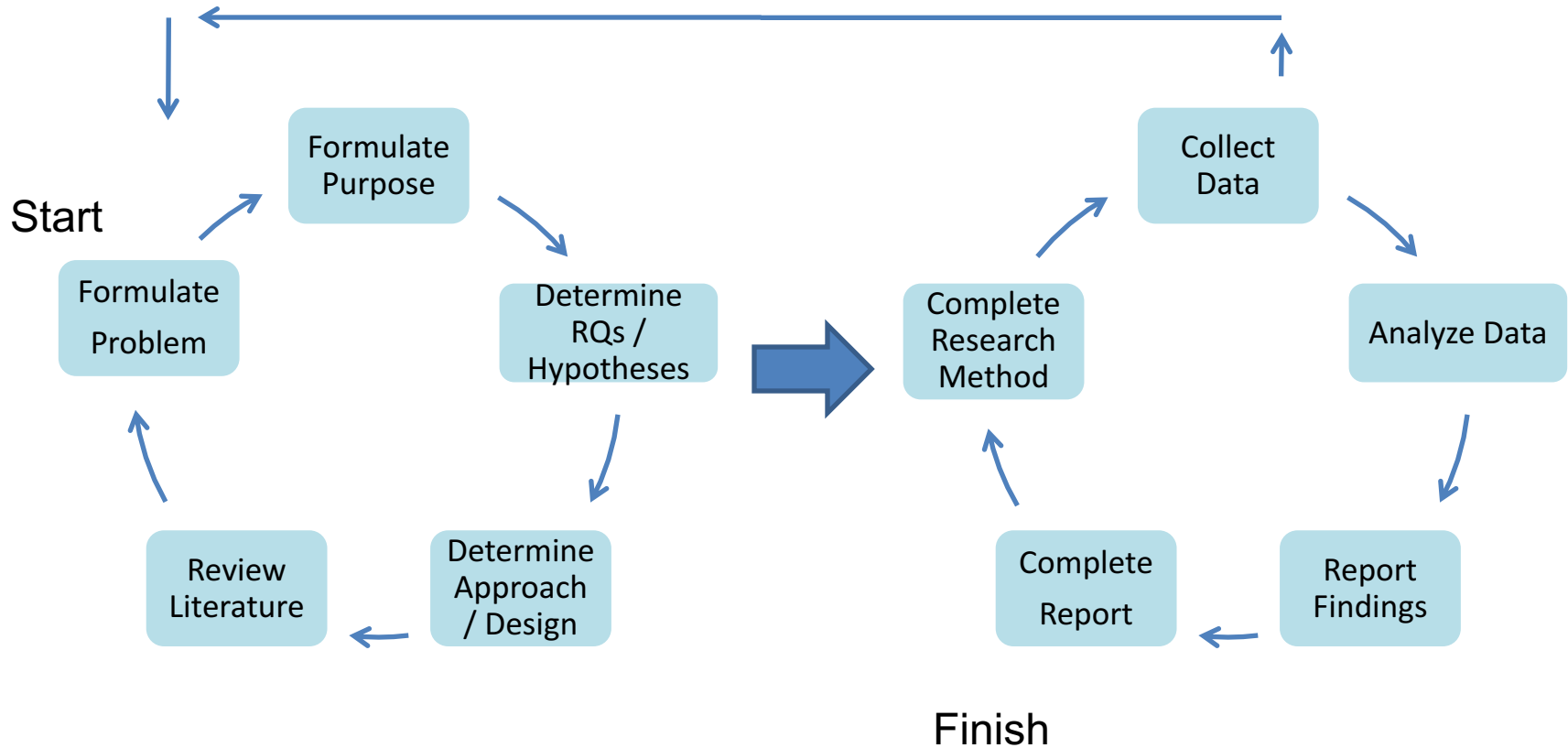


Research Process +

Presented by Dr. David Gould

Research Process



What is a Problem?

- A simple definition of a problem is that it is something to be fixed or something requiring corrective action.
 - For example, an empty coffee cup is a problem!
- What other definitions or cases might be considered problems?
- In each of these cases, there is a gap between the current situation and the desired situation.
 - In the case of the coffee cup, it may be solved as easily as a refill.

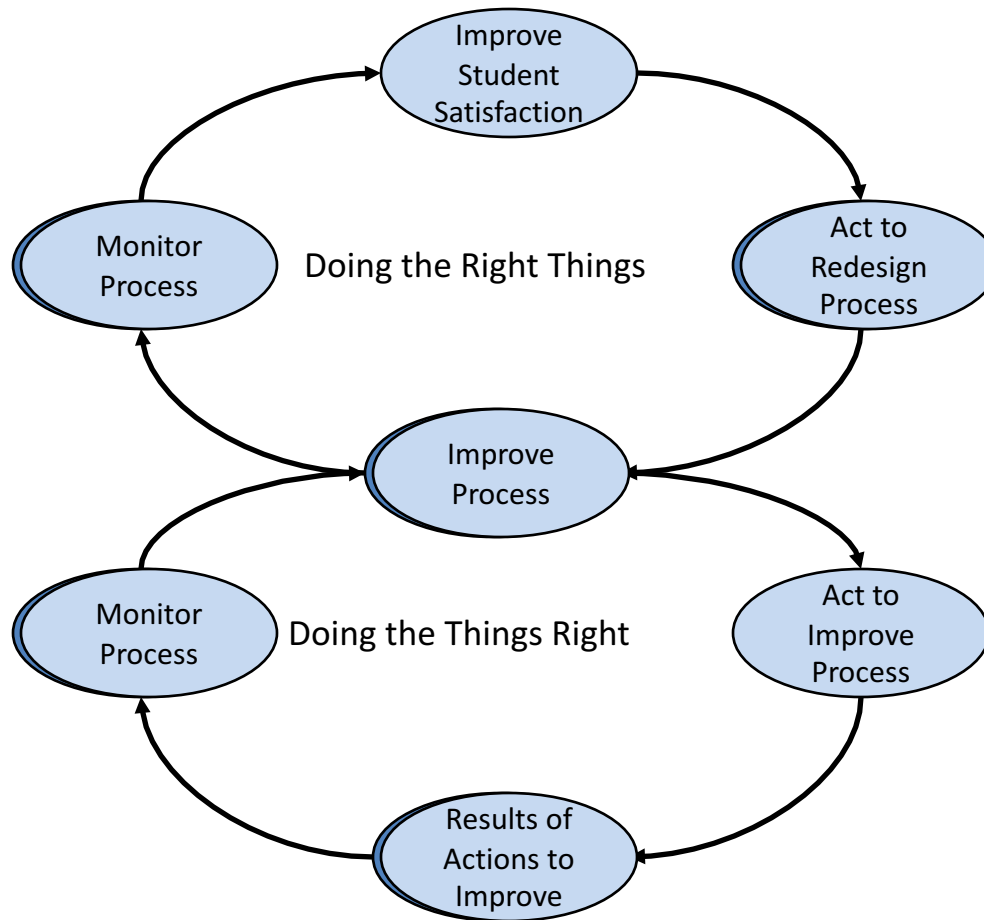
Problem Structure



Can we use single / double loop learning here?

Double Loop Learning

One Example



**Information about
process effectiveness in
serving students**

**Information about
process improvement
and efficiency**

What can we Fix?

- Process(es)
- People (capability)
- Resources
- Outputs (products / services)
- Outcomes

$$y = f(x)$$

Perspective

- The Perspective dimension comes from the common questions a reporter might use.
 - What or content
 - How or process
 - Where or geography
 - Who or stakeholders such as customers, suppliers, management, investors, employees, researchers, ...)
 - When or timing
 - Why or purpose

Sample Problem Statements

- The problem researched in this qualitative case study is that educational leaders at the ABC school have not achieved state mandated standards
- The problem addressed in this study is that inclusive educational settings have been mandated; however educator training is minimal
- The problem to be researched in this paper is to discover themes or patterns that would improve guidelines for developing an organizational strategy.

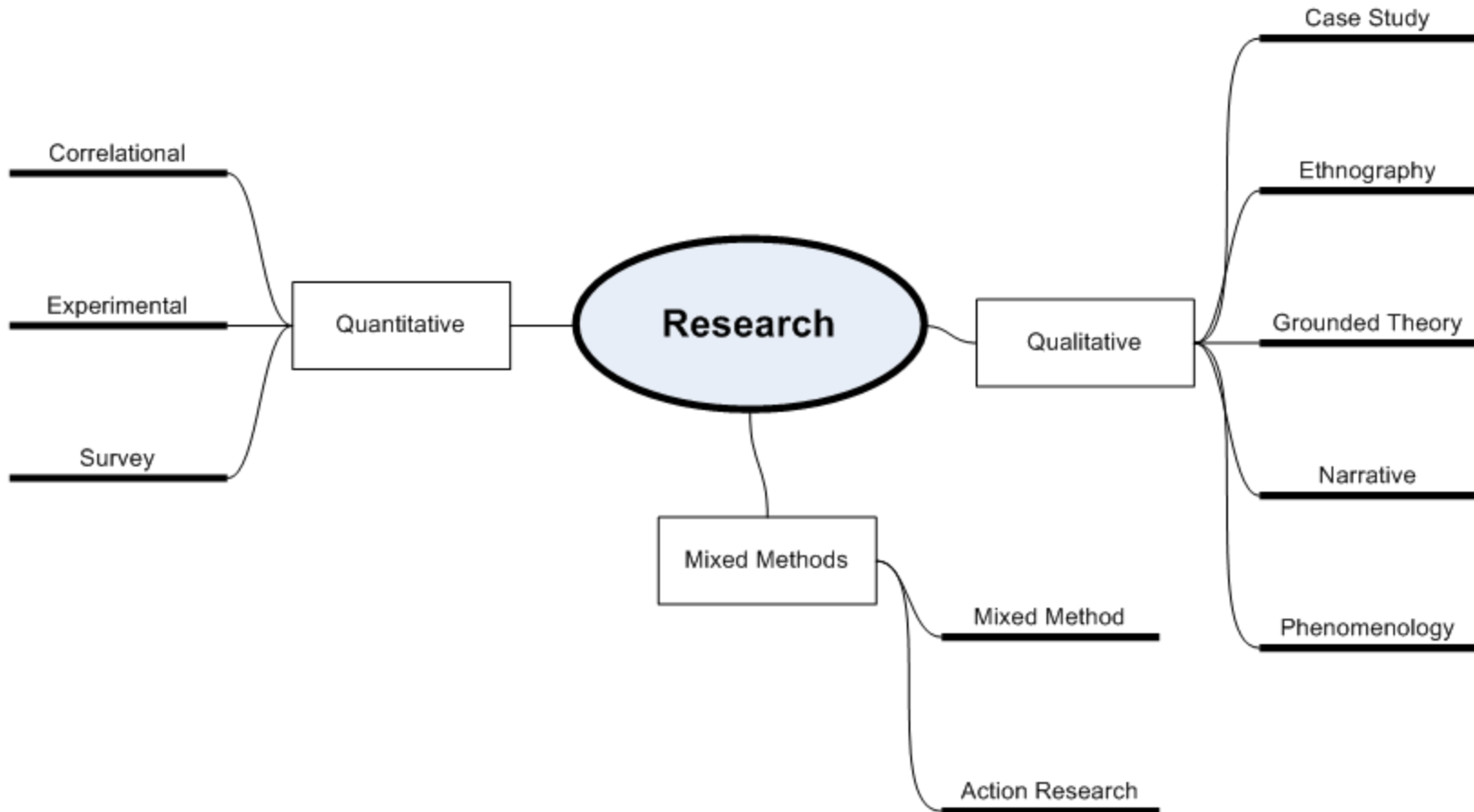
Example

- Research topic: The ABC program
- Research problem: The lack of students enrolling in the ABC program
- Research purpose: To explore ?????
- Research question(s): ??????

Example (cont)

- We could study what (or the content of) the problem
- We could study how (or the process of) the problem
- We could study where this is a problem
- We could study who is involved in this problem
- We could study when this is a problem
- We could study why this is a problem

Research Approaches and Designs



Sources: Creswell, J. (2003). *Research Designs*. Creswell, J.W. (2005). *Educational Research*

Quantitative Designs

- Correlational Design
 - To relate two or more variables to determine influence
- Experimental Design
 - To establish possible cause and effect
- Survey Design
 - To describe trends

Qualitative Designs

- Case Study
 - A study of an individual, several individuals, a group, a program, a process
 - Ethnography
 - To study a culture-sharing group over time
 - Grounded Theory
 - To generate a theory or explanation of a process
 - Narrative Research
 - To describe stories chronologically over time
 - Phenomenology
 - To describe people' s “lived experiences”
- Source: J.W. Creswell

Mixed Methods

- Action Research
 - Use when a specific problem has to be solved
- Mixed Methods
 - Use when both quantitative and qualitative can be collected
 - Types of designs
 - Sequential
 - Concurrent
 - Transformational

Data Collection Techniques

- Interviews
- Observation
- Sampling
- Surveys / Questionnaires
- Audiovisual materials
- Focus Groups

Data Analysis Techniques

- Quantitative
 - Statistical analysis
 - What else?
- Qualitative
 - Text analysis
 - Descriptions
 - Pattern analysis
 - Modeling
 - What else?

Coding

- Assigning symbols to responses in order to group into a limited number of categories
- Examples
 - Numbers such as 1, 2, or ..
 - Symbols such as A, B, C, MOT, BEH, ...
 - M for male, F for female

Coding Types

- Open Coding
 - Categorize collected data – interviews, observations and such
- Axial Coding
 - Select one open coded category and relate other categories to it; e.g., draw a diagram
- Selective Coding
 - Develop a theory based on the interrelationship of the categories in the axial coding model

Themes or Patterns

- Search for word / phrase repetition
- Compare and contrast
- Search for social patterns such as conflict, control, leadership, submission, power, status
...
- Relationships
- Metaphors ...

Statistical Analysis

- Descriptive Statistics
 - Methods of organizing, summarizing, and presenting data in an informative way
 - Measures such as mean, variance, standard deviation, range
- Inferential Statistics
 - Methods used to find out something about a population, based on a sample
- Which is better?

Critical Thinking

Reporter's Questions

Who?
(stakeholders)

What?
(content)

Where?
(geography)

Why?
(purpose /
reason)

When?
(time)

How?
(process)



The Five Why's

- Why?
 - Why?
 - Why?
 - Why?
 - » Why?

Purpose – to drill
down to root cause

Induction and Deduction

- Deduction – drawing conclusions that must necessarily follow known facts stated in the premises
- Induction – Deriving probable conclusions from general observations of diverse facts

Syllogism

- A three step form of reasoning which has two premises and a conclusion.
- Example of a categorical syllogism
 - Major premise: all people are learners
 - Minor premise: ann is a person
 - Conclusion: therefore ann is a learner

Informal Deductive Fallacies

- Fallacy of Division
 - The attempt to argue what is true of the whole is true of its parts
- Either / Or Fallacy
 - The all-or-nothing fallacy
 - Doesn't acknowledge both alternatives could be true, that gray areas exist, or other possibilities exist

Informal Inductive Fallacies

- Fallacy of Composition
 - Assumes that what is true of the whole's parts is true of the whole
- Slippery Slope
 - Once an action is initiated, there is no stopping it until it hits bottom

Induction

- Begin with some evidence or observations
- Draw some conclusions or generalizations
- Are conclusions likely or absolutely true or ?
- Example.
 - Evidence / observation: My students have always obtained their PhD – none have been ABD
 - Conclusion: All of my students will obtain a PhD
 - Valid???

Scientific *Thinking*

Scientific Thinking

Observation

Formulate a hypothesis

Experimentation / data collection

Verification

Observation

- Phenomena / events
- Relationship between events
- Cause and effect

Hypothesis

- A tentative statement about the relationship between two variables, usually in the form of a prediction.
 - Sample form: If A, then B.
 - Example: If we complete our doctorate, then we will earn more money
- A hypothesis is testable

Experimentation

- The method or process of determining whether the hypothesis is correct or not.
- This process includes data collection.

Verification

- The analysis of our data to see if the data support or dispute (falsify) the hypothesis

Theory

- **Theory** - a set of systematically interrelated concepts, definitions and propositions that are advanced to **explain** or **predict** phenomena (facts); the generalizations we make about variables and the relationships among variables.

Writing Hints

- Cite in past tense
- Use section headings and key words
- Be clear, concise, precise, and accurate.
- Provide breadth and depth and relevancy
- Be sure the paper is logical
- Double space everything except block quotes and references
- Use third person, first person ok in APA V6
- Use active voice, no passive voice
- One space after periods (between sentences)
- Strive for at least 100 references, mostly peer reviewed journals, and mostly within past 5 or 6 years
- Do not cite Wikipedia, dictionaries, and such
- Use Microsoft Word as a word processor, not a typewriter
- Learn to love APA formatting

References

- Creswell, J.W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches, 2nd Ed.* Thousand Oaks, CA: Sage.
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