

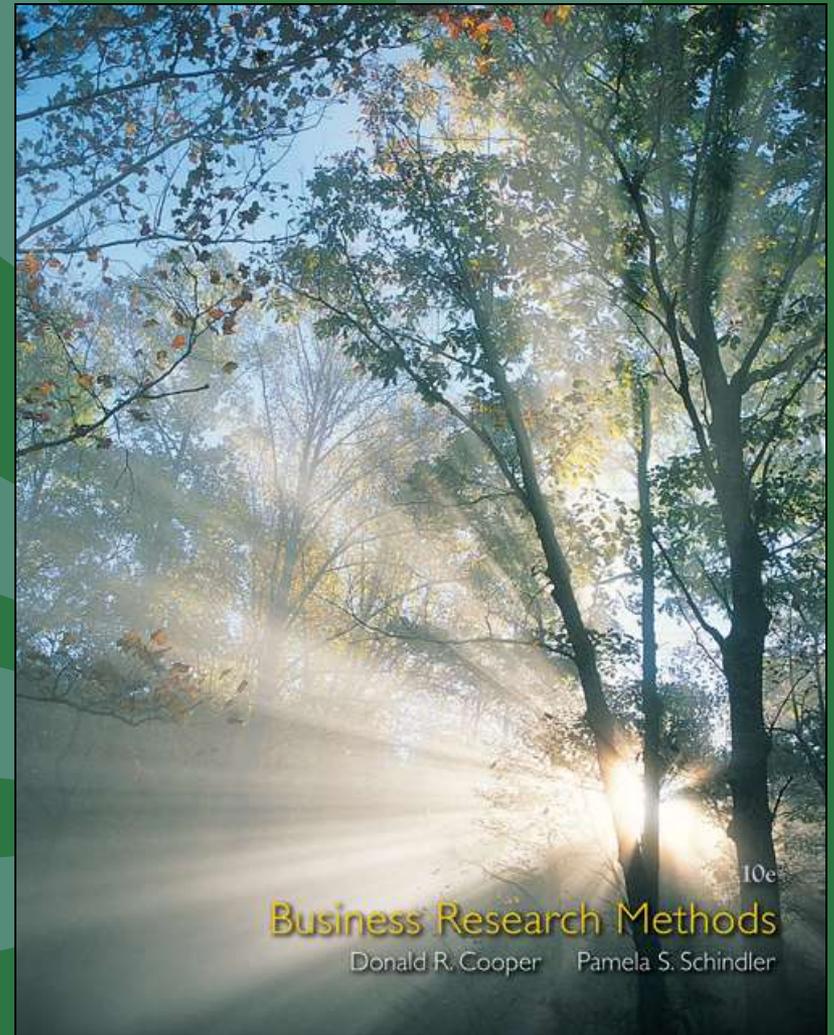


Don't make promise when you are in joy.
Don't reply when you are sad.
Don't take decision when you are angry.

Think twice., Act Wise.


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Thinking Like a Researcher



Learning Objectives

Understand . . .

- The terminology used by professional researchers employing scientific thinking.
- What you need to formulate a solid research hypothesis.
- The need for sound reasoning to enhance research results.

Research and Intuition

“If we ignore supernatural inspiration, intuition is based on two things: experience and intelligence. The more experience I have with you, the more likely I am to encounter repetition of activities and situations that help me learn about you. The smarter I am, the more I can abstract from those experiences to find connections and patterns among them.”

Jeffrey Bradshaw, creator of the software that searches databases

Curiosity Is the Ally of a Researcher

The Wheel.
The Lightbulb.
The Microchip.
Sliced bread.

Where would the
world be without
curiosity?

Curiosity. It's in our nature. It's a part of our daily lives. It's one of the most significant driving forces behind all civilization.

And at Synovate, it's what makes us tick. As one of the world's top research companies, curiosity is at the heart of all that we do. Our global network was created by bringing together like-minded intelligent people all of whom have the relentless desire to seek answers, and find better ways of doing things.

If you're curious to see our global market intelligence in action for yourself, email us at curious@synovate.com.

After all, history has proven us right.

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Thinking Style

Rationalism

Postulate ■

Self evident truth ■

Authority ■

Scientific Method ■

Idealism

Empiricism

Literary ■

Untested opinion ■

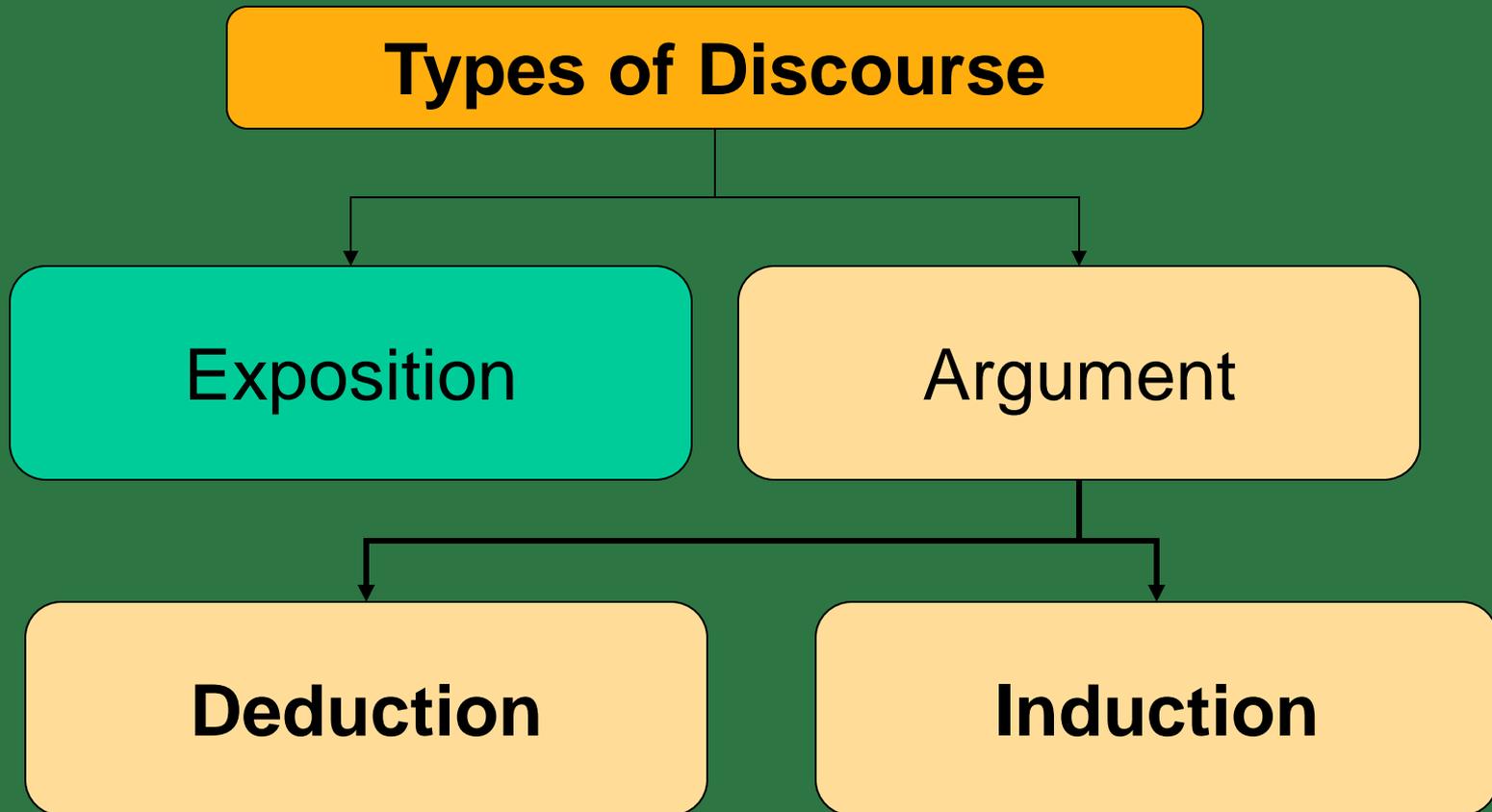
Existentialism



Challenge for the researcher

- The researcher must be able to identify source of quality information with the highest value which will bring the highest benefit and outcome for the decision being faced by the management

Sound Reasoning



Inductive/Deductive Process

Laws and Theories

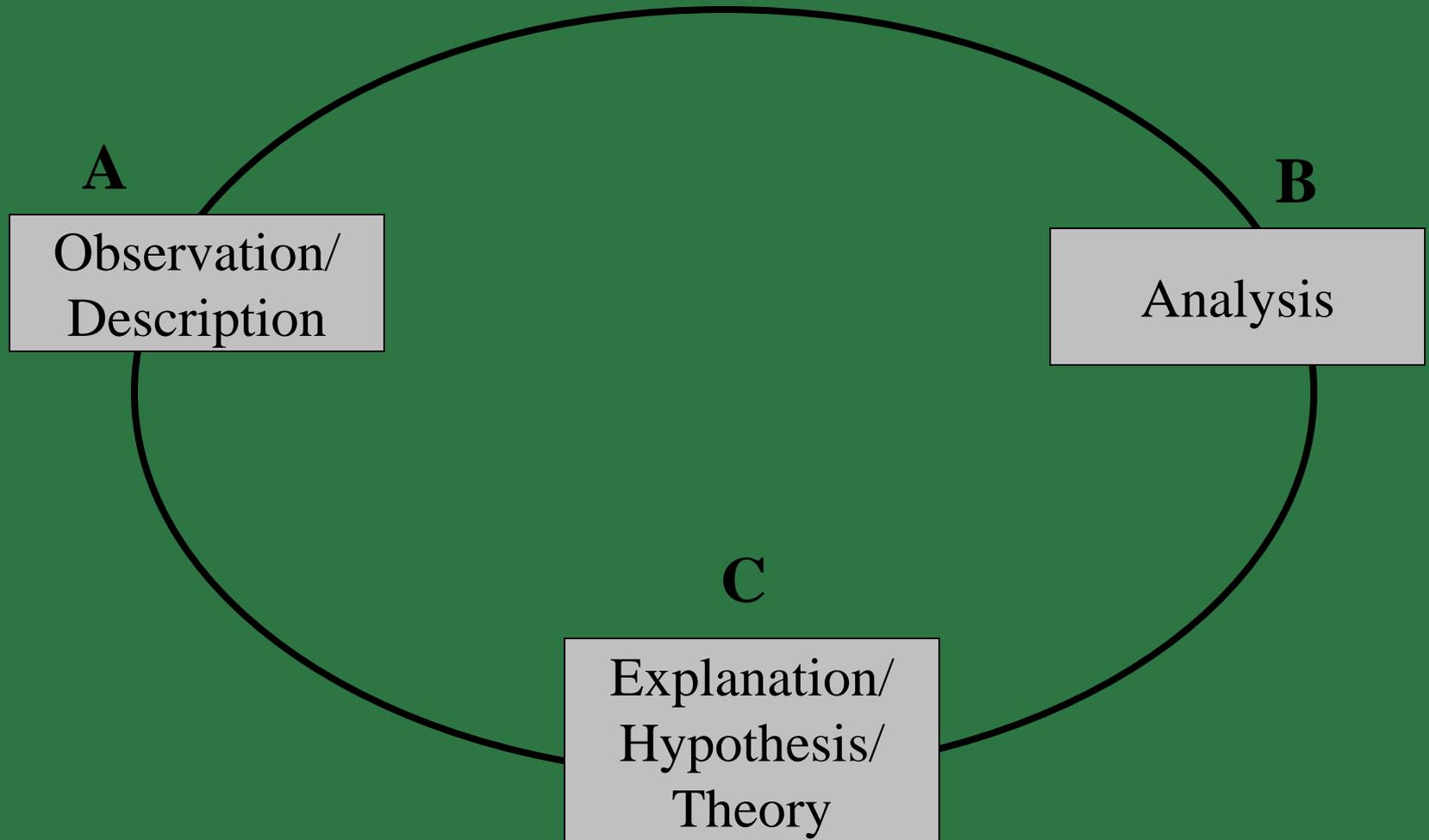
INDUCTIVE

Facts from
Observation

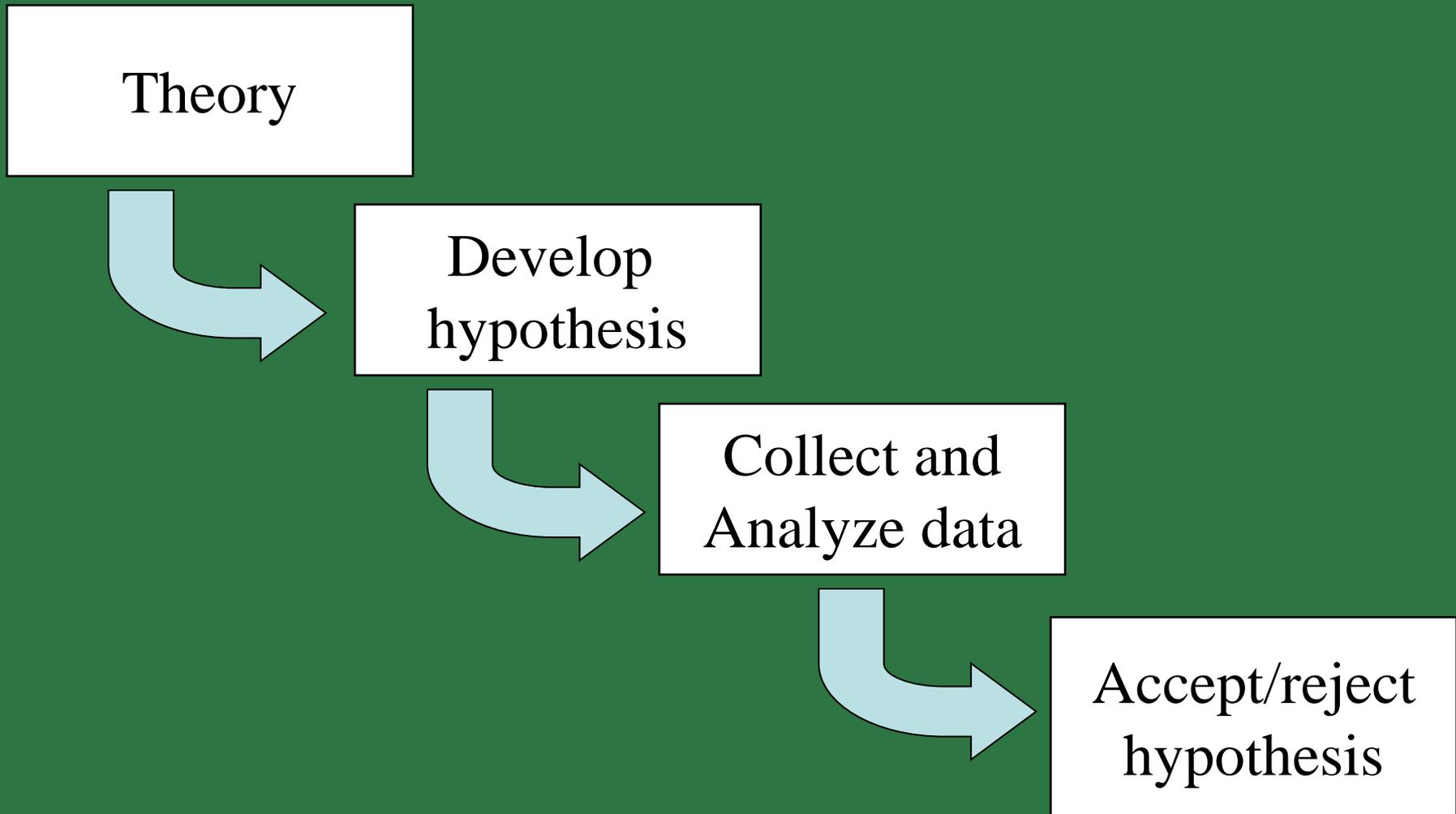
DEDUCTIVE

Explanation and
Prediction

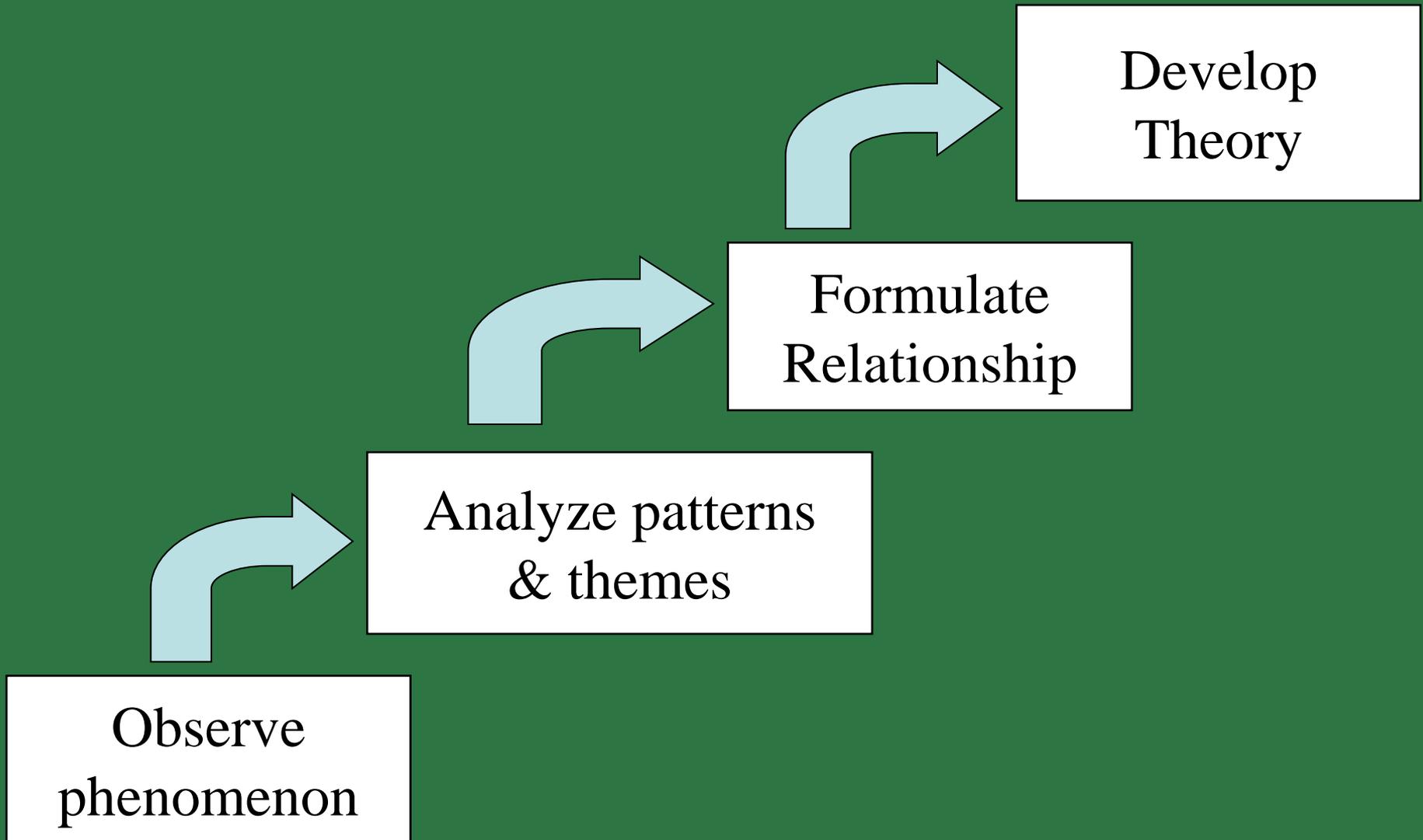
Induction and Deduction



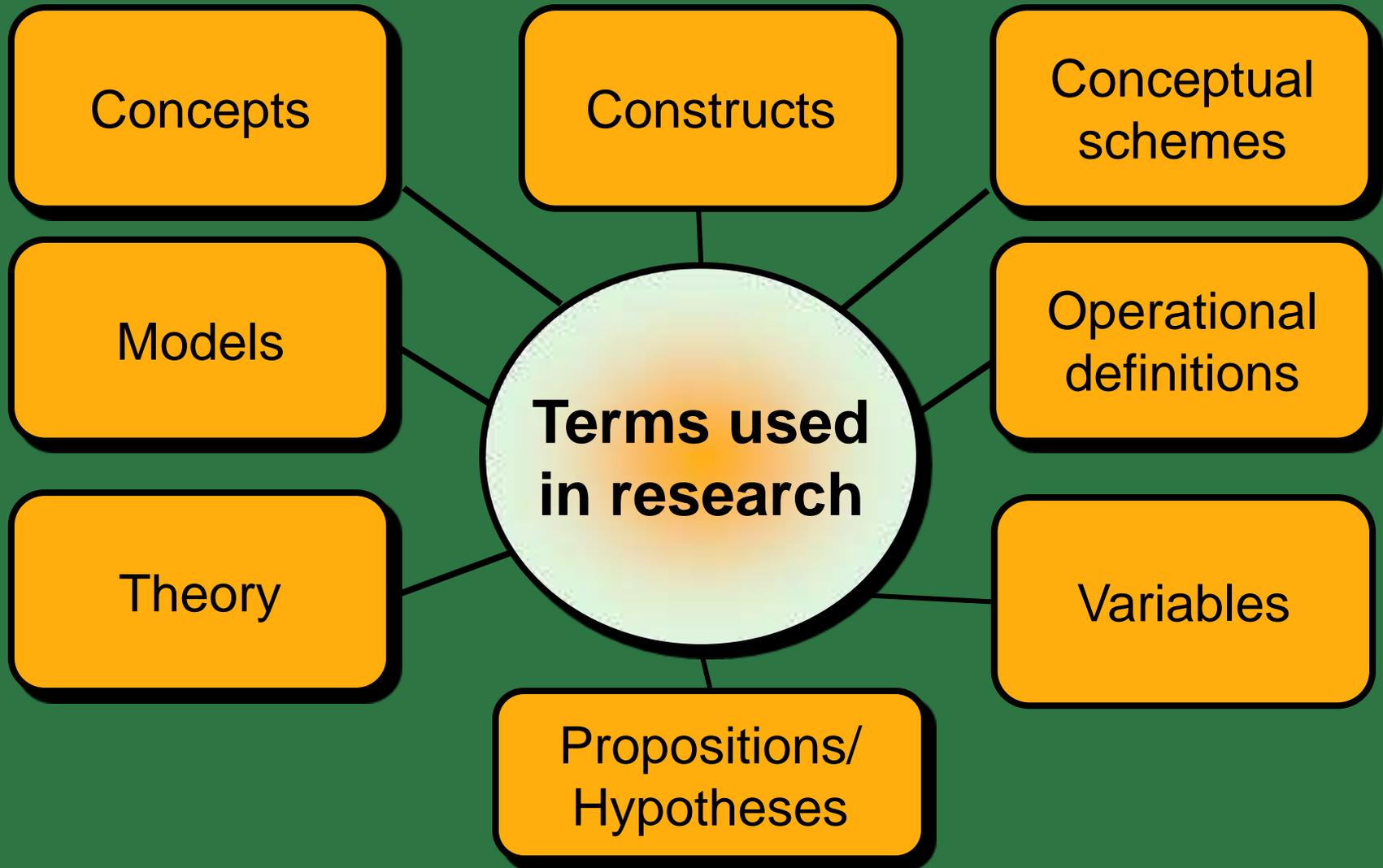
Deductive



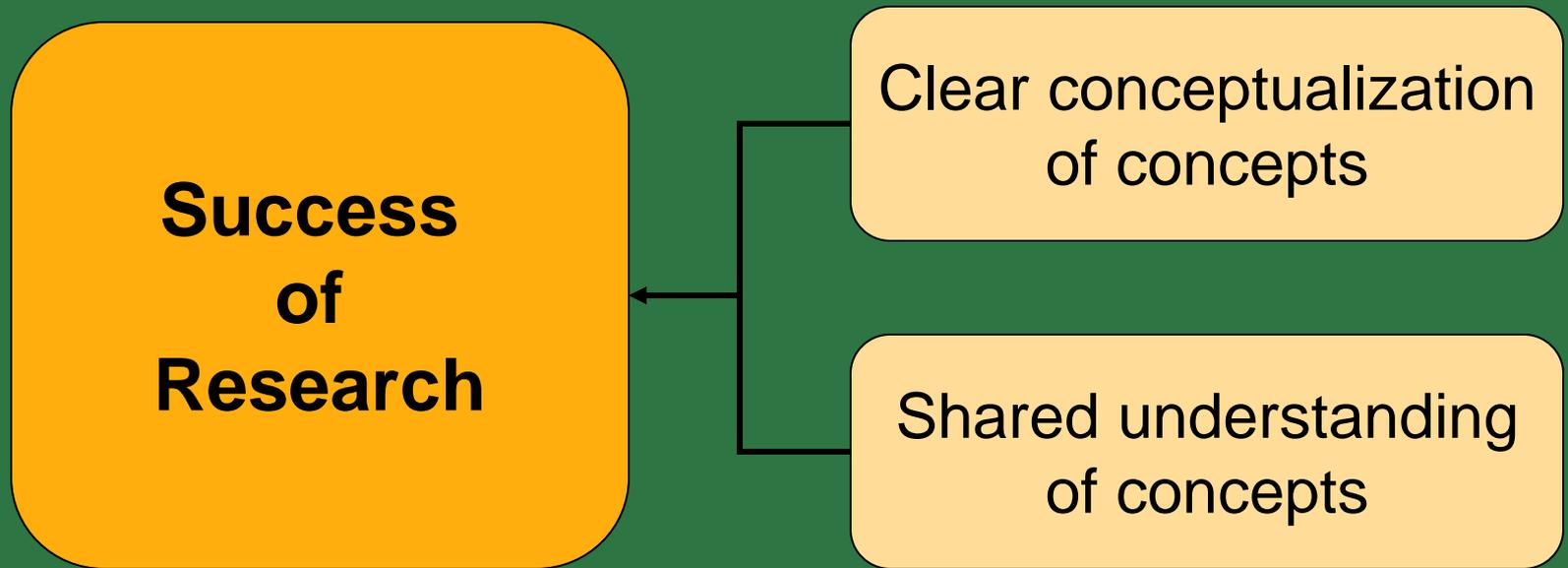
Inductive



Language of Research



Language of Research (Concept)

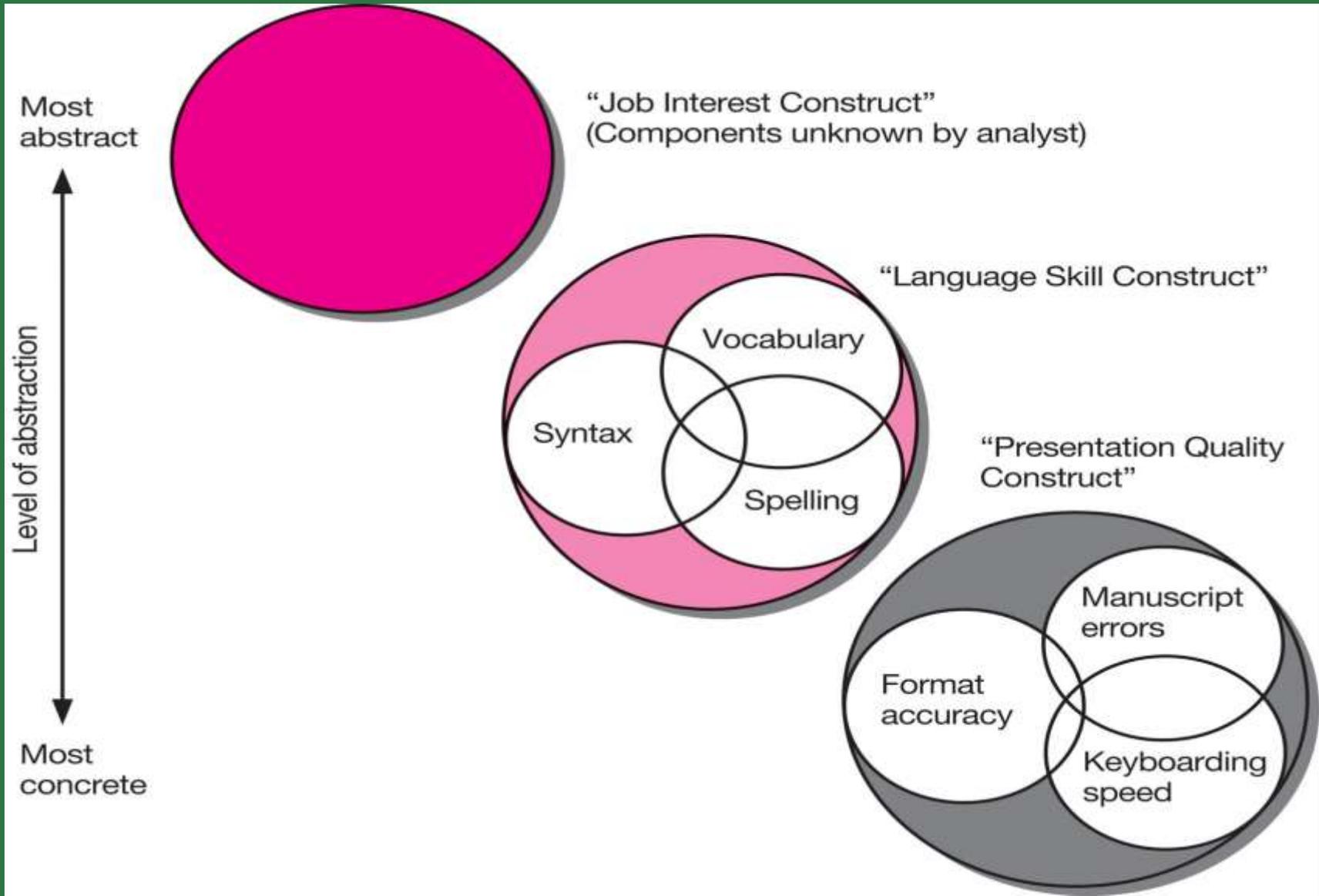


- A Concept is a generally accepted collection of meanings or characteristics associated with certain objects or events.

- Concepts have evolved over time through shared usage.

- A Construct is an image or abstract idea specifically invented for a given research and/or theory building purpose

Job Redesign Constructs and Concepts

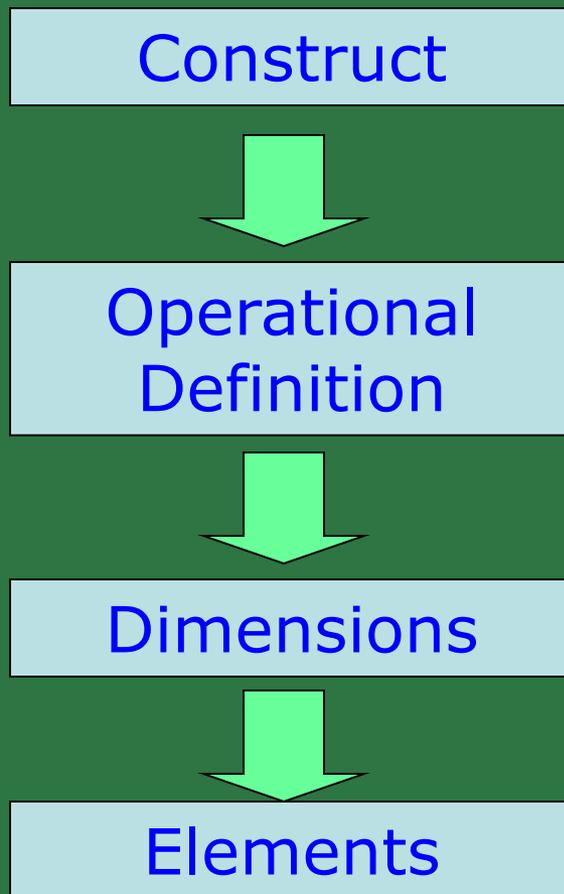


Operational Definitions

**How can we define the variable
“class level of students”?**

- Year 1
 - Year 2
 - Year 3
 - Year 4
- < 36 credit hours
 - 36 - 70 credit hours
 - 71 - 105 credit hours
 - > 105 credit hours

Operationalization



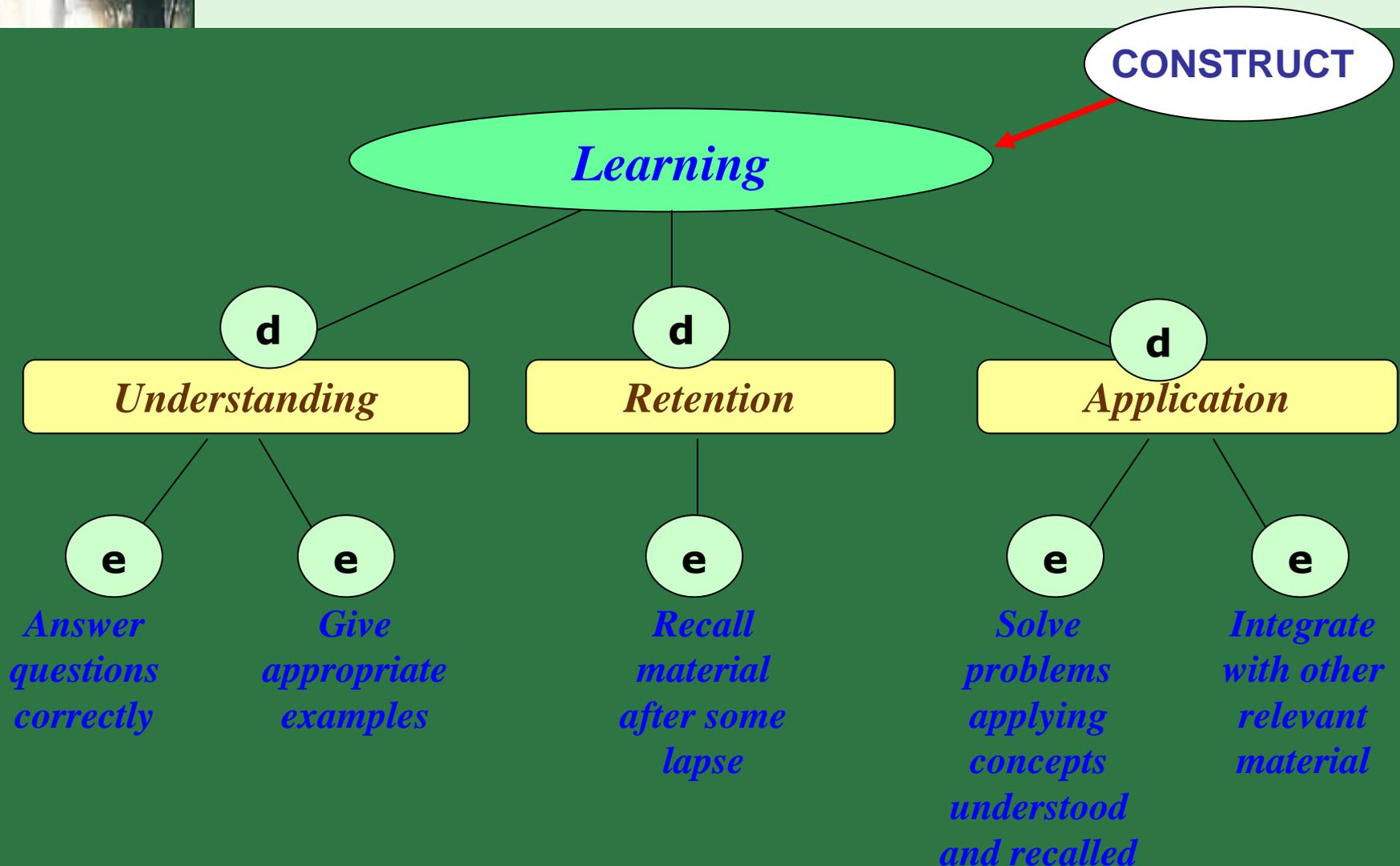
A generalized idea about a class of objects, attributes, occurrences, or processes e.g. satisfaction, loyalty

Gives meaning to a concept by specifying the activities or operations necessary to measure it

Broad characteristics to ensure coverage or scope of the concept

Specific items about the identified measurement, which are easily measured

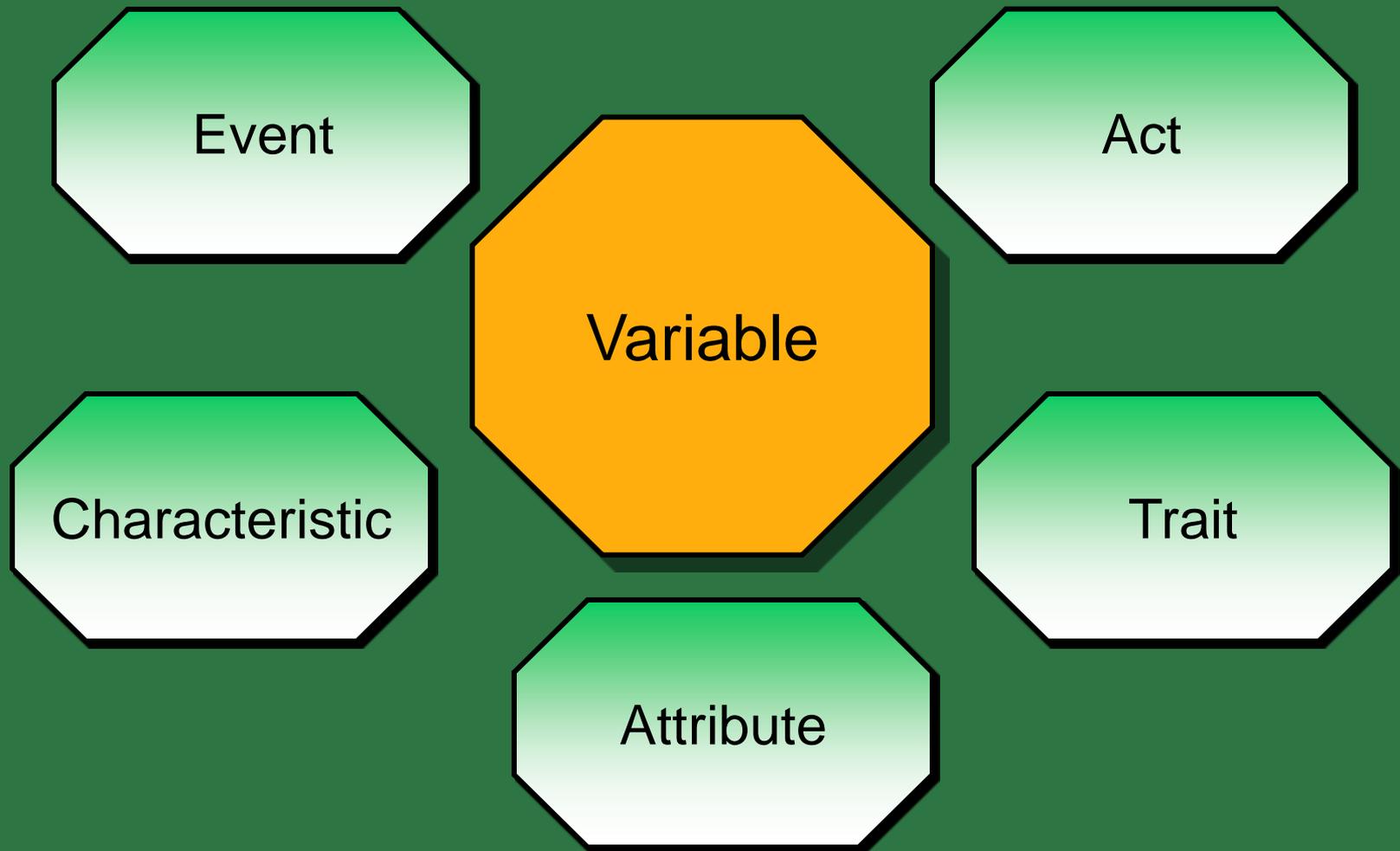
Operationalizing Learning



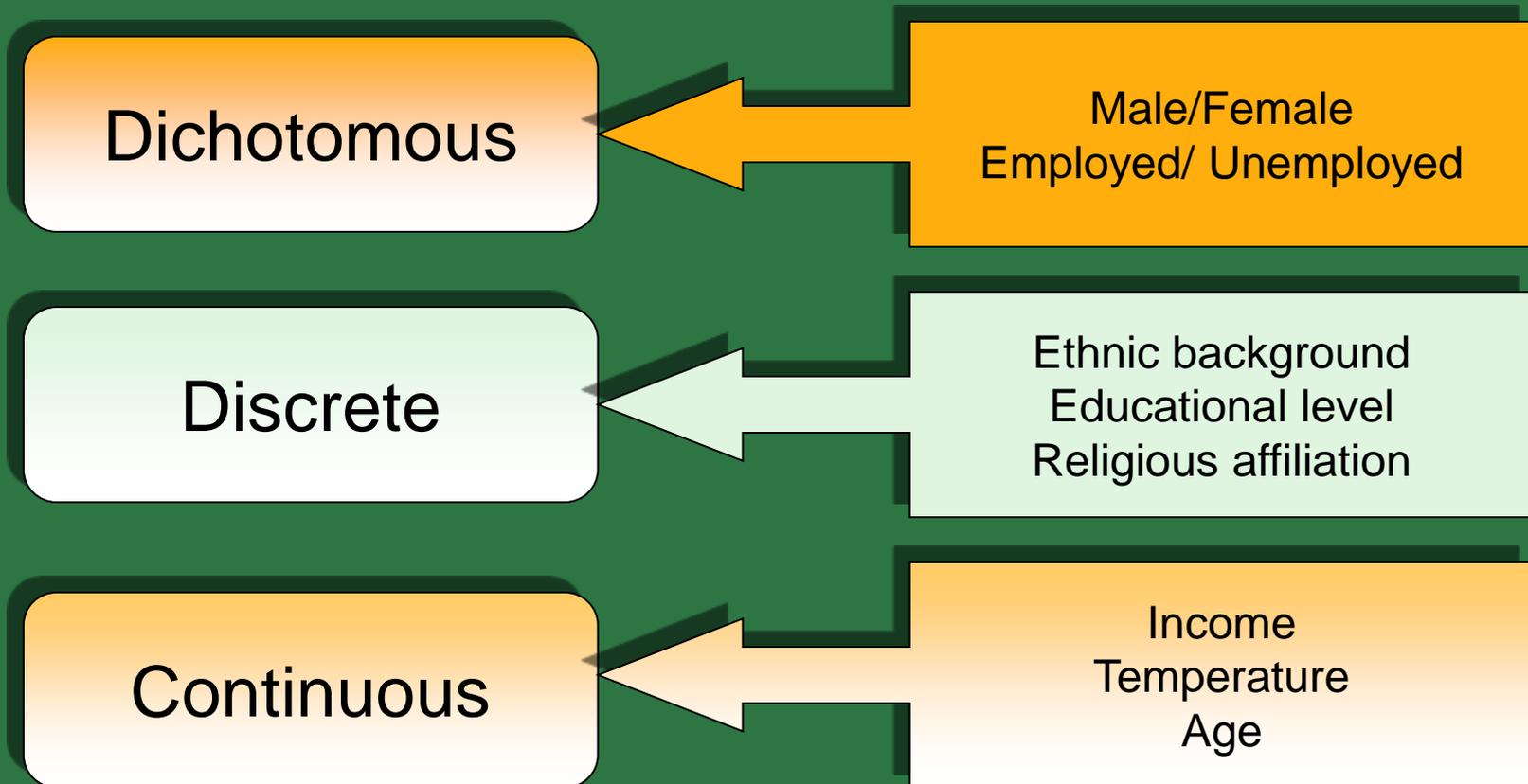
Example

Concept	Definition	Operationalization
Organizational Commitment	A situation where the individual feels satisfied with the organization and its goal and would like to remain affiliated to achieve that goal	Questionnaire Score Organizational Commitment (Mowday, Steers & Porter, 1979)
Job Satisfaction	The attitude of a person towards work, as a result of his/her perception about the fit between him/her and the organization	Questionnaire Score Job Diagnostic Survey (JDS) (Hackman & Oldham, 1975)
Perceived Usefulness	A person's subjective evaluation of the extent of using a system would enhance the individual's job performance	Questionnaire Score PU (Davis et al., 1989)

A Variable Is the Property Being Studied



Types of Variables



Types of Variables

- **Independent**
- **Dependent**
- **Moderating**
- **Mediating**
- **Control**

Independent and Dependent Variable Synonyms

Independent Variable (IV)

- Predictor
- Presumed cause
- Stimulus
- Predicted from...
- Antecedent
- Manipulated

Dependent Variable (DV)

- Criterion
- Presumed effect
- Response
- Predicted to....
- Consequence
- Measured outcome

Exercise 1

- A manager believes that good supervision and training will increase the production level of the workers.

Exercise 2

- A manager finds that off-the-job training has a great impact on the productivity of the employees in his department. However, he also observes that employees above 50 years do not seem to derive much benefit and do not improve from such a training.

Exercise 3

- The manager of the ABC Company observes that the morale of employees in her company is low. She thinks that if the working conditions, pay scales, and the vacation benefits of the employees are bettered, the morale will improve. She doubts, though, that the pay scales are going to raise morale of all employees. Her guess is that those who have good side incomes will be happy with the increased pay and their morale will improve.

Exercise 4

- The manager of AS International was worried with the high absenteeism among his workers on Monday mornings. He thinks that employees who consume excessive alcohol over the weekend experience hangover on Monday morning and will not come to work. He also feels that the high wages allows the employees to become lethargic. During his informal chat with the workers he found that all the workers in the factory consume alcohol during the weekend. Also, during the chat some workers told him that some will not experience hangover because they have high levels of tolerance towards alcohol. “Ha!, Now I know” the manager said “only those with a low level of alcohol tolerance will experience hangover thus absent from work on Mondays. Besides that the high wages could be another reason why this phenomenon happens.

Exercise 5

- A marketing manager would like to predict the factors that influence purchase decision. He conducts a literature search and also interview with several clients. After going through this process he forwards this suggestion:
- When the product is of high quality, the confidence towards the product will increase and this will lead to higher purchase intention. He also found that when the price is low, the intention to purchase will also increase. If the brand of the product is more known then the purchase intention will also increase. However he also found that if the client has high brand loyalty for a different brand than the one marketed by the company, then the brand knowledge does not play an important role in the intention to purchase.

Propositions and Hypotheses

Concept A
(Reinforcement)



Concept B
(Habits)

Hypotheses at the Empirical Level

**Bonus RM for
Sales exceeding
quota**

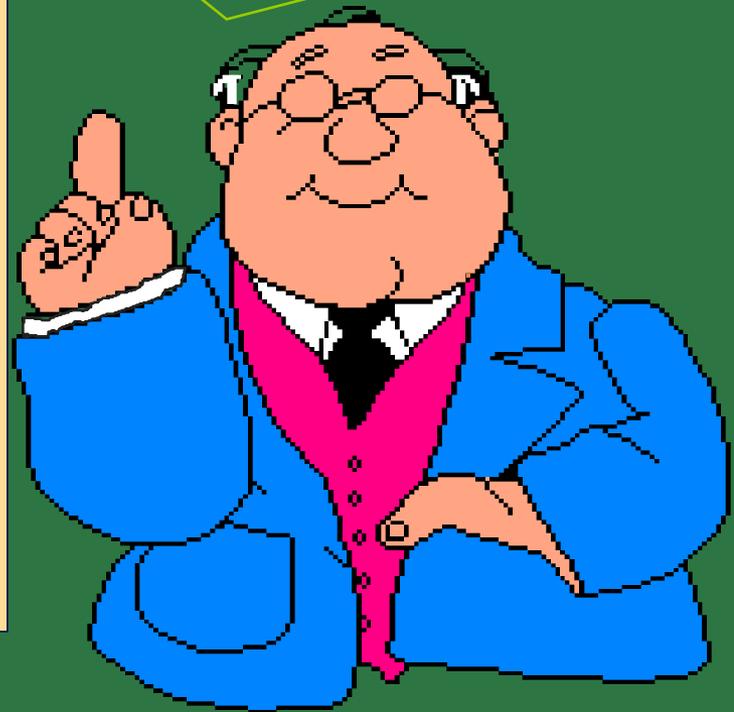


**Make more than
4 sales calls
a day**

What's a Hypothesis?

- A belief about a population parameter
 - Parameter is **population** mean, proportion, variance
 - hypotheses must be stated **before** analysis

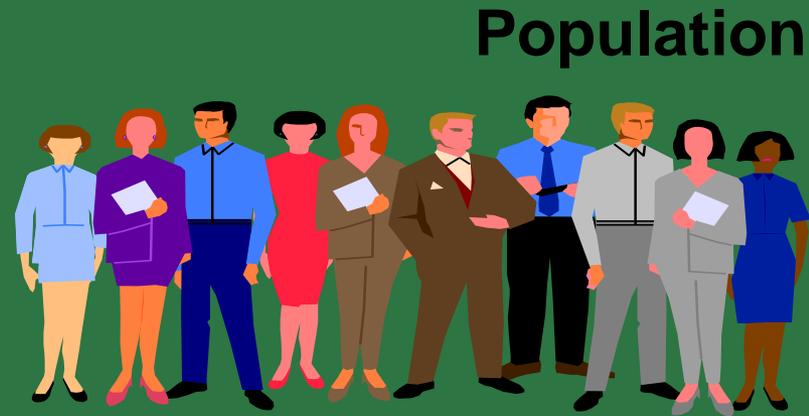
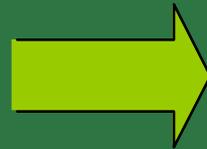
"I believe the average work efficiency of my employees is at least 90 percent."



Hypothesis Testing Process

“The average work efficiency of employees is at least 90 percent.”

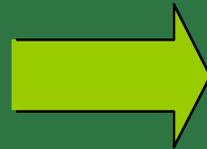
(Hypothesis)



Hypothesis Testing Process

“The average work efficiency of employees is at least 90 percent.”

(Hypothesis)



Population



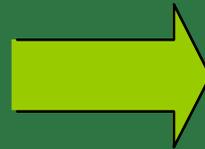
Sample



Hypothesis Testing Process

“The average work efficiency of employees is at least 90 percent.”

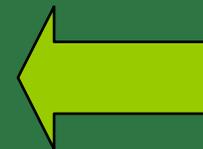
(Hypothesis)



Population



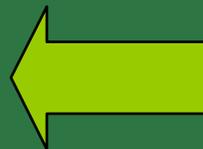
The sample mean is 46 percent



Sample

REJECT

Hypothesis



Is $\bar{x} = 46$ percent “close enough” to 90 percent?



Steps in Hypothesis Testing

- State the hypotheses
- State criterion to decide when to accept/reject the null hypothesis
- Collect sample data
- Produce sample statistic
- Make statistical conclusion based on sample data and criterion chosen



Accepting or Rejecting Hypotheses

- Cannot accept or reject a hypothesis based solely on intuition
- Decide objectively, based on sample information, to accept or reject the hypothesis

Hypothesis Formats

Descriptive Hypothesis

- In Penang, our potato chip market share stands at 13.7%.
- Malaysian cities are experiencing budget difficulties.

Research Question

- What is the market share for our potato chips in Penang?
- Are Malaysian cities experiencing budget difficulties?

Relational Hypotheses

Correlational

- Young women (under 35) purchase fewer units of our product than women who are older than 35.
- The number of suits sold varies directly with the level of the business cycle.

Causal

- An increase in family income leads to an increase in the percentage of income saved.
- Loyalty to a grocery store increases the probability of purchasing that store's private brand products.

The Role of Hypotheses

Guide the direction of the study

Identify relevant facts

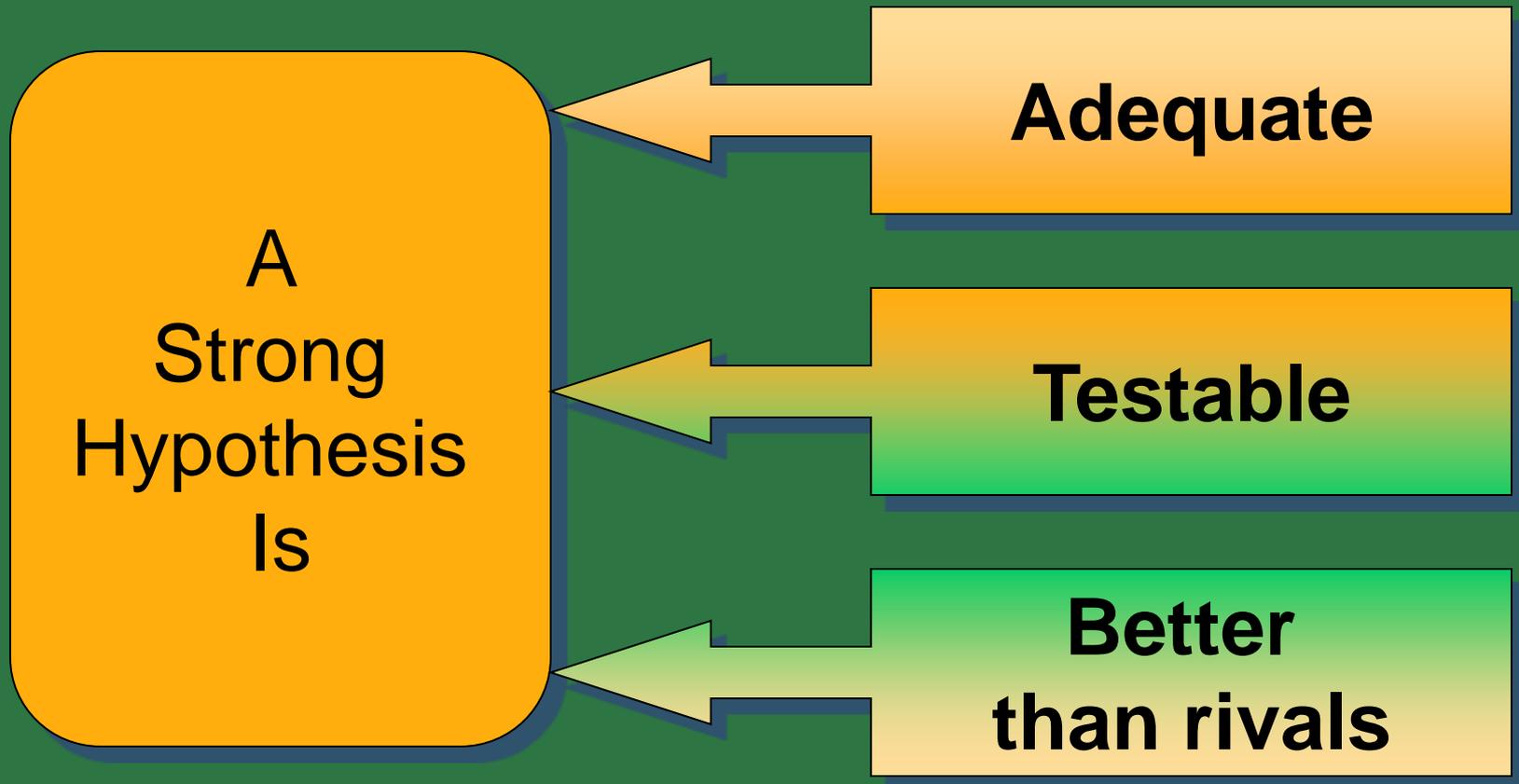
Suggest most appropriate research design

Provide framework for organizing resulting conclusions

Role

- Husbands and wives agree in their perception about each person's role in the decision making process of household buying

Characteristics of Strong Hypotheses



Hypothesis

Criteria	Interpretation
Adequate for Its Purpose	<ul style="list-style-type: none"> <input type="checkbox"/> Does the hypothesis reveal the original problem condition? <input type="checkbox"/> Does the hypothesis clearly identify facts that are relevant and those that are not? <input type="checkbox"/> Does the hypothesis clearly state the condition, size, or distribution of some variable in terms of values meaningful to the research problem (descriptive)? <input type="checkbox"/> Does the hypothesis explain facts that gave rise to the need for explanation (explanatory)? <input type="checkbox"/> Does the hypothesis suggest which form of research design is likely to be most appropriate? <input type="checkbox"/> Does the hypothesis provide a framework for organizing the conclusions that result?
Testable	<ul style="list-style-type: none"> <input type="checkbox"/> Does the hypothesis use acceptable techniques? <input type="checkbox"/> Does the hypothesis require an explanation that is plausible given known physical or psychological laws? <input type="checkbox"/> Does the hypothesis reveal consequences or derivatives that can be deduced for testing purposes? <input type="checkbox"/> Is the hypothesis simple, requiring few conditions or assumptions?
Better Than Its Rivals	<ul style="list-style-type: none"> <input type="checkbox"/> Does the hypothesis explain more facts than its rivals? <input type="checkbox"/> Does the hypothesis explain a greater variety or scope of facts than its rivals? <input type="checkbox"/> Is the hypothesis one that informed judges would accept as being the most likely?

Theory

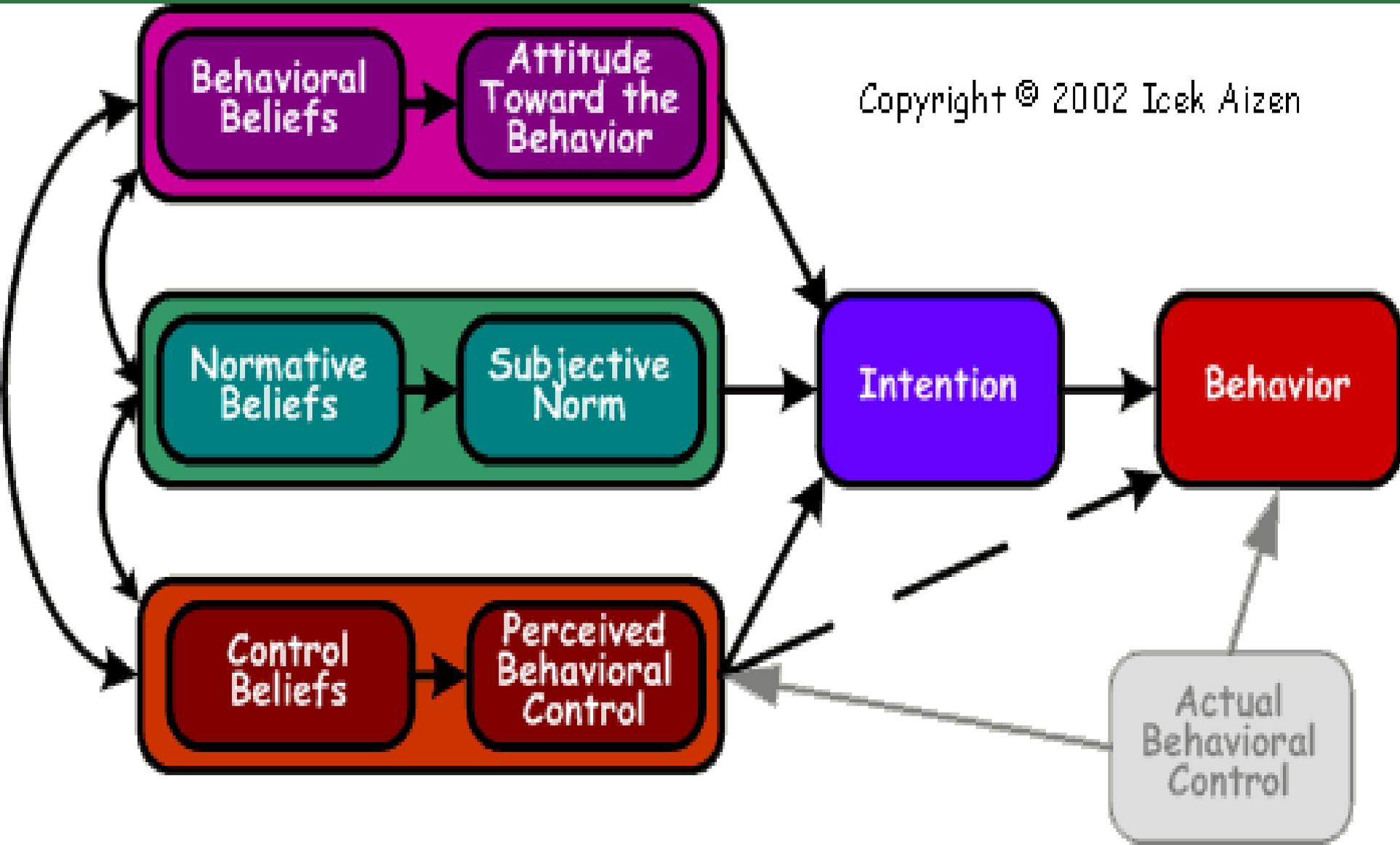
- A set of concepts, definition and propositions that are inter related systematically which is forwarded to explain or predict a phenomenon



Value of theory to research

- Reduces the range of facts that needs to be researched
- Summarizes what is already known about the object of the research
- Is used to predict other facts that needs to be found

Theory of Reasoned Action (TRA, 1980) and Theory of Planned Behavior (TPB, 1991)



Model

- The presentation of a system that is developed to study part of the system or the whole system of relationship
- The difference between theory and model is that the role of theory is for explanation whereas the role of the model is for representation

Multi Attribute Attitude Model (1973)

Attributes

- **Attrib1**
- **Attrib2**
- **Attrib3**
- **Attrib4**
- **Attrib5**
- **Attrib6**
- **Attrib7**
- **Attrib8**
- **Attrib9**
- **Attrib10**
- **Attrib11**
- **Attrib12**
- **Attrib13**

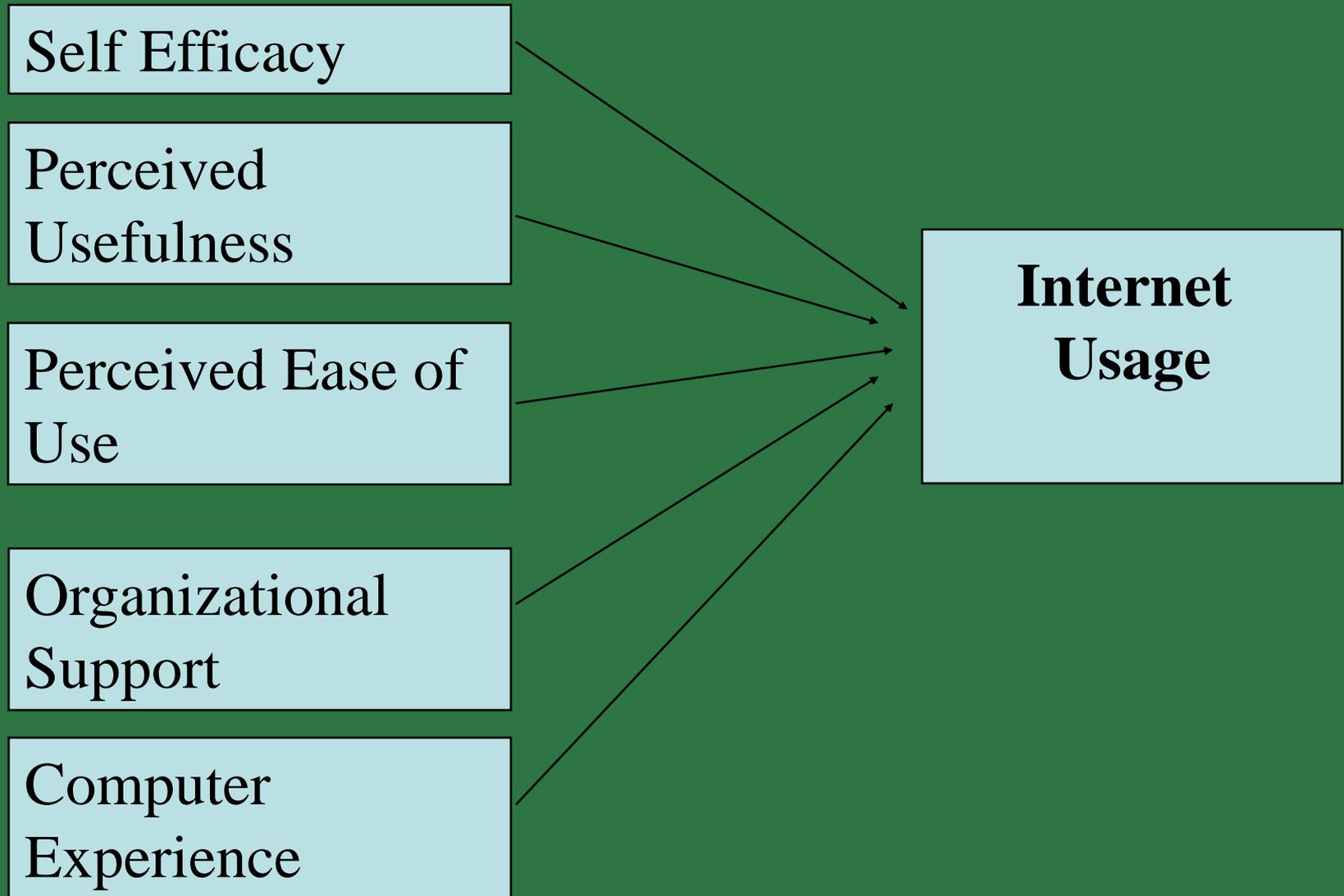
**Credit Card
Usage**

```
graph LR; A[Attributes: Attrib1-13] --> B[Credit Card Usage]
```

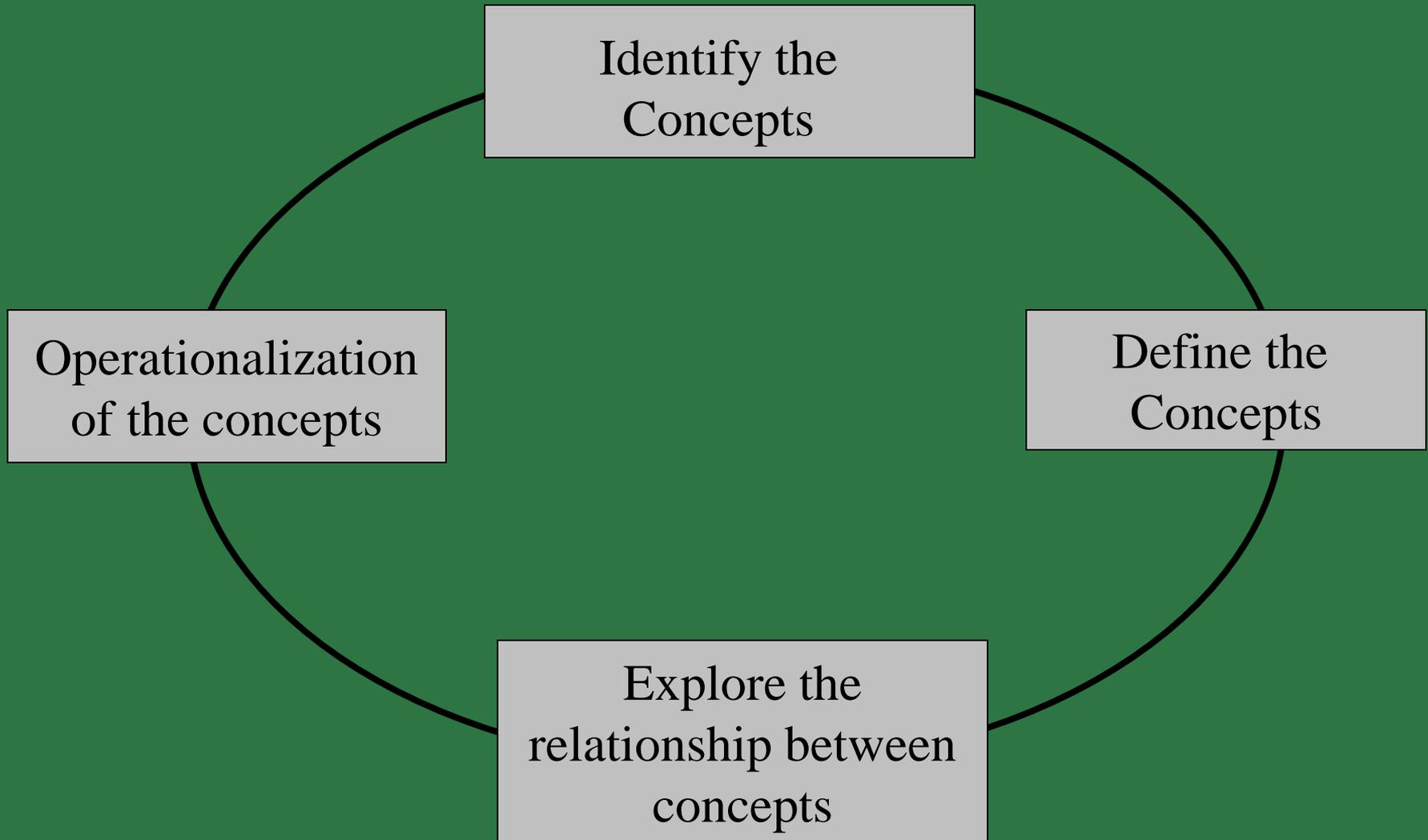
Conceptual Schemes

- Conceptual schemes is how a researcher formulates the relationship between the factors identified as important in the study of the problem formulated from:
 - Past studies
 - Logic and belief
- Helps in the testing and understanding of the variables

Example – Conceptual Scheme



Developing Conceptual Schemes





Characteristics of a Good Conceptual Scheme

- Important variables must be identified and labeled
- Explain the relationship between 2 or more variables based on some theory
- If there are prior research, the relationship, either + or – must be posited
- Must also be able to explain why such relationship exists
- A schematic diagram should be presented so that readers can better visualize the relationship

What is Important in this Chapter?

- Thinking Styles
- Inductive vs Deductive Thinking
- Language of Research
 - Concept
 - Construct
 - Definition
 - Variable
 - Proposition and Hypothesis
 - Theory
 - Model
 - Conceptual Schemes