

- A theory is a claim about a phenomenon such as its causes, context, and predictions.
- **Inductive reasoning:** A theory derived from inductive reasoning is assumed to be likely true, but may not necessarily be so
 - “From the swans I have seen, they have all been white; therefore, I theorize that all swans are probably white”
- **Deductive reasoning:** A theory tested from deductive reasoning helps determine exactly how likely a theory is given the observations.
 - “All mammals have livers, a cat is a mammal, therefore a cat must have a liver”

scientific method steps:

1. Identifying a problem
 2. Formulating hypotheses
 3. Collecting data
 4. Analyzing data
 5. Comparing results to hypotheses
- Allows comparisons between studies, as well as the evidence to support or refute claims.
 - Educational research may be basic (theory focussed) or applied (practically focussed).
 - **Quantitative (deductive):** Usually seeks to check theories, explanations, and/or compare things. Start with a theoretical explanation and or prediction and check it against the evidence.
 - **Qualitative (inductive):** Often exploratory, seeking to develop theories and explanations, or explore experiences. Look for a theoretical explanation without preconceived ideas.

Educational Research

Selection and definition of problem + hypothesis
 Execution of research problems
 Analysis of data
 Drawing and stating conclusions + testing hypothesis

Socioeconomic status can be tested through educational research, kids who do hands on experience learn better than lecture only,
 Contemporary lit vs. Shakespeare cannot be tested by educational research, neither are SAT's a good indicator of university admission.

Quantitative and Qualitative differ in: philosophical assumption, purpose of research, type of data collected, research problem/hypothesis, sample size, manipulation of context, interaction with participants, data analysis.

Research ethics: reduce harm, obtain consent, maintain confidentiality