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Analyze 5 dichotomy of inductive and deductive reasoning

1. Starting Point

Inductive reasoning begins with particular facts or observations and then arrives at a general idea.

Deductive reasoning begins with a general statement or principle and applies it to a particular case.

For instance, inductive reasoning may involve observing that several programmers succeed after practicing daily and concluding that regular practice leads to success. Deductive reasoning would start with the rule that practice improves skills and then conclude that a student who practices will improve.

2. Level of Certainty

The conclusions drawn from inductive reasoning are not absolute; they are based on likelihood.

In contrast, deductive reasoning produces definite conclusions, provided the premises are correct.

Inductive reasoning suggests what is likely to happen, while deductive reasoning confirms what must happen.

3. Dependence on Experience vs Rules

Inductive reasoning depends largely on experience, observation, and patterns noticed over time.

Deductive reasoning depends on accepted rules, definitions, or theories.

This means inductive reasoning grows from real-life examples, while deductive reasoning grows from already known facts.

4. Flexibility of Reasoning

Inductive reasoning is flexible, and its conclusions can change when new evidence is discovered.

Deductive reasoning is rigid, because once the premises are fixed, the conclusion remains the same.

If new observations contradict an inductive conclusion, it can be adjusted. However, deductive conclusions do not change unless the original premise is wrong.

5. Role in Learning and Research

Inductive reasoning is mainly used to develop new ideas, hypotheses, and generalizations.

Deductive reasoning is mainly used to test ideas and validate existing theories.

In academics, inductive reasoning often comes first to form ideas, while deductive reasoning follows to verify them.