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FOR KNOWLEDGE TRANSFER

Problem Solving for Knowledge Transfer Teaching Toolkit

Additional Print Out Materials (Not in this document)

- Problem Solving Module - Slides

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Problem Solving for Knowledge Transfer Syllabus

Duration: Approx. 4 hours

This course introduces the basics of problem-solving, an essential skill for everyone working in the knowledge transfer field. Problem-solving skills help to deal with challenges, task management, and change management. The participants will be confronted with critical-thinking techniques, which represent key tools for the definition and development of an action plan. Problem-solving skills – intended as the ability to identify a problem, understand its causes, develop a solution, and sustain positive results – will empower participants to think in a more analytical way and to be more effective in solution definitions.

With the combination of theory, real-world cases, and interactive exercises, participants will learn effective tools for problem-solving, creative thinking, quick experimenting and decision making. Mastering these skills ensures lower quicker and leaner management in knowledge transfer activities and ensures that you can solve any situation with a solution that satisfies all parties.

Intended Learning Outcomes (ILOs)

General objective

Learn the basics of problem solving and understanding the importance of problem-solving skills in knowledge transfer.

Specific ILOs

- ILO – 1: Explain the significance of clearly defining a problem before proposing solutions.
- ILO – 2: Assess the impact of cognitive biases on collaborative problem-solving in interdisciplinary knowledge transfer teams.
- ILO – 3: Apply structured problem-solving tools (e.g., SCAMPER, six hats) to evaluate alternative solutions.
- ILO – 4: Use critical thinking techniques to analyze real-world scenarios in knowledge transfer.
- ILO – 5: Summarize the principles of design thinking and its relevance to solving interdisciplinary problems.

Methods & Materials

Teaching Method(s)

- Group discussions & peer feedback
- Case study
- Frontal Lecture

Required Learning Materials (during-course)

- Course slides

Additional Learning Materials

- “Thinking, Fast and Slow” Book by Daniel Kahneman
- “Calling Bullshit: The Art of Skepticism in a Data-Driven World” Book by Jevin D. West, Carl Bergstrom
- The Design Thinking Playbook: Mindful Digital Transformation of Teams, Products, Services, Businesses and Ecosystems by Larry J. Leifer, Michael Lewrick, and Patrick Link
- A Video on Design Thinking Process https://www.youtube.com/watch?v=_r0VX-aU_T8

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Lesson Plan

20 min	**Introduction & Icebreaker** - Introduce the session objectives and timetable. Ask participants to play an icebreaker game to get to know each other a little better. Show the list of questions on **Slide 5.** Pair participants into groups of 2 or 3 people. Ask them to pick 1 to 3 questions to talk about. Objective: the activity aims to encourage people to get to know each other.	Group discussion
60 min	**Group work: What's the problem?** Split participants into groups of 3–4 people (for small class sizes, 2-people groups would also work). Show **Slide 6** to explain the activity. 5 min. Explain the exercise 15 min. Groups work on defining the problem 5 min. Each group shares their problem definitions 20 min. Debriefing & Group Discussion (Slide 7 – 8) 15 min. Theory (Slide 9 – 14)	Group work, discussion & mini lecture
45 min	**Mini experiments about the irrational side of humans** Explain the cognitive traps when we try to make a rational decision. Depending on the time, you can run a list of various experiments to explain each concept. ***Detailed instructions can be found in the next section.***	Group exercises
15 min	**Break**	-
30 min	**Theories** on problem solving techniques, SCAMPER, Six Hats, Critical Thinking, Design Thinking *More information on course slides*	Mini-lecture & Q&A

60 min	**Case Study – The Silent Startup** This exercise could be a facilitated classroom discussion with everyone's participation. Alternatively, groups of 3 or 4 people can be asked to propose a course of action to the problem. Each group presents their proposal in the classroom. Then discussion evolves around other questions on the case study.	Case Study
10 min	**(Optional) Action Planning & Closing** - Participants create action plans to apply problem solving skills in real-life situations.	Personal reflection

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Detailed Instructions for Group Activities

Anchoring Experiment: Guess the Price

1. Show the first slide of this activity (Slide 18)
The slide has only the photo, no text. Do not mention what phenomena you are going to explain at this stage. You can just mention that there will be a fun experiment.

2. Divide the class into two groups (Group A and Group B)
If virtual: send private messages, use breakout rooms, or assign groups verbally.
If in person: hand out different versions of a printed question or split the room.

3. Pose the First Question Separately. Ask everyone to write down their answers individually on paper. Make sure that the groups don't see/hear other group's question

- To Group A (High Anchor): "Does this planter & bench cost more than 40.000 EUR?"
- To Group B (Low Anchor): "Does this planter & bench cost less than 50 EUR?"

4. Change to Second Slide and Ask everyone:
What is the price of this planter & bench?

5. Reveal Their Answers for the Second Question
Then compare the two groups' average guesses — Group A usually guesses far higher than Group B, even though both were asked for the same factual estimate.

[We expect to have higher estimates from the group who received the higher anchor – Group A]

6. Debrief Questions (to discuss as a group):

"Why do you think Group A guessed mostly higher prices than Group B?"

"Did the first number in the question influence you, even though it was clearly unrealistic?"

"Where might this happen in real life? In negotiations, forecasts, evaluations?"

Framing Experiment

1. Show the first slide of this activity (Slide 21).

2. Split the classroom into 2 groups. Give a different set of options to each group. Make sure they don't see what the other group received.

- For Group 1: Option A & B
    - Option A: 20 people will be saved.
    - Option B: 1/3 probability that 60 will be saved and 2/3 probability that nobody will be saved.
- For Group 2: Option X & Y
    - Option X: 40 people will die.
    - Option Y: 1/3 probability that nobody will die and 2/3 probability that 60 people will die.

3. Ask participants to raise their hand if they choose option A or X. Then compare how the distribution is between two groups. Although Option A and Option X are basically the same, the popularity of that option is different due to how they are framed.

We expect that Group 1 chooses option A, while Group 2 chooses option Y.

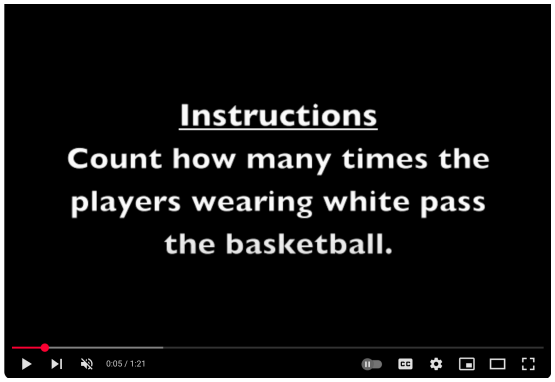
4. Explain "the Framing Effect" further with the help of Slide 24.

Big Picture – Selective Attention

1. Do not show any slides. Anything you mention can work against the experiment.

2. Make sure you have prepared the video. The participants should only see the video starting from the second 00:05. Try not to show the name of the video, or the first 4 seconds.

Video link (starting from 00:05):
https://youtu.be/vJG698U2Mvo?si=mCRzRe9nsVQo8Bsi&t=5



3. Watch the video. Pause after each question, have a quick discussion.

4. Show the slide (Slide 28) about the “Big Picture” to explain the concept of selective attention.

Alternative Video for the same exercise:
https://www.youtube.com/watch?v=LW_ZVvjP_Ms

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Case Study: The Silent Startup

Background

Dr. Smith, a university professor, contacts the Knowledge Transfer Office (KTO) with a serious concern: she has discovered that her PhD student, **John**, has filed **two patent applications** and incorporated a **startup company** — all without informing her or the KTO.

John requests that the university sign a **non-disclosure agreement (NDA)** before revealing any details about the patents. After the NDA is signed and the professor has reviewed the patent texts, she confirms she is **not an inventor**. However, she expresses **strong ethical concerns**, feeling betrayed by John's lack of transparency.

The KTO was also left in the dark, **never involved** in patent filing or startup formation.

John's position	Professor's position	KTO's position
The inventions are unrelated to his PhD project. He did not use university resources. The inventions were conceived outside university premises. The university has no claim to the IP.	John's know-how comes directly from his PhD work. University labs and bibliographic resources were indirectly used. John's actions were ethically inappropriate, even if technically legal.	Still under legal review. No clear evidence yet of IP belonging to the university. Needs to assess risk, reputation, and stakeholder interests.

New Development

John’s lawyer is pressuring the university to sign an agreement urgently, as the startup is seeking investment.

The lawyer’s proposal:

- No admission to university IP rights.
- A transactional agreement with a €10,000 lump sum payment as a gesture of goodwill.

Main Discussion Question

As the leader of the **Knowledge Transfer Office**, propose a course of action. Your goal is to:

- Protect the university’s legal and reputational interests
- Manage the professor's expectations and frustration
- Allow the startup to move forward
- Maintain a constructive relationship with all parties

Alternative Discussion Questions

- What evidence do you need to properly assess the university’s IP position?
- How do you address the professor’s concerns, even if legal action is not warranted?
- Would you accept the €10,000 offer? Under what conditions?
- How do you manage the time pressure from John’s lawyer?
- Would a long-term engagement or licensing agreement with the startup be preferable?
- What policies or communication protocols could prevent similar issues in the future?