Deductive and Inductive Approach

Deductive reasoning works from the more general to the more specific. Sometimes this is informally called a "top-down" approach. We might begin with thinking up a *theory* about our topic of interest. We then narrow that down into more specific *hypotheses* that we can test. We narrow down even further when we collect *observations* to address the hypotheses. This ultimately leads us to test the hypotheses with specific data – a *confirmation* (or not) of our original theories.

1. Theory
2. Hypothesis
3. Observation
4. Confirmation

Existing Theory------ Formulate Hypothesis------- Collect data--------Analyze Data-------- Do/ don't reject Hypothesis

Inductive reasoning: it moves from specific observations to broader generalizations and theories. Informally, we sometimes call this a "bottom up" approach. In inductive reasoning, we begin with specific observations and measures, begin to detect patterns and regularities, make some tentative and finally we develop some general conclusions or theories.

1. Observation
2. Pattern
3. Tentative Hypothesis
4. Theory

Specific Observation------- Pattern recognition --------- General Conclusion

Inductive vs. Deductive Research Approach

1. The main difference between inductive and deductive reasoning is that inductive reasoning aims at **developing a theory** while deductive reasoning aims at **testing an existing theory**.
2. In other words, Inductive reasoning moves from specific observations to broad generalizations. Deductive reasoning works the other way around.
3. Deductive approach aims at testing a theory; an Inductive approach is concerned with the generation of new theory emerging from the data.
4. A Deductive approach usually begins with a hypothesis, while an Inductive approach will usually use research questions to narrow down the scope of the study.
5. In Deductive approach, the emphasis is usually on Causality, while in Inductive approach the aim is to explore new phenomenon or looking at previously known phenomenon with a different perspective.

6. Deductive approach is usually associated with Quantitative research, while an Inductive approach is usually associated with Qualitative research. However there are no hard and fast rules for their usage.

Both approaches are used in various types of research, and it's not uncommon to combine them in your work.

Inductive Research Approach

When there is little to no existing literature on a topic, it is common to perform inductive research, because there is no theory to test. The inductive approach consists of three stages:

1. **Observation**
    - Dogs A and B have fleas
2. **Seeking patterns**
    - All observed dogs have fleas
3. **Developing a theory or general (preliminary) conclusion**
    - All dogs have fleas

d.

Deductive Research Approach

When conducting deductive research, you always start with a theory. This is usually the result of inductive research. Reasoning deductively means testing these theories. Remember that if there is no theory yet, you cannot conduct deductive research.

The deductive research approach consists of four stages:

1. **Start with an existing theory and create a problem statement**
    - All dogs have fleas
2. **Formulate a hypothesis, based on existing theory**
    - All pet dogs in my apartment building have fleas
3. **Collect data to test the hypothesis**
    - Test all dogs in the building for fleas
4. **Analyze and test the data**
    - 10 out of 20 dogs didn't have fleas

5. **Decide whether you can reject the null hypothesis**
    - 10 out of 20 dogs didn't have fleas = reject hypothesis