Picture This: Seeing through Epistemic Lenses

Alternative tool name: Flexible Epistemic Identities

Tool Profile

Approximate time needed:
70'

Adaptable to online? (y/n):
y (group discussions in Round 1 and 2 in breakout rooms)

Context and Purpose

Background literature:

Arias-Arévalo, P., E. Lazos-Chavero, A.S. Monroy-Sais, S.H. Nelson, A. Pawlowska-Mainville, A. Vatn, M. Cantú-Fernández, R. Murali, B. Muraca, & U. Pascual. 2023. The Role of Power in Leveraging the Diverse Values of Nature for Transformative Change. Current Opinion in Environmental Sustainability 64. https://doi.org/https://doi.org/10.1016/j.cosust.2023.101352

Osbeck, L. M., & Nersessian, N. J. 2024. 46: Epistemic identity. In Elgar Encyclopedia of Interdisciplinarity and Transdisciplinarity. Cheltenham, UK: Edward Elgar Publishing. https://doi.org/10.4337/9781035317967.ch46

Forms of power addressed:
Discursive (framing) power

Tool aim:
This tool aims to raise awareness and respect for different knowledge validation systems in academia by exploring how social scientists and natural scientists approach research. It also highlights differences in epistemic identities and promotes interdisciplinary perspectives especially among natural and social scientists.

Materials and Setup

Materials needed:
rope or tape, colored papers (3 different colors for NS, SS, ID for groups Round 1), small letter cards (A, B, C, D for groups Round 2), photographs (print one for each group or digital), paper and pens for observer notes, printouts of tool instructions for participants (see boxes)

Instructions for facilitators:

- **Intro: Self-Identification and Role Assignment (5')**

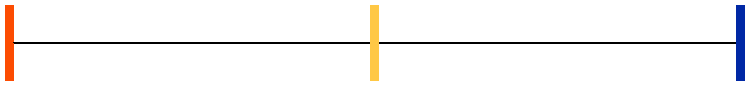
  The goal of this step is to visualize the research backgrounds of Natural Scientists (NS), Social Scientists (SS) and Interdisciplinary researchers (ID). Participants will position themselves along a spectrum or within the defined categories that reflect their research background. Based on their position, they will receive a **colored paper** indicating their role for this tool:

  Red = Natural Scientist (NS)
  Blue = Social Scientist (SS)
  Yellow = Interdisciplinary Researcher (ID)

  To facilitate this process, we propose **two options** depending on the available time and level of interaction desired.

  a) *Option 1: Spectrum Approach (More Time & Interactive)*

  Use **rope or tape** to create three parallel lines on the floor, marking a **spectrum** (See draft below)
  - One end represents pure Social Scientists (SS) - blue
  - The other end represents pure Natural Scientists (NS) - red
  - The middle zone represents Interdisciplinary Researchers (ID) – yellow

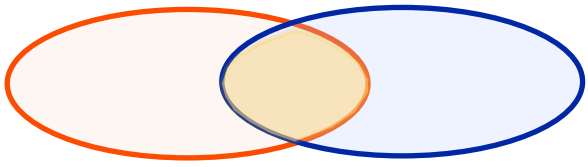


  Ask participants to position themselves on the spectrum based on how closely they identify with NS, SS, or ID. This step may include initial conversations among participants as they discuss their backgrounds and how they see themselves within the spectrum.

  Once positioned, distribute the corresponding **colored papers** to each participant.

  b) *Option 2: Overlapping Circles (Quicker Version)*

  Use **rope or tape** to create **two large overlapping circles** on the floor:
  - One circle represents **Social Scientists (SS)** – blue
  - One circle represents **Natural Scientists (NS)** - red
  - The overlapping area represents **Interdisciplinary Researchers (ID)** – yellow



  Ask participants to **step into the circle** that best represents their research identity. Those in the **overlapping area** (ID researchers) take an additional step:
  - Move toward the SS side if they tend to be more social-science oriented.
  - Move toward the NS side if they tend to be more natural-science oriented.

  Once positioned, distribute the **colored papers** accordingly.

- **Round 1 (20').**
  - **Step 1.1 Form groups**: Ideally, there are around 20 participants. Participants form 4 groups of approx. five members each. Natural scientists build 2 groups of four, and social scientists build 2 groups of four. The colored papers help to find members from the same group. **Each group is joined by an interdisciplinary researcher (ID)** who functions as an observer.

Those ID who identify more closely with NS should ideally join an SS group and vice versa. **Each group also designates a facilitator** (see below). If there are more or less than 20 participants total, the number of groups should be adjusted as necessary to keep group sizes small (4-5 members) to allow for full participation of each member.

Group 1: Natural Scientists (NSa, NSa, NSb, NSb) + observer: IDa
Group 2: Natural Scientists (NSc, NSc, NSd, NSd) + observer: IDc
Group 3: Social Scientists (SSa, SSa, SSb, SSb) + observer: IDb
Group 4: Social Scientists (SSc, SSc, SSd, SSd) + observer: IDd

- **Step 1.2 Group discussions (20'):** Each group receives the same picture (see example below) and will discuss the following questions.

  Facilitator role: Besides participating in the tasks as all other group members, the facilitator is responsible for guiding groups through the 4 discussion questions, making sure that the group stays on time (20' = approx. 5' per Q). When the 20 minutes are up, facilitators distribute the small letter cards for the next Round: Groups 1 & 2 = letters A & B; Groups 3 & 4 = letters C & D.

  Interdisciplinary researcher (ID observer) role: ID observers focus on how groups articulate the other discipline's approach and take notes on any misconceptions, assumptions, or insights (to be presented in Round 2). They should try to avoid offering advice or giving input.

  The picture:
  The picture below serves as an example. The organizer can either use this picture or may choose their own. When selecting a picture, keep the following criteria in mind:
  - The image should be clear in what it depicts but also ambiguous in terms of location to avoid long discussions about where it was taken.
  - It should be relevant and engaging for both NS and SS participants, encouraging diverse perspectives and discussions.
  - The picture should be simple, without too many elements, to keep the focus on core observations and research questions.

Photo credit: Meredith Petrick via unsplash.com.
Original photo available at: https://unsplash.com/photos/corn-field-R4nmhchAszY

The questions to discuss:

1. *NS groups discuss:* What kind of research questions would social scientists ask?
   SS groups discuss: What kind of research questions would natural scientists ask?
2. *NS groups discuss:* What research methods would social scientists use?
   SS groups discuss: What research methods would natural scientists use?
3. *All groups discuss:* Why are these questions relevant?
4. *NS groups discuss:* How would social scientists verify/ validate their results?
   SS groups discuss: How would natural scientists verify/ validate their results?

- **Round 2 (20').**
  - **Step 2.1 Form new groups:** Participants are reassigned into new, interdisciplinary groups based on the letter they got in Round 1. Each group will include members from the previous natural science (NS) and social science (SS) groups and one interdisciplinary researcher (ID). **Each new group assigns a new facilitator**.

    New group assignments:
    Group A: NSa, NSa, SSa, SSa + IDa
    Group B: NSb, NSb, SSb, SSb + IDb
    Group C: NSc, NSc, SSc, SSc + IDc
    Group D: NS2d, NS2d, SS4d, SS4d + IDd

  - **Step 2.2. Group discussions (20'):** Each group follows the following steps.

    Facilitator role: Facilitators are again responsible for time management (does not have to be very strict but make sure all three perspectives (SS, NS, ID) and all participants have a chance to share)

    Points to discuss:

    1. **Natural scientists present** (**~4'):** NS participants explain their discussion from Round 1: What they thought SS researchers would study and what methods they assumed SS would use.
    2. **Social scientists respond (~2'):** Confirm or correct
    3. **Social scientists present** (**~ 4'):** SS participants explain their discussion from Round 1: What they thought NS researchers would study and what methods they assumed NS would use.
    4. **Natural scientists respond (~ 2')**: Confirm or correct
    5. **Interdisciplinary researchers (~2'):** ID feedback their observations from Round 1: Patterns observed in how NS and SS perceived each other's disciplines, key areas of misunderstanding or alignments
    6. **Group discussion (~6'):** ID lead/ facilitate the discussion how SS and NS perspectives can complement each other and how an interdisciplinary perspective helps to bridge the different epistemologies/ approaches.

- **Round 3 (10').**
  - **Step 3.1.** For this Round, participants will remain in the **same groups** as in Round 2. The focus of this step is to critically reflect on **power dynamics in research and policy** by discussing the following three questions:

    1. How and why are certain research questions more likely to be supported or funded?
    2. Which of the research questions do you think is the most important?
    3. Which research findings or "answers" are more likely to be taken up by policy-makers?

- **Optional Round 4 (+ 20 -50').**
  - **Optional Step 4.1.** Based on the previous discussion, all groups will have the task to co-create an interdisciplinary research question related to the image on the table, bridging the different perspectives. Write down the new ID research question on a piece of paper.

- **Plenary: Sharing Insights (10').**
    - **Step 5.1.** In plenary, each ID person reports back key takeaways of the discussion of Round 2 and 3 (2-3 minutes per group).

- **Self-reflection (5').**
    - **Step 6.1. (2-3')** All participants take 2-3 minutes to reflect in silence on how these discussions and bridging of perspectives can be helpful and how they could be applied to their own research:
        - How could I apply what I learned in my own research?
        - How could I embed these insights into a future project?

    - **Step 6.2. (2-3')** Open the floor to voluntarily share self-reflections and application to own research.

Instructions for participants:

- **Round 1 (20').**
    - **Step 1.1 Form groups**:
        - ***For natural/ social scientist participants****: Form a group of approx. four members with people from the same discipline. You can identify them based on the colored papers.*
        - ***For interdisciplinary researchers****: Join a group (one interdisciplinary researcher for each group). You take the role as an observer.*
        - *Each group will* ***designate a facilitator****.*

    - **Step 1.2 Group discussions (20'):** Each group receives the same picture and follows the printout instructions for the correct group:

Round 1: *Instructions Natural Scientist Group*

1. ***Designate a facilitator.*** *Besides participating in the tasks as all other group members, the facilitator is responsible for guiding groups through the 4 discussion questions, making sure that the group stays on time (20' = approx. 5' per Q). When the 20 minutes are up, facilitators distribute the small letter cards for the next Round: Groups 1 & 2 = letters A & B; Groups 3 & 4 = letters C & D.*

2. ***Task for the ID observer:*** *Interdisciplinary researchers focus on how groups articulate the other discipline's approach and note any misconceptions, assumptions, or insights (to be presented in Round 2).* ***They should try to avoid offering advice or giving input.***

3. ***Group task:*** *Take a look at the photograph on your table. Reflect on and discuss the following questions in the next 20 minutes.*
    - What kind of research questions would social scientists ask?
    - What research methods would social scientists use?
    - Why are these questions relevant?
    - How would social scientists verify/ validate their results?

Round 1: *Instructions Social Scientist Group*

1. ***Designate a facilitator.*** *Besides participating in the tasks as all other group members, the facilitator is responsible for guiding groups through the 4 discussion questions, making sure that the group stays on time (20' = approx. 5' per Q). When the 20 minutes are up, facilitators distribute the small letter cards for the next Round: Groups 1 & 2 = letters A & B; Groups 3 & 4 = letters C & D.*

2. ***Task for the ID observer:*** *Interdisciplinary researchers focus on how groups articulate the other discipline's approach and note any misconceptions, assumptions, or insights (to be presented in Round 2).* ***They should try to avoid offering advice or giving input.***

3. ***Group task:*** *Take a look at the photograph on your table. Reflect on and discuss the following questions in the next 20 minutes.*
   - What kind of research questions would natural scientists ask?
   - What research methods would natural scientists use?
   - Why are these questions relevant?
   - How would natural scientists verify/ validate their results?

- **Round 2 (20').**
  - **Step 2.1 Form new groups:** *mixed groups based on the letter you got in Round 1 (groups A, B, C, D). ID researchers stay at the same table.*

  - **Step 2.2 Group discussions (20'):** Each group follows the printout instructions:

Round 2: *Instructions Mixed Groups (A, B, C, D) + Interdisciplinary Researcher (ID)*

Discuss and reflect on what was shared in Round 1. The aim is to compare perspectives and clarify assumptions and explore how SS and NS approaches can complement each other.

1. ***Designate a facilitator:*** *Besides participating in the tasks like all other group members, the facilitator is responsible to guide the groups through the discussion, making sure that the group stays on time (20' total - see time suggestions).*

2. ***Group task:*** *follow these steps:*
   - ***4' NS present****: NS participants explain their discussion from Round 1: What they thought SS researchers would study and what methods they assumed SS would use.*
   - ***2' SS respond****: Confirm or correct*
   - ***4' SS present****: SS participants explain their discussion from Round 1: What they thought NS researchers would study and what methods they assumed NS would use.*
   - ***2' NS respond****: Confirm or correct*
   - ***2' ID provide feedback from observations in round 1****: Patterns observed in how NS and SS perceived each other's disciplines, key areas of misunderstanding or alignments*
   - ***6' ID facilitate discussion:***
     - *How SS and NS perspectives can* ***complement each other****.*
     - *How an* ***interdisciplinary approach*** *helps bridge different epistemologies and methods.*

- **Round 3 (10').**
    - **Step 3.1.** Remain in the same groups as Round 2 and discuss the printout instructions:

Round 3: ***Instructions Mixed Groups (A, B, C, D) + ID***

In the next 10 minutes, critically reflect on power dynamics in research and policy.

1. ***Keep the same facilitator:*** *As before, this person is responsible to guide the groups through the 3 questions, making sure that the group stays on time (10' = approx. 3' per Q).*

2. ***Group task:*** *discuss these 3 questions:*

- How and why are certain research questions more likely to be supported or funded?
- Which of the research questions do you think is the most important?
- Which research findings or "answers" are more likely to be taken up by policy-makers?

- **Optional Round 4 (+ 20 -50').**
    - **Optional Step 4.1.** Remain in the same groups as Round 2 and discuss the printout instructions:

Optional Round 4: ***Instructions Mixed Groups (A,B,C,D) + ID***

Based on the previous discussion, your group has the task to co-create an interdisciplinary research question related to the image on the table. The aim is to bridge different perspectives. This co-creation process can take from 20 minutes up to hours of discussion. Follow time instructions from organizers.

Write down the new ID research question on a piece of paper

- **Plenary: Sharing Insights (10').**
    - **Step 5.1.** In plenary, each ID person reports back key takeaways of the discussion of Round 2 and 3 (2-3 minutes per group).

- **Self-reflection and voluntary sharing (5').**
    - **Step 6.1. (2-3')** Take 2-3 minutes to reflect in silence on how these discussions and bridging of perspectives can be helpful and how they could be applied to your own research:
        - How could I apply what I learned in my own research?
        - How could I embed these insights into a future project?

    - **Step 6.2. (2-3')** Voluntary option to share self-reflections and application to own research in plenary.

Additional Resources

Tool origin story:

This tool emerged from the challenges faced in interdisciplinary research, particularly between social and natural scientists. It was first conceptualized during a team workshop where we explored epistemic identities (Osbeck & Nersessian 2024) and their role in shaping research practices. The discussions were fueled

by insights from our questionnaire and interview data, which revealed the persistent difficulty of understanding other disciplines, the dominance of natural science in problem framing, and the lack of a common language between social and natural scientists.

Recognizing the importance of addressing discursive and framing power (Arias-Arévalo et al., 2023) and making epistemic identities more tangible in TD research, our team of four started developing this tool. By making epistemic identities visible and challenging implicit biases, the tool aims to foster meaningful dialogue between social and natural scientists and more equitable and integrative knowledge production in order to improve TTCIs.

The original idea of the tool is currently being further developed and tested in workshop settings.