

The Research Process

Part I

Definition, Methods, Forms, Sources, Project types

Definition

Research is a human activity based on investigation, which begins with observation.

It is a process involving basically three steps:

1. **Discovery** - the act of detection followed by application of insight. In serendipity, one makes an accidental fortunate discovery
2. **Interpretation** – assigning meanings or values to discoveries
3. **Revision** – modification of interpretations based on logic

The goal of the research process is

to produce new knowledge, or to offer a new manner of understanding present knowledge.

We use two basic research methods, scientific and historic.

The Scientific Method

This method involves techniques for

- investigating phenomena
- acquiring knowledge
- or correcting and integrating previous knowledge

The Scientific Method Gathers Evidence that is:

- observable (internal states of a system can be inferred by knowledge of its external outputs)
- empirical (dependent on evidence or consequences that are observable by the senses)
- measureable (the process of estimating an object's magnitude relative to some unit of measurement)
- subject to the scientific principles of reason.

A scientific method consists of the collection of data through observation and experimentation, and the formulation and testing of hypotheses (a suggested explanation for a phenomenon, or of a reasoned proposal suggesting a possible correlation between multiple phenomena)

The Historical Method

- The historical method involves techniques and guidelines by which historians use primary sources and other evidence to research and then to write history

- This approach may also be used with artistic project development

Research Forms

- Exploratory research - structures and identifies new problems
- Constructive research - develops solutions to a problem
- Empirical research - tests the feasibility of a solution using empirical evidence

Your project may involve multiple research forms

Research Sources

- Primary Research – collection of data not previously existent (IRB submission may be required)
 1. Interviews
 2. Surveys
 3. Speeches or performances
- Secondary Research - summary, collation and/or synthesis of existing research
 1. Books
 2. Journals and magazines
 3. Electronic database – library
 4. Internet - primarily .org, .edu, .gov

At the University, you may perform

- problem solving – select an existing problem and seek a solution
- case study - in-depth, longitudinal examination of a single instance or event
- experiments – a set of observations performed in seeking to solve a problem
- interviews – for information or for assessment – IRB submission required
- simulation – an imitation of some real thing, state of affairs, or process. The act of simulating something generally entails representing certain key characteristics or behaviours of a selected physical or abstract system.

At the University, you may perform, con't.

- content or textual analysis – studying the content of communication: Who says what, to whom, why, to what extent and with what effect?
- surveys – used to collect quantitative information about items in a population – opinion or factual information – IRB submission required
- statistical analysis - the collection, analysis, interpretation or explanation, and presentation of data

•ethnography - the genre of writing that presents varying degrees of qualitative and quantitative descriptions of human social phenomena, based on fieldwork, or the collection of raw data

You may be creative

- art
- photography
- creative writing
- website construction

Physical Product or Artifact

- Printed Reports
- Collections of items
- Slides
- Laboratory culture (photos)
- Power Point
- Photography
- Creative writing

The physical artifact for the Honors Program Research must be presented to the Director three weeks prior to graduation.

Creative Projects may require

- Interviews
- Literature review
- Use of subjects (photography – IRB submission and permission of subjects required)
- Website posting permission
- Production of lengthy or large physical artifact

Verbal Presentation

- University Spring Symposium
- Professional meeting in your discipline
- Non-discipline related gatherings
- Great Plains Honors Council Conference

A faculty person must be present and must verify your presentation.

The verbal presentation for the Honors Program Research must be presented at least three weeks prior to graduation.

The Research Process

Part II

Shaping the Research Question

Definition

•A research question is one that yields hard facts to help solve a problem, produce new research, add to theory, or improve services. A question that yields opinions can be interesting but is not generally researchable.

Clarification

•Research deals with facts, with **observable phenomena** in the real world. A research question will result in answers that

- Explain
- Describe
- Identify
- Substantiate
- Predict
- Qualify

Why Ask the Question?

•Because research deals with the real world, findings should add to knowledge that can be used by other researchers, theorists, students, or practitioners. The investigation of the question should improve

- Health Practices/Knowledge
- Services
- Procedures
- Technology
- Business
- Aesthetic understanding

Initial Problems with the Question

Many students find research a difficult process and feel overwhelmed before they complete the research and explain their findings. They stop before they have any sense of completion because:

- They lacked a clearly stated question with which to work
- They chose a highly complex question as their first effort

Clarity is a Must

Research questions must be clear, because

- Fuzzy questions yield fuzzy answers
- The clearer the question, the clearer the answer
- Clear questions are more usable in any area
- A simple, clearly stated question assures a feeling of confidence that will support proposal development

Directive Questions - Examples

•If the research question were about a particular business or scientific phenomenon, one might ask, for instance:

- When did it happen?
- In what way (how) did it happen?
- Why did it happen?
- To whom did it happen?
- What difference did it make, now that it has happened?
- What predictions can one make for its future?

Directive Questions - Examples

If the research question is about a service, questions could include:

- What are the benefits of this service?
- Who needs this service?
- Why are some subjects not receiving this service?
- How do those who receive it use it?
- What would be the effects of removal of this service?
- What predictions can one make for its future?

Directive Questions - Examples

If the research project deals with an artistic or creative endeavor, one might ask:

- Why should the public better understand this topic?
- What is the specific benefit of this creative activity?
- What will the public gain from viewing this creative act?
- How are special skills revealed through this act?

Don't ask a "sitter"

Questions should demand more of an answer than a simple "yes", "no", or "maybe".

Without some movement in it, the question is just a "sitter," without impetus or direction.

Sitters are questions that elicit answers such as, "Yes, that's interesting," or "No, I don't think so."

The Process of Building Research Questions

Guidelines will simplify the process for building research questions. The way research questions are worded has a profound effect on the research process that follows. There are two basic components to every question, namely:

- the stem

- the topic

First Rule: Start With a Simple Question

A simple question has one stem and one topic. You start with a simple question; that means a question with *one stem* and *one topic*.

Example: In this question *Who pays taxes?* the stem is “who” and the topic is “taxes”.

Second Rule: Use Action Questions

- Any question that can be answered by a “yes” or “no” is not action oriented. These questions are stoppers.
- Questions that begin with “should” or “could” are stoppers; they elicit opinions, not facts. For example, “Should day care facilities use recycled products?” is a stopper.
- Active questions imply that the researcher will have to measure or observe something
- Therefore your research questions must be:
 - action-oriented
 - demanding some activity on your part

Third Rule – An Abstract Topic Requires a Concrete Answer

- Measurement in research means examining an abstract idea to derive a concrete answer.
- Whether the answer is in numerical form or a description, it is observable and concrete.

Fourth Rule: Avoid Inactive Verbs

- Avoid using inactive verbs such as “do” at the beginning of your question. They elicit an opinion rather than some activity directed toward research. Examples:
 - Do we need a new system for paying taxes?*
 - Does underground trafficking in humans exist in the United States?*
 - Do women participate in the military?*
 - Do children respond to recycled materials?*
 - Do some U.S. citizens want to end immigration?*

Fourth Rule, cont.

You do not want a question answerable with a simple “yes” or “no”. Begin by changing “do” to “what”. The previous questions become:

What new system for paying taxes can be developed?

What about our culture promotes underground trafficking in humans in the United States?

What advantages result from women participating in the military?

What results from children responding to recycled materials?

What reasons lead some U.S. citizens to desire an end to immigration?

Continue to revise for the sake of clarity and accuracy.

Sample Question Patterns

- What is the relationship between _____ and _____?
- Why does nature _____?
- Why do humans _____?
- Why is _____ important/useful/enduring/valuable?
- What results from _____ ?

Don't settle

- Don't settle for the first question
- Don't settle for the earliest format of your question
- Practice use of active verbs
- Practice use of words that will imply and elicit action/reaction