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INTEGRATED DESIGN

TEXTBOOK FOR TEACHERS

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INTEGRATED DESIGN - Textbook for teachers

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TABLE OF CONTENTS

Chapter 1
Introduction

INTRODUCTION

One of the main priorities of the **Europe 2020 strategy** and **Erasmus+** program regarding the higher education goals is to support and create opportunities for people in higher education (students, academics, etc.) to work together on the international and interdisciplinary level. There is a high demand for universities to open their educational systems to business, which will prepare students for work and provide them with the skills and experience necessary for the realization of complex, real problems. Supporting students in acquiring and developing basic skills and critical competencies (such as communication skills, teamwork skills, creative thinking, and innovative thinking) is essential.

The High5 project aimed to develop a new innovative educational method called **Integrated Design (ID)**. A simple understanding of Integrated Design is crucial for the current world that is developing so fast. At the academic level, it seems to be necessary to learn the complexity of issues and realize projects taking into consideration many aspects. The cases taught at the university courses shouldn't be imaginary ones and too simplified. Integrated Design helps to deal with complex tasks thanks to a variety of tools and tips. The proposed Integrated Design approach supports the flipped education model in Bloom's Taxonomy and encourages students to get to a higher level of learning in general. Learning by doing is implemented into Integrated Design as well.

Integrated Design combines valuable areas such as **problem-solving methodologies** (Design Thinking and Problem Based Learning), sustainable development, circular economy, innovation thinking, and entrepreneurial skills. Integrated Design is an answer to the complexity of the world and projects undertaken at universities, companies, and various institutions.

This **TEXTBOOK** was elaborated for the use of teachers (mainly academics) and summarises the knowledge and experience that was gained during the training courses for teachers in the frame of the High5 project. TEXTBOOK includes the guidelines to conduct classes using the Integrated Design methodology. It combines the project-based learning method materials, together with business and sustainability aspects. It covers such topics as:

- Methods in problem-solving;
- Project management and conduction;
- Entrepreneurial skills and business approach;
- Techniques for presentations;
- Gamification as a tool for the creation of interesting educational materials;
- Sustainable development aspects;
- Circular Economy & Social innovations.

INTEGRATED DESIGN

Integrated Design is **a new methodology** that has taken the best from well-known project approaches and has included additional crucial aspects of the modern world. The method integrates creative thinking, innovative design, problem-based learning, learning by doing, a philosophy of sustainability, and a circular economy. ID can be treated either as a way of thinking and attitude to designing or a set of practical tools to implement along the designing process or both.

Integrated Design is a mindset that allows designers to solve real problems of real people, create innovative solutions and take care of sustainability, our environment, and future generations. ID encourages us to find even simple and unpretentious ideas to existing challenges but always in consideration of sustainable development goals.

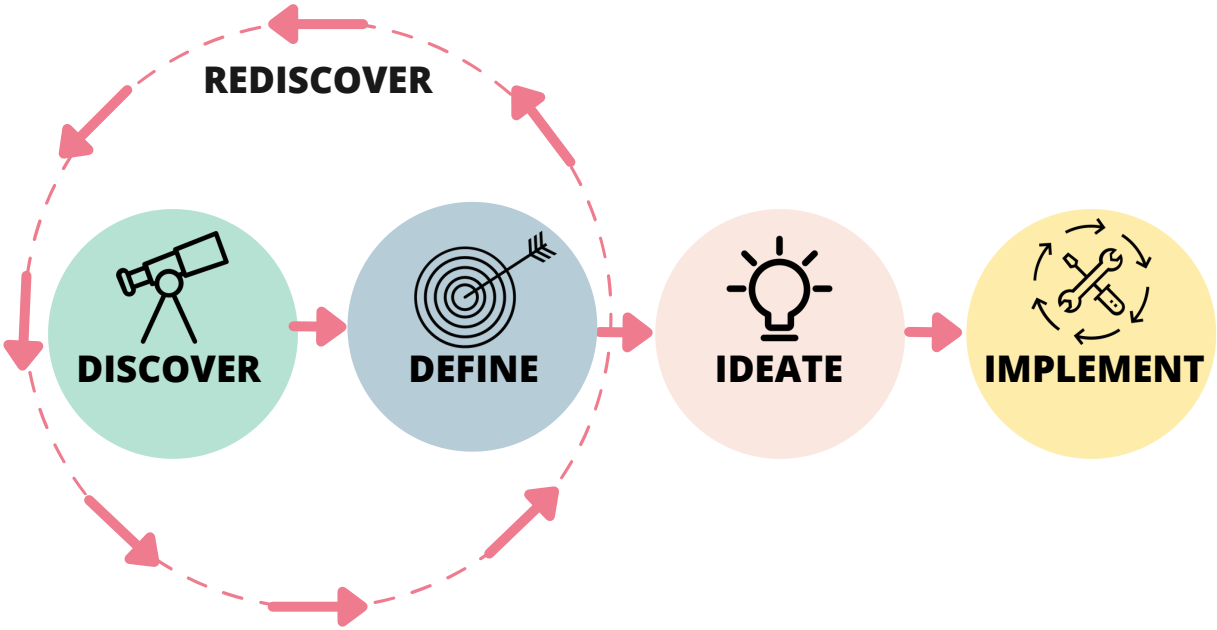


Fig. 1. Integrated Design process steps

In Fig. 1, the stages of the Integrated Design Process are presented. It is a process that consists of several steps: Discover, Define, (Re-Discover), Ideate, and Implement.
Similar to the Design Thinking methodology, ID is not a linear process. While designing it is necessary to iterate steps and refine the solution. The implementation step includes rapid prototyping of the solution and testing it with potential users. Results of the ID process are created the match Sustainable Development (SD) goals and human needs.

Why use Integrated Design?

- Answers to the complexity of the world and projects undertaken at universities;
- Being aware of all consequences of the implementation of the chosen solution;
- Links education with research and business;
- Takes advantage of innovative teaching and learning method;
- Provides knowledge, skills, and experience without framing them as an educational process;
- Boost students' creativity and creation of innovations that will be adjusted to the needs of society;
- Make users aware of the future consequences of their current actions.

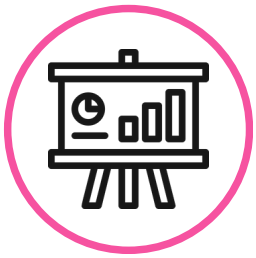
As the world's business landscape evolves, universities are attempting to keep up by fostering teaching that supports an interdisciplinary and new approach to solving problems and developing creativity as two of the top skills in high demand by employers. According to the World Economic Forum (WEF) - Future of Jobs Report [*https://www.weforum.org/reports/the-future-of-jobs-report-2020*]:

- **50% of all employees** will need **reskilling** by 2025, as the adoption of technology increases.
- **Critical thinking** and **problem-solving** are at the top of the list of skills employers believe will grow in prominence in the next five years.
- Newly emerging since 2020 skills in **self-management** such as **active learning, resilience, stress tolerance, and flexibility**.
- Respondents to the Future of Jobs Survey estimate that around 40% of workers will require reskilling of six months or less.

In addition, such global changes and the new reality of the pandemic situation require accelerated and flexible online education and training based on digital technologies, virtual presence, virtual work, and interactive collaboration. Higher education has the means and tools to reskill and upskill the new generation of employees but flexibility becomes a key success factor together with a very fast adaptation which is supported by the technological advances and disruptions in the context of digital transformation.

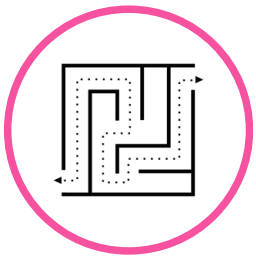
The image in Fig. 2 presents the forecast for new skills that will be needed by 2025. In this respect, new approaches, methodologies, and education models are sought in partnership with businesses, non-profits, and other organizations.

TOP 10 SKILLS OF 2025



Analytical thinking and innovation

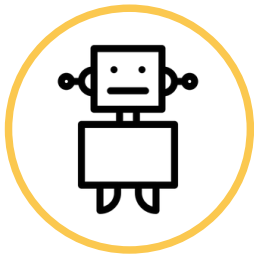
Active learning and learning strategies



Complex problem solving

Resilience, stress tolerance and flexibility

Critical thinking and analysis



Technology use, monitoring and control

Creativity, originality and initiative

Technology design and programming

Reasoning, ideation and problem-solving

Leadership and social influence

Problem-solving skills

Technology use and developement skills

Self-management skills

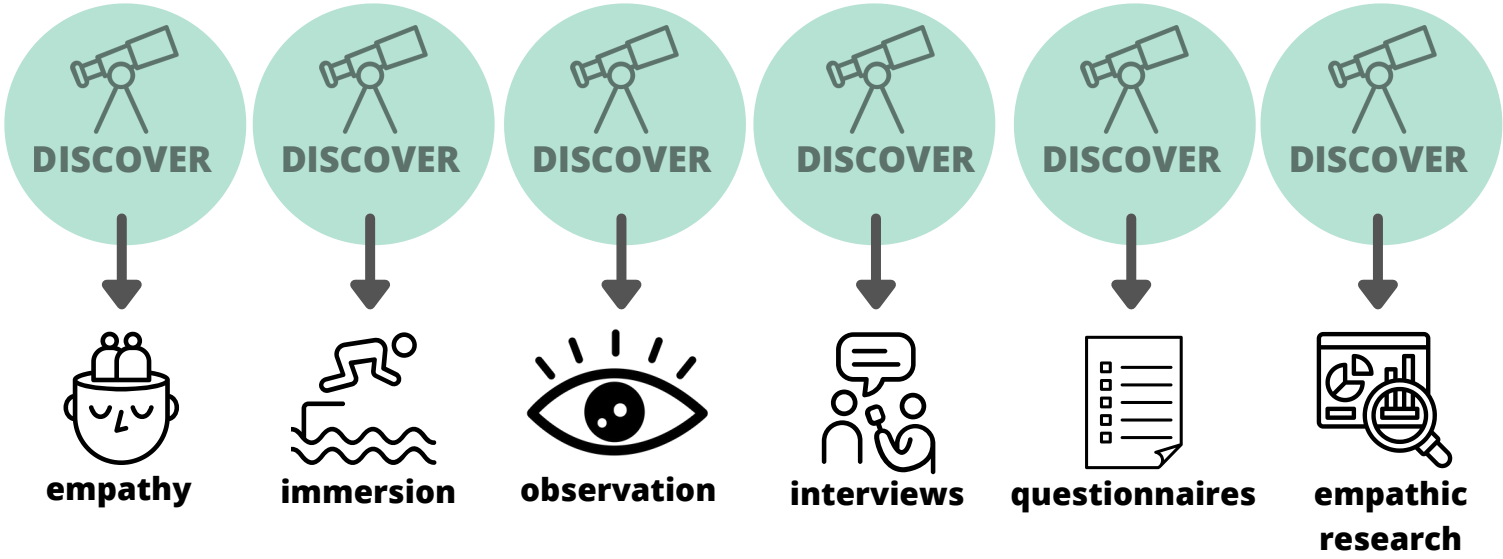
Working with people skills

Fig. 2. Predicted top 10 skills for the future job market

Chapter 2

Discover

INTEGRATED DESIGN STAGE 1



STAGE 1
DISCOVER

EMPATHY

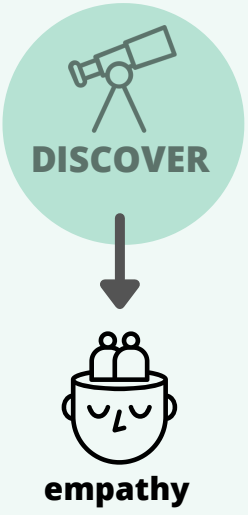
Empathy is the ability to understand another person's thoughts and feelings from their point of view, not from your own. It is the first and very important phase of the designing process focused on a real understanding of the end user's needs and desires.
Empathy is an enormous concept.
Two American renowned psychologists, Daniel Goleman and Paul Ekman have identified three components of empathy breaking down its concept into the following three categories: Cognitive, Emotional, and Compassionate.

Cognitive empathy is the ability to understand how a person feels and what they might be thinking. Cognitive empathy makes us better communicators because it helps us relay information in a way that best reaches the other person.

Emotional empathy (also known as affective empathy) is the ability to share another person's feelings. Some have described it as "your pain in my heart." This type of empathy helps you build emotional connections with others.

Compassionate empathy (also known as an empathic concern) goes beyond simply understanding others and sharing their feelings: it moves us to take action, to help however we can.

The empathy stage often can be divided into three separate but mutually intertwined steps (see Fig.3).



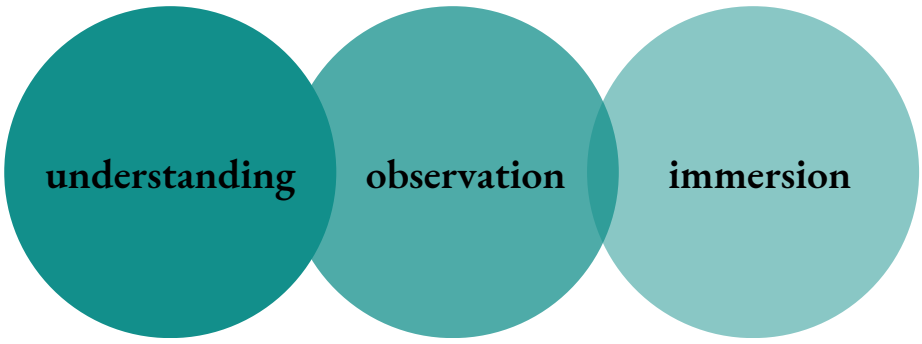


Fig. 3. Three main steps of empathy

Three concepts/types of empathy are graphically shown in Fig. 4. The three chairs symbolize the path of the empathy stages from the left brain to the heart and finally to the right brain.

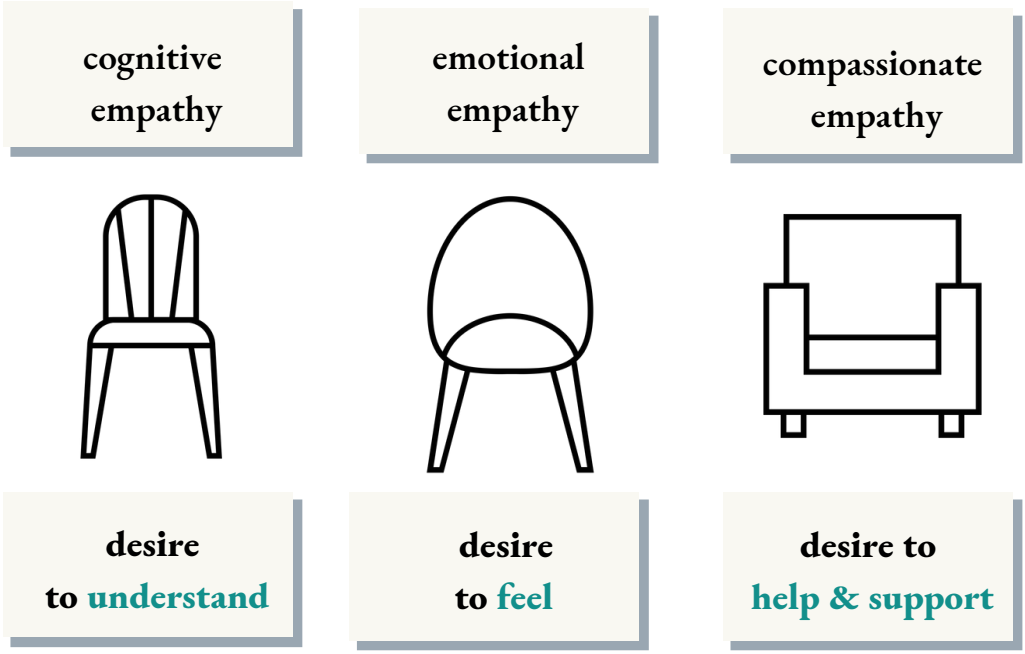
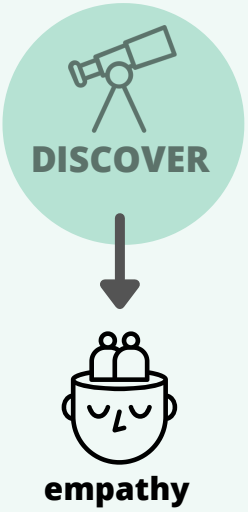


Fig. 4. Short description of the empathy types according to Goleman and Ekman

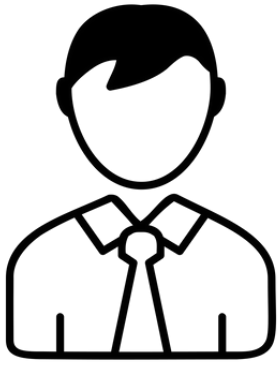
The first chair represents the situation of sitting on it and imagining what we want to understand about the other person. Then, we stand up and move to sit on the **second chair**. Now, sitting on the second chair, we try to feel what the other person is feeling. From thinking with our left brain (first chair), now we feel with our heart (second chair). In the end, we move into the **third chair**. Now, by thinking with our right brain, we want to find a way to do something for that person to help and support them.

Empathy is also about **Creating Personas, Buying personas**.

- Personas are fictitious characters that represent different types of users for a possible product or service.
- They are created from qualitative data, originating from field research and represent the desires, motivations, expectations, and needs of a real group of users.
- The tool can be used at several stages of a project, but it is especially useful in the stages of generating and validating ideas.
- If you know exactly who this person is, you can deliver something simple that meets their needs, hitting the target straight on.



EXAMPLE - PERSONA'S DESCRIPTION



- Who? Pedro, 28 years old
- Administrative analyst
- Works in a bank in downtown Rio de Janeiro, and lives in Copacabana, and cycles between places daily.
- Has a relationship of affection with the bike.
- The lack of infrastructure in the city is a great source of frustration: "I have to replace bike parts constantly, it is very expensive!"
- Prefers to shop online, but, in the case of bicycle parts is suspicious: "I need to have the parts in my hands to make sure they are of good quality".

One key driver for innovation is the changing needs of customers and users which can be ranked using the Maslow pyramid as a framework. Students can use it to analyze and define the specific needs of the target users. To better understand them students prepare an empathy map of the users.

Create a four-quadrant layout on paper or a whiteboard. Populate the map by taking note of the following four traits of the user, as stated in Fig. 5.

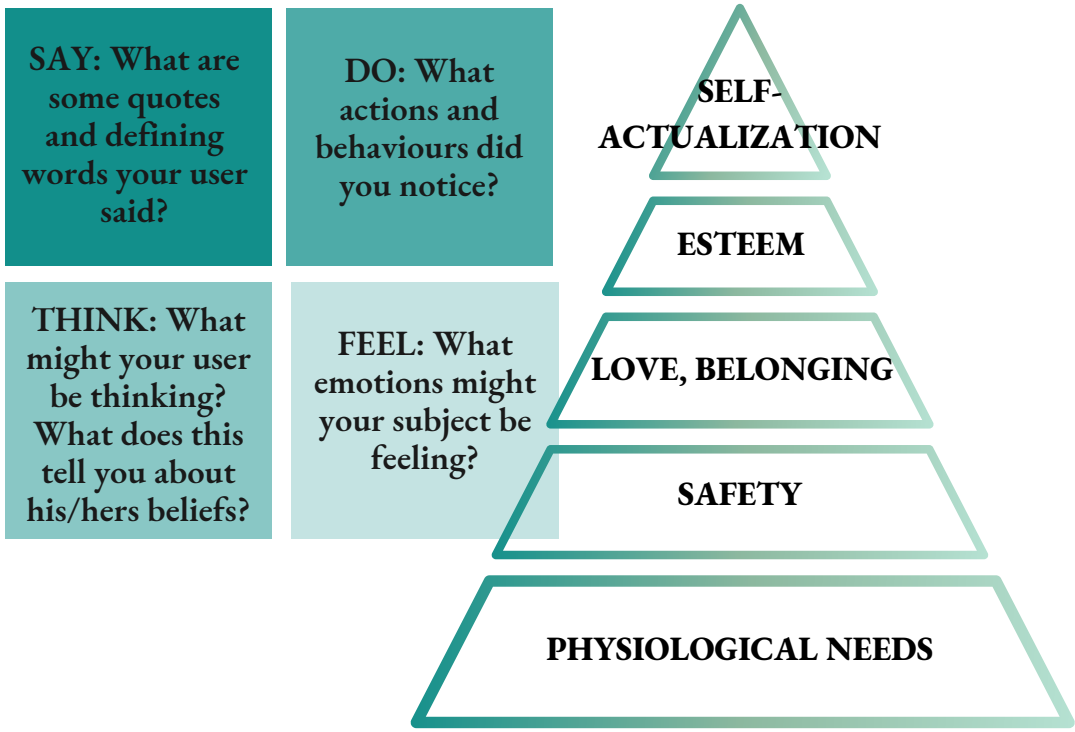
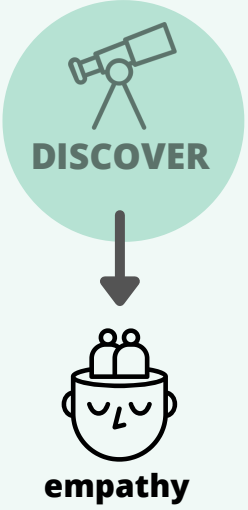


Fig. 5. Framework for empathy map vs. the Maslow's pyramid of needs

After the interviews and observations on personas, you can always create a "persona card" (Fig. 6) that will help you to sum up all the information about the specific person.



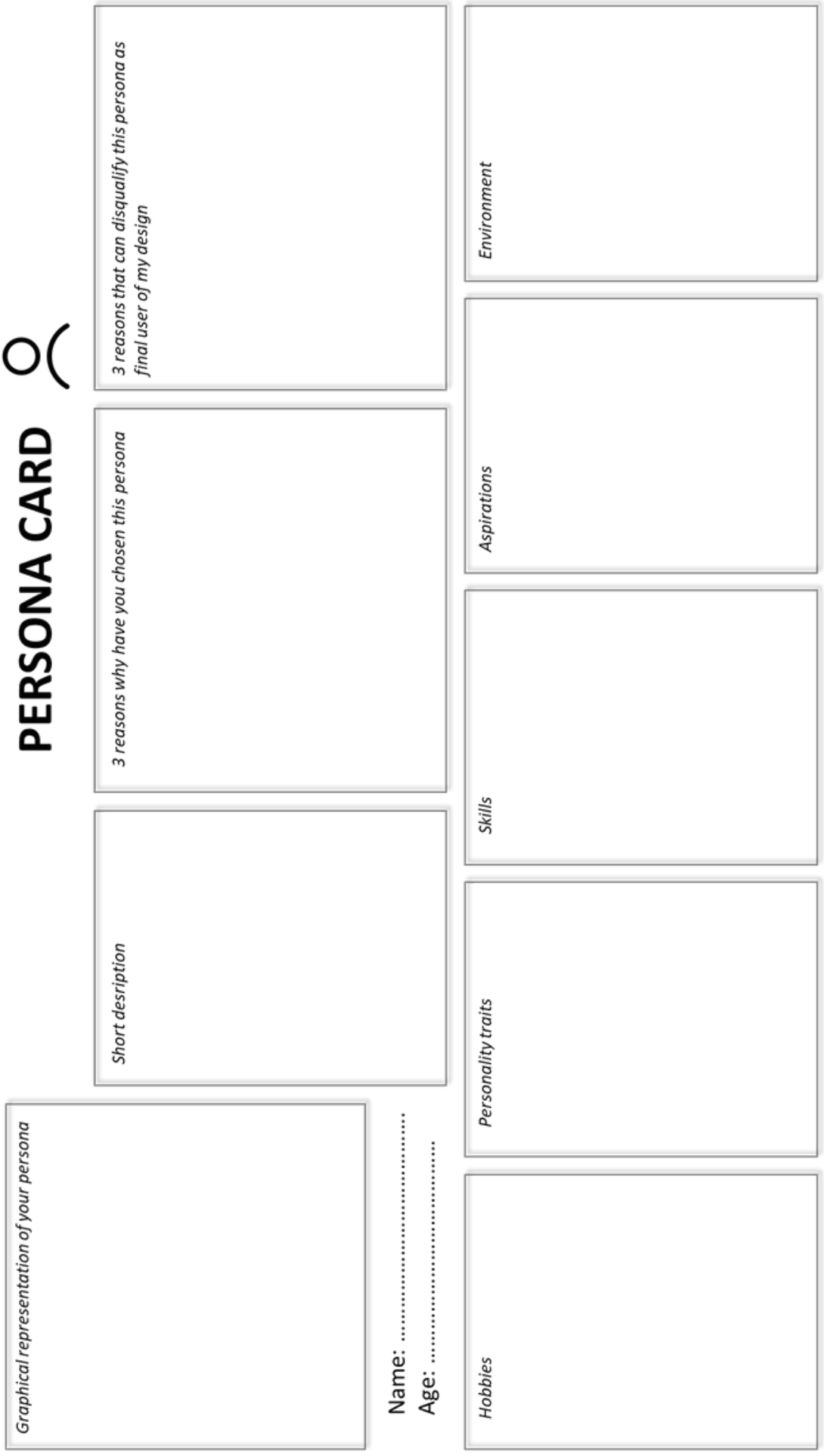


Fig. 6. Persona card example

IMMERSION

There is also another way how to gather valuable information about the people we are designing something for. It is **IMMERSION**. Immersion means putting yourself in the shoes of your potential users. Immersion can help to understand them better, see the world from their perspective and broaden the designer's horizon. Thanks to immersion it is possible to discover new things about users and their surroundings. Immersion should be planned and well-thought to get insights – some design treasures. To prepare for reasonable immersion you need to answer several questions:

- **How to simulate/immerse in my users' situations?**
- **What are the key elements? Any equipment?**
- **How long should I be in the shoes of my user to be able to find out valuable insights?**
- **When and where to do immersion?**

Immersion looks differently depending on the design challenge. It is not difficult to immerse in the situation of a regular customer in the local shopping mall. However, if a regular customer uses a wheelchair and is a person with special needs, additional equipment will be needed. In general, immersion is not recommended as the first tool in empathizing with users. Before implementing immersion potential users, their needs and limitations should be discovered and known. Immersion can be also supported by the equipment available on the market such as simulators. Exemplary simulators are presented in Fig. 7. The following situations can be simulated with their use: (A) being pregnant; (B) being old; (C) simulating disease.

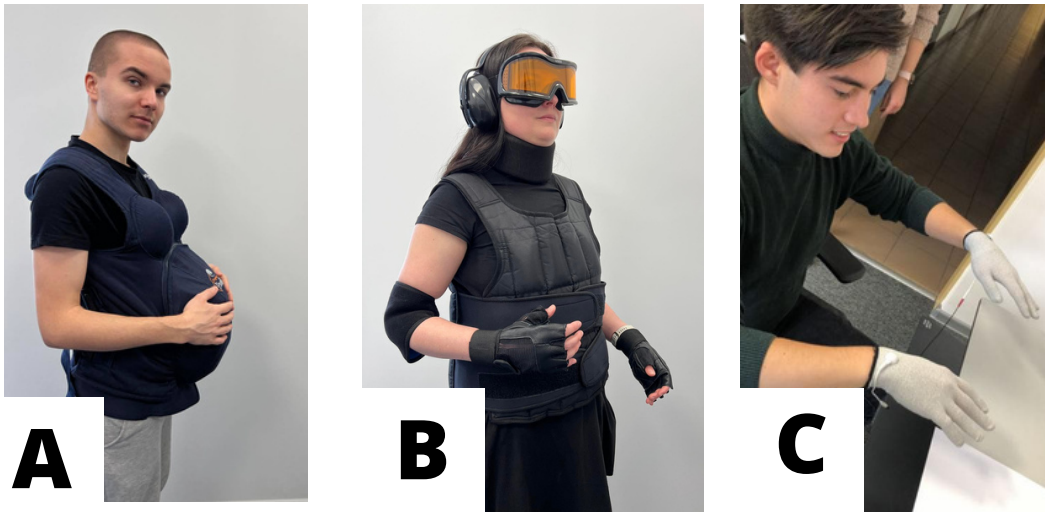


Figure 7. Simulators that help in immersion (A – pregnancy simulator, B – geriatric simulator, C – Parkinson's disease simulator).

Immersion has also some limitations, therefore just using various tools to get to know the user better may lead to success in designing process.

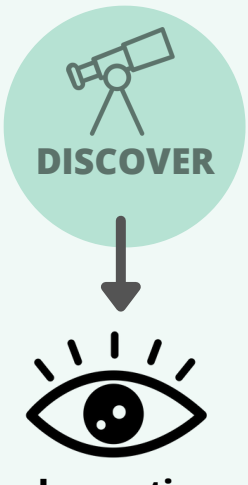
OBSERVATION

Observation in Integrated Design can be defined as an act of looking at the people, potential target group, and potential users to get information about them. Observation allows designers to find out interesting insights and even unconscious behaviors and actions of people whom they design something for.

In observation, it is important to grasp the general view but also detailed information about the users and their surroundings. Observe people in their "natural" environment and note down all findings without analyzing them. As everything is a "system of connected vessels", the observation task is about focusing on several aspects, such as users **activities/ actions, behaviors, habits, everyday choices, people around and their influence on him/her, interactions with other people and objects, and environment.**

Observation is a necessary tool to extend and complete the findings gathered in the interviews or from the questionnaires. Observation can help to check if users act as they say during direct contact and further it can improve the quality of data analysis and draw conclusions about users before the next steps in the ID process.
On the one hand, observing is easy (simply, just watch your potential users), but on the other hand, it is quite tricky. Even if you look at something, still you may not recognize some elements of the seen "picture", some elements might be ignored without consciousness, and some elements might be interpreted wrong. So, observation is about being aware of these limitations as well.

Fig. 8. Observation of people/surrounding/environment. (*Attribution: Woman Traveler Looking Through Binoculars by Jacob Lund Photography from NounProject.com*)



INTERVIEWS

There's no better way to understand the hopes, desires, and aspirations of those you're designing for than by talking with them directly. Below you can find particular steps for the interviews.

1. No more than three research team members should attend any single interview to not overwhelm the participant or crowd the location. Each team member should have a clear role (i.e. interviewer, note-taker, photographer).

2. Be prepared with a set of questions you'd like to ask. Start by asking broad questions about the person's life, values, and habits, before asking more specific questions that relate directly to your challenge.

3. Make sure to write down exactly what the person says, not what you think they might mean. This process is all about hearing exactly what people are saying. If you're relying on a translator, make sure he or she understands that you want direct quotes, not the gist of what the interviewee says.

4. What the person says is only one data point. Be sure to observe your interviewee's body language and the context in which you're talking.

Who can be the source of information for the interview?

- Managers
- Employees
- Customers
- Consumers
- Competitors
- Business partners or suppliers
- External experts

What can be considered as interview techniques?

- Phone interview
- Questionnaires
- In-person interviews
- Focus groups
- Ethnographical research
- Immersive studies
- Pilots

You can use a question ladder or any other similar tool in order to create questions that will be complex and informative. An example of a matrix that you can use while creating questions for questionnaires is in Fig. 9.

Simple questions ← → *Complex questions*

	IS	DID	CAN	WILL	WOULD	MIGHT
WHO	Who is...?	Who did...?	Who can...?	Who will...?	Who would...?	Who might...?
WHAT	What is...?	What did...?	What can...?	What will...?	What would...?	What might...?
WHERE	Where is...?	Where did...?	Where can...?	Where will...?	Where would...?	Where might...?
WHEN	When is...?	When did...?	When can...?	When will...?	When would...?	When might...?
WHY	Why is...?	Why did...?	Why can...?	Why will...?	Why would...?	Why might...?
HOW	How did...?	How did...?	How can...?	How will...?	How would...?	How might...?

Fig. 9. Matrix for creation questions for questionnaires

HOW TO START A CONVERSATION?

Conversation Starters put a bunch of ideas in front of users to spark their reactions.

STEP 1

Determine what you want the people you're designing for to react to. If you're designing a sanitation system you might come up with a bunch of Conversation Starters around toilets, or privacy.

STEP 2

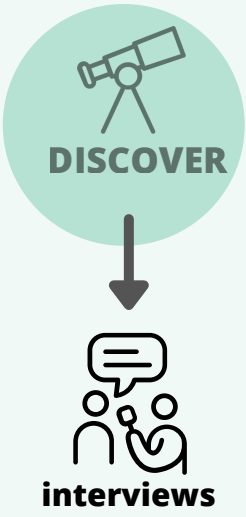
Now come up with many ideas that could get the conversation started. What is the toilet of the future, the toilet of the past, a super toilet, the president's toilet? Come up with a list of ideas like this to share with the person you're designing for.

STEP 3

Once you're with the person you're designing for, start by telling them that you're interested in their reactions to these Conversation Starters. Some may be silly, some may be absurd, and you're only looking to get their opinions.

STEP 4

As the person you're designing for shares his/her attitude to your Conversation Starters, be open to however they interpret the concepts. When one of them strikes him/her, ask the follow-up questions. You can learn a lot about how he/she thinks and what the interviewees might want out of your solution. To collect information and generate insights, the team should plan where and how the data will be gathered – i.e. define sources and techniques to use.



WHAT ELSE SHOULD YOU REMEMBER WHEN PREPARING AND CONDUCTING INTERVIEWS?

"Show me" rule

If you are around the interlocutor, ask him to show you the things he interacts with (objects, spaces, tools, etc.). Take photos and notes to revive your memory later. Or ask the interviewees to guide you through the process.

"Draw it" rule

Ask participants to outline their activities and experiences with sketches and diagrams. This is a good way to disprove assumptions and reveal how people perceive and organize their actions.

Thinking out loud

As you complete a process or task, ask participants to describe aloud what they are thinking about. In this way, it will help you discover their true motivations, fears, perceptions, and reasoning.

Be specific and thorough

People often generalize what is typical and leave out rich, important details. Instead, ask people to talk about a specific time period. E.g. rather of what your typical sandwich is like, ask them what sandwich did they eat yesterday.

Fig. 10. Giving interview (*Attribution: Back View Of Woman Holding A Report Paper Interviewing A Person by Scopio from NounProject.com).*

DISCOVER

interviews

Note that thoughts/beliefs and feelings/emotions cannot be observed directly. They must be inferred by paying careful attention to various clues. Pay attention to body language, tone, and choice of words. Finally, find the needs and insights of users.

QUESTIONNAIRES

Questionnaires are a very useful and widespread used analytical tool that helps to get relevant information concerning the topic in a framed way. It is a list of questions that allow obtaining information on opinions, attitudes, or experiences, qualitatively and quantitively.

WAYS TO CONDUCT THE QUESTIONNAIRES

Fig. 10. Ways on how to conduct the questionnaires.

Advantages to using questionnaires for research purposes:

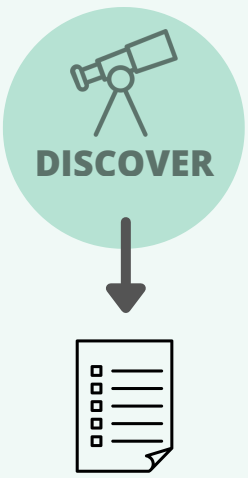
- Their use is very practical - they allow to gather a big amount of data on a specific topic;
- They are fast - gathering data takes several minutes for the user;
- They are easy to be analyzed - most often questionnaires are conducted with the help of online analytical tools (e.g. Google Forms, Microsoft Forms).

HOW TO SET UP A QUESTIONNAIRE?

1. Start with the introduction on the background of your research - what is the purpose of this research, explain why you need to gather this information

2. Gather socio-demographic data concerning important information e.g. age, sex, country, education, etc.

3. You can ask both open-ended and closed-ended (restricted-choice) questions. Closed questions allow you to manage obtained data quantitatively, while open questions may provide you with broader aspects that you might not have thought about while creating the survey.



EMPATHIC RESEARCH

The major role of that tool is to help in finding yourself in the numerous possible areas to explore. It allows setting some initial constraints for further work. The direct result of empathic research is a set of **catchy information** mostly in the **graphical form** that can be easily used for **visualization** conducted exploration of the project topic. The work on a selected topic through empathic research is composed of 4 stages.

1 **Questions from scratch**

Think about the answer to the following questions (to understand possible areas of exploration):

- What is the scale of the problem? Global or local or maybe related with the country, region or geographical area
- What are the statistical data in that field that may help to understand it?
- What is the difference between common knowledge and scientific perspective?
- Who is affected by various aspects of that problem? Maybe there already exists a specific „persona" for that problem?

2 **Internet research**

Try to justify your answers by exact data from the internet or look them up. Look for further areas to explore (note them)

3 **Results visualization**

Select from the internet according to personal preferences:

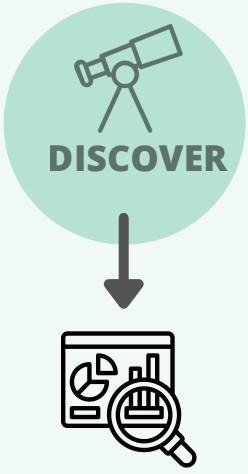
- Pictures that show the problem in the best way;
- Graphs showing important data in the area of the problem;
- Articles - scientific or from daily magazines concerning that problem;
- Movie or part of the movie that is related to that problem.

4 **Re-cap**

Consider the following questions and if necessary repeat previous points:

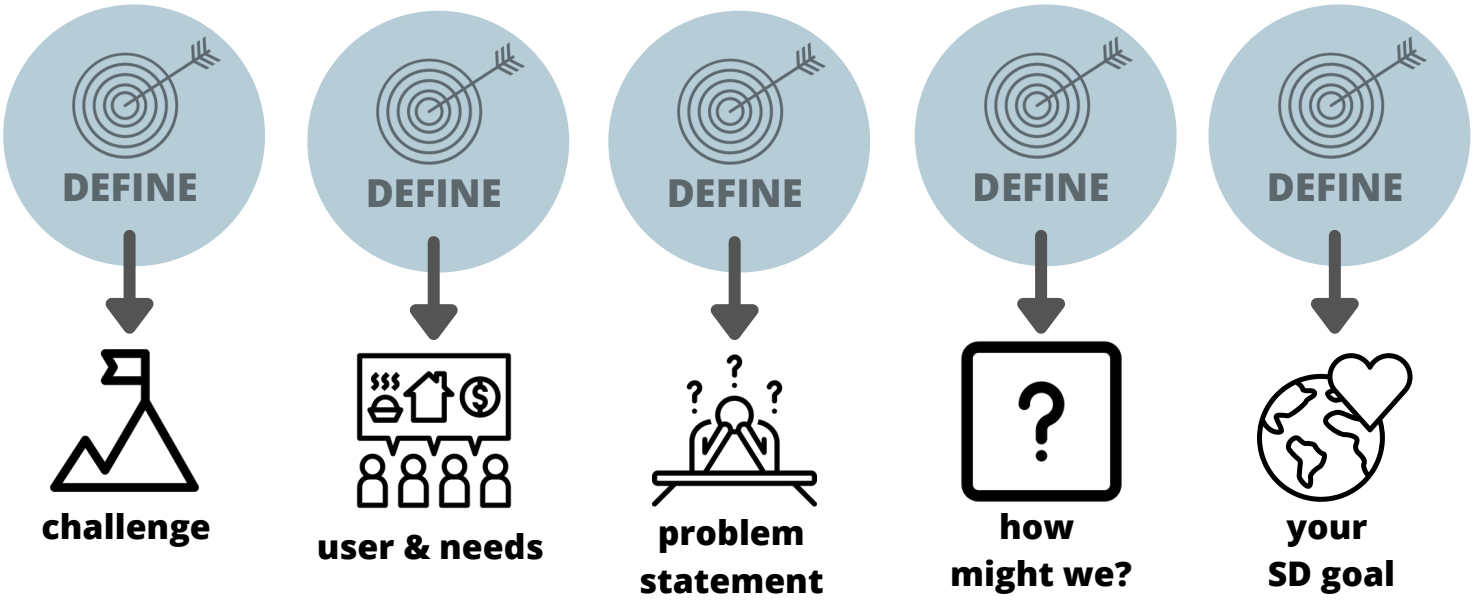
- What surprised me? (Concerning your initial knowledge of the problem as well as its global understanding on the Internet)
- What aspects did I miss in my research?
- To whom and why can I present this form of my results?
- What aspect need personal (project) verification?

The empathic research is based on **internet exploration** that is most appealing to students and seems very fast at the beginning. Exploration of the topic in that way links various levels of knowledge: **basic concepts, catchy (community popular) phrases, and statistical data**. It is an open work that does not have to narrow just to an investigation of 4 initial and 4 closing questions but it is better to add more with the practice of the team and their involvement in the project.



Chapter 3
Define

INTEGRATED DESIGN STAGE 2



STAGE 2
DEFINE

DEFINE THE CHALLENGE

Properly framing your design challenge is critical to your success. Here's how to do it just right:

1

STEP 1

Start by taking the first step at writing your design challenge. It should be short and easy to remember, a single sentence that conveys what you want to do. We often phrase these as questions that set you and your team up to be solution-oriented and generate lots of ideas along the way.

2

STEP 2

Properly framed design challenges drive toward ultimate impact, allow for a variety of solutions, and take into account constraints and context. Now try articulating it again with those factors in mind.

3

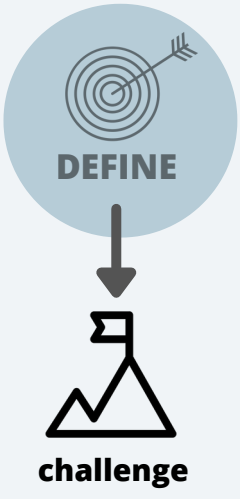
STEP 3

Another common pitfall when scoping a design challenge is going either too narrow or too broad. A narrowly scoped challenge won't offer enough room to explore creative solutions. And a broadly scoped challenge won't give you any idea where to start.

4

STEP 4

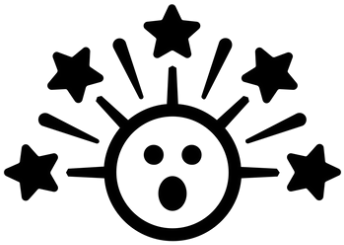
Now that you've run your challenge through these filters, do it again. It may seem repetitive, but the right question is key to arriving at a good solution. A quick test we often run on a design challenge is to see if we can come up with five possible solutions in just a few minutes. If so, you're likely on the right track.



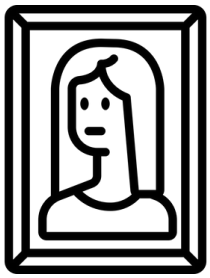
USER & NEEDS

In order to define the potential user and their specific needs, there is a recommended tool in the project process, namely Creative Persona. Building a Creative Persona enables one to discover and uncover a detailed picture of a specified user.
Here are the basic steps that lead to building a good picture of the Creative Persona:

STEP 1
Collecting and segregating all the information about the target group;



STEP 2
Finding some interesting, inspiring, funny, striking, repeatable (one or more) quotes noted during interviews;

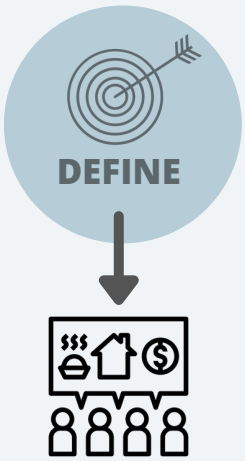


STEP 3
Visualizing the Persona – at first mind imagination and then finding a picture or drawing a face/body;

STEP 4
Choosing the style of expressing the Creative Persona – e.g. mind map, list, Feng-Shui map, road map, empathy map, story, journey...;

STEP 5
Action – building of the Creative Persona by the project team.

For inspiration on how to actually build the Creative Persona, the project team can use one of the following styles (templates), combine the styles, create a hybrid one or invent their own model.



user & needs

PROPOSED STYLES OF CREATIVE PERSONA VISUALIZATION

The list is the easiest and the least creative way of building a Persona. It consists of a picture and listed information about the target group, e.g. biometric information, personality features, interests, goals, values, frustrations, fears, motivations, challenges, etc.

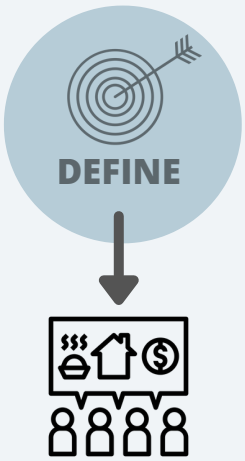
A journey/ story is a way to show the path taken by the user as a customer. In this picture it is important to create a chain of dependencies between the following: 1) awareness, 2) research and knowledge, 3) evaluation and consideration, 4) purchase and 5) recommendation and loyalty.

Mind Map is created around a single concept – potential user, drawn as an image in the center of a blank page, to which associated representations of ideas such as images, words, and parts of words are added. Major ideas are connected directly to the central concept, and other ideas branch out from those major ideas. The branches can be created using similar groups as in a List Persona type, however, here the information is more visual.

Empathy Map also provides a picture (or a drawing) of the Persona in the center. Around this picture there are several categories listed describing the user: 1) doing (what does a user's typical day look like?), 2) seeing (what is the user's environment like?), 3) hearing (what influences the user?), 4) thinking and feeling (what are the user's hopes, dreams, fears, and important issues?), 5) pains (what obstacles or challenges does the user have?), 6) gains (what does the user hope to achieve and how the success might be measured?).

Road Map defines the progress and change of the user on the timeline.

Feng Shui (Bagua) Map is a method to represent the important life issues of the user in the form of a circle or a square, placing again the user in the center. In Bagua Map, the specific place of several life spheres in the general picture is very important. They are as follows: fame - on the top of the user (South), love and marriage – in the right top corner (South West), creativity and children – on the right of the user (West), helpful people and travel – in the right bottom corner (North West), career – on the bottom of the user (North), knowledge, self-development, and growth – in the left bottom corner (North East), health and family – on the left of the user (East), wealth and money – in the left top corner (South East).



PROBLEM STATEMENT

A turning point in project solving is a swap from the vast understanding of the topic and related issues (Discovery phase) as well as revealing of problems or possible areas of improvement (Define phase) to crystallization of solutions via generation of ideas and their further refinement (Ideate and Implement phase). Since it is just a step from very appealing creative work on ideas rumbling in the heads of project team members, there might be a tendency to fasten it to the limits or even skip it. So as not to miss the defined problematic aspects or target group it is worth creating a summary of the vision of project realization. Such a marked path of problem-solving prevents from proposing completely unnecessary or unwanted solutions. By stating the already gathered findings in a compact form of a single sentence it is possible to not only summarize the ongoing work (like empathic research, questionnaire, interviews, observation, or immersion) but also channel the focus on the established track. A prepared "problem statement" should show the perspective that is seen, understood, and followed by the project team. It is worth remembering that like in the presented picture the perspective is highly dependent on the situation as well as the selected group of receivers (Fig.11).

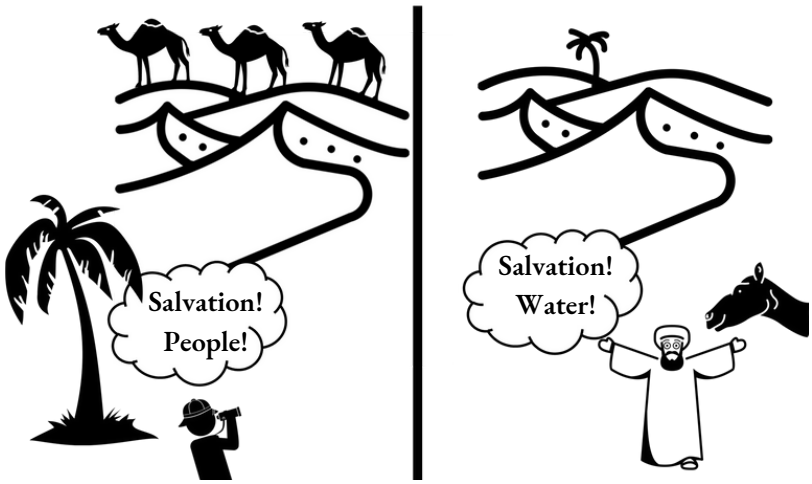
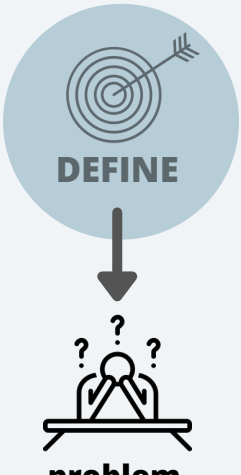


Fig. 11. Different points of view for different users



A clear "**problem statement**" gives the possibility to:

- Link the findings of Discovery with the developed solution during Ideate phase;
- Understand the receiver of the elaborated solution as well as their motivations for using it;
- Draw attention to key aspects of the undertaken challenge;
- Remind the project team about the agreed constraints (such as environmental aspects affecting the solution, time of realization, people involved, etc.) ;
- Go back on further phases of the project solving by means of Integrated Design and check the suitability of fulfillment of the primary goal;
- Formulate the slogan form of the vision of the project – helpful in showing the need that must be satisfied to obtain a better future.

HOW MIGHT WE...?

Every problem is an opportunity for design. By framing your challenge as a *How Might We...?* question, you will set yourself up for an innovative solution.

1

STEP 1

Start by looking at the insight statements that you have created. Try rephrasing them as questions by adding "*How might we...?*" at the beginning.

2

STEP 2

The goal is to find design opportunities, so if your insights suggest several *How Might We...?* questions that's great.

3

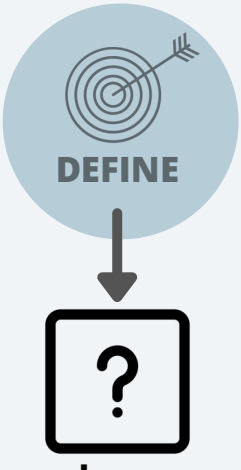
STEP 3

Now take a look at your *How Might We...?* question and ask yourself if it allows for a variety of solutions. If it doesn't, broaden it. Your *How Might We...?* should generate several possible answers that will become a launchpad for your Brainstorms.

4

STEP 4

Finally, make sure that your *How Might We's?* are not too broad. It's a tricky process but a good *How Might We...?* should give you both a narrow enough frame to let you know where to start your Brainstorming, but also enough breadth to give you room to explore wild ideas.



YOUR SD GOAL

Sustainable development is a way of providing humans with socio-economic development without endangering our planet's natural systems and our future. However, first, we need to understand what causes us to behave in unsustainable ways and in which ways we have not been meeting our planet's (user's) needs. By defining the problem we gain more insight and can get to the root of it.

Key aspects that you might think of when applying sustainability issues into the Define phase might be as follows:

ANSWER THE FOLLOWING QUESTIONS:

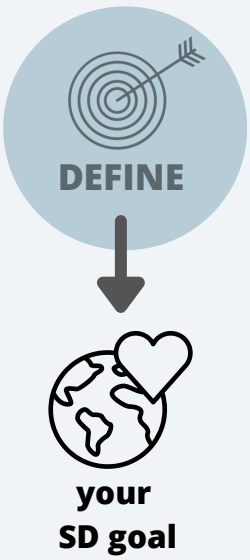
1. Sustainability means meeting our own needs without compromising the ability of future generations to meet their own needs. What can you do to follow this principle?

2. How would you include different aspects of Sustainability into your everyday life?

3. How economy, society, and environment are interrelated in the classical economic model, and how they should be connected in a sustainable world?

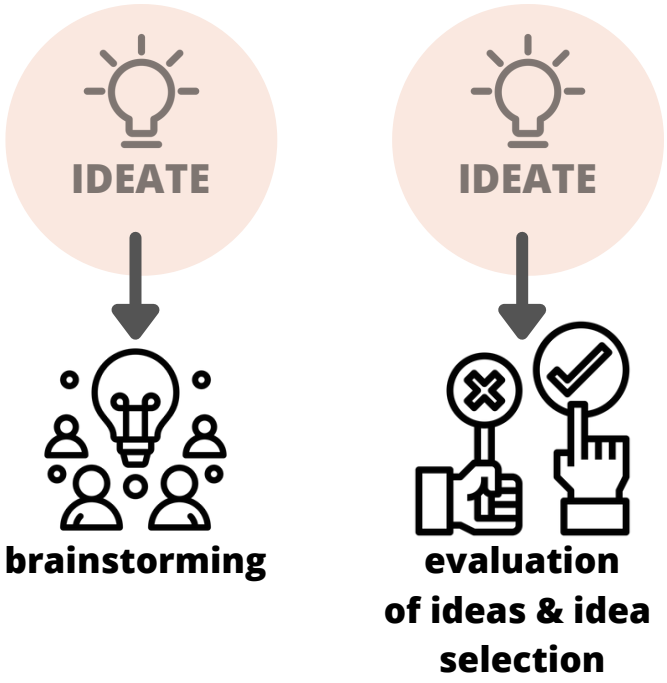
4. Pick one Sustainable Development Goal. Imagine how your work efforts are helping to achieve that goal.

5. Think about your viewpoints on sustainability. What would the world look like in your opinion if we were sustainable? How would you like the world to be? Write down at least 6 sentences.



Chapter 4
Ideate

INTEGRATED DESIGN STAGE 3



STAGE 3
IDEATE

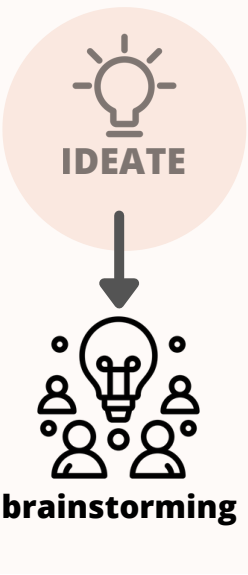
This stage is related to various brainstorming and idea generation techniques that can be widely applied by the tutors and the student teams. Depending on the complexity of the project ideation may be narrowed to only the general idea of the solution or extended to the exploration of its various aspects: details of construction, features, materials, supply chain, packing, promotional campaign, etc. Especially in the case of the next iterations of the Integrated Design process, they are devoted to the improvement of the idea the diversification of the final product, and service is often considered in that phase.

BRAINSTORMING

Brainstorming is the common name for the bunch of techniques that are used for **maintaining and improving the group decision process**.

Its basics are closely related to heuristic methods since, in general, it is based on **finding the conclusion** from the **set of ideas** contributed by all members of the working project team.

That approach was created by Alex F. Osborn who was trying to promote creativity in solving problems based on "organized ideation" which was defined as using the brain to storm a problem. Since that time brainstorming has settled in for good in the modern world, its development was multidirectional which ends up in numerous possible approaches that can have even opposing principles. Interestingly, the widespread use of such methods in both business and education is sometimes the reason for underestimating it. The three major problems are as follows:



1. There is a misconception that due to the universality of brainstorming, there is no need to explain or teach it because it is common knowledge.

2. In a world that promotes quick action, the basic rules governing a given ideation process are often not agreed upon, so expectations can easily miss out on results. What is more, when a given tool/technique does not work, it is assumed that the brainstorming does not fit the given application/project group, instead of verifying the actions taken or trying a different approach.

3 So much effort (and time) is put into generating the ideas that their number is becoming the solo star of the process. In that way, many groups end halfway through with just numerous possible variants that just mess up the logic of the designing process and do not enrich the final solution.

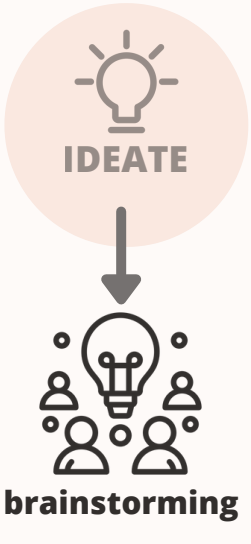
Practice makes perfect, but during brainstorming, as in the gym, not paying attention or not knowing the basics of a given exercise can end up in reluctance to the next try resulting in bigger or smaller failure. The general concept of each technique used during the ideation phase can be usually summed up in a few words so it is worth reminding them before at least the first session of brainstorming with each group.

From three to eight people (usually depending on the available space to communicate without disturbance) take part in the most standard form of brainstorming sessions. They freely submit ideas and exchange views on a given problem topic. Each piece of information should be gathered in form of notes, graphics, etc. (Fig. 12) There should be no criticisms of the proposed subjects. The work is limited by time (usually from 20 to 30 minutes) to secure a high number of new ideas. Several brainstorming sessions may be taken one by one or with some additional intervals.

The essence of all brainstorming methods lies in four general stages presented in Fig. 13. For a reliable and conclusive session at least two first steps are necessary with the dab of data preservation. In that way, not only do the new points of view appear but also they are clarified as an initial walkthrough for the common understanding of the group. At least the basics of data preservation like writing down/drawing upcoming aspects allow smooth work within the generation and evaluation/selection stage.

Fig. 12. Data preservation in brainstorming in form of post-its

It should be remembered that a single session is giving only the initial set to further work with. Enriching the process with fully developed further stages is important considering a well-developed conclusion. Depending on the preferences of the team, topic and experience, consecutive brainstorming sessions may vary in the number of stages (for example leaving stages 3 and 4 till the end of 3 sessions of generation and evaluation/selection).



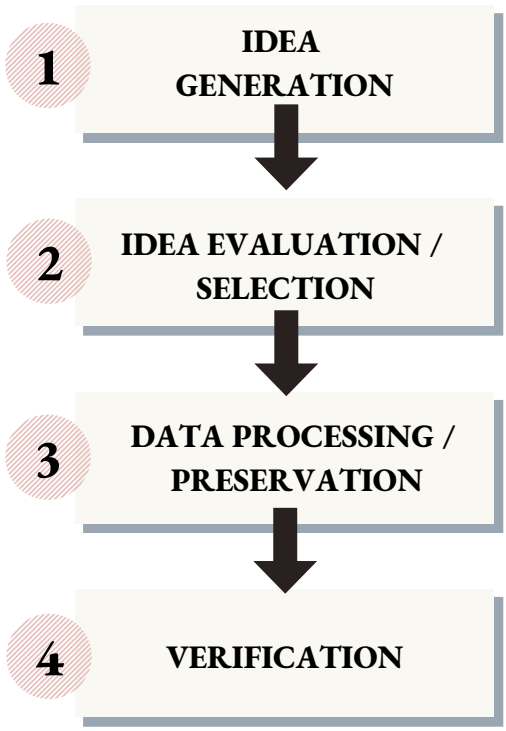


Fig. 13. Actions to be undertaken while brainstorming

Generation of ideas

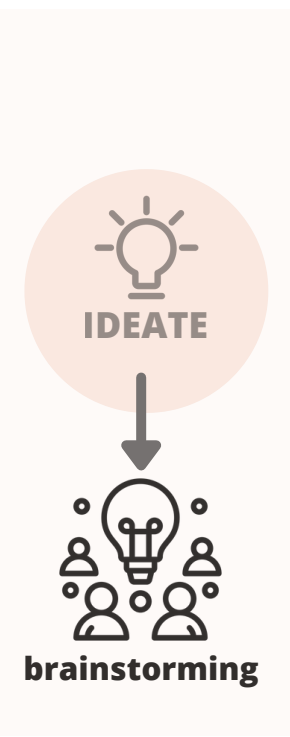
It is the basic and inevitable aspect of the brainstorming session that seems to require minimum explanation. Some specific techniques may require strict rules considering the form of provided information but in general, the rule is to favor quantity over quality. As usual, it important is not to exaggerate that stage to generate ideas related to the starting point or form new associations and not throw in only red herrings. In the further part of that section, there will be some tips that may help increase the number of provided solutions, information, and details.

Evaluation and selection of ideas

It is necessary to channel the streams of ideas into a single spurt of high impact for the final solution. The outcome of that stage is highly dependent on the set of established constraints, so there is no single right answer to how to perform it. Nevertheless, the separate section is devoted to examples of methods that can be used for that purpose.

Data processing/preservation

It is commonly omitted especially in short-run projects, but regardless of the reasons, it should be done consciously understanding possible consequences. Brainstorming is undertaken to explore new points of view and to reveal aspects that may be not obvious from the first moment (otherwise it is just listing). Unfortunately, human attention is paid mostly to the aspect that relates to strong emotions. In that way, something that will first grab your attention may mask further golden ideas.



Data processing/preservation gives time to go back and additionally think over gathered material. Processing may be an additional occasion to redistribute the findings in some categories that allow better orientation and understanding of the relations between mentioned aspects. Some brainstorming techniques like mind mapping are based especially on that stage since a mind map is a hierarchical diagram visualizing relationships among pieces of the whole.

Another aspect is simple handling during other stages of Integrated Design. Although sticky notes act as a perfect tool for brainstorming sessions, they lose some advantages if the gathered information is not transformed into other media. Changing the location of work, or simply going back after a long pause is just a few examples of possible problems.

The last but not least, data processing and preservation help to reframe the numerous creasy ideas, understandable by the devoted project team, into the form of table/list/diagrams, etc. that is digestible by people of more stiff views (like some bosses, controllers, administration workers, etc.)

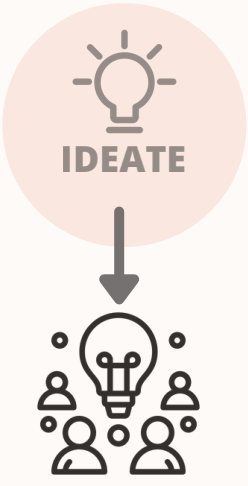
Verification

The verification stage is an obvious continuation of the evaluation selection process that enables one to fully conclude on the elaborated material (and sometimes forces the organizer to conduct another brainstorming session). It is especially important from the perspective of designing new products, services, or features. It allows for checking the similarities and differences between existing solutions and ours. Verification of the given idea with existing solutions allows learning from the existing state of the art.

Regardless of the number of stages the brainstorming sessions are provided not only to work on a given subject but can also stimulate the work of a project team. They may help with ice-breaking activities and encourage openness. For successful work, it is necessary to not only give new ideas but also listen to and discuss views of the others. Enforcing a multidirectional approach acts as a creativity booster.

Although such a session forces the development of several potential solutions, it is usually very fast. Through teamworking, it is possible to end up with numerous ideas within only several minutes. Commonly used conversation style may be described as a mixture of the **"yes, and..."** or **"no, but..."** approach. In the first case, the new ideas are directly built on the ideas of other participants (tall structure aiming at clarification of details). In the second case, the exploration of new perspectives is favored (flat structure showing various possibilities).

Yes, and...
No, but...



Pros and cons of brainstorming

Especially in inexperienced groups or those formed by people that do not know each other there may appear several problems during brainstorming sessions that result from a lack of control (or too much of it). Generating ideas in a group is perfect for open people but the strong character may dominate the whole work.

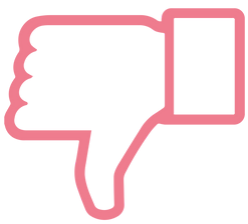
Strong personalities tend to boost some aspects and neglect or disregard the views of others. Especially in such cases, there is a necessity to empower no criticism. What is more, freedom of expression may be used by more talkative people which will overwhelm the discussion and point of view of those participants that are less sure or even fear judgment. Because brainstorming is based on discussion attention must be paid to the given and not unrelated topic. Moreover losing a common track of discussion, or over-shouting can lead to chaos.

Several unwanted behavior patterns may also appear during group sessions. Although the general idea is to produce numerous information/solutions some people may get stuck with their subject waiting for the best occasion to express it.

The next-in-line syndrome is a situation when people forget about aspects preceding their turn to perform. In that way paraphrase it unintentionally or just repeat it. Most people like their own ideas so they may enforce them. Even more problematic is when the first idea becomes a golden egg that a person is so afraid to break that cannot think of any other aspects (Fig.14).

Considering the above it is the obligation of the educators/mentors to draw students' attention to some key aspects of brainstorming, ensure a common understanding of the undertaken actions, and facilitate at least initially even theoretically advanced groups.

- Teaches to listen
- Building on the ideas of teammates
- Stimulates creativity
- Each participant has the same value
- Quick results
- Multidirectional approach



- Overdomination/submissive approach
- Paralyzing fear of someone else's judgment
- Chaos during the session
- A tendency to explore topics unrelated to the task
- Group responsibility = no responsibility
- First shot perfect
- "Next in line" effect
- A frequent decline in individual motivation

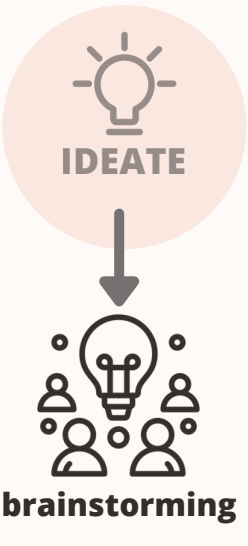


Fig. 14. Advantages and disadvantages of brainstorming

METHODS OF BRAINSTORMING

There are numerous variants of standard brainstorming sessions, some of them are described in more detail in the next section. Among the most common names of used techniques you can find:

6-3-5
Checklist
S.C.A.M.P.E.R
Chain of associations
Trend maps
Decomposition
Change of features
Emphatizing-storm
Philips 66
Reverse Thinking
Walt Disney
Idea note
Two steps swap
ABC avalanche

TIPS FOR TEACHERS

Explore Your Hunch

A huge part of human-centered design is following your nose. If you've got a feeling about something, give yourself a chance to explore it.

Mash-Ups

What would the Harvard of agricultural extension services look like? Mash-up two existing brands or concepts to explore new ideas.

Analogous Inspiration

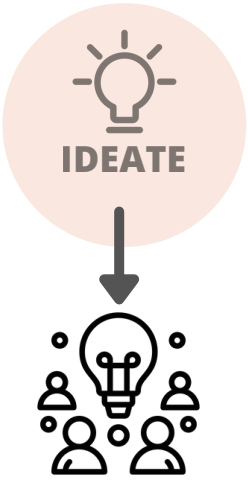
To get a fresh perspective on your research, shift your focus to a new context.

Share Inspiring Stories

Once you've had a chance to Download Your Learnings it's time to make sense of them. One way is to share the most inspiring stories you've heard with your teammates.

Ideation techniques

http://icreate-project.eu/index.php?t=98



REVERSED BRAINSTORMING

It is a combination of brainstorming and reversal techniques. Reversal brainstorming can be divided into 4 main steps:

Step 1. Problem statement
Step 2. Reverse the problem statement
Step 3. Finding reversed ideas (as much as possible)
Step 4. Solution ideas based on reversed suggestions

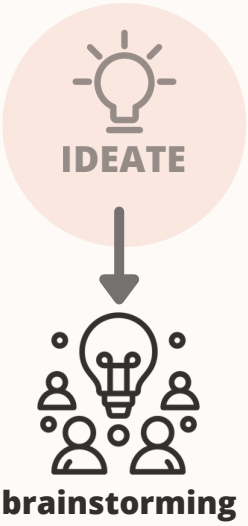
A problem statement can be formulated as a sentence but also as a question. However, a question form may be easier for participants to understand and use in the process.
In the second step, the participants should change their perspective and rewrite the problem statement into a problem-causing statement. In a non-reverse statement, the participants concentrated on how to solve the problem, and how to prevent it. In reverse, it is crucial to think about how we can generate/ intensify the problem.
The third step is generating reversed ideas and it should be done according to all good practices and rules of traditional brainstorming and generation of ideas.
The last step is crucial in the method. The participants reverse generated ideas into solution ideas for the original problem or challenge. Then they evaluate them.

Example:
Step 1. Problem statement: How might we improve user satisfaction with using public transportation?

Step 2. Reversed problem: How might we make users unsatisfied with using public transportation?

Step 3. "Reversed ideas":
Crowded trams, buses, and underground
Public means of transport arrive and depart inconsistent with timetables
Very expensive tickets
Non optimal tram/bus/metro routes
Very long distances between stops and stops in unwanted places

Step 4. Finding potential solutions:
The frequency of trams/buses adjusted to users' needs
Reasonable ticket prices e.g. support from the city government
Stops adjusted to users' needs, more request stops (used when needed)



CHAIN OF ASSOCIATIONS

This method should not be confused with Chain Association Method. Although both techniques involve combining impressions, ideas, and other mental phenomena to cosign the awareness of others, the first is related to brainstorming while the second is with the mnemonic technique.

Generally, people feel confident with stagnant reality so we come up with ideas that are obvious, and swapping to innovative thinking may need several attempts. Brainstorming by means of association is a way to get out of the box and overpass typical thinking.

This method is based on writing down the word that comes to mind when you see another word (Fig.15). In that way, you iteratively work to achieve a chain of ideas that may be topics that you do not immediately think of. The clue is to stop overthinking but get carried away by the process.

As a group brainstorming method, it can be conducted in several ways. In the case of a set of individual sessions – starting word is common. Then each participant is creating own chain. The gathered associations are compared to select obvious and more sophisticated aspects. The chain can be also created by the whole team. In that way, people work interchangeably on the word given by their predecessors.

Chain association method:

- is a way to easily collect material for other brainstorming methods;
- is fast, usually chain of about 10 associations can be formed in less than a minute (for newcomers about 3 minutes);
- can be easily performed by groups or individuals;
- requires openness from participants;
- involve additional time to select breakthrough ideas and work on them later on;
- is relatively easy to get stuck in a dead-end.

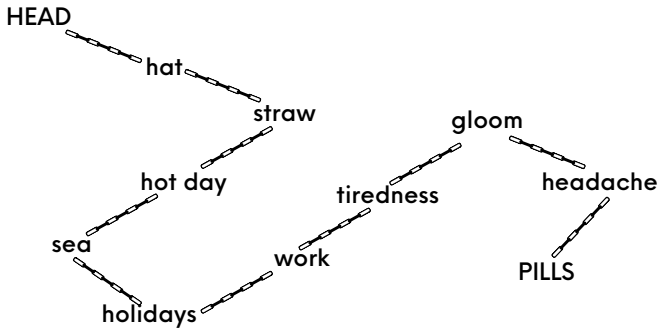
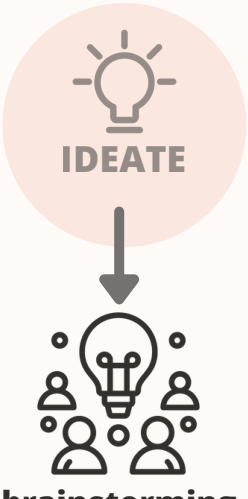


Fig. 15. Example for chain of associations technique

That method is not limited just to working on new ideas but also allows us to define the environment in which the exact idea is situated. It is very important in the case of branding or creating commercials. Because associations are largely shaped by the cultural values of consumers they may allow perception trends that may be used in the marketing and communication of the product.



ABC AVALANCHE

When the students seem to really be out of ideas during brainstorming sessions, and all other more sophisticated methods to boost their creativity fail, it is high time to introduce the ABC Avalanche brainstorming technique.

The main idea of that tool is to brainstorm ideas, words, etc., with the simple help of the alphabet. In that way, the teacher asks the students to think about generating ideas starting with every single letter of the alphabet. In the case of using an English alphabet, as a final result, there should be at least 26 ideas.

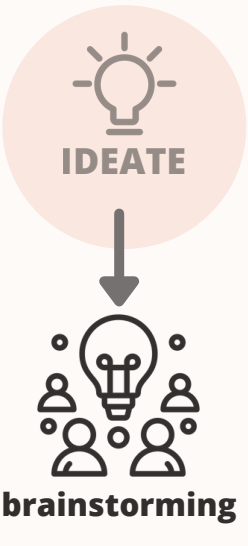
There are different ways in which people should participate in that activity. The brainstorming session involving ABC might be conducted separately by each student, or in small groups to facilitate the process.

ADVANTAGES OF ABC AVALANCHE

- Participants generate many diverse ideas
- A rapid technique that forces to generate many ideas
- Judgment on ideas is postponed due to the limited time to work and the participant's focus on generating ideas to fill the alphabet

There are also different variations of that technique:

- **Divide the alphabet into groups of letters** so each group of brainstorming session participants has to work only on a limited number of letters. This might help when we have a limited time to conduct the brainstorming.
- **Make a competition** – the teacher can divide participants to work in small groups and make them compete with each other on who will be the first to complete the alphabet.
- **Make the whole group work together** – this may be an excellent way of performing that exercise in a short time. It can also serve as an energizer for the whole group. The simple way to do this is to make the whole group complete the ABC brainstorm together, out loud in front of everybody.
- **Use not the simple alphabet, but the spoken one**. This is a really hard one but forces the students to think harder and generate many more ideas.



Example topic: How to deal with the skepticism of teachers and students about the importance of the subject?

A: *advice regarding improvements in subjects concerning Sustainable Development*

B: *best movies/video examples*

C: *case analysis of topics highly related to SD*

D: *different contrasts (perfect nature vs polluted regions)*

E: *everyday note concerning SD aspects showing good and bad habits*

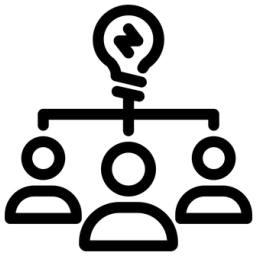
F: *Facebook presenting students and teachers with an SD perspective*

PHILIPS 66

The Phillips 66 brainstorming method was originated by J. Donald Phillips, Hillsdale College, Michigan, U.S.A. The large size of a group or ineffective dynamics can become a barrier to the ability to generate creative ideas. The purpose of creating the method was to successfully involve people in the discussion or ideation process in large groups and help them brainstorm effectively. The assumption is to overcome reasons, such as fear or uncertainty, that make people unwilling to speak and express themselves in large group situations. The method is also used to help overcome the problem of silence in group situations and to ensure that everyone gets a chance to contribute to the discussion. Therefore, while conducting the process, it is very important to ensure participants that their ideas, opinions, and concepts are welcomed and valued in order to make them feel confident and express their proposals.

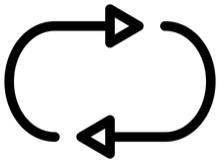
The Phillips 66 method is also meant to get feedback from a large number of people on specific issues in a formalized way and within a specific time frame. It can be used not only for more effective brainstorming but also to evaluate strategies or procedures. The Phillips 66 method is beneficial because it gives all participants the space and freedom to express themselves equally, thus ensuring that as many creative voices as possible contribute to solving the problem or challenge.

General rules

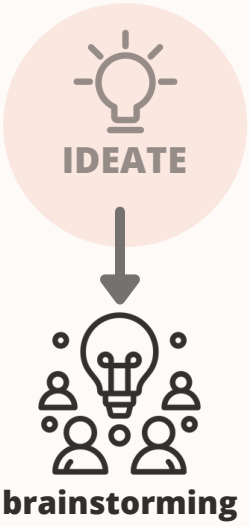


The large group of people (20-100) is divided into small sub-groups of six participants each. Each group spends six minutes brainstorming and discussing possible solutions to an identified topic or problem and then presents their results to the larger group, whole working panel, or a leader.

Within each team one person is assigned as a leader, one is responsible for taking notes, and one for keeping time. During the allocated six minutes, each team is obliged to find a solution to a specific problem formulated at the begging of the process. The member who takes notes keeps a record of the solutions formulated by the group.



Afterward, the team moves forward to another problem/ issue and spends another six minutes finding the solution. This process can be repeated as many times as needed. Finally, the potential solutions designed by each team for each problem are gathered and compared.



The Phillips 66 method is designed for use in large group situations, however, it can be modified for application in smaller groups as well. The process includes the following steps:

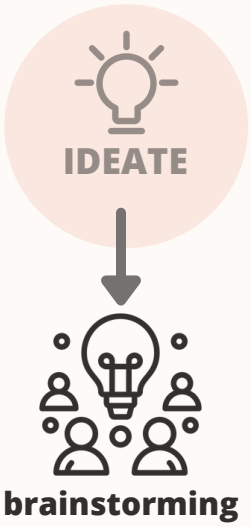
1. Assignment of the chairperson to manage the overall process within a large group

2. Creating groups of participants (six participants per group)
   - assignment of a team leader in each group to facilitate the discussion
   - assignment of a note-taker in each group to record the solution devised
   - assignment of a time keeper in each group to time the sessions

3. Stating the problem or issue as clearly as possible to ensure a relevant and successful solution
   - the problem or issue should be concise and to the point without any extra unnecessary information
   - if the problem is too wide it should be divided into smaller, more manageable topics
   - aim for specific and concise answers

4. Setting the time limit and ensuring discipline and comfort in sharing opinions
   - each team then has six minutes to devise a solution to the stated problem or issue
   - the facilitator of each team is responsible for ensuring that all participants in the group have the chance to give their opinions and that the group has time, in the end, to sum up, and agree on a solution
   - the facilitator is also responsible for ensuring that there is no censorship and that all opinions are welcomed
   - the time-keeper is responsible for ensuring that the group keeps to the time limits set
   - the note-taker is responsible for ensuring that the solution is recorded accurately.

5. Final Discussion
   - when the time is up the chairperson will chair a discussion on the solutions generated
   - if some similar solutions are produced, they can be linked or combined where appropriate



EVALUATION OF IDEAS & IDEA SELECTION

Evaluation of material generated during brainstorming and selection of subjects for further work is an important part of the designing procedure since it enables narrowing the decision to the most promising solutions. As it was already mentioned there is no golden solution for that part, although there exist techniques helping in the final decision-making process. The key point is to follow your hunch based on the available information and predictions.

The methods of idea evaluation can be more general – with imposed constraints, or rather flexible with fully adjustable constraints. All of them are based mostly on predictions rather than strict scientific data. That is why predominantly they are selected in the **preliminary brainstorming sessions** provided for the sake of the general vision of the product service and/or its main features. Depending on the number of subjects that should be evaluated it is possible to categorize all the findings according to the constraints and then find a consensus conclusion in each group or just readily choose the best solo representative of each category.

In the first case the three main techniques are:

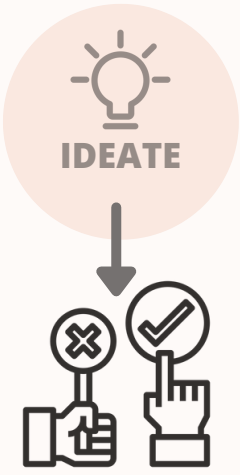
1 FAN

The FAN's method name is the abbreviation of the constraints used to evaluate the generated ideas:

- **Feasible** - probably to construct, technically simple;
- **Attractive** - in general, or involving catchy elements;
- **Novel** - showing the determinants of innovativeness.

The subjects that are assigned only to FEASIBLE are rather easy to copy or easily described by multiple existing examples from the market. The possible return of the money spent on the development of such ideas may be problematic but there will be no potential problems with legal aspects of its introduction/supply chains etc. That type of subject should be considered only if additionally assigned to the A or F category.

Subjects assigned to ATTRACTIVE or NOVEL have much more potential for marketing success since they reward from some unique aspect. Usually, subjects in A group are directly appealing so can easily attract the attention of potential customers but lacking novelty still can be easily copied. Nevertheless, an A category is quite promising to start with.



evaluation of ideas & idea selection

In choosing the subject in the N category the group should remember the advantages (no competitors, possibility to create their own environment, etc.) and disadvantages (minimal patterns of action to follow, possible aversion to change, etc.). It does not mean that such ideas are worse than A group but usually require more effort to start with – still resulting in better perspectives for the future.

2 ROSE, THORN, BUD

The second technique uses the comparison of our solution and the plant is Rose, Thorn, and Bud (Fig. 16). It can be easily transferred to success, challenge, and potential. This approach is better at developing the firstly selected subject since it enables to distinguish the best sides, things to work on within the nearest future, and potentials for further development.

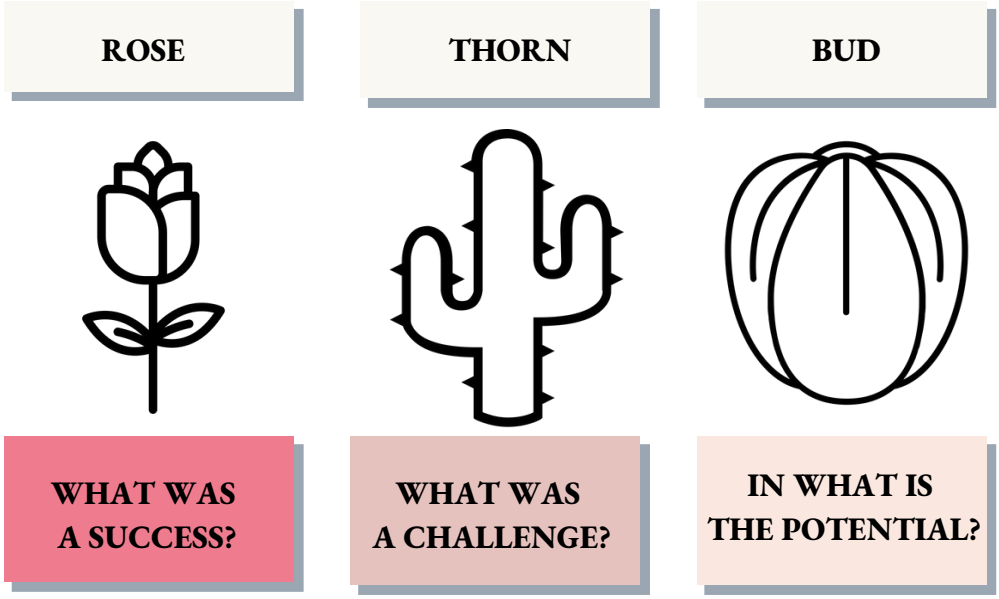
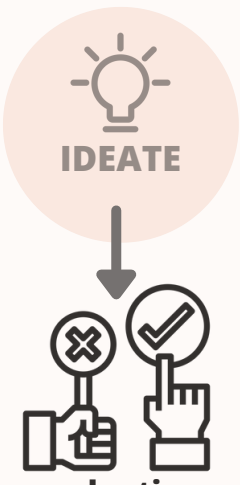


Fig. 16. Rose, thorn & bud technique.



3 NOW / HOW? / WOW!

In the case of Now, How? Wow!, the division is based on the level of difficulty in implementation and originality (Fig.17). In fact, it combines both previous approaches since "Now" and "Wow!" are resembling the FAN categories while "How?" requires more understanding of the environment of the solution. Each category shows additional information to extract maybe as to think over the final choice and even choosing a single option there is still a possibility to investigate key aspects of other options that may affect the final solution.

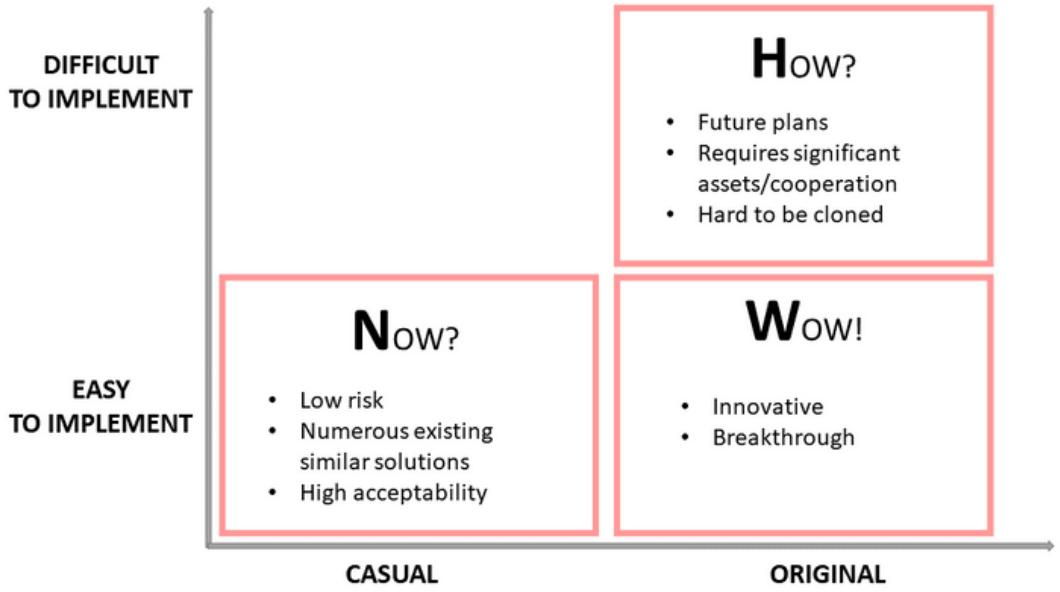


Fig. 17. An idea on Now/How?/Wow! technique implementation. The choice of the polygon is dependent on the phase of the project and the devotion of the team

The flexible methods of evaluation are based on setting measurable constraints first and treating them as variables of some coordinate system (similar to shown in graphics devoted to Now, How? Wow! method (Fig.18). The constraints may be directly related to the problematic areas distinguished during the Define stage.

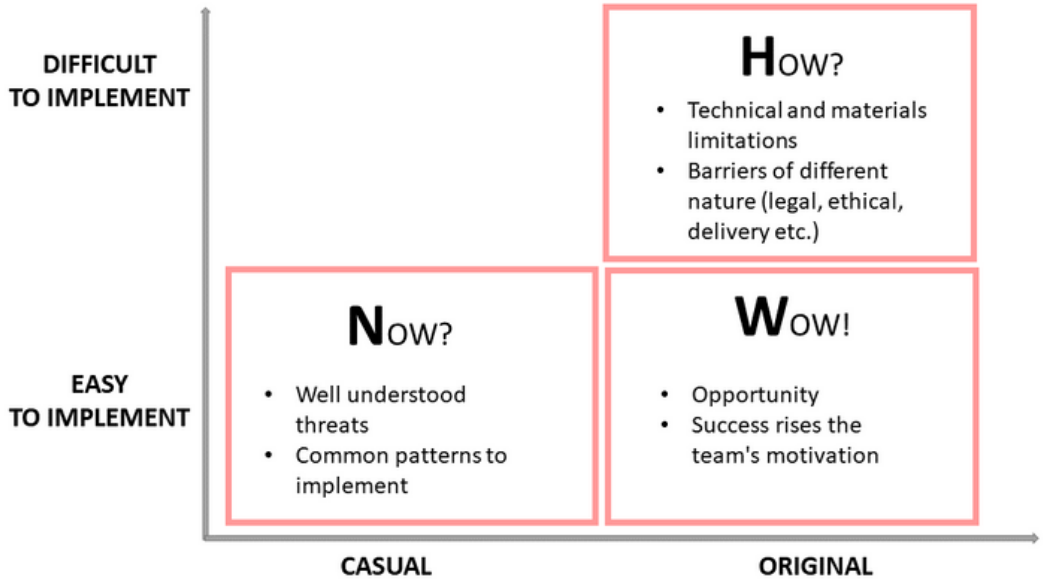
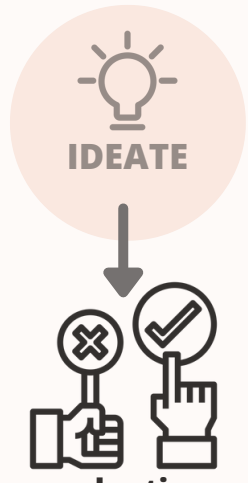
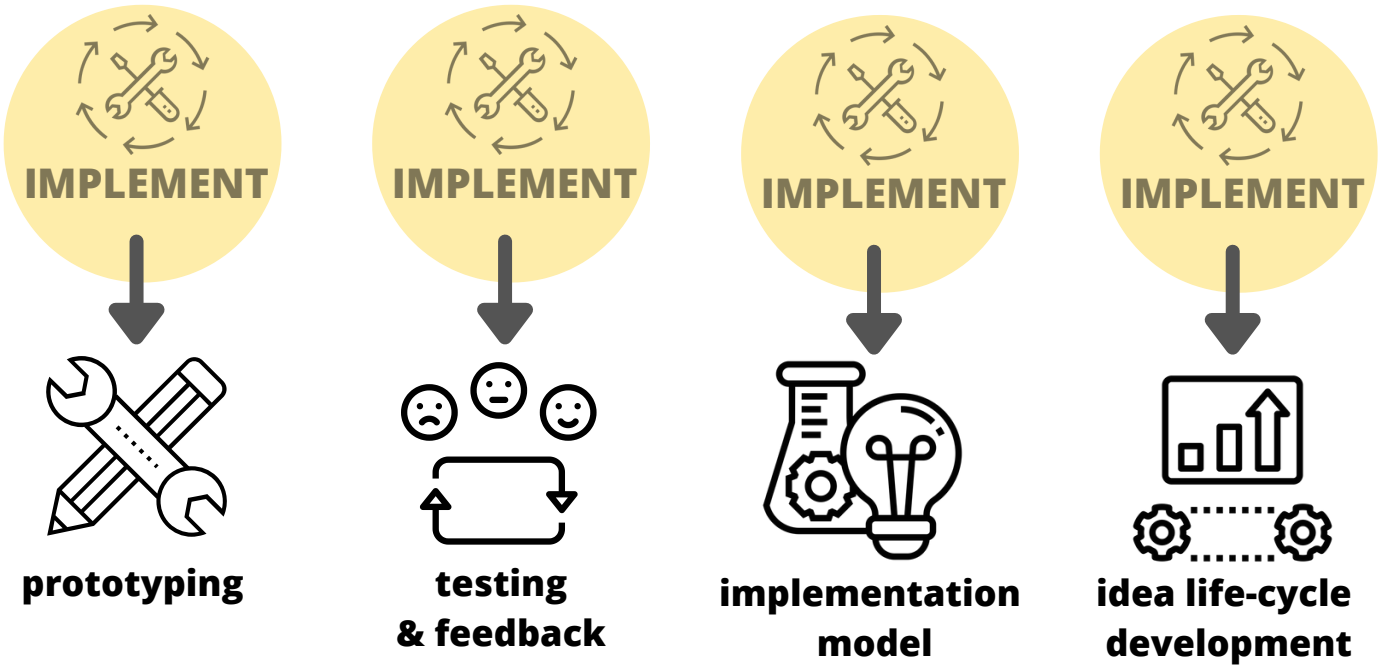


Fig. 18. Another idea to use Now / How? / Wow! technique. Each polygon can be related with useful information to extract



Chapter 5
Implement

INTEGRATED DESIGN STAGE 4



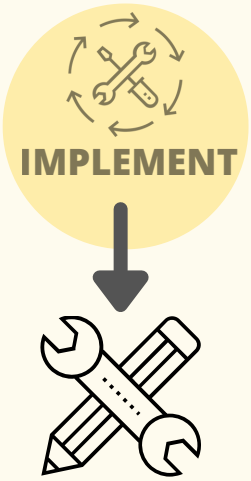
STAGE 4
IMPLEMENT

Implementation is a process. During it:

- Users have to be aware of the purpose of our product/service. The new product/ service could be something completely different or just improvement from the existing one.
- In some cases, users have to go out of their comfort zone to implement the new products/ services. It takes time.
- SMART objectives have to be determined:
  - Specific – you know exactly what the author wants to happen.
  - Measurable – you can objectively measure or assess whether the team achieved the result.
  - Achievable – the objective is something you can get done (no "stretch objectives").
  - Result – the objective is a result you desire and not an activity.
  - Time-bound – the team must complete the objective by a deadline, to create urgency and priority.

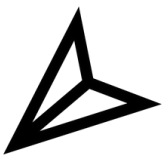
PROTOTYPING YOUR IDEA

Prototype development could be realized more visually and with tools describing a process. Below you can find tips to think about when you want to develop a prototype of your idea, selected during the previous stages of the Integrated Design process:



Get Visual

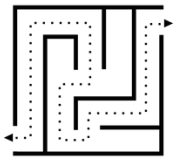
Incorporating drawing, sculpting, and building into the Ideation process can unlock all kinds of innovative solutions.



Determine What to Prototype

There are so many ways to prototype an idea. Here's how to isolate what to test. During the ideation phase, too many ideas are created. For the implementation phase maximum 3 have to be selected for prototyping and after testing one will be selected to be realized

Create a Journey Map



A Journey Map allows you to identify and strategize for key moments in the product, experience, or service you're designing (TIP: One online tool for a Journey map is available on https://www.userinterviews.com/ux-research-field-guide-chapter/customer-journey-maps)

Rapid Prototyping

Build your prototypes quickly, share them immediately, and keep learning. It is well developed with an agile methodology for software development. It includes requirements, discovery, and solutions improvement through the collaborative effort of self-organizing and cross-functional teams with their customer(s)/end-user(s) adaptive planning, evolutionary development, early delivery, continual improvement, and flexible responses to changes in requirements, capacity, and understanding of the problems to be solved. Agile software development values are based on their combined experience:

- Individuals and interactions over processes and tools
- Working software over comprehensive documentation
- Customer collaboration over contract negotiation
- Responding to change by following a plan

Make a Storyboard

A quick, low-resolution prototype or a Storyboard can help you visualize your concept from start to finish.

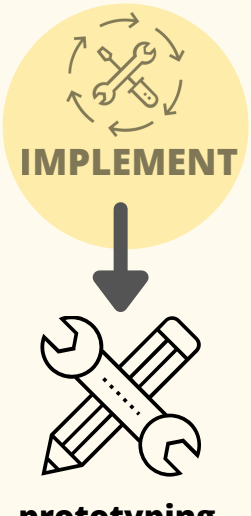
(TIP: A tool to be used – www.storyboardthat.com; Twine – an open-source tool for telling interactive, nonlinear stories - https://twinery.org/)

Perform a role-play session

A quick and tangible way to test an idea or experience is to get into character and act it out. You can play different roles according to Bono's hats in different phases of the integrated design process

Design a co-creation session

The people you're designing for can tell you plenty, and they can show you more. Here's how to further incorporate them into your design process.



TESTING AND GIVING FEEDBACK

In the Implementation phase, a crucial part is to give and obtain feedback about the proposed solution. Below there are listed several strategies to think about when designing a solution testing session:

1. **Live Prototyping** - it is a chance to run your solution for a couple of weeks out in the real world.

2. **Keep Iterating** - Testing, getting feedback, and iterating will help you get a great solution to market and let you know where to push it when you do.

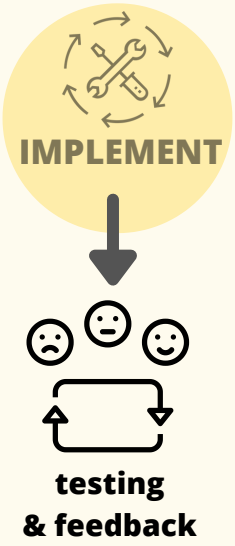
3. **Build Partnerships** - You may well need some help getting your concept to market. Build the Partnerships you'll need now. This can be done by creating a stakeholders/partnerships map.

4. **Roadmap** - You'll need a timeline and a plan of action to get your idea out into the world. A Roadmap keeps you on time and on target.

5. **Pilot** - it is a longer-term test of your solution and a critical step before going to market.

6. **Sustainable Revenue** - Your Funding Strategy will get you through launch, but you'll need a long-term revenue strategy to have maximum impact. This can be done by developing some financial spreadsheets and forecasts of what the revenue of a certain product/solution/service would look like.

7. **Design a co-creation session to gather feedback from the users** - the first step is to identify whom you want in your Co-Creation Session. Perhaps it's a handful of people you've already interviewed. Maybe it's a particular demographic like teens or female farmers or people without jobs.
   Once you know whom you want, arrange a space, get the necessary supplies (often pens, Post-its, paper, maybe art supplies), and invite them to join. Make the most of a Co-Creation Session with Conversation Starters, a Brainstorm, Role Plays, Rapid Prototyping, or other activities to get your group engaged around the problem you're looking to solve. Then, capture the feedback your group gives you. The goal here isn't just to hear from people, it's to invite them into your design team. Make sure that you're treating your Co-Creation as designers, not as interview subjects.



The feedback is necessary to make on each stage and to ensure that the prototype meets the user's needs and if it is necessary to improve them.

IMPLEMENTATION MODEL

Implementation is:

- The most important part of the project life cycle (the phase when to product becomes a part of the life)
- The most difficult part – to change behaviors, to change the mindset
- There are a lot of obstacles
- Have to be patient, consistent, and steady

CLAIM Model for implementation is based on the five main steps described below:

CLEAN-UP

- Walk the current process
- Review current steps
- Assess what is required to bring new
- Prepare the environment for new
- Set expectation for change

LAYOUT

- Map the new solution
- Assign role, activities & audits
- Develop the standards & reporting
- Entrench through training

APPLY

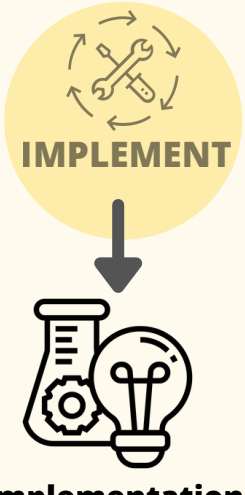
- Begin using
- Audit to ensure the standard is followed
- Retrain as needed
- Document lessons

IMPROVE

- Find improvement opportunities
- Review opportunities
- Approve opportunities
- Make changes
- Ensure update of steps and retraining happen

MAINTAIN

- Follow new steps
- Audit as planned
- Continue to improve
- Evaluate periodically



implementation

IDEA LIFE-CYCLE DEVELOPMENT

The Idea Life-Cycle Development is a way to sustain the product life cycle through time. This implies that a product analysis has to be done to improve it constantly according to the evolution of the needs of consumers and the development of products from the competitors. This process requires market information and developers' creativity and innovation (Fig.19).

1. Analysis of the product or service:
   - Collection of data on the market (consumers and competitors): statistics, questioners, internal reports.
   - Collecting references from what others have done and best practices, interviews with the (potential) users, pictures, videos, etc.
2. Ideas
   - Brainstorming ideas to boost creativity and innovation
   - Existing resources and estimated costs and profits
3. Re-Design
   - Process/product/service description
   - Implementation of new ideas
4. Test and revisions in market
5. Implementation

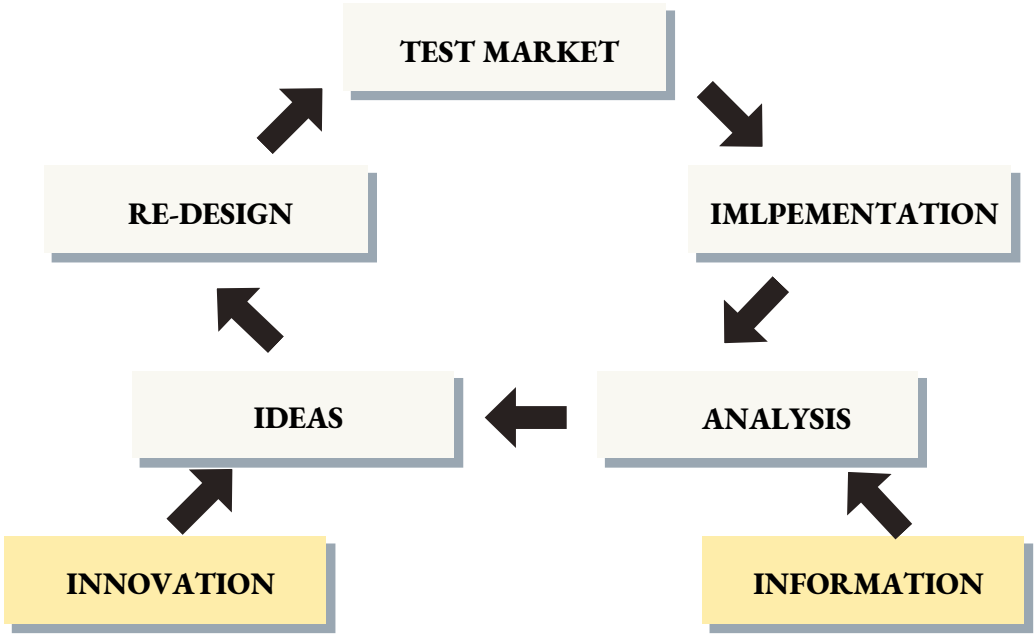
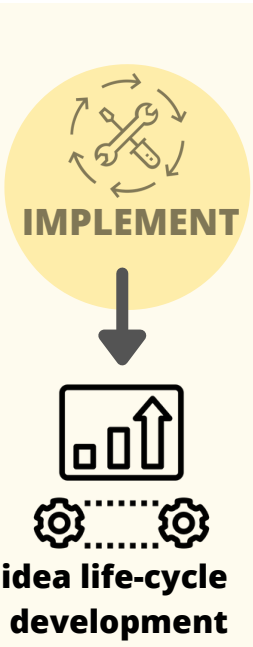


Fig. 19. Idea life-cycle development diagram.



Chapter 6
Sustainable Development

TIPS FOR TEACHERS

We are living in a very unique time in the history of our civilization, facing several simultaneous challenges and converging crises: a deteriorating environment, a very unequal distribution of decreasing resources, widespread poverty, wars, climate change, persecution and oppression of many peoples, and dissatisfaction with life even in those countries with a surplus of material wealth. These are only some environmental, economic, social, and cultural aspects of why we need to speak about and act for sustainable development.

To illustrate the "Why" question more widely, in 2009, a group of scientists described the nine processes that regulate the stability and resilience of the Earth system that are setting boundaries for our activities. Therefore the scientists proposed quantitative planetary boundaries within which humanity can continue to develop and thrive for generations to come.

Crossing these boundaries increases the risk of generating large-scale abrupt or irreversible environmental changes (*Rockström, 2009*) (Fig. 20A). Additionally, our economy and social and cultural life should fit into these boundaries illustrated by the second doughnut-shaped illustration (Figure 20B).

The social foundation forms an inner boundary, below which are many dimensions of human deprivation (*Raworth, 2012*). The biggest challenge is to see and teach connections between these dimensions, and how we depend on and influence planetary boundaries.

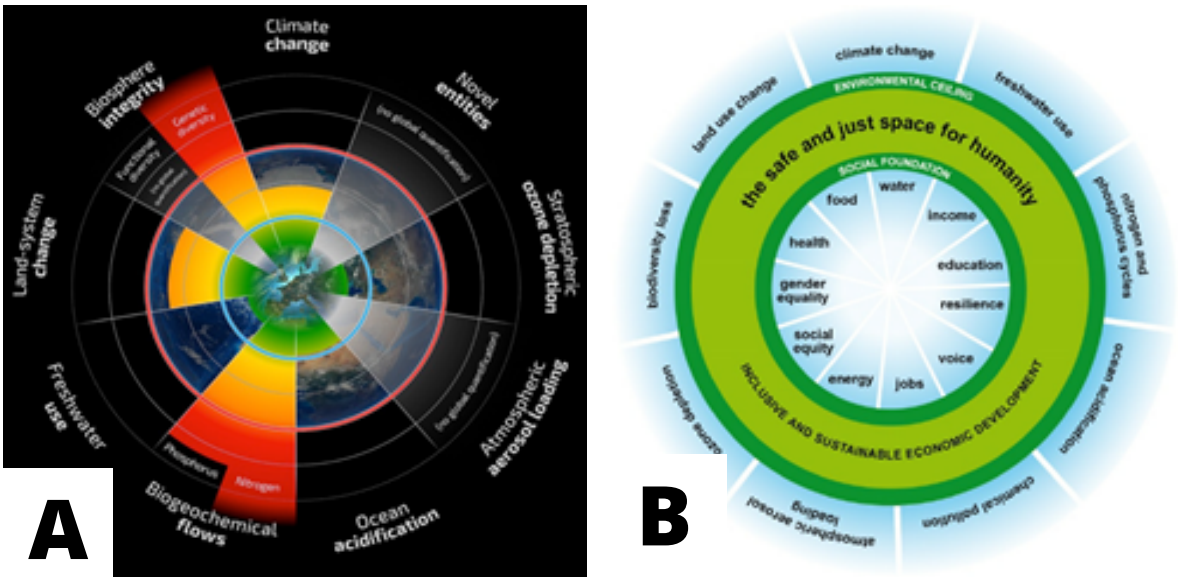


Fig. 20. The planetary boundaries (A) concept presents a set of nine planetary boundaries within which humanity can continue to develop and thrive for generations to come (Rockström, 2009) and to ensure a safe and just space for humanity to thrive in (Raworth, 2012)

TIPS FOR TEACHERS

sustainable development

Because of facing these challenges the role of higher education in society is changing and educators are having tasks to change their teaching practices to direct students to act for sustainable development. First, during the past decade, the number of universities and students has increased significantly – never before have there been so many people in society with higher education. This is the basis for the development of a knowledge-based society (Estonian Ministry of Education and Research, 2014; Albulescu and Albulescu, 2014). This new knowledge and innovation born at higher education institutions create a learning environment for students that enables them to take responsibility for their own well-being and also create added value for society in the future and contribute to sustainable development (United Nations, 1991) .

THE GENERAL IDEA OF EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD)

Herein, we reach the question of how to teach aspects, connections, actions, and understandings of sustainable development, and how universities should contribute to environmental challenges that we are facing like climate changes, lacking clean water, decreasing biodiversity, and degradation of soils and, connect these with economics, culture and human relationships.

At first, we need to agree that the idea is not to speak about sustainability and sustainable development but about education. Learners should understand the system of the word and the connections between their everyday actions and with ecological, economic, and social systems that support their lives. It starts from the relationship between universities and society, the strategic actions of universities, how curricula are developed, how educators are motivated, and how academics see their role in society and sustainable development.

There are several institutions that have been describing strategies, initiatives, methods, and case studies on how to contribute to education for sustainable development. The widest frame is given by different international institutions like UNESCO, OECD, and UNECE, and today we are focusing more on UN Sustainable Development Goals, additionally on the Green Deal in Europe and other strategic frameworks that give us a framework for education for sustainable development.

ESD allows every human being to acquire the knowledge, skills, attitudes, and values necessary to shape a **sustainable future**. It means including key sustainable development issues in teaching and learning; for example, climate change, disaster risk reduction, biodiversity, poverty reduction, and sustainable consumption. It also requires participatory teaching and learning methods that **motivate and empower learners to change their behavior and take action for sustainable development**. ESD consequently promotes competencies like critical thinking, imagining future scenarios, and making decisions in a collaborative way (UNESCO, 2014). ESD is essential for the achievement of a sustainable society and is therefore desirable at all levels of formal education and training, as well as in non-formal and informal learning (Council of the European Union, 2010).

SHORT OVERVIEW OF SDGS AND THEIR CONNECTION WITH EDUCATION

Sustainable Development Goals or Global Goals (hereafter SDGs) are a blueprint to address and combat global problems and are helping to provide a better future for everybody socially, economically, and environmentally. These were adopted by the United Nations in 2015.

The goals are a call to action to help nations lead a more sustainable life regarding issues like inequality, climate change, poverty, lack of infrastructure, war, and degradation of nature to name a few. All of the SDGs are interconnected so their implementation prompts change not only in the target area but affects others as well by providing a framework to enhance prosperity and protect the planet. (*United Nations, 2015*). In order to be able to follow SDGs proper education, mindset and values are needed.

Teaching the new generation sustainable values and educating them about forthcoming problems helps them to acquire knowledge that is necessary to attain SDGs (*Kangur et al., 2020*). For example, education can enable and inspire a breakthrough from poverty or it can help to reduce inequalities and make pupils more tolerant and motivated. People need to be inspired to become change-creators (*Nazar et al., 2018; Adegbesan et al., 2010*).

Not only universities are able to educate and empower people in regard to solving global problems but can also provide important research data. Tertiary education could hold the key to leading our society toward reaching a more sustainable future via SDGs (*Kangur et al., 2020*). There are good examples of ways to teach, for example, global education - SDGs are like a curriculum for that and it is recognized in the whole world.

TIPS FOR TEACHERS

sustainable development

SDGs are divided into 17 goals and 169 targets that are interlinked with each having its own desired outcome. 13 of them focus on social inclusiveness, 11 of them on ecological inclusiveness while most overlap in both criteria (*Gupta & Vegelin, 2016*) (Fig. 21). Additionally, in describing the characteristics of SDGs we can stress three main keywords: universality (these goals apply to every nation and every sector, city, business, school, and organization, all are challenged to act); integration (it is recognized that the goals are all inter-connected, in a system, we cannot aim to achieve just one goal, we must achieve them all), and transformation (it is widely recognized that achieving these Goals involves making very big, fundamental changes in how we live on Earth).

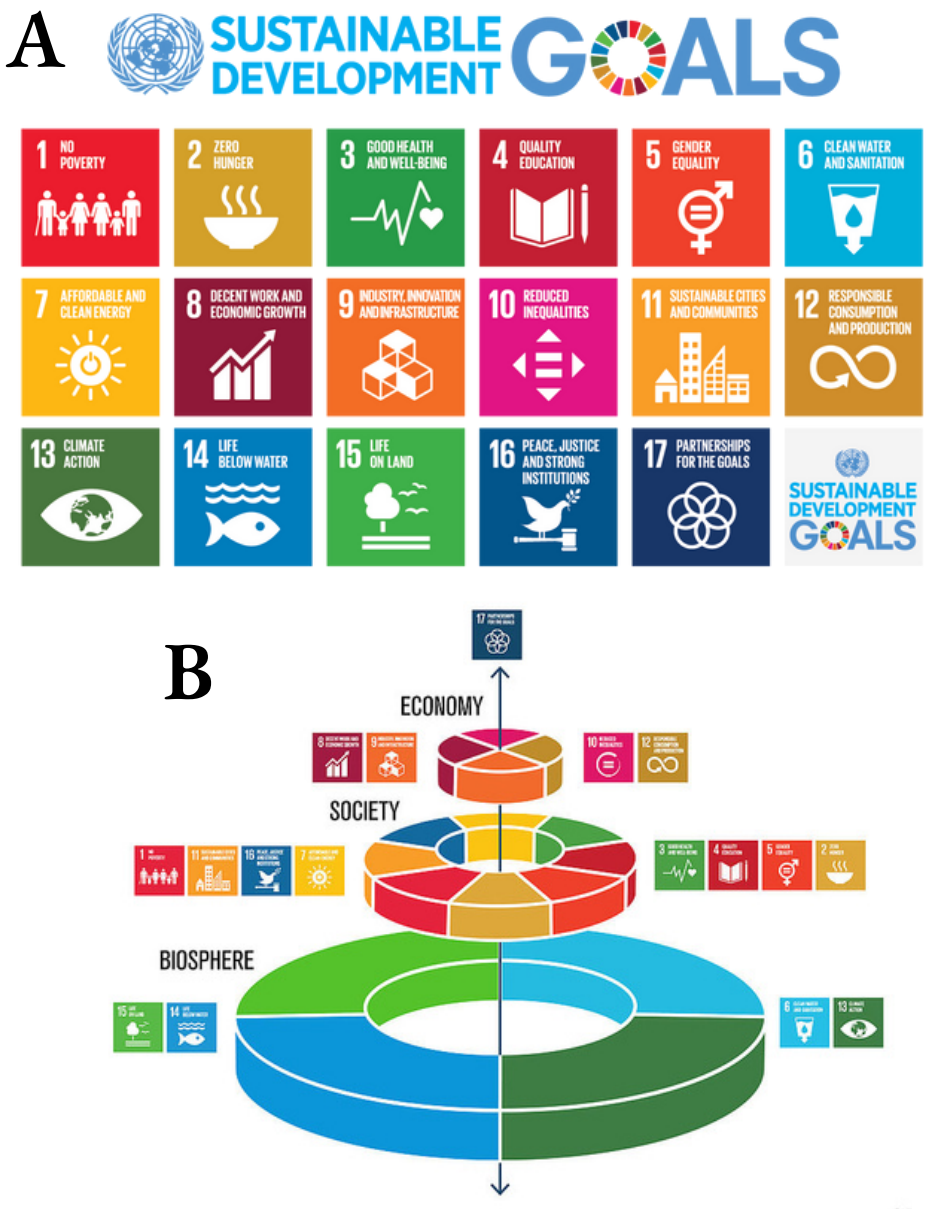


Fig. 21. UN Graphical Illustration of the 17 SDGs (A) and the interconnected nature of the SDGs - illustration implies that economies and societies are seen as embedded parts of the biosphere (B) (Folke et al., 2016)

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SDGS EXPLAINED

NO POVERTY

By 2030 the goal is to improve the income for at least half of the population now living in poverty and reduce the rate of extreme poverty all over the world. Ensuring that the vulnerable will have equal access and rights to all-natural and economical resources and appropriate living conditions irregardless of their age or sex.

ZERO HUNGER

Ensure access to nutritious and safe food for everyone and end malnutrition with an emphasis on the poor and vulnerable. Also, the goal is to become more productive agriculturally regarding yield, farmers' income, and sustainable production while also maintaining the ecosystems. In addition, steps towards research, trade correction, and maintenance of seed and plant banks are planned.

GOOD HEALTH AND WELL-BEING

The goal is to combat communicable diseases and reduce maternal and neonatal mortality, also substantially reduce the number of deaths by other causes. Also, it's important to ensure access to healthcare services and products may be sexual, mental health, substance use, or disease-related problems. Global coverage of safe and quality medical help is necessary.

QUALITY EDUCATION

Ensuring access to quality and equal education for all children and adults at any level of education. Quality education means that students should also be provided with knowledge in sustainable development and lifestyles and human rights. The goal is to provide teachers with appropriate training and increase the number of qualified educators. The goal also includes addressing global literacy and numeracy and safe and inclusive education facilities.

GENDER EQUALITY

This goal is especially oriented toward women's empowerment, protection, and their equal opportunities in finance, land-owning, inheritance, and politics to name a few.

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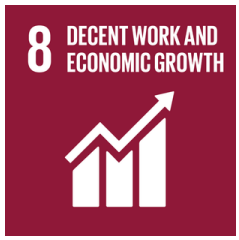
CLEAN WATER AND SANITATION

By 2030 all people should have access to clean and safe drinking water and hygienic living conditions. This includes access to toilets and hygienic products. The goal also aims to protect water-related ecosystems, reduce pollution and hazardous waste and make water usage more efficient and sustainable.

AFFORDABLE AND CLEAN ENERGY

The aim of this goal is to increase sustainable and renewable energy universally while making sure its availability and affordability for all people with an emphasis on developing countries. This includes expanding and enhancing infrastructures and technology.

DECENT WORK AND ECONOMIC GROWTH



The goal includes enhancing economic productivity, entrepreneurship, innovation, and the growth of small enterprises. By 2030 all men and women should be equal in the work field and be provided with safe working conditions. Also put an end to child labor, and slavery and provide the youth with opportunities of training and employment.

INDUSTRY, INNOVATION AND INFRASTRUCTURE

Goal 9 focuses on creating new and enhanced existing infrastructures that are sustainable, efficient, and of high quality. Also, upgrade technology and help small-scale enterprises to be viable on the market. This is aimed to contribute to human well-being and economic growth.

REDUCED INEQUALITY

By 2030 society should become more inclusive and more united for example regarding opportunities, income, social inclusion, rights, and political inclusion. That can be achieved by eliminating discriminatory laws, adopting new protective policies and monitoring global markets more closely.

SUSTAINABLE CITIES AND COMMUNITIES

All people should be provided with safe, affordable, and sustainable housing and transport. Urbanization should be done sustainably and slums should be upgraded, resulting in cities having a lower environmental impact, more greenery, cleaner air and a safer public space for all.

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RESPONSIBLE CONSUMPTION AND PRODUCTION

The goal aims to handle natural resources more sustainably and efficiently while still providing people with goods. It is important to reduce waste and chemical pollutants, recycle and Goal 12 also aims to reduce global food waste by half. Companies are also encouraged to adopt and apply sustainable thinking.

CLIMATE ACTION

Climate Action's aim is to combat natural hazards and climate disasters and encourage the adoption of new strategies. Also, raise awareness of the subject and help developing countries mitigate climate problems

LIFE BELOW WATER

This is a more environmentally inclined goal seeking to protect marine and water-related ecosystems and prevent and reduce pollution and habitat degradation. This includes managing fishing practices, and increasing scientific knowledge and research. Conservation of oceans and restoration of habitats.

LIFE ON LAND

This goal focuses on terrestrial ecosystems. Protection, restoration, and conservation include sustainable use of land and resources, combating desertification, combating habitat and biodiversity loss, ending poaching, increasing financial support for conservation, reduce irresponsible use of natural resources among many more.

PEACE, JUSTICE AND STRONG INSTITUTIONS

This goal wants to provide equal access to justice for all groups of society and create a more peaceful environment by reducing terrorism and violence. Also to reduce corruption and other illicit actions. This includes the global cooperation of institutions and lawmakers.

PARTNERSHIPS FOR THE GOALS

Partnerships and cooperation between institutions and all countries are important to achieve all Sustainable Development goals. Goal 17 aims to unify financial capital between countries and to enhance the development of sustainable technology, trade, and policies globally. Developing countries are expected to provide support to developed countries.

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EDUCATION FOR SUSTAINABLE DEVELOPMENT – COMPETENCES, METHODS, AND OUTCOMES

There is no 'correct' pedagogy for sustainability education, but there is a broad consensus that it requires a shift toward active, participative, and experiential learning methods that engage the learner and make a real difference to their understanding, thinking, and ability to act for sustainable development. Tilbury and Wortman (2014) have formulated general competencies that need to be developed both locally and globally in order to develop a sustainable way of life and meet the challenges of society:

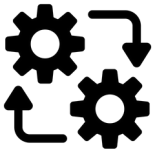
ENVISIONING

Being able to imagine creatively for a better future. The premise is that if we know where we want to go, we will be better able to work out how to get there. By using role-play, real-world inquiry, futures visioning, problem-based learning, and providing space for emergence.

CRITICAL THINKING AND REFLECTION

Learning to question our current belief systems and to recognize the assumptions underlying our knowledge, perspective, and opinions. Critical thinking skills help people learn to examine economic, environmental, social, and cultural structures in the context of sustainable development. How - including the more traditional lecture, but also newer approaches such as reflexive accounts, learning journals, and discussion groups.

SYSTEMIC THINKING



Acknowledging complexities and looking for links and synergies when trying to find solutions to problems using real-world case studies and critical incidents, project-based learning, stimulus activities, and the use of the campus as a learning resource.

BUILDING PARTNERSHIPS

Promoting dialogue and negotiation, learning to work together, including contributions from guest speakers, work-based learning, interdisciplinary/ multidisciplinary working, and collaborative learning and co-inquiry.

PARTICIPATION IN DECISION-MAKING

Empowering people with emphasis on group or peer learning, developing dialogue, experiential learning, action research/learning to act, and developing case studies with local community groups and business

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These skills should be learned and applied according to the cultural contexts of different groups and stakeholders (Tilbury and Wortman, 2004).

Developing competencies of sustainable development have been topics for several years for many projects (including Erasmus+) and state strategies. Herein we can highlight the results of the project A rounder Sense of Purpose (RSP).

RSP is a framework that has been designed for all educators, working at any level, who wish to provide an education for sustainable development (*https://aroundersenseofpurpose.eu/*). RSP also states that in order to work towards a more just and sustainable world, at first, the educator needs to have sustainability competencies themselves and be able to develop them within their learners (Fig.22).

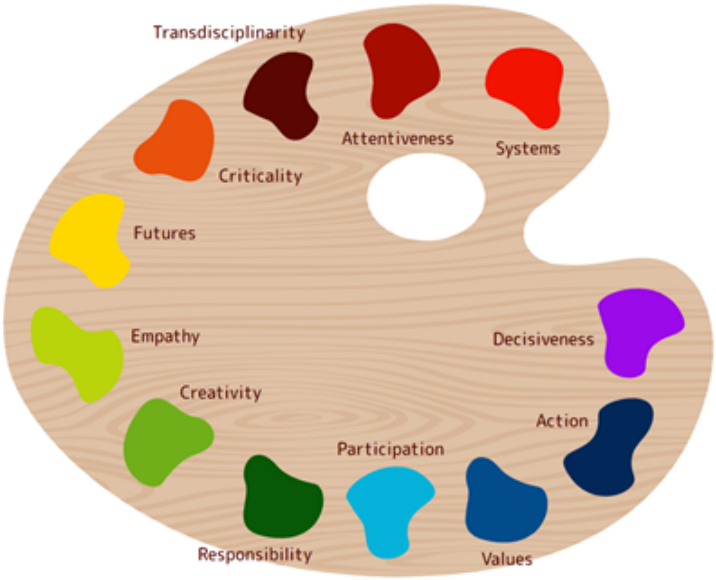

Fig. 22. The 12 RSP Competences are presented on an artist's palette. This acknowledges that educators will rarely focus on one competence at a time, rather they will blend competence areas in response to each unique context. Educating with a rounder sense of purpose. A Rounder Sense of Purpose. (n.d.). Retrieved September 22, 2022, from https://aroundersenseofpurpose.eu/

TIPS FOR TEACHERS

How to contribute to education for sustainable development, to develop competencies and ways of thinking by creating new programs, curricula, or projects?

Besides each and every learning process should focus on motivation and basic psychological needs - autonomy, competence, and relatedness herein main key questions have been created to think about (Arro et al. 2018):

- How does it (program, curriculum, project, etc.) support the understanding of sustainable development goals?
- Does your program support the general competencies of sustainable development?
- How this program supports the learner's own development, contribution to the community, and a better world?

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BEST PRACTICES IN SD IMPLEMENTATION FOR HIGHER EDUCATION PURPOSES

There are many workshops, guidelines, and textbooks published/provided from where examples could be found. Herein we are giving examples of some practices that have been done at Tallinn University.

1 **Projects and thesis**

More and more students' projects and theses are connected with some aspects of sustainability by studying an environmental attitude or awareness of UN Sustainable Development Goals, creating teaching materials for schools or developing social entrepreneurship, doing campaigns, or giving suggestions on how to act more sustainably. The best solution would be to connect into one bigger project ideas, knowledge, and tasks from different courses. It gives an opportunity to learn how to use resilience thinking as an approach to understanding and managing social-ecological systems, contributing to the research in this field as well as helping solve real-world problems. LIFE is a subject at Tallinn University where students from different study fields carry out collaborative projects on a topic of their interest (read more: *https://www.tlu.ee/en/life*). LIFE ideas for projects could be offered by the students themselves, and their supervising teachers but more and more by enterprises and non-government organizations cooperating with the university.

2 **Projects for contributing to UN Sustainable Development Goals**

Form groups of four or five students. However, there are examples of groups of 12 students. By playing a lottery, all participants get a theme, that is one of the goals of sustainable development (you can use SDGs Flashcards (Fig.23)). A further task is to create a realistic project idea for the school or community or why not, international, which takes into account all the sustainable development goals that the group focused on. In order to narrow the issue, the focus can be on environmental, economic, social relations, or cultural sustainability (Fig.24. for different groups. It can take an hour, during which an idea and a course of action can be created, as well as, for example, a semester, during which the activities can also be carried out. Similar project creation can be carried out in the community, where together (e.g. students, parents, local government, and business) they contribute to solving some challenges and the activities are actually carried out.

TIPS FOR TEACHERS

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3 **Ecosystem services**

Form groups of four or five students. Each group will get a different topic to draw (favorite breakfast that all group members enjoy, dressing), that is acceptable by all group members; hobbies that all group members would like to do together or morning activities, etc. The next task after drawing all elements is a great mind map answering the question, of where these elements are coming from and what kind of and how many ecosystem services you need for that.

4 **Life Cycle Assessment**

The design process of the product (for example simple knife, toothbrush or pen, or more complicated phone or bike) from its design, material use (from where these materials are coming from) to its complete utilization. During designing, answer the questions: Why is it needed? How big is the impact? Do you have alternatives? What materials do you need? How much? Have you compared your design with a standard product? How big, for what, and where (geographically) is the impact? How big is the socio-economical impact? Can you repair it? The main message of this exercise is "Do not design the product, design the life-cycle of the product".

5 **Challenge yourself with sustainability practices**

During the course, all students had to choose a challenge in sustainability and follow it during the one-month period. The chosen challenge was discussed and adjusted if needed (e.g. instead of sorting the garbage (which is obligatory according to the law anyway) one could choose to practice zero-waste). Through the challenges, students made notes and reflected on their setbacks and success stories. Their practical questions were answered and supported with theory in lectures.

6 **Class starts with an opening discussion and reflections**

Students can share their thoughts and speak freely if there are any obstacles in their way to participate actively in the class. Those can be personal (e.g. missing cat) or related to the understanding of the course materials, previous tasks, etc. Very important is also the layout of the class i.e. how students sit. Classroom with a free layout or the possibility to reorganize it should be preferred. Sitting in the circle is, in the beginning, a bit uncanny for students, but when they get used to it, it will support and activate discussion. In the group discussion, students have specific roles which are drawn randomly. Roles can be: timekeeper, recorder, manager, reflector, elaborator, reporter, etc, depending on the topic.

TIPS FOR TEACHERS

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7

Observation and notice of the learned theoretical concepts

When learning new concepts or definitions, the amount of new information can be overwhelming, and quite often will end up simply memorizing the definitions not understanding them. In his class "Ecological pedagogy" M. Kangur gave students homework tasks as go outside to notice and observe the key concepts of ecology (e.g. adaption, succession, competition, predation, parasitism, mutualism, matter cycles, food webs). This task was followed by discussions and later resulted in an essay. Feedback from the students was very good, they finally understood how ecosystems function and were able to notice new things in nature.

Fig. 23. One opportunity is to use SDGs Flashcards. They contain more than 200 questions relevant to the 4 dimensions (ecological, social, economic, and worldview) - whole systems approach to sustainability, and participants could explore these four dimensions of each of the 17 SDGs in question-focused small group conversations, to collaboratively identify actions and solutions aimed at implementing the global goals in ways that are relevant to their lives and their communities

Fig. 24. Keywords and topics behind four dimensions of SD designed by Gaia Education

Additional strategies and methods to use for education for sustainable development with students: role-playing, group discussions, stimulus activities, debates, critical incidents, case studies, reflections, critical reading and writing, problem based learning, modelling good practices etc.

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TIPS FOR TEACHERS

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Chapter 7
Circular Economy & Social Innovations

TIPS FOR TEACHERS

Under the new challenges of the 21st century, the world and Europe face new challenges and verified new paradigms. Besides the crises that lived in the first decades of the 21st century, the climate changes and the urgency in change mentalities lead to a paradigm shift.

Currently, Europe faces the called European 2020-2030 Challenges. The innovation and R&D spending in Europe is below 2%, compared to 2.6% in the US and 3.4% in Japan. It is not only the absolute amounts spent on R&D that count, Europe needs to focus on the impact and composition of research spending and improve the conditions for private sector R&D. The smaller European share of high-tech firms explains half of our gap with the US.

Regarding education, training, and lifelong learning, around 50% of current students reach medium qualifications level, but this often fails to match labor market needs. Less than one person in three aged 25-34 has a university degree compared to the 40% in the US and over 50% in Japan. According to the Shanghai index (2014), only two European universities are in the world's top 20.

Currently, Europe and the World are facing an important moment of transformation. The recent crises, including the COVID-19 crisis, have wiped out years of economic and social progress and exposed Europe's economy to structural weaknesses. The GDP of the European Union (EU) state members felt, that industrial production dropped and more than 30 million people stayed unemployed. The recent economic crises had no precedent in our and as well future generations.

Some of the Europe 2020 strategy's key priorities highlighted the EU's growth strategy for the coming decade and intends to turn the EU into a smart, sustainable and inclusive growth economy. Sustainable growth has as flagship initiatives an industrial policy for the globalization era and the resources efficient Europe, whether by inclusive growth is taking into account an agenda for new skills and jobs and a European platform against poverty and social inclusion.

The 17 Sustainable Development goals defined by the United Nation in the 2030 Agenda and presented in Figure 21, consider relevant 17 goals for sustainable development which teachers should be in mind to educate and to adapt in the contents of their curricular programs. In the present chapter, we are going to retain our attention on the topics of Circular Economy, related to goals 1, 3, 4, 6, 7, 11, 12, 13, 14, 15, and 16, and Social Innovation related directly to goals 1, 10, 11, and 12. And we are going to apply the concepts to the case of the textiles or the garment industry.

TIPS FOR TEACHERS

circular economy & social innovations

The textiles are an interesting case of study and currently with scarcely applied studies. Textiles, especially garments, involve higher rates of polluting production processes for the environment, in terms of heat production processes and chemical materials. Textiles, and especially the case of garments, are mainly associated with fashion and are often used only during one season of the year.
To a better understanding of the themes under study will be applied the concept of Integrated Design, which combines the three main aspects of project-based learning methods, a business approach, and sustainability.

After this introduction, the second section presents the concepts of Circular Economy and Social Innovation and the relations that can be generated between the two concepts. In section three the case of textiles will be exposed, based on producers and consumers and the circular circuit between them including also the forms of recycling, reusing, and reducing the textiles' garbage and alternative uses with added value. In section four, some will be presented with some activities and their expected results. And the section five concludes.

THE CONCEPTS OF CIRCULAR ECONOMY AND SOCIAL INNOVATION

Circular Economy presents a sustainable way both to produce goods and services and to contribute to the sustainable and rational consumption and to the sustainable development of economies. The concept is based on three basic principles (Robaina, Villar and Pereira, 2020):

1. Preserving and valuing natural capital by controlling finite stocks and balancing flows of renewable resources;

2. Optimizing resources productivity through the circulation of products, components, and materials, both in technical and biological cycles;

3. Enhancing the effectiveness of the system by reducing harm to human welfare, regarding, for instance, food, mobility, shelter, education, health, and entertainment, and managing externalities related to land use, air, water, and noise pollution, the release of substances and climate change.

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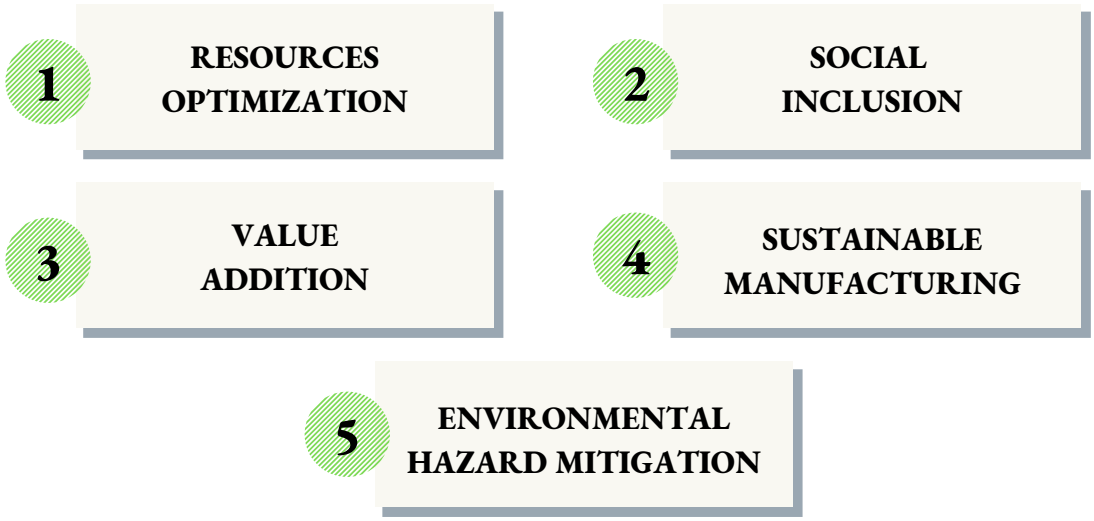
This concept is related to the importance of the choice of the most sustainable production materials, which do not pollute the environment, be biodegradable, and that be the most appropriate for the production processes. As well as the best uses from the consumers, like, for example, warn about the best ways of dealing with textile use, such as washing textiles, how to reuse them or to be able to give or sell them in second hand.

Once, nowadays, natural resources and energy are every day scarcer, and the spending of energy and outputs resulting from production, but not incorporated on it contributes to heating the planet and climate change, circular economy highlighted the high importance of maximizing the existing natural resources, the efficiency of applied resources, and the welfare of citizens and future generations.

The Circular Economy can be applied in many ways, like the practical life of individuals and families, companies, institutions, and in all industries, cities, and society, including social innovation purposes. These applications are sustained most of the time in entrepreneurship and innovative ideas that create procedures and are supported by entrepreneurial attitudes, skills, and knowledge that enable them to turn ideas into action.

According to the European Commission (2015), innovation for sustainability is based on materials, resource efficacy, digitalization, and new business models. This implies some relevant issues:



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Economy can be characterized as a Linear Economy, as an open loop economy and as a close loop Circular Economy (Fig. 25 and 26).

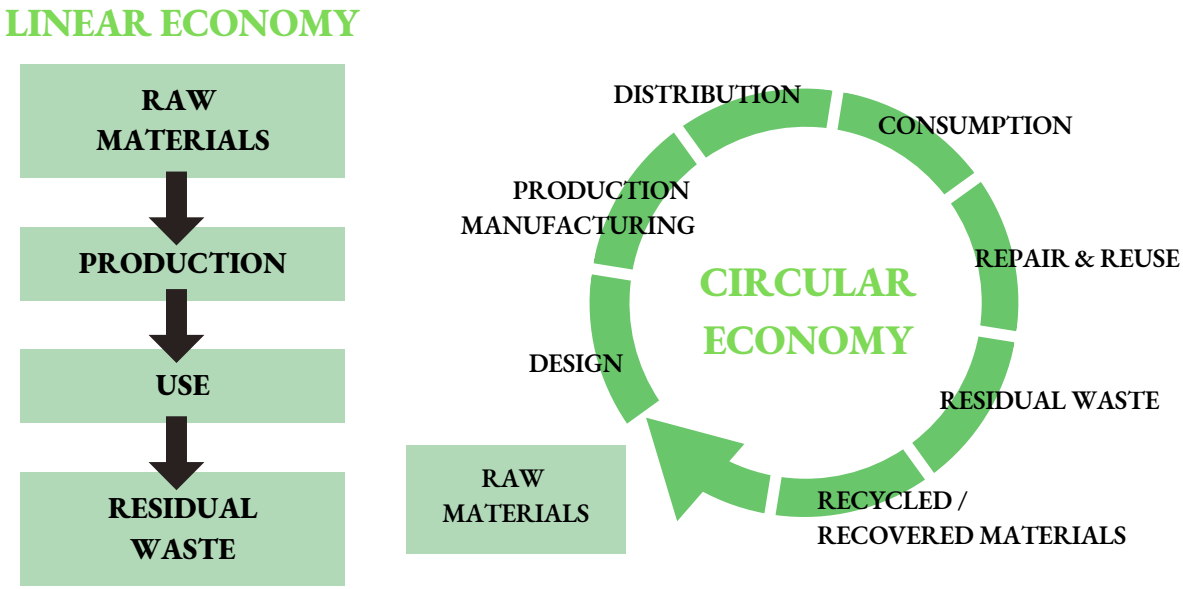

Fig. 25. Linear Economy vs. Circular Economy

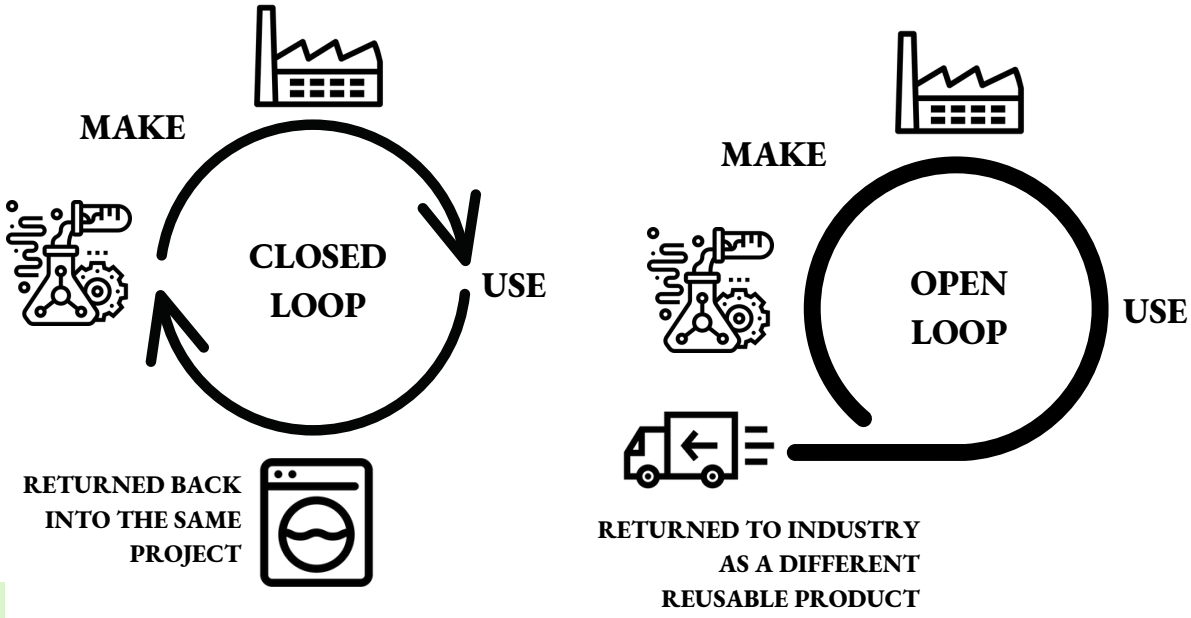

Fig. 26. Closed Loop versus Open Loop Recycling

The open loop is supposed more efficient, once the waste of materials can be used in other industries. However, the combination of the two systems in one, illustrates the best solution, maximizing the use of resources and minimizing the waste generated by the system, which is wished to be zero. When the closed loop is mentioned, it refers to the case that after completing the circular circuit through different economic activities there exists a return back into the same product. On the other side of an open loop, there is a circuit but not a closed one, so there is a return to industries as a different reusable product.

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When one talks about Circular Economy and relates it to sustainable development goals, Social Innovation appears as an important concept to complement the circular economy. Social Innovation, is a concept where innovation is developed with the purpose of social aims. For example, provide goods for poor individuals or families or unemployed, promote gender quality and social inclusion, and have social proposes like collecting money to reuse or recycle goods for poor children, sick people, animals, and other purposes. Social Innovation, also, can be a solution to the social and environmental problems of today's society (Schwab Foundation, 2013).

Several definitions of Social Innovations can be used. Social innovation, based on Phills et al (2008), can be defined as a new solution to a social problem that is more effective, efficient, and sustainable than existing solutions and for which the value created accrues primarily to society as a whole rather than private individuals. The Center for Social Innovation at the Stanford Graduate School of Business defines social innovation as "the process of inventing, securing support for, and implementing novel solutions to social needs and problems. Or according to the Young Foundation (2012: 18), Social innovation includes" new solutions (products, services, models, markets, processes, etc.) that simultaneously meet a social need (more effectively than existing solutions) and lead to new or improved capabilities and relationships and better use of assets and resources. In other words, social innovations are both good for society and enhance society's capacity to act."

The Young Foundation (2012: 18) describes some key core elements of Social innovation that are represented in Fig. 27.

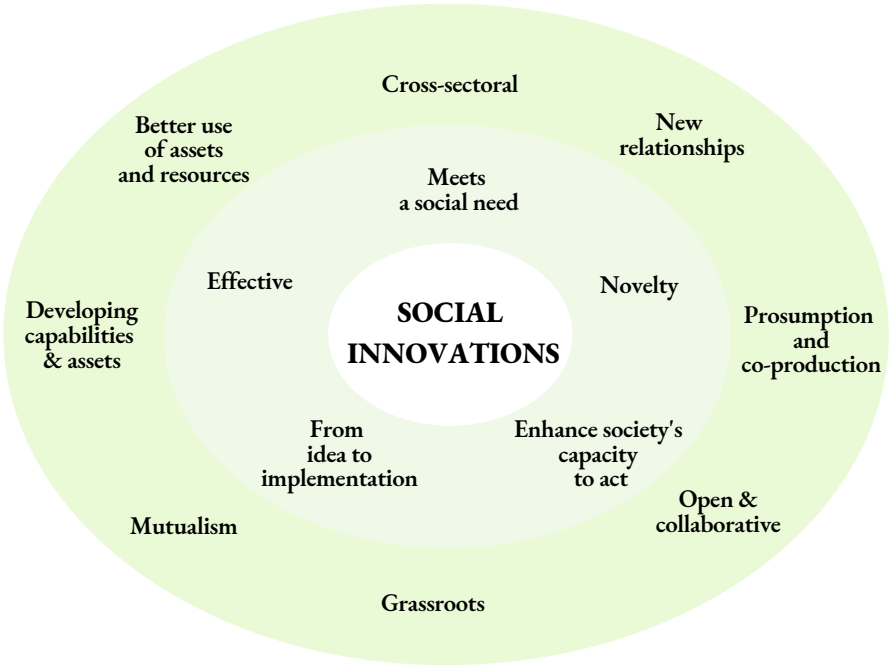
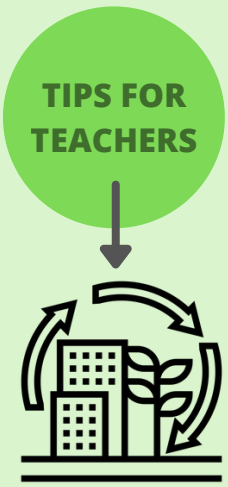


Fig. 27. Core elements and common features of social innovations.



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IF YOU WANT TO KNOW MORE ABOUT THE CIRCULAR ECONOMY & SOCIAL INNOVATIONS, READ...

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circular economy & social innovations

CIRCULAR ECONOMY - CASE ON TEXTILES

The textiles were chosen as the case study to present the issue of circular economy and social innovations, because this economic industry uses a significant amount of resources and involves higher rates of polluting production processes for the environment, in terms of heat production processes and chemical materials. Textiles, and especially the case of garments, are mainly associated with fashion and are often used only during one season of the year.
Textile production is a major contributor to climate change and produces an estimated 1.2 billion tons of carbon dioxide equivalent per year. According to the UK Parliament's Environmental Audit Committee report "Fixing Fashion", this is more than the total produced by international flights and maritime shipping combined.

Textile production also entails substantial resource use: for example, to produce 1 kg of cotton takes between 10,000 and 20,000 liters of water. More alarmingly, the World Bank reckons that 20% of global water pollution is caused by textile processing, making it the second biggest polluter of freshwater resources on the planet [Data retrieved from https://www.bir.org/the-industry/textiles on 12/02/2021].

Based on these starting facts it is proposed to conduct a study on the application of the Circular Economy Model to Textiles, namely to the Clothing or Garments sector: better forms of production (materials and processes), use, reuse, and/or recycling. The most sustainable production materials, which will not pollute the environment, which can be biodegradable, and the most appropriate production processes are very important. It is also important to warn about the best ways of dealing with textiles use, such as washing textiles, and how to reuse them or to be able to give or sell them in second hand. In this context, several hypotheticals are related to reuse and social innovation.

Some international stores have already started campaigning on sustainable textiles (e.g. C&A and H&M) or reused (e.g.: Intimissimi or Women's Secret gives discounts on the exchange of used clothes; the resale stores of clothes in 2nd hand).

TIPS FOR TEACHERS

circular economy & social innovations

Other non-profit organizations collect clothing used to distribute to the poorest families or poorer countries where robes that are no longer worn by some people can be reused by others without being thrown away. There is thus reuse that can have social purposes. It is also possible to reuse clothes used to produce objects for social purposes, as a case of social innovation. As it is, for example, the case of used clothes utilized to make dolls or hats with colored colors for children with cancer.

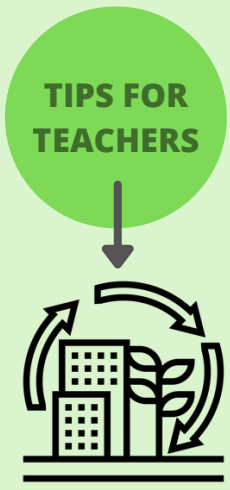
Thus, it is intended that the several groups present proposals of sustainable materials with greater potential to be biodegradable, and sustainable production processes with low pollutant degrees for the production of clothes under the Circular Economy Model. And also present proposals for Social Innovation associated with textiles and clothes.

There are also many ways in which the recycling of textiles can be provided.
When we talk about recycling is relevant to consider its benefits of it. The recovery and recycling of textiles provide both environmental and economic benefits, which can be classified as allowing:

- Reducing the need for landfill space. Certain synthetic fiber products do not decompose, while natural fiber such as wool does decompose but produces methane which contributes to global warming.
- Reducing pressure on virgin resources. This includes materials traditionally used in textiles such as cotton and wool, as well as oil and other chemicals employed to produce synthetic fibers.
- Reducing pollution.
- Reducing water and energy consumption.
- Reducing demand for dyes and fixing agents. This, in turn, minimizes the problems caused by their use and manufacture.

Also, some recycling applications are beneficial for Industries:

- Knitted or woven woolen and similar materials are reused by the textile industry in applications such as car insulation, roofing felt, loudspeaker cones, panel linings, and furniture padding.
- Cotton and silk are used to manufacture paper as well as wiping and polishing cloths for a range of industries, from automotive to mining.
- Other types of textile can be reprocessed into fibers for upholstery, insulation, and even building materials.

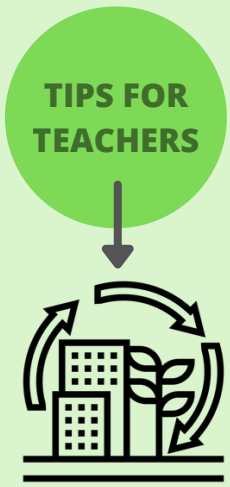


circular economy & social innovations

Some international stores have already started campaigning on commercializing sustainable clothes produced with recycled fibers, which is the example of the international stores C&A, H&M, Mango, Zara; or for the case of reuse/recycling campaigning for used clothes (e.g.: Intimissimi, H&M or Women Secret) which give discounts on the exchange of used clothes.

On the other hand, the increase in the market of resale stores of clothes in 2nd hand has increased in developing and developed countries, based on the second ones in cultures of less waste. Other non-profit organizations collect clothing to distribute to the poorest families or poorer countries.

There is also reuse that can have social purposes. It is also possible to reuse clothes used to produce new objects for social purposes, as a case of social innovation. As it is, for example, the case of used clothes to make, bags, dolls, or hats with colored colors for children with cancer or to help a social cause. Some other examples can be consulted in 41 Inspiring Examples of Social Innovation (wethinq.com).



circular economy & social innovations

CIRCULAR ECONOMY - CASE ON TEXTILES & INTEGRATED DESIGN APPROACH

The methodology to apply to the proposed tasks is the Integrated Design Process. This process is based on several stages and is a sequential form to solve the proposed problems under the topics of Circular Economy and Social Innovation.

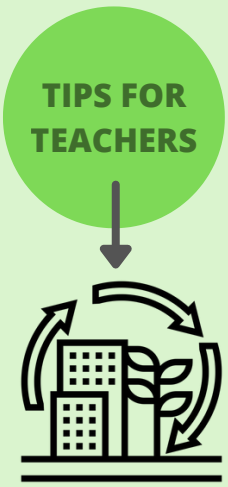
Consider the pictures you have seen during this text and your personal or family case. Suppose you decided to implement a business or a social event based on the Open Circular economy process with business, environmental and social proposes. Apply the Integrated Design Process to a set of proposed tasks under the Proposed Learning Problem of Circular Economy and Social Innovation applied to the Textiles case starting from the individual/familiar perspective. And present the following tasks and outputs:

- Represent a scheme and description of the Circular Economy Model applied to your case.
- How do you intend to associate the previous scheme and description with Social Innovation? In which way(s)?
- Statistics of footprint and pollution of several textiles input materials and production processes will be provided to the base of the decision of the materials and the productive processes (and will be reflected in the assessment of several works)
- Statistics, Theoretical and Practical articles, texts, and Case studies will be presented to sustain the materials
- Design Thinking and Problem-Based Learning will be some of the methodologies that will be applied in a complementary way.

Conclusions

This chapter has its main purpose to present the concepts of Circular Economic and Social Innovation as issues very important to guarantee the 2030 sustainable Development goals. That is very important that the teachers interiorize the concepts and realize their importance in the diverse ways in the way of life and society to can contribute to a better standard of life for current and future generations.

The figures, video, and examples had as their main objectives to illustrate the relevance of the application of the concepts in the current society and economy with all the benefits that it can create. Also, the problems proposed had the main goal to take teachers to think, reflect, and apply circular economy and social innovation to reality in individual or group proposals.

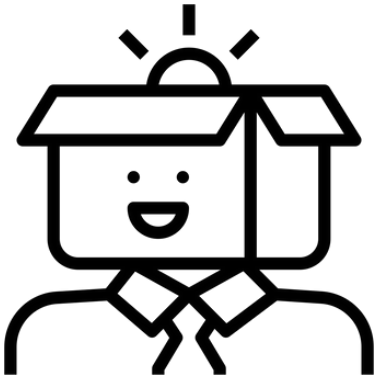


circular economy & social innovations

Chapter 8

Project-based methods

TIPS FOR TEACHERS



DESIGN THINKING
& HUMAN-CENTERED DESIGN

DESIGN THINKING (DT)

The well-known method by business and innovative organizations - Design thinking as a problem-solving approach, is used by designers to tackle problems and create their products. It is a non-linear iterative process following five main steps:

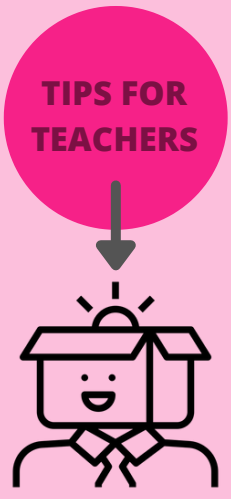
As described above, the five phases of Design Thinking, are as follows:

- Empathize – with your users (sometimes divided into: understand and observe)
- Define – your users' needs, their problems, and your insights
- Ideate – by challenging assumptions and creating ideas for innovative solutions
- Prototype – to start creating solutions
- Test – solutions

These stages are not necessarily sequential and require further flexibility and adaptation according to the projects that students are working on (Fig.28).

Fig. 28. Design Thinking process

IDEO is the UX design organization often credited with inventing the term "design thinking" and its practice. In fact, design thinking has deep roots in a global conversation that has. IDEO has been practicing human-centered design since the beginning in 1978 and took up the phrase "design thinking" to describe the elements of the practice that they find most learnable and teachable—empathy, optimism, iteration, creative confidence, experimentation, and an embrace of ambiguity and failure. As a mindset and methodology, Design Thinking is a relatively young approach and new to academia and the education system as a whole. In comparison, the scientific method has stood centuries of rigorous investigation; and modern management practices such as Six Sigma and Lean Manufacturing have benefited from decades of practice and examination. Design Thinking has seen just 15 or so years of widespread adoption. For the most part, it is still largely a set of heuristics for guiding team-based collaboration.



In general, the recommendation is to apply project-based learning where the tutor defines a common case for teams of students to work on. Trainers at universities should apply this methodology in their courses with a series of exercises, case studies, tools, and games to be interactive and allow online preparation. There should be a structured adapted approach based on the specific subjects and areas of study. In some cases, students can do the initial research individually and/or in teams and define the common topic/challenge to work on. Then the trainer could advise on the refinement and further definition of the project.

HUMAN-CENTERED DESIGN (HCD)

This is an approach used in designing and problem-solving that emphasizes involving the human perspective in all the stages of transforming the idea to an end product or service. It may be treated as the evolution of the Design Thinking methodology or its crucial element. The human-centered approach was developed and now is commonly used by design companies IDEO and Stanford University of Technology but also plenty of units all around the world.

Working with HCD involves 3 main stages:

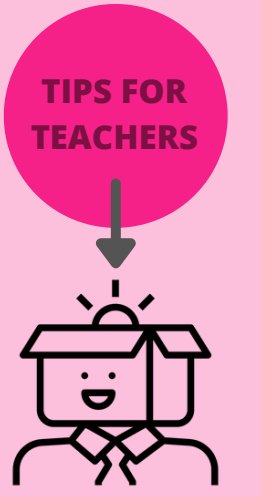
1. **Inspiration phase** – understanding of people needs, hopes, desires on the basis of deep empathy, immersion and repeated observation/interviews

2. **Ideation Phase** – selection of the areas of interest based on the identification of opportunities, followed by act of designing interchangeably correlated with prototyping the solution and sharing them with group of interest

3. **Implementation Phase** – transferring the solution to the market

The HCD brings the necessity of understanding the perspective of the user and experiencing the problem to such extend that people from the target group becomes part of the designing processes and even the design groups. In that way it is a participatory action research known from 40's of XX century – involves researcher/designer and regular people working together to understand a problematic situation and change it for better.

There are no crucial difference between Design Thinking and HCD, especially that those two methodologies are based on similar mindset:



Learning from failures

On every path, there will appear some obstacles, and the key point is to learn by overcoming them. Especially the designing of innovative solutions is full of turning points but in fact, it is the chance to innovate. The process of finding the right answer usually requires deep investigation and even going back a few steps back, which is related to iterative processing of the idea/solution.

Keep smiling

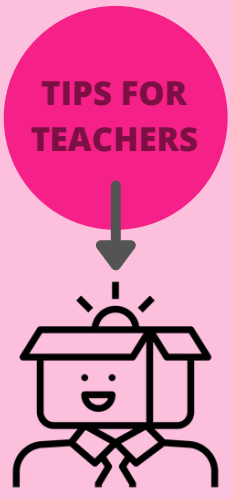
Optimism expands possibility. The positive attitude to the work to be done or more generally the topic is the milestone of the designing process. It helps not only to push when hitting dead ends but motivate in case of even the greatest challenge. That additional energy helps to look at the problem from different perspectives and push toward an unexpected solution. To some extent, that point is also crucial in the inspiration phase because it is much easier to understand other people and acquire information about their needs when staying open-minded and honestly interested in conducted research.

Look around carefully

People around each designer and the environment in which they live are the source of necessary inspiration for a creative project. In that way, empathy is the key to understanding humans and their motivations by stepping into other people's shoes. What is more, the designer should confront the usefulness of the solution in real life as often as possible, because only in that way its context can be explored.

Make it

Since tangibility may be replaced only by thousands of descriptions. There is no matter in the technique used for making, used materials, artistry of performance, or even what is made. The goal is to share the idea, improve it and make it more suitable to the defined needs. Of course, the designing process appreciates abstractionism, but "building" the ideas allows us to test, evaluate and reveal new opportunities to develop. Prototyping can be realized in many different ways but always it allows one to confront the view of a designer with the opinion of the user.



project-based methods

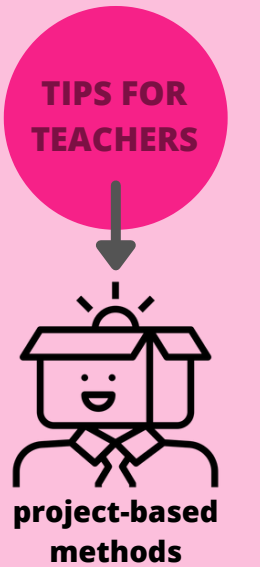
Human-Centered Design differs from Design Thinking only by putting more stress on some aspects: one is almost unbounded and unfettered relations between the designer and people, and the second is not only inventing a new approach but also its implementation. Of course, prototyping is indispensable for forming the final solution but it is only the first step in making it available to the community. The HCD draws attention also to such aspects as:

- Assessment of resources and possible replacements;
- Founding strategies;
- Business models;
- Re-scaling;
- Staffing and allocating human resources;
- Communicating the idea;
- Constant iterative improvement;
- Monitoring and evaluating the impact;
- Future development.

In that way, the "human" aspect of HCD is expanded also on important business activities that without doubt require cooperation with different groups of people such as founders, co-workers, employees, media.
Human-centered methodologies start with the Empathy and Research stages, which aim to better understand the target groups and individuals to a high extent by knowing their needs, habits, behaviors, perceptions, lifestyles, etc.

PROBLEM-BASED LEARNING (PBL)

Problem-based learning is an active student-centered teaching method. PBL uses a problem situation to focus the learning activities on a need-to-know basis (Woods, 1994). The PBL method is very different from traditional learning where the student is familiarized with discipline-based material (knowledge) and is then given a problem or example of its use (Maskell, 1998).



Additionally, PBL encourages a multidisciplinary approach to problem-solving and develops techniques and confidence in solving problems that have not been encountered before. The method applies teamwork, which can be defined as cooperative learning where students maximize their own and other group members' learning by working together to accomplish a common goal and develop personal and social skills as well as interdependence and individual and group accountability.

As was mentioned above, PBL learning differs from the traditional approach. The differences are presented in the process scheme (Fig.29). Importantly, students are introduced to the subject matter through related, practical problems, after which they work independently, individually, or in groups, to arrive at suitable solutions (Costa, 2007).

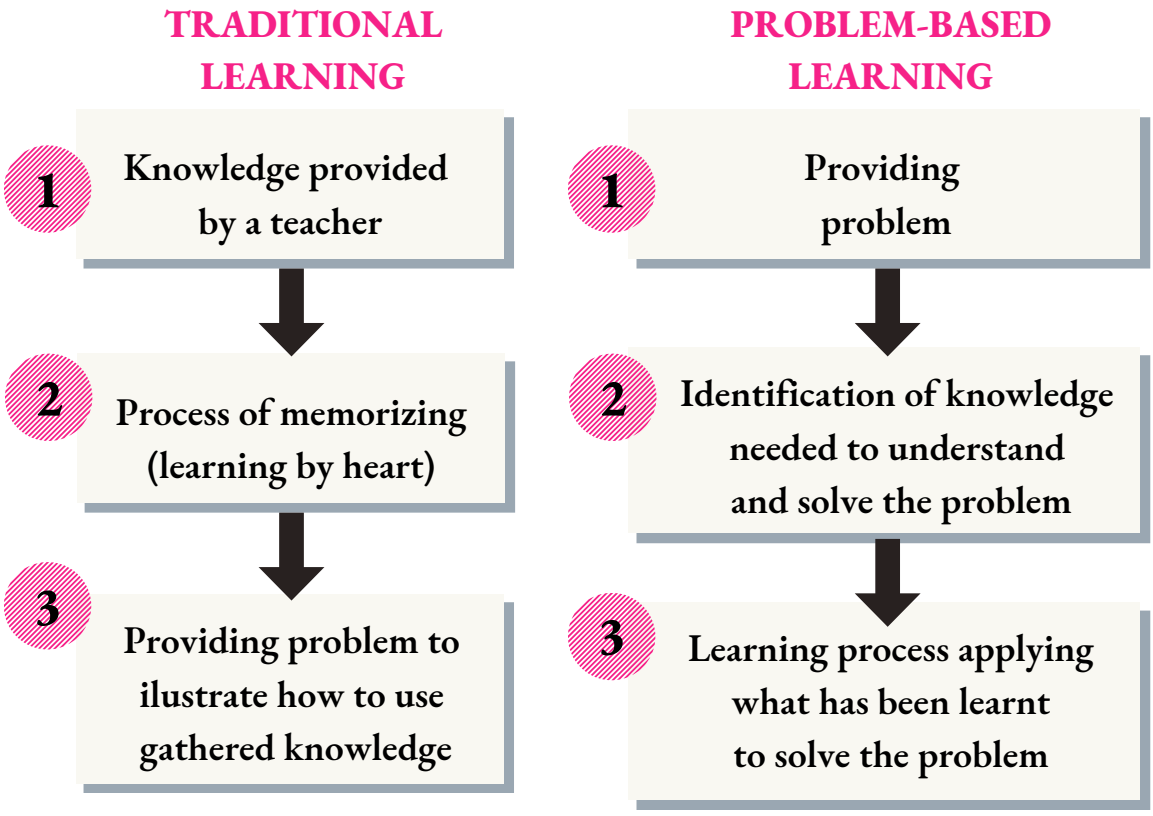
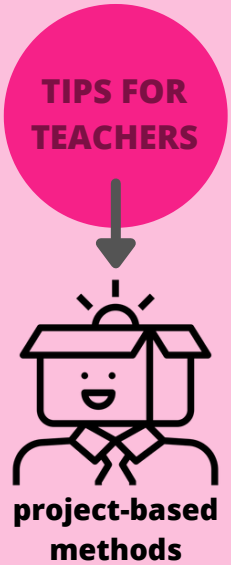


Fig. 29. Comparison between traditional learning and PB

PBL is ideal for engineering education as it promotes creativity and independent thinking. It evolves the ability to find and filter out the right information, which is a necessity in current jobs. Success in professional life requires the capability of taking an initiative and acquiring new knowledge.



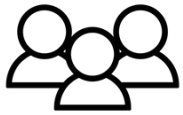
KEY ASPECTS OF PROBLEM-BASED LEARNING ARE:

Learning goals should be self-identified

Learners do independent self-directed studies first and then they come back to the group to exchange information and discuss

Learners lead the process of learning

Learning takes place in small groups with a facilitator (teacher)



Each team member has a role to play in the learning process

There should be trigger materials such as lab data, photographs, articles, videos, paper-based clinical scenarios, or transcripts from interviews with potential user

Teamwork, communication, problem-solving and responsibility for learning process are essential skills

TIPS FOR TEACHERS

project-based methods

Summing up, the PBL method concentrates on:

- active learning,
- given problem,
- students/ learners as key elements of the learning process,
- and working in small groups.

RESEARCH-BASED LEARNING (RBL)

"... universities should treat learning as not yet wholly solved problems and hence always in research mode."
~ Wilhelm von Humboldt on the future University of Berlin (1810)

Research-Based Learning is a model of learning which integrates research in the learning process to construct knowledge by formulating hypotheses, collecting data, analyzing making conclusions, and writing a report. RBL is associated with the following activities of students: analyzing, synthesizing, and evaluating. In the RBL process, both learners and lecturers can improve their assimilation and application of knowledge. The research-based learning model generally covers four aspects:

1. **learning which constructs students' understanding**
2. **learning through developing prior knowledge**
3. **learning which involves social interaction process**
4. **learning which is achieved through real-world experience**

Research components include background knowledge, procedures of experiments, implementation, research results and discussion, and publication of those results. In the RBL strategy students are provided with instructions that use an authentic–learning, problem–solving, cooperative learning, hands-on, and inquiry discovery approach, guided by a tutor.

Research-based learning involves interdisciplinary collaborative research for university students in learning, meaning that there is a relationship between their learning experience in class and current scientific discoveries. RBL encourages students to active participation in the learning process. Some of the learners' competencies in research-based learning include:

- strong understanding of basic concepts and methodology,
- problem-solving in creative, logical, and systematical manners,
- and a scientific attitude that covers respect for evidence, honesty, and open-mindedness.

Students are expected to develop communication skills, competent technique, and analysis to adapt, and the ability to collaborate, work and compete.

The RBL model gives university students opportunities to learn and construct knowledge from such research procedures as finding information, formulating hypotheses, collecting data, analyzing, making conclusions, and writing a report. The general procedures of RBL are shown in Fig. 30.

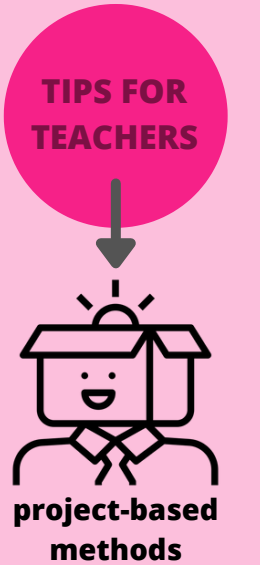
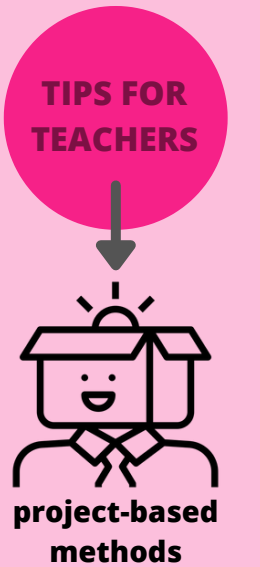


Fig.30. Stages of Research-based learning led projects

In other definition, Research-Based Learning is a method that links the approaches of inquiry/inquiry-based learning and the features of undergraduate research. Inquiry-based learning includes such methods as problem-based learning, project work, fieldwork, case studies, etc. Undergraduate research has the following essential components:

- learning the epistemologies and forms of discipline-based inquiry,
- learning particular disciplinary research methodologies,
- linking the questions and forms of inquiry explicitly to academic staff research interests and current research foci in the disciplines,
- producing work that mimics the forms of knowledge creation and dissemination in their disciplines and professional areas.

While inquiry-based learning models may contain some or all of these elements, in undergraduate research programs they are significant.
Research-Based Learning implies a stronger relationship between the methodological basics of knowledge-making ways than inquiry-based learning and can extend beyond the undergraduate curriculum. The RBL process is shown in Fig. 31.



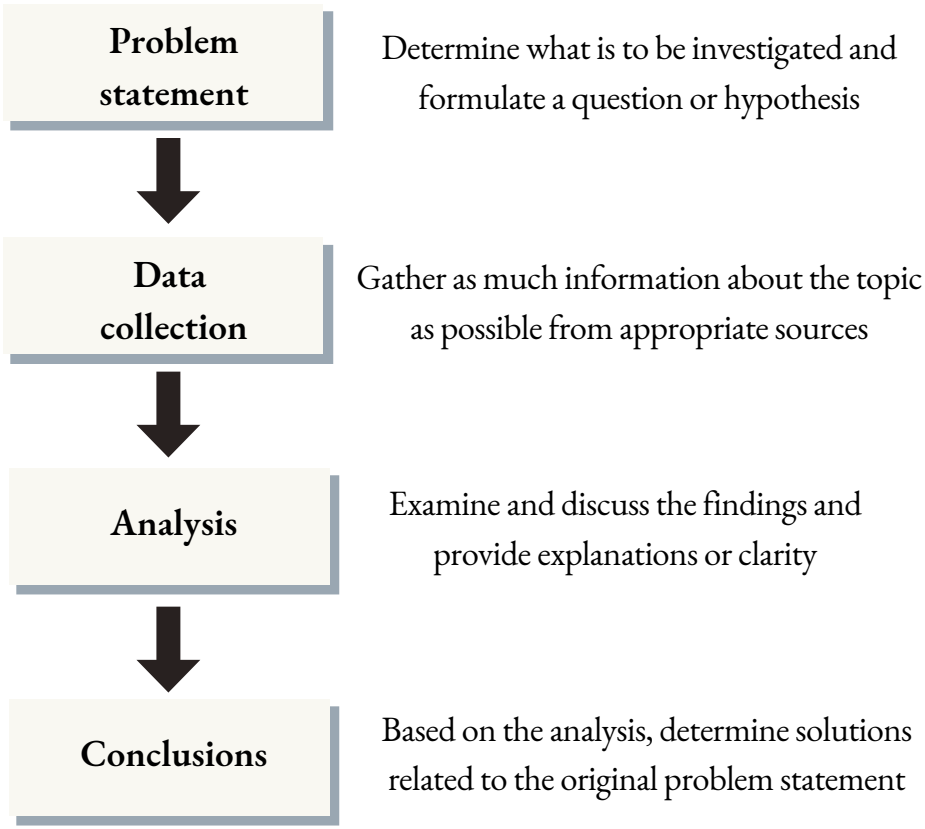
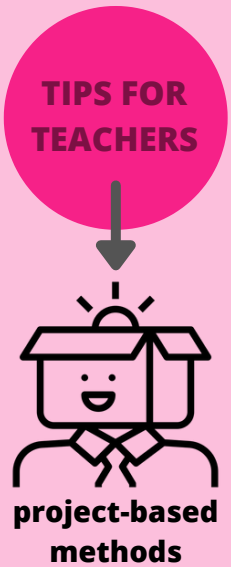


Fig. 31. Research-based learning process

There are four main ways of engaging undergraduates with research and inquiry :

- **Research-led**: learning about current research in the discipline, based on the 'information transmission' model; curriculum structured around subject content; focus – understanding research findings;
- **Research-oriented**: developing research skills and techniques, curriculum structured around research processes as well as subject content; focus – understanding research processes, teaching inquiry skills and 'research ethos';
- **Research-based**: undertaking research and inquiry, a curriculum designed around inquiry-based activities; focus - on learning through inquiry; the teacher-student division minimized;
- **Research-tutored**: engaging in research discussions.

These four ways of engaging students in research and inquiry are all valuable and interdependent. Effective programs and modules should incorporate all these modes. At the same time, students learn most actively and become producers, rather than consumers of knowledge in the process.



CASE TEACHING

Cases are narratives, statements, stories, and situation descriptions that present an unresolved or thought-provoking issue. Based on them, teaching applying cases, i.e. Case Teaching is a method of learning involving the deep analysis of the provided cases based on discussion-based, critical thinking, and group communicative learning. Case teaching is a method that provides activities from the top levels of Bloom's Taxonomy principles and thus makes learners more actively engaged in the learning process.

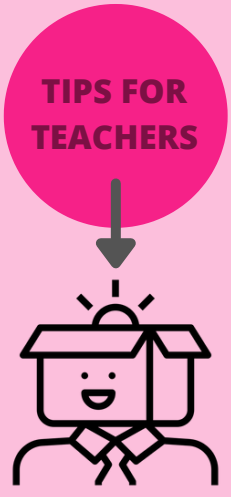
In that method, students are applying critical thinking since they review the real-life problem (called a case) in terms of the project they conduct. The provided case should be thought-provoking or pose a dilemma to the team, to make them look at the problem from different perspectives.

Two aspects are essential to have a good case:

- Should contain only information, without providing any analysis of the content, and must be a narrative on the basis of which the information might be extracted and further analysis be conducted;
- The most effective cases are based on real-life events, and that can be passed, distant past, or even present situations.

The main advantages of the use of learning based on cases are as follows:

- It is a chance for students to develop their skills in the inquiry-based approach;
- It helps them integrate the knowledge and experience they possess with practice to perform a detailed analysis of the provided case;
- It may encourage students' self-reflection and critical thinking;
- Case teaching utilizes collaborative learning amongst learners and poses a possibility to facilitate learning processes.



One of the key components of the case teaching framework might be storytelling activities, that increase the effectiveness of the case-based method itself.

Case-teaching methodology has been described as a part of the problem-based learning method in 2001 by Rideout. Nowadays, in literature, it is often described in terms of how the two approaches are similar and what is different between them.

The main difference is that in PBL, the tutor plays a minor role, and that method involves more open, less structured work than the case of Case-based methods. Also, in Problem-Based Learning, the problem is not well-defined in the beginning and strong emphasis is put on the possibility of multiple solutions to the stated problem.

THINGS TO REMEMBER WHEN CREATING A CASE

1 Decide on the way of writing and structure:

- Try to tell the whole story;
- In the beginning, establish constraints (main protagonist, key decision-maker, place, time, nature of the problem, etc.);
- Provide a background on the problem "environment";
- Clearly identify the issue/problem to be solved or used to teach a concept/theory;
- In the end, provide a short synthesis of the case.

2 Before you choose a case to start with, think about the set of goals you might want to achieve during classes – what do you want to accomplish by introducing that case, and what facts and other important information students might get from the provided text. Then, just pick a case.

3 Be prepared! Get familiar with the case, and try to be aware of all potential issues involved within the case. Also, look for the possible problems that might occur to students. You might also prepare some possible questions that students may ask.

4 In the beginning, try to take baby steps i.e. start with the smaller cases and a small number of them, and then increase it over time.

5 Prepare students to work with cases – to avoid misunderstanding and frustration among students, learners need to know what will be expected from them. You as a teacher must introduce the case and provide students with guidelines on how to approach it.

6 Encourage collaborative work of students by allowing students to work in groups.

7 When students form groups, try to form as many diverse, multidisciplinary teams as possible and feasible.

8 Allow the students to work in stable teams to be able to pass through all stages of team development together (forming, storming, norming, performing, and adjourning).

9 Be involved in the whole process of case analysis development – strategically interrupt when necessary, discuss, ask inquiry questions and report back on students' work in every stage.

TIPS FOR TEACHERS

project-based methods

IF YOU WANT TO KNOW MORE ABOUT PROJECT-BASED METHODS IN EDUCATION, READ...

DESIGN THINKING & HUMAN-CENTERED DESIGN

Full kit with exercises, case studies and materials: https://www.designkit.org/methods

https://www.interaction-design.org/literature/article/what-is-design-thinking-and-why-is-it-so-popular

Case studies: https://voltagecontrol.com/blog/8-great-design-thinking-examples/

PROBLEM-BASED LEARNING

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RESEARCH-BASED LEARNING

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CASE TEACHING

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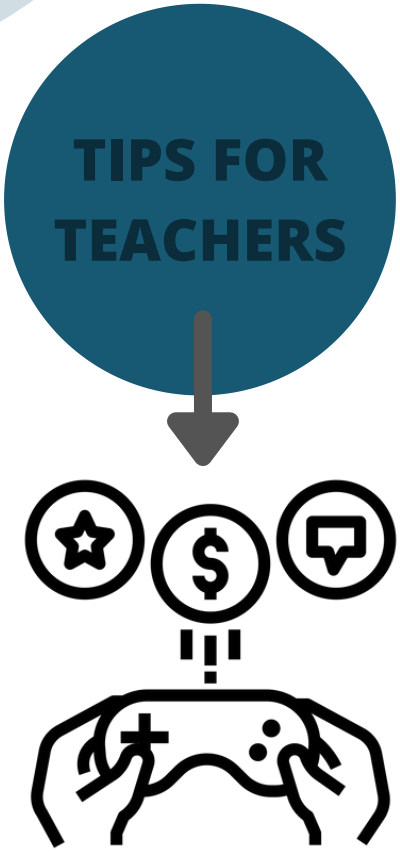
Chapter 9
Gamification in the classroom



Gamification is the application of game-design elements and game principles in non-game contexts. It aims at raising the users' engagement level and hence improve significantly the general outcome of the task at hand. In the scope of education, gamification can be used for improving the student's interest in the courses or their grades or their working methodology, or any other aspect the teachers will want to focus on.

This chapter aims at providing some insights and structure on how to introduce a degree of gamification to a teaching task. Although the exact definition and recognition of gamification as a valuable tool is relatively recent, humans have tried throughout history to make existing tasks more intriguing, motivating, and even fun. When a small group of people casually decide to compete against each other in hunting and gathering or simply start keeping the score of their activities and comparing it to their records, they are adopting principles that are prevalent in modern games to make tasks more engaging.

In his book "Drive: The Surprising Truth About What Motivates Us", Daniel Pink (Pink, 2011) examined the science of motivation and how extrinsic and intrinsic rewards can affect everyone's behavior. Throughout the book, he cited numerous studies concluding that extrinsic rewards are not by themselves sufficient to sustain the users' engagement, and sometimes have exactly the opposite effect. Extrinsic rewards "can deliver a short-term boost - just as a jolt of caffeine can keep you cranking for a few more hours. But the effect wears off - and worse, can reduce a person's long-term motivation." Pink concludes that intrinsic motivators have three essential elements:

"Autonomy—the desire to direct our own lives;
Mastery—the urge to make progress and get better at something that matters;
Purpose—the yearning to do what we do in service of something larger than ourselves."

Gamification tries to use more intrinsic rather than extrinsic rewards. One way to distinguish the two notions is to say that intrinsic rewards sustain engagement because they engage people at an emotional level, whereas extrinsic rewards can certainly be motivating for people, but with a motivation that occurs more at a transactional level.
Another way of looking at it is to use one of the earlier works done on adapting gameplay practices within the workplace when Charles Coonradt (Coonradt, 1984) explored the value of adding game-play elements at work through his book The Game of Work. He addressed the question, "Why would people pay for the privilege of working harder at their chosen sport or recreational pursuit than they would work at a job where they were being paid?" He then boiled it down to five conclusions that led to hobbies being preferable to work.

- Clearly defined goals
- Better scorekeeping and scorecards
- More frequent feedback
- A higher degree of personal choice of methods
- Consistent coaching

Those five elements boil down to specific motivation Core Drives that can be intently designed as per the methodology mapped (Yu-kai Chou, 2017). In his book "Gamify: How Gamification Motivates People to Do Extraordinary Things", Brian Burke (Burke, 2014) sums up gamification using the following points:

- Gamification, games, and rewards programs all use game mechanics such as points, badges, and leaderboards, but the similarities end there.
- Loyalty, rewards, and incentive programs function as payback for players who complete certain actions prescribed by the sponsor organization. The sponsor organization bears the costs of the program and the rewards to players.
- Games have no purpose other than entertaining the players. When a game is successful, players pay for the cost of the game plus the profit to the provider.
- Gamification is about motivating players to achieve goals that are shared by the provider and the player. Normally, the provider pays for the solution and the players participate for free.

What's new about gamification is that it uses a digital model to extend engagement and motivation beyond face-to-face interactions, breaking the barriers of scale, time, distance, connectedness, and cost. Disintermediation, social networking, and crowdsourcing are adjacent trends that enable gamification. Gamification serves three primary purposes:

- changing behaviors,
- developing skills,
- and driving innovation for three target audiences: customers, employees, and communities of interest

The principle of gamification is a relatively novel one and there is no universally agreed upon and clearly defined methodology behind it, in the same way, that there are no absolute rules in the field of game design. One of the famous books on the subject is eloquently called "The Art of Game Design" (Schell, 2018), illustrating how game design and by extension gamification is a subject still in its infancy much as behavioral psychology on which it relies. Rather than presenting a collection of general advice and good practices, the present document aims at introducing a global structured view on gamification and how to apply it in education. For that purpose, the Octalysis framework that was imagined by Yu-kai Chou has been selected (Fig.32).

Videogames and games, in general, have perfected for centuries the art of getting the user involved. In essence, a game is a futile activity only invented to entertain its users which means it needs to be very good at motivating them at keeping playing as there is no reward beyond simply winning. By carefully examining games and video games a series of motivational interests, called Core Drives can be distinguished. Games also tend to motivate their users in two different fashions, some in an inspiring and empowering way, while some in a manipulative and obsessive manner.

Those observations led to the creation of the Gamification Framework called Octalysis, designed as an octagon shape with 8 Core Drives representing each side.

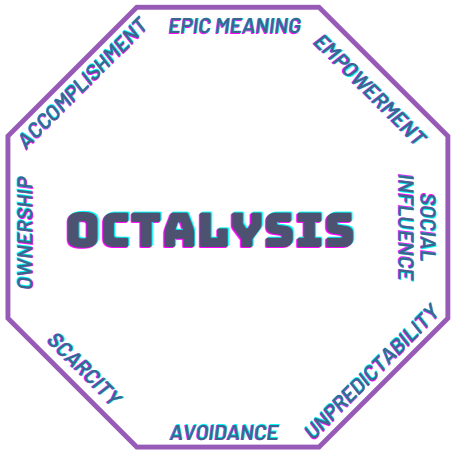


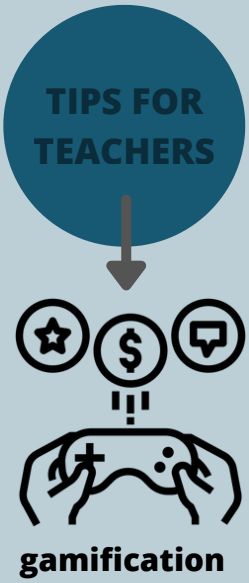
Fig. 32. Octalysis framework

1 **EPIC MEANING & CALLING**

Epic Meaning & Calling is what happens when a user or player believes that they are doing something greater than themselves or they were somehow chosen to do something. For example, when someone devotes a lot of his time to maintaining a forum or helping to create things for the entire community, like Wikipedia or Open Source projects, they are driven by meaning. This also comes into play when someone has "Beginner's Luck" – an effect where people believe they have some type of gift that others don't.

2 **DEVELOPMENT & ACCOMPLISHMENT**

Development & Accomplishment is the internal drive of making progress, developing skills, and eventually overcoming challenges. The concept of the challenge here is crucial, as receiving a badge or atrophy without overcoming a certain challenge is not meaningful at all. This is the core drive that is the easiest to design for and coincidently is where most of the classic gamification systems are by using points, badges, and leaderboards.



3 EMPOWERMENT OF CREATIVITY & FEEDBACK

Empowerment of Creativity & Feedback happens when users are engaged in a creative process where they have to repeatedly figure things out and try different combinations. People not only need ways to express their creativity, but they need to be able to see the results of their creativity, receive feedback, and respond in turn. This is why playing with Legos and painting are fun in and of themselves and often become what is called Evergreen mechanics, where a game designer no longer needs to continuously add more content to keep the activity fresh and engaging.

4 OWNERSHIP & POSSESSION

This is the drive where users are motivated because they feel like they own something. When someone does feel ownership, they will innately want to make what they own better and also own even more. Besides being the major core drive for wanting to accumulate wealth, this deals with many virtual goods or virtual currencies within systems. Also, if someone spends a lot of time customizing their profile or avatar, they subsequently feel more ownership towards it. Finally, this is also the core drive that makes collecting stamps or puzzle pieces fun.

5 SOCIAL INFLUENCE & RELATEDNESS

This incorporates all the social elements that drive people, including mentorship, acceptance, social responses, companionship, as well as competition, and envy. Observing a friend that is amazing at some skill or owns something extraordinary can drive someone to reach the same level. This drive also refers to the need to draw closer to people, places, or events that we can relate to. When seeing a product that reminds of one's childhood, the sense of nostalgia would likely increase the odds of buying the product. This Core Drive is relatively well-studied too, as many companies these days are putting a lot of priority on optimizing their online social strategies.

6 SCARCITY & IMPATIENCE

This is the drive of wanting something because you can't have it. Many games have what is called Appointment Dynamics, displaying messages such as "come back in 2 hours to get your reward". If someone can't get something right now that will motivate them to think about it all day long. This is the Core Drive utilized by Facebook when it first started: at first it was just for Harvard. Then it opened up to a few other prestigious schools, and eventually all colleges. When it finally opened up to everyone, many people wanted to join because they previously couldn't get into it.

7 **UNPREDICTABILITY & CURIOSITY**

Generally, this is a harmless drive of wanting to find out what will happen next. If you don't know what's going to happen, your brain is engaged and you think about it often. Many people watch movies or read novels because of this drive. However, this drive is also the primary factor behind gambling addiction. Also, this core drive is utilized whenever a company runs a sweepstake or lottery program to engage users. The very controversial Skinner Box experiments, where an animal irrationally presses a lever frequently because of unpredictable results, are exclusively referring to the core drive of Unpredictability & Curiosity, although many have misunderstood it as the driver behind points, badges, and leaderboard mechanics in general.

8 **LOSS & AVOIDANCE**

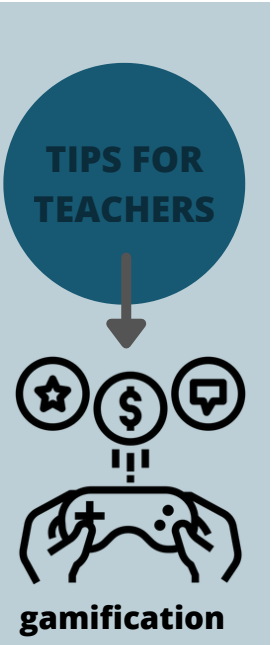
This core drive is based upon the avoidance of something negative happening. On a small scale, it could be to avoid losing previous work. On a larger scale, it could be to avoid admitting that everything someone did up to this point was useless because they are now quitting. Also, opportunities that are fading away have a strong utilization of this Core Drive, because people feel like if they didn't act immediately, they would lose the opportunity to act forever.

CREATIVITY DRIVES AS OPPOSED TO LOGIC DRIVES

The Core Drives on the right are loosely called Right Brain Core Drives, being more related to creativity, self-expression, and social aspects. The Core Drives on the left are loosely called Left Brain Core Drives, being more associated with logic, calculations, and ownership (Fig.33).

Interestingly, logic-related Core Drives are mostly extrinsic motivators where motivation stems from obtaining something, whether it is a goal, a good, or anything else hard to obtain. Emotion-related Core Drives are intrinsic motivators where the users do not need a goal or reward to use their creativity, hang out with friends, or feel the suspense of unpredictability – the activity itself is rewarding on its own.

Many gamification systems aim to design for motivation based on extrinsic motivators, such as rewarding users at the end. However, many studies have shown that once you stop offering the extrinsic motivator, user motivation will often decrease to a much lower level than before the extrinsic motivator was first introduced. It is therefore essential to combine both intrinsic and extrinsic motivators, making something in and of itself fun and rewarding, so users continuously engage in the activity.



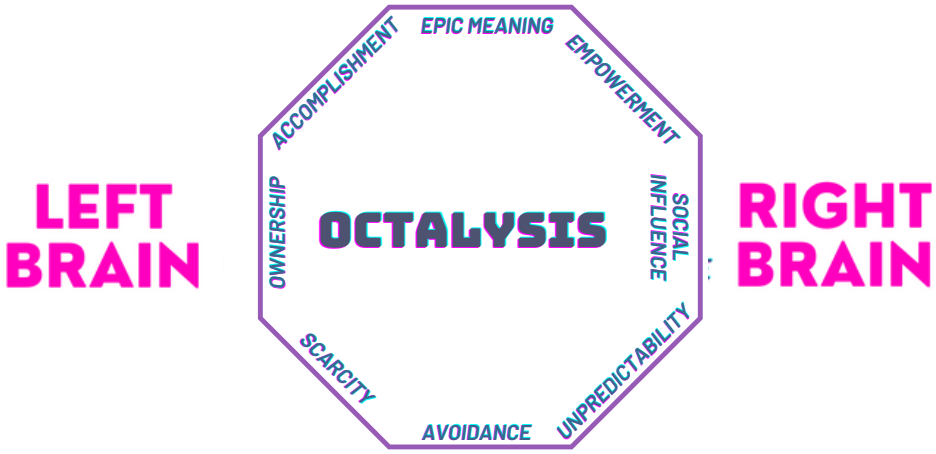


Fig. 33. Creativity vs logic

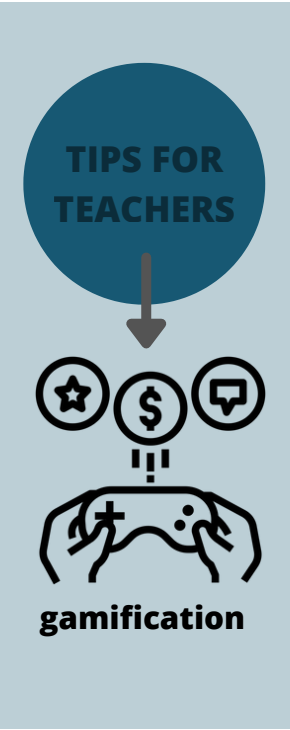
POSITIVE MOTIVATORS AS OPPOSED TO NEGATIVE MOTIVATORS

The Core Drives situated in the upper part of the octagon are considered very positive motivators, while the ones at the bottom are considered negative motivators. Techniques that utilize the top Core Drives are called "White Hat Gamification", while techniques that utilize the bottom Core Drives are called "Black Hat Gamification" (Fig.34).

If something is engaging because it lets people express their creativity, makes them feel successful through skill mastery, and gives them a higher sense of meaning, it makes users feel very good and powerful. On the other hand, if someone is always doing something because they don't know what will happen next, if they are constantly in fear of losing something, or because there are things they can't have, even though they would still be extremely motivated to take the actions, it can often leave a bad taste in their mouth.

Negative motivators are not intrinsically bad, they are just motivators designed on the way the human psyche functions. They can be used for both a productive and healthy result or a malicious and manipulative one. Many people voluntarily submit themselves to negative motivators to go to the gym more often, eat healthily, or avoid hitting the snooze button every morning.

A good Gamification system will consider all the Core Drives of a positive and productive activity so that everyone ends up happier and healthier.



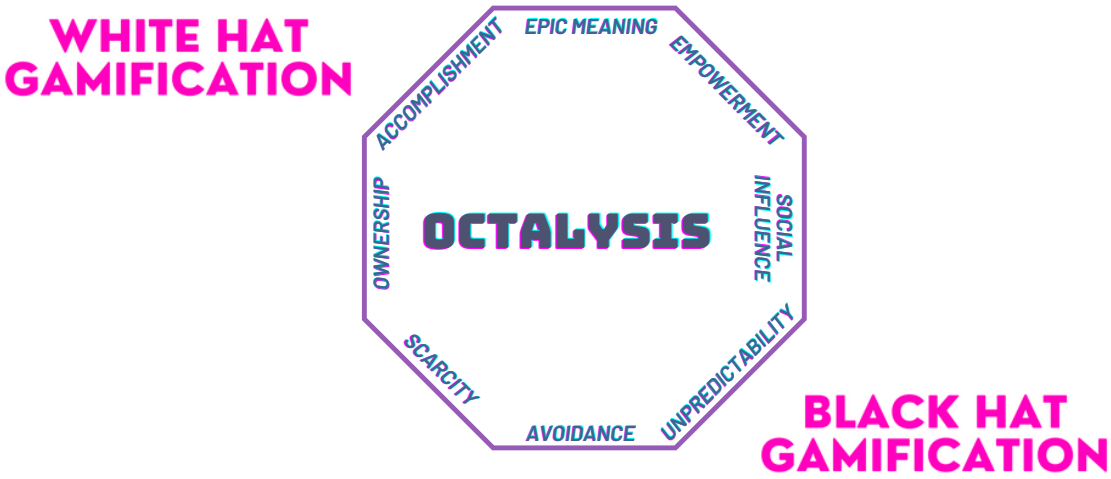


Fig.34. Positive vs negative motivator

APPLYING AN OCTALYSIS FRAMEWORK

A good gamified system doesn't need to necessarily include all of the Core Drives, but it does need to do well with the ones it does implement. Some extremely successful products do very, very well with Social Influence, while others just utilize Scarcity.

The Octalysis framework will help classify all the game mechanics in an existing gamification system according to their appeal to each Core Drive or they can help create a new gamification system by making sure to develop as many of the Core Drives as necessary to the system.

IF YOU WANT TO KNOW MORE ABOUT GAMIFICATION, READ...

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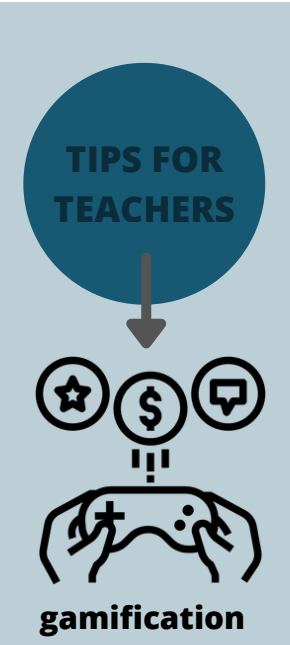


Chapter 10

How to give impactful presentations?

TIPS FOR TEACHERS

Good communication skills are essential in any role. A good presentation can make a positive difference whether persuading colleagues, motivating a team, introducing a product into the market, promoting positive attitudes, and more. This chapter aims to highlight the importance of presentation skills in achieving effective communication as well as professional and personal development. Furthermore, the document introduces ideas, tips, and good practices for delivering high-impact presentations that address the interests and needs of the audience and achieve the effective conveyance of a message.

THE SIGNIFICANCE OF PRESENTATIONS

Oral communication is something that all individuals practice in their everyday lives. It has power, which goes beyond that of written communication. A lot of the important things that an individual remembers are related to something that someone said. For example, it is not unusual to hear a friend or a colleague saying "my teacher once said ..." or "my father once said ...", demonstrating the impact that oral communication with significant individuals has had on an individual's life.

Fig.35. The power of giving a presentation (*Acknowledgment: Businesswoman Pointing At Projection Screen And Delivering A Presentation by Jacob Lund Photography from NounProject.com*)

Oral communication is evident in all aspects of life. It is deployed for professional reasons, for learning, for disseminating ideas, for communicating with peers and individuals higher or lower in the hierarchy of an institution, and more. Oral communication may take place in several forms including meetings, lectures, face-to-face, from a distance, interviews, conferences, and more. It is significant because it is a powerful way for an individual to communicate ideas. It fosters interpersonal communication, it is not cumbersome as written presentations may be, it provokes immediate reactions as a speaker can observe her audience, and it is one of the most effective ways of avoiding conflict and solving problems.

TIPS FOR TEACHERS

impactful presentations

Professionally, good communication skills reflect positively on a professional. A good technical presentation may help an individual to connect and to develop his professional network. Once an individual's career has progressed, he/she may also assume the role of a mentor to others.

In some cases, oral presentations are of strategic importance. One example is when a company places a new product on the market. A good presentation may catapult the new product into a successful life cycle, while a bad one may dim the chances for success. Another example where good communication skills can have a positive impact is when a coordinator addresses his team to raise morale, promote change, or foster the adoption of a new work model. Furthermore, in the age of mass communication through TV and other media, oral presentations have an even higher impact and they may reach very wide audiences.

Even though presentations are an integral part of professional and everyday life, as everyone presents informally when speaking to friends, most individuals are intimidated when speaking informal settings. For this reason, and taking into account the importance of good oral communication skills for career and personal development, industry and academia train individuals towards building effective presentation skills.

Training involves practical advice on how to speak and how to use body language. While sound, this approach has also received criticism in that it results in everyone presenting similarly. Despite this observation, building basic presentation skills can help an individual with limited experience in presenting. As the person gains experience, he/she may develop a more personalized way of talking to an audience.

PRESENTATIONS OBJECTIVES

Oral communication is part of everyday life. Everyone speaks to friends and colleagues daily. Oral communication is a natural act. However, when an individual speaks in front of an audience stress may change the way he appears, sometimes demonstrating a different personality.

Oral presentations usually involve personal communication - the listeners can see the speaker. For this reason, both what the speaker says and how he/she appears are important. To achieve the desired effect, the audience must perceive that the speaker believes in his/her message. It is also important that the presentation is tailored to the interests and needs of the audience. Most of the time, an individual does not have enough time to present all of the intended ideas. What is important in a presentation is:

- To present the central message;
- To maintain the attention of the audience;
- To achieve the participation of the audience;
- To let the speaker's personality come through.

TIPS FOR TEACHERS

impactful presentations

The above implies that it is important for the speaker:

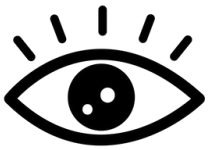
- To express the ideas with clarity;
- To empathize with the audience and understand the audience's reactions;
- To avoid information overload towards the audience.

Taking the above into account, what constitutes a good speaker? A good speaker is not only an individual that structures grammatically and syntactically correct sentences. Instead, it is an individual who:

- Presents a message;
- Provides characteristics and good examples;
- It helps the audience follow the presentation.

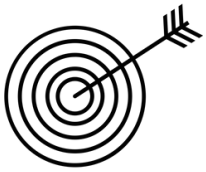
It is less important whether the speakers have a good pronunciation of a foreign language or whether they speak fast or slow. The most important aspect of a presentation is the message that is coming across.

EFFECTIVE PRESENTATION TECHNIQUES



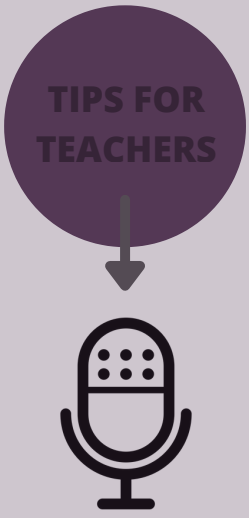
Establish eye contact

In a good presentation, the speaker must make every member of the audience feel that he addresses them directly. Eye contact is important as it demonstrates that the presenter truly believes in the message presented.
Eye contact is typical in everyday conversation. However, when speaking to a friend over coffee, an individual does not stare at the person he/she speaks to continuously. The speaking person may look around the room while speaking, usually establishing eye contact when making an important point.
This is a good rule of thumb to use informal presentations as well. While it is not necessary to stare at the audience at all times, it is important to establish eye contact at the beginning and the end of an important message.



Focus on a single theme or message

A good presentation focuses on a single theme or message. There are several reasons for this. First, the audience cannot follow too many themes in a single presentation. On the other hand, in most presentations, there is not enough time to discuss all the ideas that the presenter might have liked. For this reason, the presenters need to select carefully the message that they wish to convey and focus the presentation to make a positive impression on the audience and achieve effective communication. This requires practice and preparation.



Exploit pauses

Many speakers are anxious that they speak too fast. Speaking fast is not necessarily a problem during presentations. What is important is that the speaker is understood at the normal speed of speaking. Humans tend to speak fast because they think fast. A common rate of speech production in the English language is 125 words per minute. However, the human mind can "think" in 500 words per minute. Very smart individuals may think in 700 – 800 words per minute. This means that humans think faster than they can speak. While the speed of speech may be acceptable at faster or slower rates, it is important to use pauses in between important messages to allow the audience to digest new ideas. Using pauses is a good presentation tool. It may be applied in many ways. For example, a presenter may speak, pause to take a look at their notes giving at the same time the audience an opportunity to reflect, then look at the audience to observe reactions. Using pauses effectively may be practiced to perfect emphasize important messages.

Use tools to drive the presentation

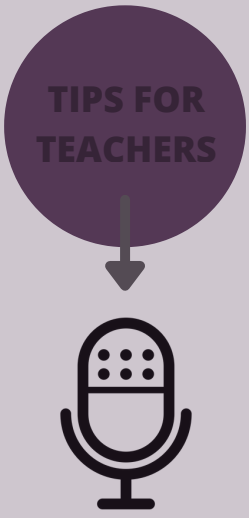
A presentation may be driven by slides/bullets/notes/the presenter's memory. A presenter that speaks from memory must be careful not to jump from one theme to another. Most of the time, a presenter uses combinations of supporting tools like those listed above. Supporting tools offer several advantages. They help the presenter structure their thoughts during a presentation. They help build mental pictures in the audience's minds. They create interest and help the audience follow a presentation. But most importantly, they help the presenter to convey ideas and underscore messages.

PREPARING AN EFFECTIVE PRESENTATION

A typical presentation in the academic world may have a structure like the one that follows:

Title → A table of contents of the presentation → A review of related work → The presenter's idea → Conclusion

This structure is often deployed in formal presentations even at conferences. Despite its popularity and widespread use, it is far from perfect. Its main flaw is that the presenter reaches an idea, which is the most important part of the presentation, after 20 minutes of speaking. Most of the time, the presenter has lost the audience by that point. The presenter wasted the most important slide of the presentation, the one after the title, by using it to present something as boring as a table of contents.



IDEAS THAT MAY HELP PRESENTERS PREPARE AN EFFECTIVE PRESENTATION

1

Present the main message first in a strong introduction

The main message of a presentation should be presented first, on the first slide. The presenter should get straight to the point of the presentation right from the beginning. This is the time when the audience is rested and the presenter has their full attention. Putting the main message first is a powerful way to start a presentation. After the presenter introduces the most important message, he/she may continue the presentation by adding explanatory or supporting information, presenting related work, discussing related fieldwork, evaluating the advantages and benefits of the proposed ideas, and more in the following slides.

2

Tell a story

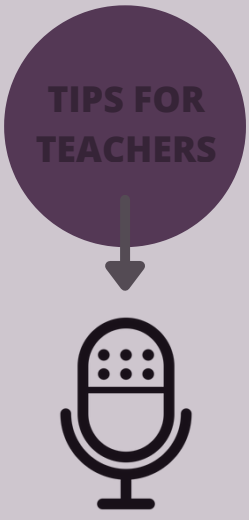
Audiences can relate to stories. People, and not objects, have stories. A presenter can exploit storytelling to convey a strong message. For example, when the theme of a presentation is cars, the presenter may focus on drivers or the engineers that designed a car model. When the theme is a software service, the presenter may focus on the users. Stories make presentations more compelling, help the audience engage, and ultimately contribute to establishing a good connection between the presenter and the audience.

3

Help the audience make strong mental pictures

Establishing strong mental pictures helps the audience follow the presenter's message. It is particularly important when the theme of the presentation is abstract. For example, consider a presentation that focuses on the technology deployed for constructing strong planes. One way to present this topic is to fill several slides with physics equations. This is accurate but ultimately may be tiring for the audience. By using a story the presenter can help the audience establish a mental picture. For example, the presenter might ask the audience "did you know that the shell of a plane is only 4 times as thick as the shell of a soda can?". This establishes a strong picture that helps the audience focus and pay attention to the technical presentation that may follow to explain the physics facts.

It is ok to use some clichés if they help establish mental pictures. This is not to say that a presentation should be full of clichés, however, is it acceptable to use them as a presentation tool in moderation if they serve the goals of the presentation.



4

Something must change during the presentation

A good presentation introduces an aspect of change. In other words, during a presentation, a change needs to be identified that improves a particular situation. For example, a presentation may focus on something that is not as effective as could be and introduce a solution that improves current practices. This approach to presenting change is relevant in diverse sectors. For example, in education, a presentation may focus on how learning takes place today and how an innovative, emerging pedagogical approach supported by technology may enrich learner experiences and help achieve educational goals. In industry, a presentation may focus on how a new product or service improves the life or experiences of users as compared to existing solutions.

5

Use non-verbal communication

A speaker may use tools to support the presentation. They may include:

- Images or photos;
- Posters;
- Videos;
- Slides;
- Gestures.

These constitute non-verbal communication. They can be effective tools for reinforcing pauses that help the audience absorb key messages. They may change perceptions and may create emotions. This does not mean that non-verbal communication tools are relevant in all situations. The presenter may decide if such tools will support her message and use them when they are beneficial.

6

Prepare

Some presenters may think that due to their experience they do not need to prepare. This is a misperception. All presenters need to prepare. At the very least a presenter, even an experienced one, must consider in advance:

- What is the message one wishes to convey?
- What knowledge of the subject the does audience possess?
- How to convey the message effectively?

Even when the presenters are highly familiar with the topic of the presentation, they must prepare for adapting the message to the specific audience's interests and needs.

7 **Encourage audience engagement**

Audience engagement is desirable because it fosters the transmission of the key message of a presentation. It may be encouraged in diverse ways. Presenters may use, for example, rhetorical questions, namely questions for which they do not expect an answer from the audience but which, however, make the audience think. Another good way for encouraging audience engagement is the use of paradigms and examples that are relevant to the audience's experiences. The examples used and stories told must make the audience relate to the theme of the presentation. The presenters should strive to make each audience member feel that they speak to them individually.

8 **Prepare an alternative structure for a presentation**

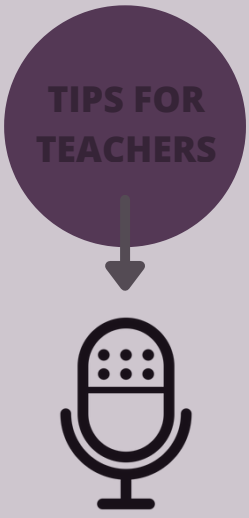
Based on the above discussion, the following is a suggestion for an alternative structure of a presentation that may help a presenter effectively convey a message:

- Deliver a strong introduction;
- Focus on a single central theme;
- Focus on 2 or at the most 3 sub-themes but not more because the audience will not be able to follow;
- Use in a planned and structured way supporting tools such as examples, videos, images, slides, animations, and others;
- Use effective stories that support the central theme;
- Make a strong closure.

The advantage of this structure is that the main message is presented at the beginning of the presentation making a high impact. As an example the above structure can be adapted as follows for presenting a new software service:

- Present the new software service central idea;
- Explain why the service is an improvement to currently used tools or practices:
    - Analyze the current market trends;
    - Present the benefits of the proposed solution;
- Deliver a strong closing statement.

The presentation of the key idea at the beginning entices the audience to listen with heightened focus.



9

Prepare supporting slides

Slides are one of the most common tools used by presenters to drive their presentations. This section focuses on how to prepare effective supporting slides.

A presenter must keep in mind that the purpose of slides is exactly that, to support. The focus of the presentation is the speaker. Slides should not overshadow the speaker. Rather they should underline the speaker's remarks. Emphasis should be given to the oral presentation rather than the slides.

Slides should be light and include limited text. The speaker should allow the audience at least 2 minutes to review each slide. Less time is not enough for the audience to read the text or review the material on the slide. The presenter should avoid rolling slides on the projector.

Slides should not substitute notes. Sometimes presenters include a lot of information on slides simply as a means of remembering what they wish to discuss next. The slides should include limited text that underscores the presenter's message. This implies that the presenter will not be able to include in the slides all information that will be presented. It is acceptable for the presenter to maintain notes on the side, if necessary, as a supporting tool. However, if the presenter chooses to maintain notes, reading these notes should be avoided.

If the audience wished to read text, they could achieve this through other means, such as reading a book or information on the internet, rather than choosing to attend a presentation. Keeping this in mind, the presenter may use the notes simply to take a quick glimpse for remembering the next point needed to be made in the presentation. This approach requires practice on behalf of the presenter.

Following are some good practices for preparing slides:

- Use a few words;
- Use large fonts readable from a distance;
- Use images and photos to establish mental pictures in the audience;
- The popular 10-20-30 rule for slideshow preparation refers to using 10 slides for a 20-minute presentation with a font size of 30.

TIPS FOR TEACHERS

10

Think about habits that should be avoided in a presentation

So far this section focused on what the presenter should strive to achieve. Following are some recommendations on habits that many individuals have that subtract from the focus of a presentation and for this reason, should be avoided.

Presenters should avoid turning their back on the audience. A presenter might be inclined to turn his/her back to the audience when looking at the slides projected on a screen behind, for remembering what her next message should be. A presenter is of course allowed to look at the slides but should avoid turning their back to the audience while doing so. Furthermore, the presenter should be conscious so that he/she does not turn her back on the audience while moving around the presentation space.

A presenter should avoid reading the slides. The purpose of the slides is to support the presentation. The focus should be, as stated above, the presenter and the message.

The presenter should void "empty" words that do not add value to sentences. Examples include, "basically", "so", "I mean", "right", "you know what I mean", and so forth. These phrases subtract from the coherence of the presentation and the message focus.

11 **Explore your body language**

Regarding body language, a presenter should think minimally. Gestures and movements should be used like everyday conversation. When talking to a friend in an informal setting, an individual does not typically make large gestures although he may use, for example, his hands to underscore a message. The behavior of a presenter in a formal setting should be analogous.

On the other hand, a presenter should strive to avoid movements that take place unconsciously, such as playing with hair, putting hands in pockets, walking nervously, crossing arms at the chest, or others. This requires practice. The best way to address it is to videotape and review a presentation to become aware of body language and consciously avoid unnecessary movements.

12 **Think about giving the conversational style presentation**

The conversational presentation style is an alternative to more typical approaches. In a conversational style, the presenter speaks as if addressing a friend in everyday communication in an informal environment. This implies the deployment of examples, stories, or other means. In a conversational style, a presenter often does not use notes on paper or other supporting tools because this makes the presentation appear stylized.

The conversational style is more appropriate for experienced presenters. It takes a lot of practice to achieve fluent conversational communication. Until a presenter masters this style, the good practices presented above will help guide him through an effective presentation.

TIPS FOR TEACHERS

impactful presentations

FINAL TIPS

Concluding, the following are some final tips for delivering an effective presentation:

- It takes practice to improve an individual's presentation skills. A good idea is to practice by delivering presentations to friends. Alternatively, a presenter may practice by delivering presentations in front of a mirror or a camera. Finally, a good idea is to review presentations by effective public speakers.
- An oral presentation differs from written communication. In oral presentations, the presenter must take into account the audience. The same topic may need to be presented in a different way to different audiences.
- Finally, answering audience questions is as important as the presentation itself. The presenter should take time to respond with empathy to the audience's questions or comments upon completion of the presentation.

EXAMPLES OF GOOD PRESENTATIONS

A very good example of an effective presentation is the introduction of the iPod® by Steve Jobs. The presentation, which is available on youTube®, demonstrates the deployment of all concepts discussed above. The charismatic speaker presents the key idea of the presentation, which focuses on making music mobile, in the first minute of the presentation. Subsequently, he continues by providing supporting and explanatory information that analyzes the current situation in the music storage market and explains how the iPod® is a significant improvement as it allows individuals to take music with them in a small device that economically fits in their pocket. Finally, the speaker concludes the presentation with a strong message, namely the company logo and the focus on slick design. The speaker uses a similar style in the presentation of McIntosh a few years earlier.

Other good examples of presentations that apply the concepts discussed in this document, such as presenting the key message upfront and focusing on a single theme followed by 2 or 3 subthemes, supported by effective slides, and using images and stories to create mental pictures in the minds of the audience are those of Jane McGonigal and Stuart Brown on serious games and gamification. The reader is encouraged to review the videos as practical examples of the real-life deployment of good practices for effective public presentations.

TIPS FOR TEACHERS

See these inspiring presentations approach in...