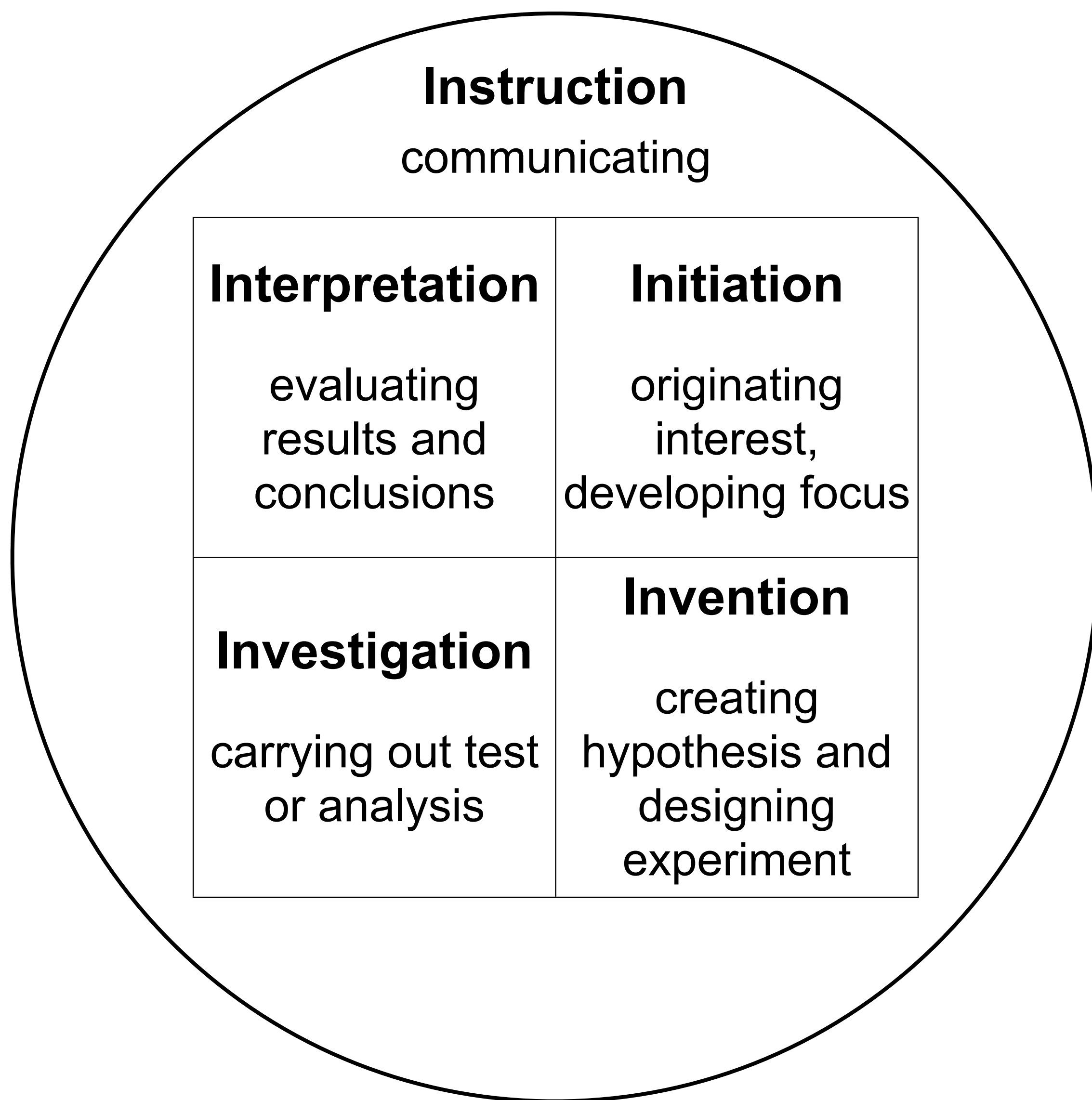


# Teaching Science As Inquiry

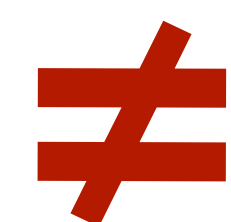
## Phases of Inquiry



- Learning and instruction cycle
- Metacognitive approach
- Importance of community
- Teacher as research director

### Phases of Inquiry

Initiation
Invention
Investigation
Interpretation
Instruction



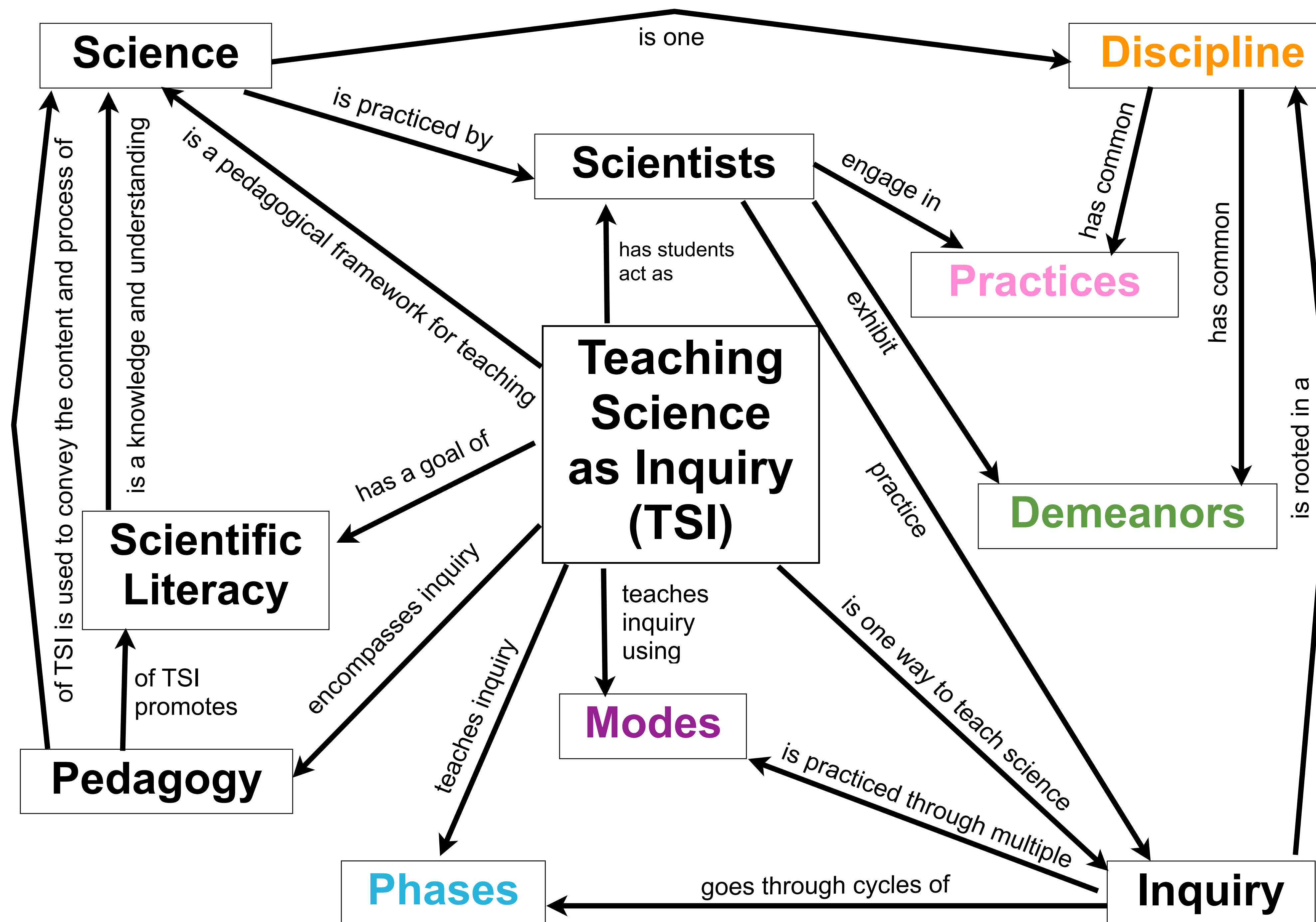
### Scientific Method

Question
Hypothesis
Experiment/Results
Conclusion
Communication

- Reflection of what happens when doing science
- Multi-directional
- No prescribed sequence

- Organized method for reporting
- Taught in one direction

## A Theoretical Framework



### Modes of Inquiry

Curiosity	Experimentation	Technology	<ul style="list-style-type: none"> <li>• different ways of carrying out the processes of inquiry</li> <li>• describe the many ways scientists inquire</li> <li>• inquiry does not fit into a narrow definition of "hands-on"</li> </ul>
Replication	Description	Product Evaluation	
Authoritative knowledge	Induction	Transitive knowledge	
	Deduction		

### Discipline

- An instructive community
- An expression of human imagination and ingenuity
- A way of inquiring about the world
- A tradition
- A conceptual structure
- A specialized language or system of symbols
- A heritage of literature, artifacts, and networks of communication
- A system of values and demeanors

### Practices of Science

What scientists do:

- Asking questions
- Making observations
- Devising a testable hypothesis
- Collecting, analyzing, and interpreting data
- Constructing and critiquing arguments
- Communicating
- Contributing to community
- Teaching fellow researchers

### Demeanors

How scientists act:

- Responsibly
- Courteously
- Skeptically
- Respectfully
- Accurately
- Honestly
- Open-mindedly
- Evidentially

