

# A quick review of several areas of research methodologies

Moinul Morshed Porag Chowdhury

Postdoc

Department of Computer Science  
New Mexico State University

March 18, 2021

# Outline

- 1 General Overview
- 2 Research Problem
- 3 Literature Review
- 4 Specifying Purpose
- 5 Collect Data
- 6 Analyze
- 7 Report
- 8 More

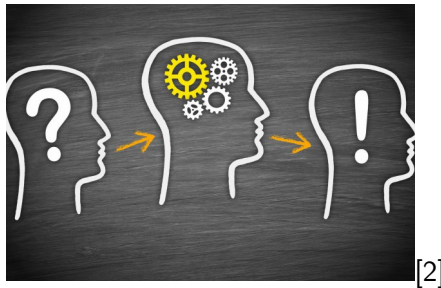


[1]

# Research at a glance

Three basic steps:

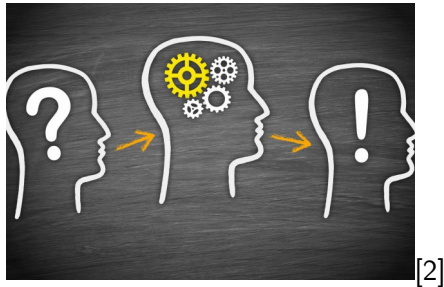
- 1 Pose a question



# Research at a glance

Three basic steps:

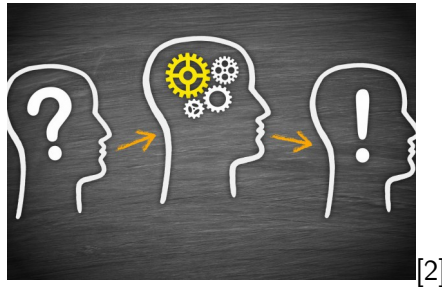
- 1 Pose a question
- 2 Collect data to answer the question



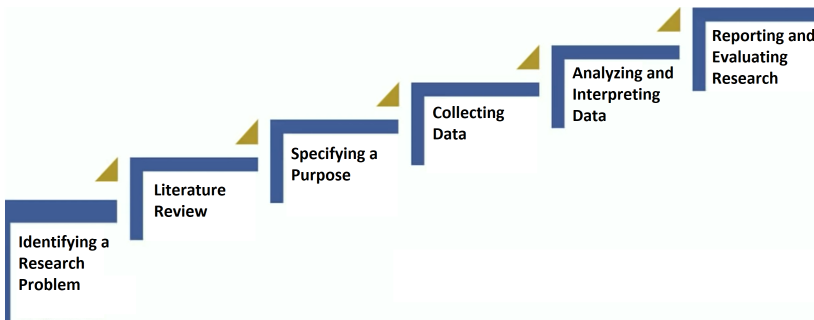
# Research at a glance

Three basic steps:

- 1 Pose a question
- 2 Collect data to answer the question
- 3 Present an answer to the question



# Steps in the process



# Outline

- 1 General Overview
- 2 Research Problem**
- 3 Literature Review
- 4 Specifying Purpose
- 5 Collect Data
- 6 Analyze
- 7 Report
- 8 More



# Finding an interesting problem

- Select Topic of Interest



# Finding an interesting problem

- Select Topic of Interest
- Some issue or problem that needs to be solved



# Finding an interesting problem

- Select Topic of Interest
  - Some issue or problem that needs to be solved
  - You will state the problem in the introductory section of your paper and state the rationale for their importance.
- [3]



# Outline

- 1 General Overview
- 2 Research Problem
- 3 Literature Review**
- 4 Specifying Purpose
- 5 Collect Data
- 6 Analyze
- 7 Report
- 8 More

# Literature Review

- Who has studied the problem before?  
What do they think?



**Literature Review**

# Literature Review

- Who has studied the problem before?  
What do they think?
- Lit Review Sources
  - Locating summaries
  - books, and
  - journals, and indexed publications on a topic.



**Literature Review**

# Literature Review

- Who has studied the problem before?  
What do they think?
- Lit Review Sources
  - Locating summaries
  - books, and
  - journals, and indexed publications on a topic.
- Lit Review writing:
  - selectively choosing which literature to include in your review, and then summarizing the literature in a written



**Literature Review**

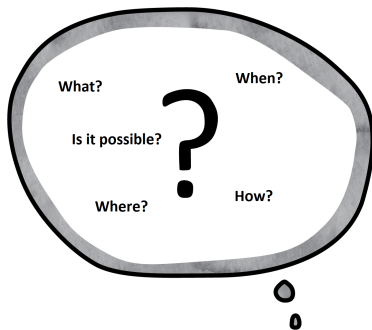
# Outline

- 1 General Overview
- 2 Research Problem
- 3 Literature Review
- 4 Specifying Purpose**
- 5 Collect Data
- 6 Analyze
- 7 Report
- 8 More



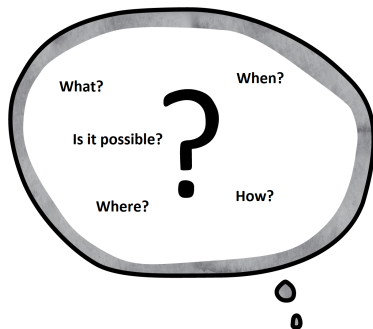
# Research Question

- Identify major purpose or objective of the study



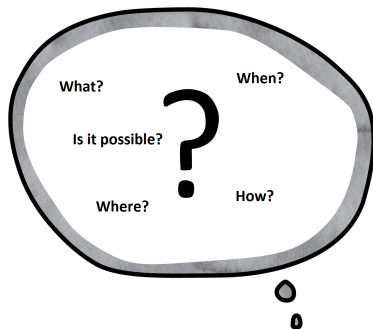
# Research Question

- Identify major purpose or objective of the study
- Clear, Focused, Concise



# Research Question

- Identify major purpose or objective of the study
- Clear, Focused, Concise
- Measurable, observable data or Participant experience



# Outline

- 1 General Overview
- 2 Research Problem
- 3 Literature Review
- 4 Specifying Purpose
- 5 Collect Data**
- 6 Analyze
- 7 Report
- 8 More

# Collect Data

- Identifying and selecting individuals for study



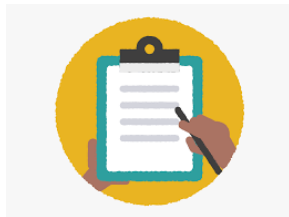
# Collect Data

- Identifying and selecting individuals for study
- Obtain permission



# Collect Data

- Identifying and selecting individuals for study
- Obtain permission
- Gathering information by asking questions or observing behaviour



# Collect Data

- Identifying and selecting individuals for study
- Obtain permission
- Gathering information by asking questions or observing behaviour
- Simulation





# Outline

- 1 General Overview
- 2 Research Problem
- 3 Literature Review
- 4 Specifying Purpose
- 5 Collect Data
- 6 Analyze**
- 7 Report
- 8 More

# Analysing and Interpreting data

- Drawing conclusions



# Analysing and Interpreting data

- Drawing conclusions
- Represent information in table, pictures and figures



# Analysing and Interpreting data

- Drawing conclusions
- Represent information in table, pictures and figures
- Explain findings



# Outline

- 1 General Overview
- 2 Research Problem
- 3 Literature Review
- 4 Specifying Purpose
- 5 Collect Data
- 6 Analyze
- 7 Report**
- 8 More

# Reporting and Evaluating Research

- Structuring the report



# Reporting and Evaluating Research

- Structuring the report
- Presenting



# Reporting and Evaluating Research

- Structuring the report
- Presenting
- Submitting





# Outline

- 1 General Overview
- 2 Research Problem
- 3 Literature Review
- 4 Specifying Purpose
- 5 Collect Data
- 6 Analyze
- 7 Report
- 8 More**

# Methodology and Methods

- Methodology is a rationale behind your research and the lens through which you will analyze your research.

## Examples

Researchers systematically looks at a problem and tries various solutions to see how effective they are.

# Methodology and Methods

- Methodology is a rationale behind your research and the lens through which you will analyze your research.

## Examples

Researchers systematically looks at a problem and tries various solutions to see how effective they are.

- Methods are the tools you will use to carry out your research.

# Methodology and Methods

- Methodology is a rationale behind your research and the lens through which you will analyze your research.

## Examples

Researchers systematically looks at a problem and tries various solutions to see how effective they are.

- Methods are the tools you will use to carry out your research.
  - Survey or questionnaire

# Methodology and Methods

- Methodology is a rationale behind your research and the lens through which you will analyze your research.

## Examples

Researchers systematically looks at a problem and tries various solutions to see how effective they are.

- Methods are the tools you will use to carry out your research.
  - Survey or questionnaire
  - Controlled experiment

# Quantitative and Qualitative

- Quantitative: conversion of observations into data for the purpose of analysis from a neutral "objective" perspective.



# Quantitative and Qualitative

- Quantitative: conversion of observations into data for the purpose of analysis from a neutral "objective" perspective.
- Qualitative: description and interpretation of observations from a biased, "subjective" perspective.



# Ethics

- Honesty





# Ethics

- Honesty
- Objectivity
  - Bias recognition



# Ethics

- Honesty
- Objectivity
  - Bias recognition
- Integrity
  - Do the work!



# Ethics

- Honesty
- Objectivity
  - Bias recognition
- Integrity
  - Do the work!
- Carefulness
  - Do the work, conscientiously



# Ethics

- Honesty
- Objectivity
  - Bias recognition
- Integrity
  - Do the work!
- Carefulness
  - Do the work, conscientiously
- Respect for intellectual property
  - Thou shalt not steal - any other person's ideas!!



# Ethics

- Honesty
- Objectivity
  - Bias recognition
- Integrity
  - Do the work!
- Carefulness
  - Do the work, conscientiously
- Respect for intellectual property
  - Thou shalt not steal - any other person's ideas!!
- Confidentiality
  - Do not reveal anything that could get someone into trouble!



# The end

Thank you for listening.

# Bibliography

- [1] *What is research?* <https://youtu.be/mV0bUQpz468>, Accessed: 2021-03-18.
- [2] *British school of coaching.*  
<https://www.britishschoolofcoaching.com/what-makes-a-good-research-topic-and-what-makes-a-good-research-question/>, Accessed: 2021-03-18.
- [3] *Intro to research methodology,*  
[https://www.youtube.com/watch?v=1LGuNn9Q0bI&ab\\_channel=GaryGramenz](https://www.youtube.com/watch?v=1LGuNn9Q0bI&ab_channel=GaryGramenz),  
Accessed: 2021-03-18.