Fashion DIET

Design Thinking – a Suitable Method for Implementing Education for Sustainable Development (ESD) in Textile Education

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Learning Objectives

After this lecture you should be able to:

- Describe the historical development of Design Thinking.
- Explain the method Design Thinking with its different phases and core elements.
- Explain the potential of Design Thinking for implementing Education for Sustainable Development (ESD) in education.
- Discuss the acquaintance of design competence through Design Thinking.
- Reflect on how to integrate Design Thinking into your professional activities/studies.

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Key Competencies of the 21st Century

- Creativity, problem-solving skills and collaborative working are defined in numerous international studies as well as by the OECD (2017) as key competencies to manage the challenges of the 21st century.
- Perspectives and expertise of interdisciplinary teams, the ability to think in a networked way and to work on joint solutions are required for this purpose (Kay & Greenhill, 2011).
- The essential learning and innovation skills are described by pairs of two: creativity and innovation, critical thinking and problem-solving skills, communication and collaboration (Trilling & Fadel, 2012).
- Creativity can be seen as a special form of problem-solving ability and can therefore already be important for the learning success at school (Theurer et al., 2012).

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Tea or coffee – what do you prefer?

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Spaghetti Marshmallow Challenge

- Form teams of 3 to 4 people.
- Build the tallest freestanding tower.
- Use as much and as little of the material as possible.
- Spaghetti, strings and tape may be shortened.
- One marshmallow must go on top and must stay there.
- The highest construction wins!
- Duration: 15 minutes
- Presentation: 3 minutes

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What is Design Thinking?

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History of Design Thinking

1969 **Design as Way of Thinking**
Herbert A. Simon
The Sciences of the Artificial

1991 **Methodical Design Process for Projects at IDEO**
David Kelley & Bill Moggridge, IDEO

2003 **Foundation of d.school, Stanford University**
David Kelley, IDEO

2007 **Foundation of HPI School of Design Thinking, Potsdam**
Hasso Plattner




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Bauhaus Dessau as Inspiration

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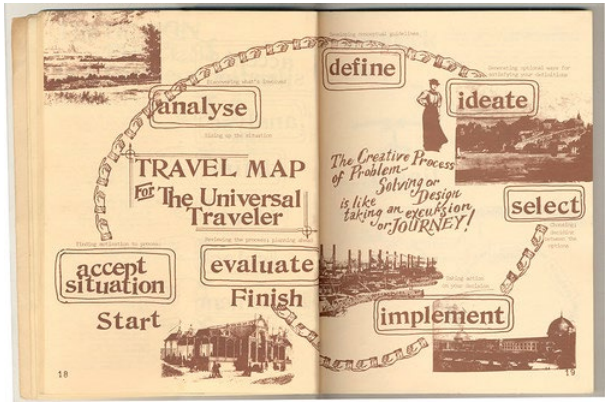
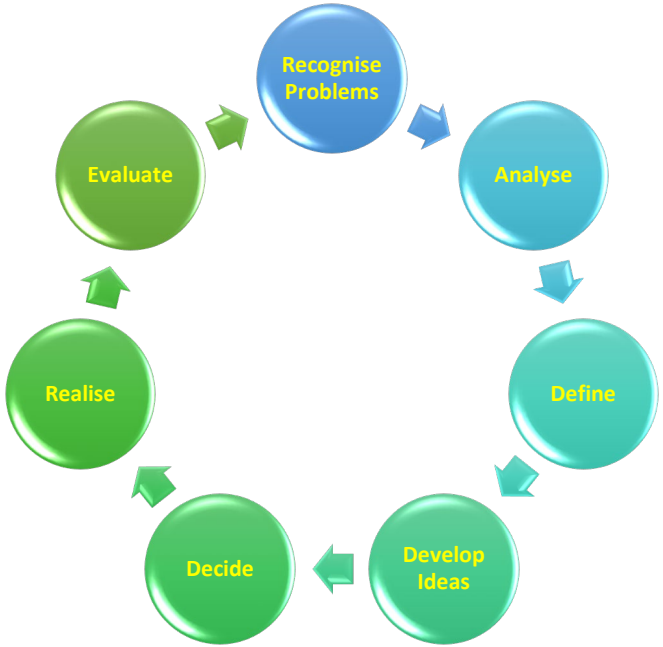
From Design Process to Design Thinking



Burdick, 2011



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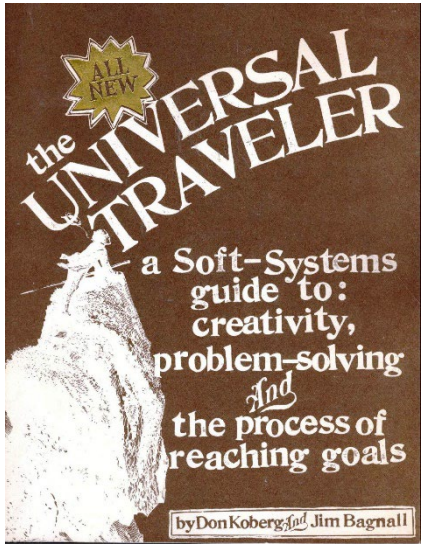

Book Cover: Koberg & Bagnall, 1976

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Design Thinking as a Method

- “Thinking like a designer can transform the way you develop products, services, processes—and even strategy.” (Brown, 2008)
- Design Thinking is a creativity method and problem-solving method that is based on the way designers think and work.
- It aims to produce innovations that are oriented towards the needs of users.

(Meinel et al., 2015)

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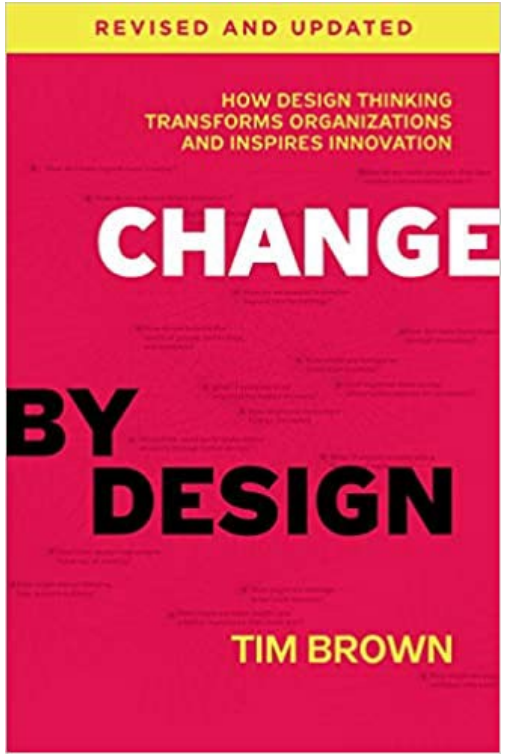
Dissemination of Design Thinking

- The subject of Design Thinking is the rage at business schools, throughout enterprises, and increasingly in education.
- This has happened in large part due to the work of IDEO, a leading US design firm.
- Tim Brown, chairman of IDEO, uses this book to show what the techniques and strategies of design are like to produce innovations that are oriented towards the needs of users.



Book Cover: Brown, revised and updated edition, 2019

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Dissemination by Universities and Schools

- Hasso Plattner Institute at University of Potsdam
- HPI School of Design Thinking
- Stanford d.school at Stanford University
- Joint research projects on the impact of Design Thinking in business and society
- Workshops for companies and non-profit organisations
- Projects at schools and universities

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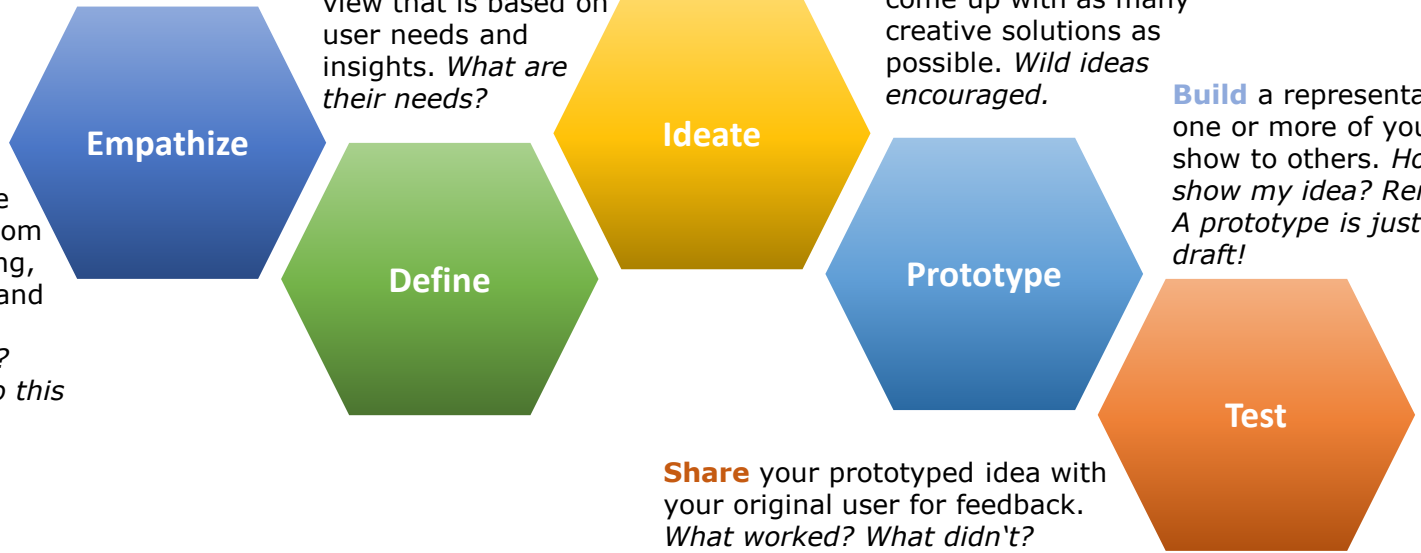
Stanford d.school Design Thinking Process



Learn about the audience for whom you are designing, by observation and interview.
Who is my user? What matters to this person?

Create a point of view that is based on user needs and insights. *What are their needs?*

Brainstorm and come up with as many creative solutions as possible. *Wild ideas encouraged.*

Build a representation of one or more of your ideas to show to others. *How can I show my idea? Remember: A prototype is just a rough draft!*

Share your prototyped idea with your original user for feedback. *What worked? What didn't?*

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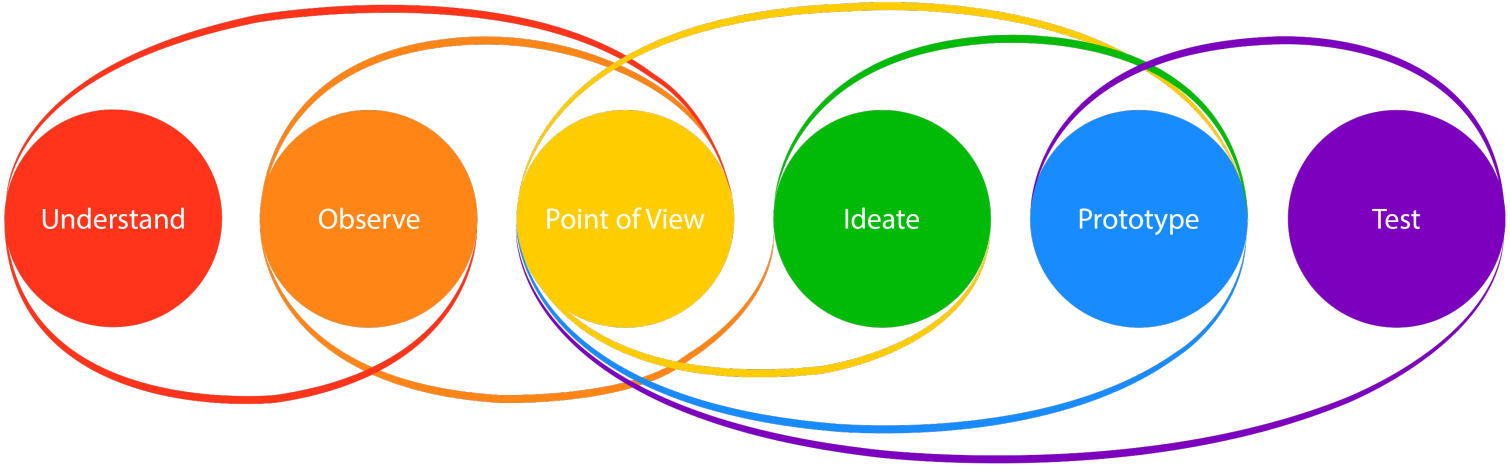
Design Thinking Process by HPI Academy



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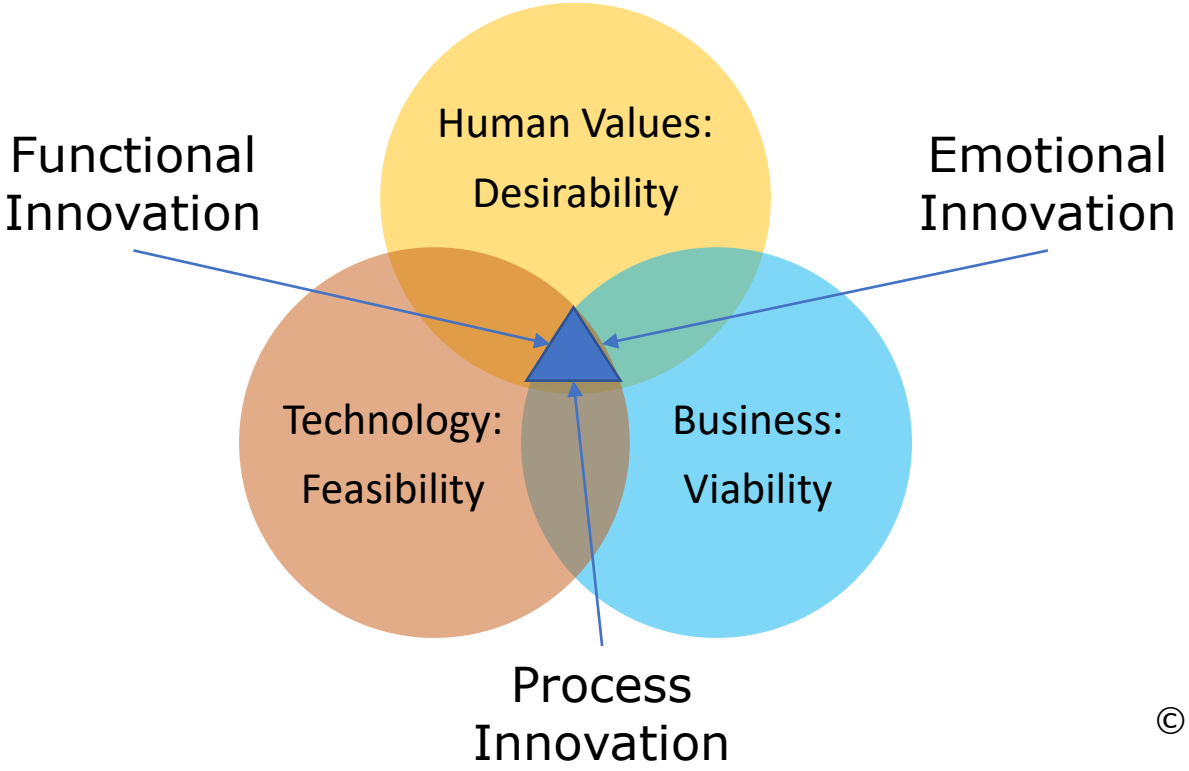
Trifecta for Innovation



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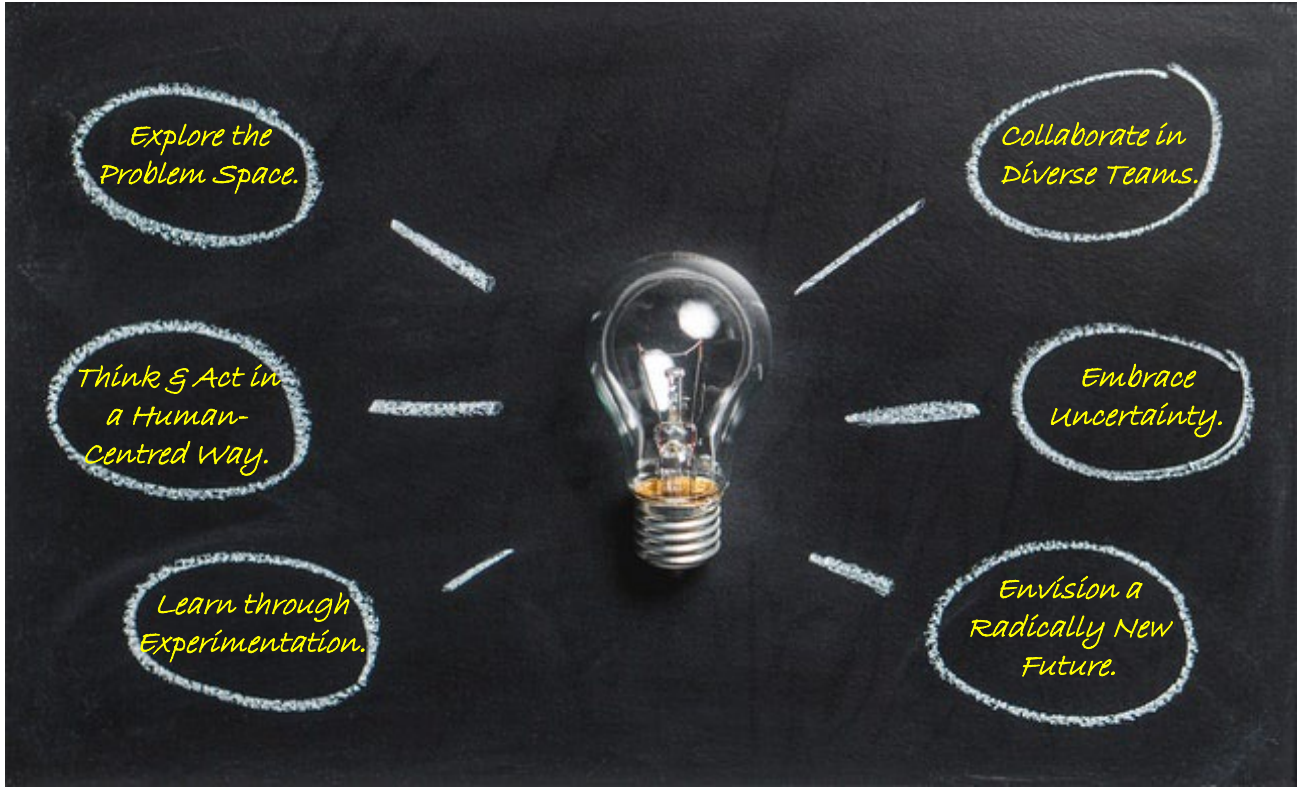
Design Thinking Mindset for Innovation



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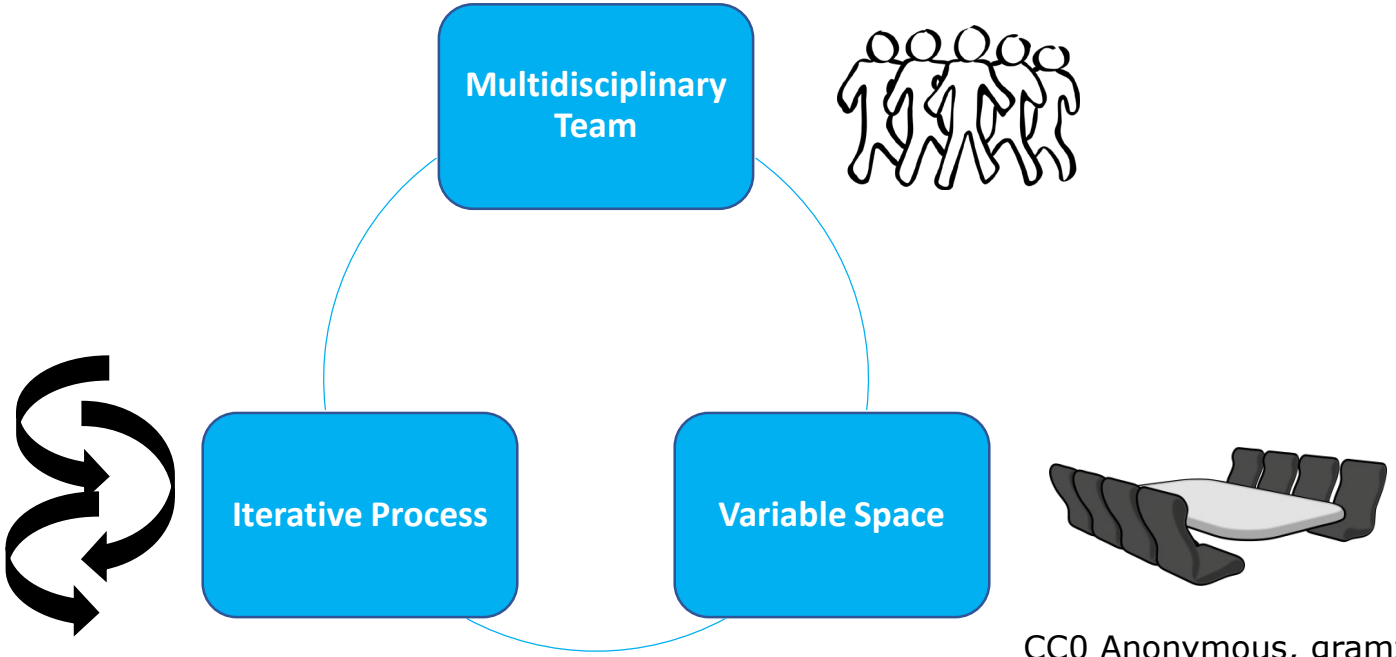
Core Elements of Design Thinking



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Prerequisite: Multidisciplinary Teams

- Design Thinking requires and enables collaborative work in teams/groups of people with different expertise and backgrounds, different ages, positions, etc.
- Multidisciplinary Teams work together on a task or solution because …

"Together we are smarter than any of us."

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Prerequisite: Variable Space

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Kay Herschelmann

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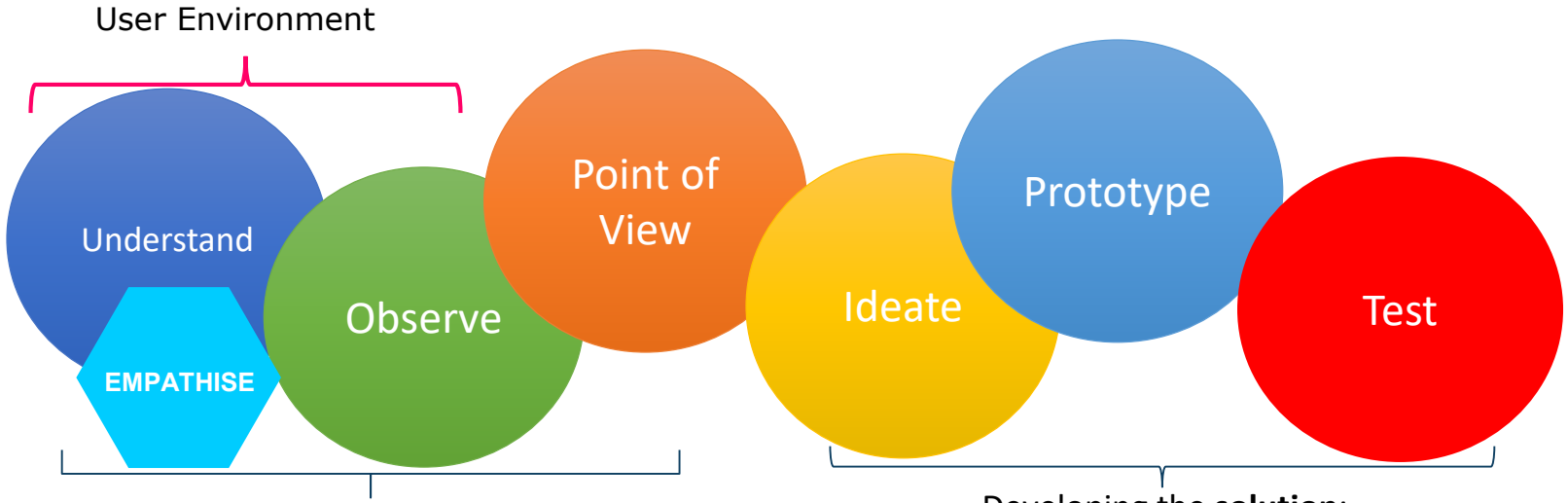
Prerequisite: Iterative Process



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Fail Faster, Succeed Sooner

- Making mistakes is explicitly allowed and even encouraged (Meinel et. al, 2015).
- Fear of mistakes often creates fear of the task as a whole. It prevents creativity, free thinking and action.
- In the first phases, which are about recognising a problem, as well as in the creative phases, it is essential to put criticism aside.
- “Fail early to succeed sooner.“ (Brown, 2009)

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Elements of Design Thinking

Process

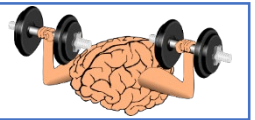
- Encouraging creative ideas.
- Fast, short, iterative cycles (sprints).

Clearly defined process and structure

Mindset

- Strict orientation towards the users and their needs.

Attitude, mindset



Tool Box

- Visualise
- Experiment

Craft, making, doing

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Defining Target Groups and Requirements

Go out and talk to people.

Immerse yourself in their experiences.

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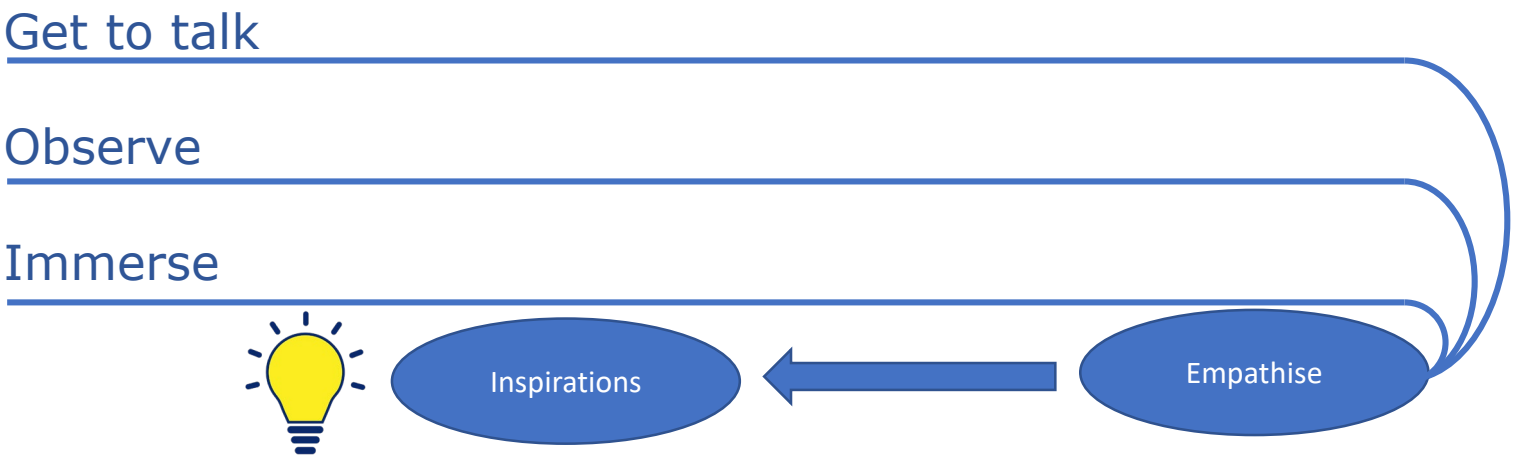
Finding Inspiration through Empathy

Problems Conflicts Contradictions



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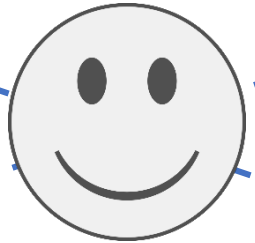
Building Empathy with the Target Group

What does the user **think** and **feel**? What are his/her hopes, fears, concerns?

What does the user **hear**? What do friends, parents, teachers and other influential people say?



What does the user **see**? What do friends and like-minded people do? What offers are there in advertising, for example?

What does the user **say** and **do**? How does he/she appear, how does he/she typically behave? What are typical statements?

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Target Group Definition: Man and Technology



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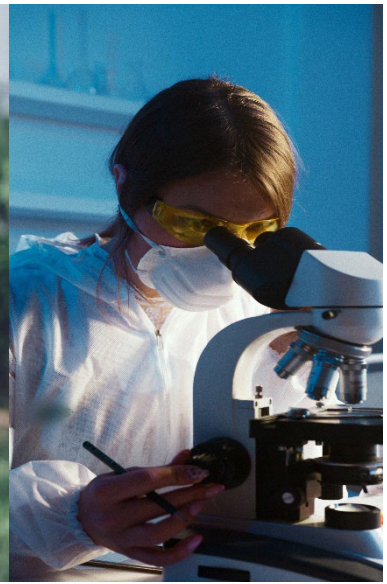
Expanding the Target Group through a New Perspective



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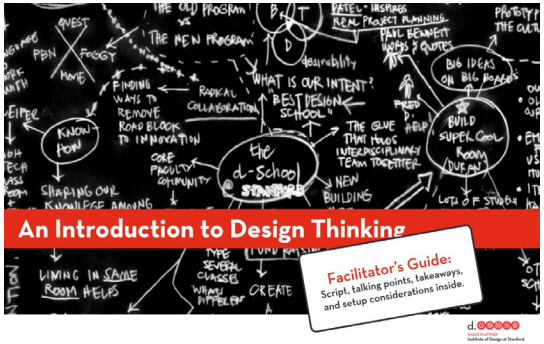
Wallet Project – Design Thinking Workshop

Goal: Introduction to Design Thinking in one hour with a tandem partner to convey the principles of Design Thinking through self-experience.

Split into tandems to create an improved, everyday purse for the respective team partner(s) according to the principles of Design Thinking. The tandems shall ...

- find out more about the future user of the purse (the tandem partner),
- develop a set of design proposals based on these findings,
- present the design proposals to the team partner and have him/her evaluate them,
- incorporate the feedback into an optimised design, test it again and
- reflect on their own approach together with their team partner.



https://hci.stanford.edu/dschool/resources/wallet/Wallet%20Facilitators%20Guide.pdf

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Short Task for Small Groups or Tandems

- Design the perfectly suitable and sustainable purse for your colleague.
- Use materials that are currently available to you at your desk: (coloured) paper and pencils, glue stick, scissors and further materials you might use for creating objects.
- Work along the six phases of Design Thinking within 30 minutes.
- Keep to a timetable (approximately 5 minutes per phase).
- The individual phases can be announced by the facilitator.
- You can use the original 60 minute time timer or another stopwatch.
- Please present your results in the plenary.

Time Timer

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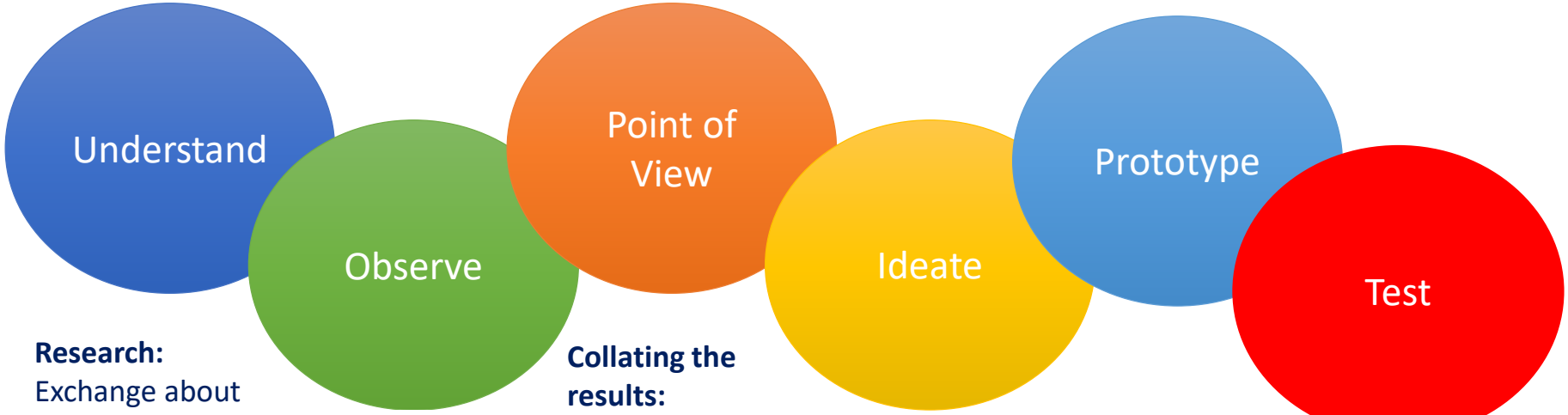
Process Sequence



Research: Exchange about a suitable and sustainable purse in the team.

Interviews: Ask your colleague about his or her wallet handling habits.

Collating the results: Categorising and defining the task in the team: **What** do we want to implement?

Develop ideas and make sketches. → **How** do you want to implement them?

Implementation as a model: Building the prototypes

Presentation to the plenary, receiving **feedback.**

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Presentation and Reflection

- How did working and testing with a real person change the direction of your prototype?
- What was it like to show unfinished work to another person?
- How did the pace feel? Rapid iterative cycles - how did they feel about that compared to how they normally work?
- Based on what they learned - what would they do next?
- What would they like to do again?
- To what extent can the method help you integrate ESD as a guiding principle in your projects?

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Design Challenge for Student Teachers: Build the Perfect Reading Place!

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Students …

- get to know the Design Thinking process and how to go through it.
- learn how to apply methods and tools which are relevant to the respective process phases.
- get to know ideas and suggestions for integrating the method into their own projects.
- learn how to build prototypes for their own projects, including sustainability as a product design requirement.

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Promoting Collaborative Working

- In the design process, communication between the team members in finding a solution is an important part of achieving a common result (Meinel et al., 2015).
- Design Thinking promotes collaborative working among learners as well as the ability of teachers to evaluate learning outcomes, as more meaningful communication among learners becomes apparent (Koh et al., 2015).
- On the one hand, Design Thinking has the potential to improve skills such as creativity, problem-solving skills, communication and teamwork, on the other hand, it can enable learners to develop empathy for others (Retna, 2016, p. 5).

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Results of Design Thinking Studies in School Education

- Design Thinking can lead to more sustainable learning for students and greater satisfaction for teachers in teaching subject matters through the use of creative and collaborative elements. (Carroll et al., 2010; Koh et al., 2015)
- Participating teachers being part of an elementary school study in Germany are of the opinion that creativity is promoted above all. The participating school children see the emphasis on collaborative work. They appreciate the self-determined work that enables the free development of ideas. All interviewed participants are of the opinion that especially working in groups helps the children to solve problems. (Högsdal & Grundmeier, 2020).
- Design Thinking enables and supports the implementation of ESD in diverse educational settings and subjects. (Dotson et al., 2020; Mueller et al., 2020; MacDowell, 2020; Högsdal & Grundmeier, 2021).

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Objectives for the Implementation of Design Thinking

- Design Thinking-based education should promote *creativity*, *problem-solving skills* and *collaborative working*.
- They are defined as *key competencies* of the 21st century in numerous international studies as well as by the OECD (2017).
- Perspectives and expertise of interdisciplinary teams, the ability to think in a networked way and working on joint solutions are required (Kay & Greenhill, 2011).
- Design Thinking thus also supports the implementation of ESD as a guiding principle.

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Design Competence as the Core Element of ESD and Design Thinking as an Enabler

- Design Competence refers to the ability to apply knowledge about sustainable development and to recognise problems of non-sustainable development. This means being able to draw conclusions about *ecological, economic and social developments* in their interdependence from analyses of the present and studies of the future.
- Furthermore, it also includes being able to make, understand and individually, collectively and politically implement decisions based on these conclusions, with which sustainable development processes can be realised (Seybold, 2019).

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Sub-Competences of Design Competence

Build up knowledge in an open-minded way and integrate new perspectives.	Be able to analyse and assess developments with foresight.	Gain knowledge and act in an interdisciplinary manner.	Recognise and consider risks, dangers and uncertainties.
Plan and act in cooperation with others.	Consider conflicting goals when reflecting on strategies for action.	Participate in collective decision-making processes.	Motivate yourself and others to become active.
Reflect on one's own guiding principles and those of others.	Use ideas of justice as a basis for decision-making and action.	Plan and act independently.	Show empathy for others.

(de Haan, n. d.)

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Design Thinking Principles

1. Interdisciplinary Cooperation	4. Build on the Ideas of Others	7. Empathy	10. Show, Don't Tell
2. Embrace Failure	5. Defer Judgement	8. Culture of Prototyping	11. Bias Toward Action
3. Embrace Experimentation	6. Focus in Human Values	9. Craft Clarity	12. Radical Collaboration

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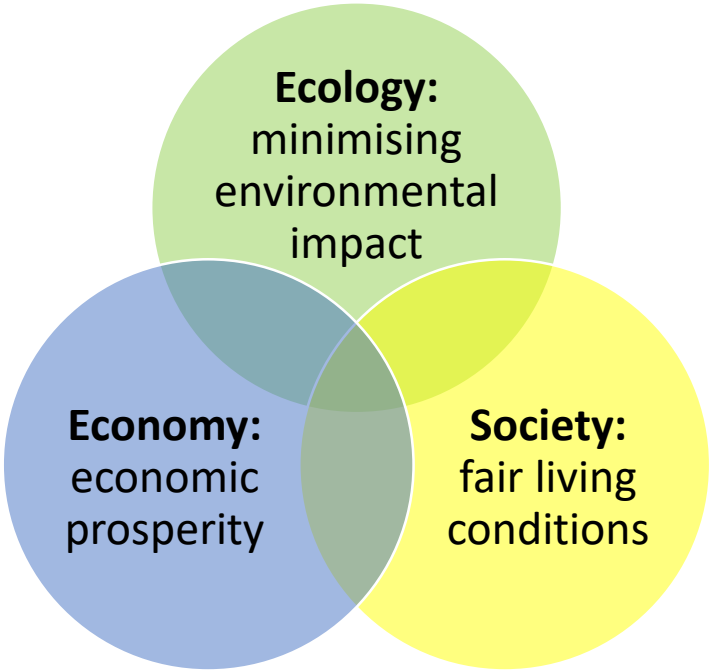
Target Dimensions and Sustainability

Combining *economic prosperity* with *socially just conditions*, while *minimising environmental pollution* and *conserving natural resources* and not imposing burdens on future generations that would impair their life chances compared with today's, has become the objective of both international and national policy (de Haan, n. d.).



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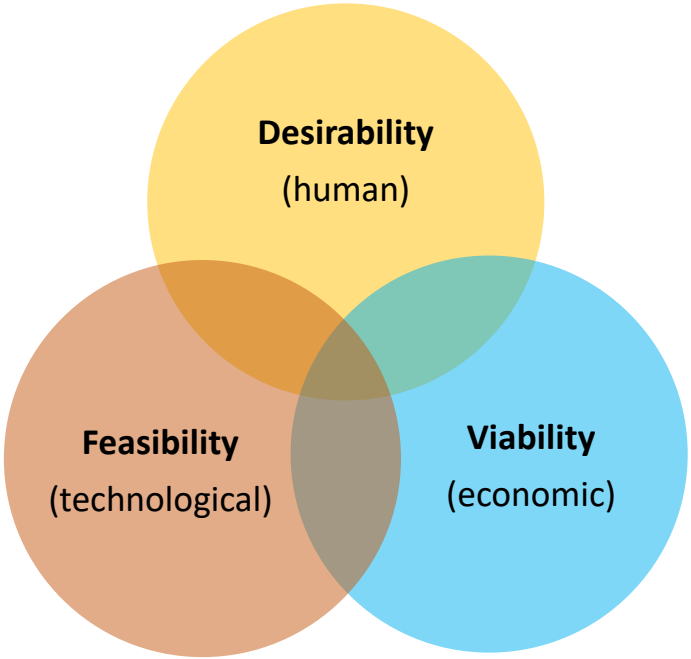
Innovation Model through Design Thinking

- Only when the intersection of all three areas is given, “real” innovation has been created.
- Design Thinking is the tool, mindset and process which enables that kind of innovation.
- De Haan’s target dimensions of sustainability are in accordance with IDEO’s and d.school’s definition of innovation.



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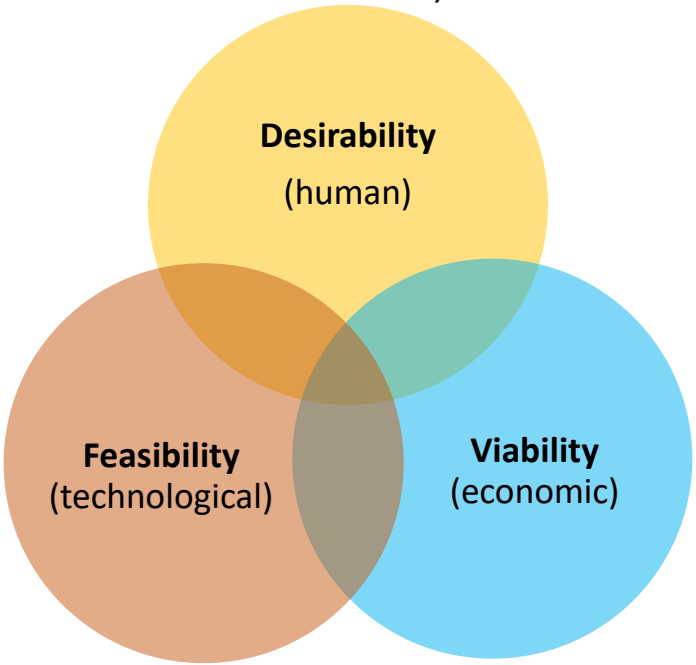
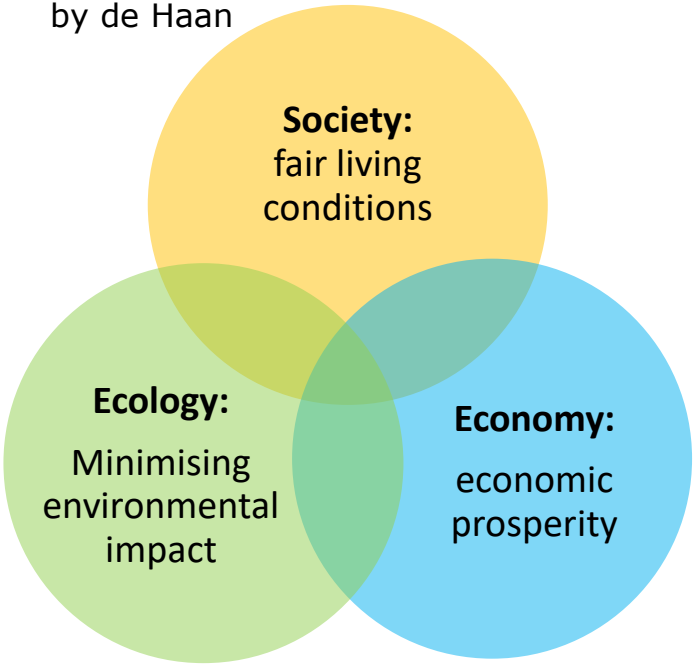
Innovation Model and Target Dimensions of Sustainability in Comparison

Innovation Model by IDEO



Target Dimensions of Sustainability by de Haan



Designing an ecologically oriented future can be understood as an innovation desired by mankind.
Modified from Högsdal & Grundmeier, 2021

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Design Thinking as an Enabler of Design Competence with regard to ESD

- At the beginning of the millennium, the US design agency IDEO pushed for innovation, especially in technology-related areas by applying Design Thinking as a new method.
- This became necessary due to a standstill in the area of technological innovations (Brown, 2009; Meinel et al., 2015).
- This circumstance can be compared with the situation in the textile and fashion sector that makes it difficult – but at the same time urgently requires – to implement an orientation towards sustainability.
- The comparison leads to the assumption that Design Thinking has high potential to implement ESD in this industrial sector and should therefore be implemented in textile education.

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Design Thinking as a Method of Research-Based Learning

- Deep experiences, lively stimulation and imaginative encouragement on the part of the teachers should lead to the fact that children solve problems in a creative way and are enabled to draw their conclusions. (Foster, 1974).
- Independent learning should be learned and learners' autonomy should be enabled at every stage of the learning process. (Klafki, 2003).
- One's own actions should enable the acquisition and the advancement of knowledge and the ability to solve problems. (Winter, 2016, p. 3).

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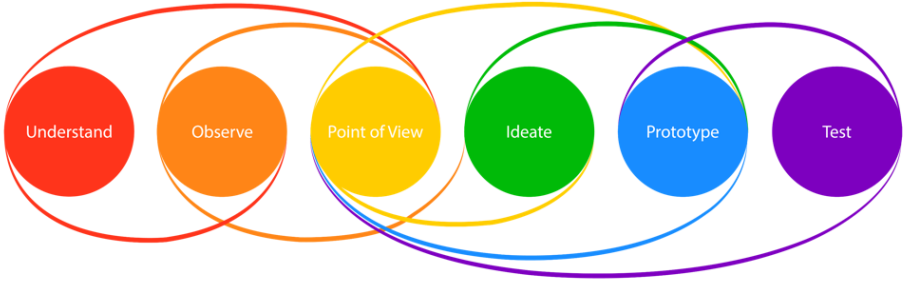
Design Thinking and Research Processes

1. Perceive an initial problem or framework topic (introduction).
2. Find a question and define the problem.
3. Develop information and theoretical approaches (research situation).
4. Select and acquire methodological knowledge.
5. Develop a research design.
6. Conduct the research activity.
7. Develop and present the results.
8. Reflect on the whole process.



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Group Discussion

- From your point of view, can Design Thinking promote the so-called "competencies of the 21st century" such as creativity, problem-solving skills and collaborative working?
- From your point of view, can Design Thinking support ESD?
- From your point of view, can Design Thinking support research-based learning?
- From your point of view, can Design Thinking support the acquisition of empathy?
- To what extent can you imagine to integrate Design Thinking into your professional activities/studies?
- In which professional areas would you use Design Thinking?

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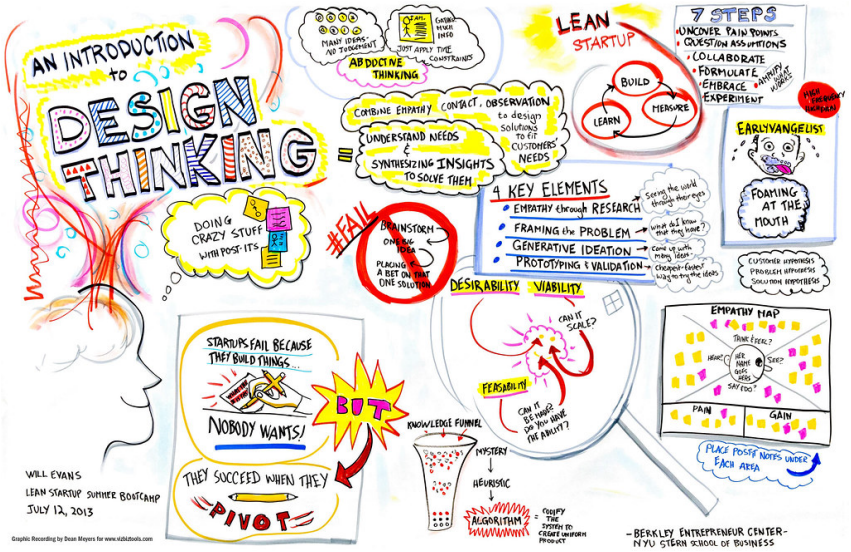
Tasks

- Discuss the questions in small groups and comment on the following statement:

"Design Thinking is not only a mindset but also the confidence that we all can take part in creating a more desirable and sustainable future by facing and dealing with challenges."

- Note down your ideas.
- Add images (drawings, illustrations, photos, etc.) to visualise your ideas.



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- Develop a poster or use a digital pinboard to record your ideas.

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References for Further Reading

- Meinel, C. & Krohn, T. (Eds.). (2022). *Design Thinking in Education: Innovation Can Be Learned.* Springer.
- Lewrick, M., Link, P., & Leifer, L. (2020). *The Design Thinking Toolbox: A Guide to Mastering the Most Popular and Valuable Innovation Methods*. Wiley.
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