge, which can lead to growth and success of a company.

Innovation Loop



Discuss with students the idea of iteration. Link the iteration loop with the innovation cycle.



#3. Reshoring to the U.S.

According to Reshoring Initiative (<http://www.reshorenow.org/companies-reshoring/>), many companies decided to change the location of the production from offshore.

Examples:



Apple³:

- ✓ \$100 million investment to produce the Mac Pro in the U.S. instead of China.
- ✓ 200 jobs the U.S.

³ http://www.reshorenow.org/content/companies_reshoring/Cases9_26_16.pdf

- ✓ Reasons: Rising wages, Lower energy costs



Ford⁴:

- ✓ Hybrid transmission components and transmission gear machining reshored from Japan,
- ✓ Battery pack assembly from Mexico
- ✓ Steel forging from India
- ✓ Ford plans to add 12,000 U.S. jobs by 2015
- ✓ Reason: I To be sure quality standards are followed

Ask students to list advantages and disadvantages of reshoring.

Do they know the companies from their domestic market which decided to change the location of the production from offshore to their countries?



#4. Reshoring to the UK

Re-shoring to the UK from China



<https://www.youtube.com/watch?v=KXdYGNpMa-8>

⁴ http://www.reshorennow.org/content/companies_reshoring/Cases9_26_16.pdf

Watch the video with students. Discuss the social and environmental aspects of reshoring.



#5. Obstacles can lead to sustainable solutions. Watch about Coca Cola Company experienced water constraints in China.

Coca-Cola helping China go green?



<https://www.youtube.com/watch?v=X0zGvyNboD4>

Ask students what they think about the efforts of Coca Cola Company on water protection?

What kind of stakeholders can co-operate to protect environment, and, at the same time, benefit from green solutions?



#6. Industrial Symbiosis

Watch about industrial symbiosis in Northern Ireland. Ask students to compare this symbiosis with Kalunborg Industrial Eco-Park presented in the course.

Industrial Symbiosis | Improving productivity through efficient resource management



<https://www.youtube.com/watch?v=GjI9tvsUwNU>

Ask students to list benefits.

Ask students to list the conditions of effective and win-to-win cooperation.



#7. Smart and eco campaigns. Is it easy to influence the consumers and make them behave in a certain way? Many companies would like consumers to buy their products and contribute to the environmental protection.

Seven Billion Dreams. One Planet. Consume with Care



<https://www.youtube.com/watch?v=JyL58vlbvgw>

Introducing PlantBottle™



<https://www.youtube.com/watch?v=aEVVJxqWaZ8>

Palm oil: how our consumer choices affect wildlife



Indonesia and Malaysia are the world's
biggest palm oil producers



<https://www.youtube.com/watch?v=w-1DQwaauwE>

Watch the above eco advertisements. Discuss with students which adds have bigger impact on consumers – those presenting real problems in natural environment or introducing a certain solutions like, for example bottles made of plants?

Ask students (in groups up to 4 people) to prepare an idea (a script) for an advertisement of their favorite products. Such app should enhance people to change their behavior in order to protect environment.



Important terms (in an alphabetic order):

E&I

Prosumers

Industrial symbiosis

R&D

Innovation loop

Reshoring

Networks

Synergy effect



Students:

- ✓ Can implement E&I as a management method
- ✓ Know how flex assets in order to become more frugal
- ✓ Knows the methods to shape consumer's behavior
- ✓ Are aware that networks accelerate innovations
- ✓ Are able to provide examples of successful cooperation which result in frugal solutions
- ✓ Are aware of the impact of campaigns that should affect more conscious behavior and environmental protection.



Sources:

To read:

Using shark scales to design better drones, planes, and wind turbines. Bioinspired vortex generators increase airfoil lift, decrease

drag, Source: Harvard John A. Paulson School of Engineering and Applied Sciences,

<https://www.sciencedaily.com/releases/2018/02/180207090135.htm>

Smith S.J., (2011) The Young Activist's Guide to Building a Green Movement and Changing the World: Plan a Campaign, Recruit Supporters, Lobby Politicians, Pass Legislation, Raise Money, Attract Media Attention, Ten Speed Press

McCallum W., Sutherland J., (2018) How to Give Up Plastic: A Guide to Changing the World, One Plastic Bottle at a Time. Penguin Books Ltd.

Ermine J.L., Knowledge Management: The Creative Loop (Innovation and Technology Set Book 5) , Wiley-ISTE

To watch:

Innovation Loop Live 2018 – Umeå, Sweden

<https://www.youtube.com/watch?v=7uRTR9Yd1mQ>

Innovation Loop

<https://www.youtube.com/watch?v=RG98ukjWcYI>

Wearer Innovation Loop

<https://www.youtube.com/watch?v=usLlolkSmJs>

Together Possible - WWF

<https://www.youtube.com/watch?v=zTau1cqtg4U>

Innovation Networks

<https://www.youtube.com/watch?v=Dc20kt7LNd8>

Industrial symbioses and eco-industrial parks: the Kalundborg symbiosis

<https://www.youtube.com/watch?v=1koYpJs5PSo>

Find more on our website:

www.frugalinnovation.how



*Promoting low tech
sustainable solutions*

Our project will introduce,
adapt and mainstream
frugal innovation into our
entrepreneurship
education processes.



This project has been
funded with support from
the European Commission

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