
Basics of a Research Plan

What is a Research Plan?

- A plan written/outlined in the **FUTURE TENSE BEFORE** start of experiment (NOT a Science Project Report).
- Plan must be **APPROVED PRIOR** to start of experiment by Sponsor and SRC/IRB (where applicable).
- The Research Plan states the method or steps that **WILL BE USED (FUTURE TENSE)**.
- It should **NOT HAVE** data and conclusion. **IS NOT** written in the past tense.
- Refer to the "Intel Rules and Guidelines" at www.societyforscience.org. Click on "Student Science". Go to "Rules, Forms, and Resources". Click on "Forms" and then on the link for the "Research Plan Instructions".

The Research Plan Format Should Include the Following:

A. Rational: A brief **BACKGROUND** summary that **SUPPORTS** the research problem **EXPLAINING** why the project is **scientifically important**. Could it have an impact on society? It is **NOT** the plan.

B. Question: A statement stated as a **question** leading to the study. Use the **QUESTION MARK!!!**
AND/OR

Problem: Stated as the Purpose, Problem, Objective, or Engineering Goal.

- **DO NOT USE** personal pronouns! Action words should be in the **FUTURE TENSE!**

Hypothesis: A temporary answer/educated guess based on known information.

- Follows the Purpose (Problem, Objective, or Engineering Goal).
- Use "**IF/THEN**" format. **RELATE** it to the question and Purpose (Problem/Objective, etc.)
STAY AWAY from "I think that. . ." It should be direct, clear, and **NOT** wordy.

C. Method or Procedure: (Use **FUTURE TENSE**)

- May be written as a stepwise outline, in sections, or in phases.
- Detail the procedure and experimental design that **WILL BE** used very clearly and complete!
- **STAY AWAY FROM** personal pronouns like "I will . . . , We will . . . , Next I will . . . etc."
- **Do NOT START OFF** with: "Step 1. Gather all the supplies". This is not part of the experiment!!
- **Use METRIC** Measurements. Include concentrations, quantities, and major equipment.
- **Risk & Safety:** Identify any potential risk and safety precautions needed.
- **Data Analysis:** Include a section describing the procedures that **WILL BE USED** to analyze data.
- **Discussion of Results & Conclusion:** **FUTURE TENSE**. Discuss data/results that **CAN BE DRAWN**

Human Subject Studies (Intel International Rules and Guidelines)

- Include exactly what the Human Subjects **are being asked** to do.
- Give the number of subjects that **will be** involved, their ages, gender, recruitment, etc.
- Describe the Risk Assessment process and how risks **will be** minimized (Form 4).
- Explain what strategies **will be** used to protect privacy and confidentiality (Form 4).
- Submit a sample of **Inform Consent Form**. EACH Human Subject needs to sign one if applicable.
- If applicable, include a copy of surveys, questionnaires, or tests administered.

Vertebrate Animal Studies (Intel International Rules and Guidelines)

- Justify the use of non-human vertebrate animals. What contribution **will** the study have?
- Give the number of animals **to be used**, their species, strain, sex, etc. and describe housing, daily care and all procedures/methods to minimize discomfort, pain, and injury.
- What **will** happen to the animals after the study?

Potentially Hazardous Biological Agents (Intel International Rules and Guidelines)

- Give the Biosafety Level (BSL), source of agents, source of specific cell line, etc.
- Where **will** bacteria or fungi be collected, ordered from, cultured, observed, and disposed of?
- What **will be** the safety or sterilization procedures that **will be** used? Supervision?

Hazardous Chemicals, Activities, & Devices (Intel Intl. Rules & Guidelines)

- Describe risks involved, the safety precautions, supervision, and procedures to minimize risk.
- Detail chemical concentrations, drug dosages, disposal, and type of hazardous equipment.

D. Bibliography: Need at least **5** major **RELIABLE** references. Use a proper format. *Internet resources* should have the: 1) author if given, 2) title of the article, 3) website, 4) date the article was posted on the website or the date it was retrieved by the student from the website. **DO NOT JUST GIVE A WEBSITE!!!**

Note: Search for bibliography templates on the Internet or how to do a bibliography.