Content Map: Nature of Science & Scientific Practices

# **Instructions**

* Place all the required concepts on your map.
* Show relationships between concepts using **arrows, symbols, or other clear visual markers.**
* Label each connection with a word or phrase explaining the relationship (e.g., “leads to,” “informs,” “requires”).
* For ideas that **contradict** or **do not connect**, you may use symbols (e.g., ✖, ≠, dashed lines) or other visual cues instead of arrows. Just make sure to explain what your symbols mean.
* Some concepts may **not connect directly.** That’s okay – label it explicitly.
* Show how different types of literature (**primary → secondary → tertiary**) flow into the scientific process and public understanding.
* Highlight how **positive claims** differ from **normative claims** in their relationship to evidence and communication.

# **Concepts to Include** *(you may add others as needed)*

## Core Practices vs. Evidence

| **Core Practice (Action scientists take)** | **Evidence Produced (Output of that practice)** |
| --- | --- |
| **Observation** | Observational data (notes, images, recordings) |
| **Questioning / Hypothesis formation** | Testable predictions, research questions |
| **Data collection** | Measurements, datasets, statistics |
| **Experimentation** | Experimental results (outcomes under controlled conditions) |
| **Replication** | Confirmatory results, reproducibility data |
| **Revision** | Revised models, corrected datasets |
| **Theory development** | Explanatory frameworks supported by accumulated evidence |
| **Modeling** | Models, simulations (tested against observations) |
| **Study design** | Double-blind study results |

Communication & Community

* Peer review
* Public communication
* Invisible college (meetings, emails, conferences, informal exchanges)

## Knowledge Sources

* Primary literature (research articles, preprints, datasets)
* Secondary literature (review articles, books, indexes)
* Tertiary literature (handouts, encyclopedias, textbooks)

## Boundaries of Science

* Supernatural claims
* Positive claims (descriptive/testable: what *is*)
* Normative claims (value-based: what *should be*)