Middle School - Research Proposal Instructions

A typed, detailed research proposal is required for ALL projects and MUST accompany the Student Researcher Checklist Form (1A) and Risk Assessment Form (3) and be completed PRIOR to experimentation.

The Research Proposal is a brief, but detailed explanation of the rationale behind the project idea, the research question(s), the procedures/methodology, the risk assessment and background exploration. This MUST be completed PRIOR to experimentation in order to be approved by the Adult Sponsor and the SRC/IRB (if required). Any changes to this proposal MUST be documented (make an amendment to the original document) and approved by the Adult Sponsor and the SRC/IRB (if required) before work can continue on the project.

The research proposal for ALL projects MUST include the following parts:

1. What is the **rationale/reason** for doing this project? Include a brief summary of the background research you did in relation to your project and explain why this research is important scientifically and, if applicable, any impacts to society in general your research has.
2. State your **hypothesis(es)**, **research question(s)**, **engineering goal(s)**, and/or **expected outcomes** (predictions) for your project. Be sure this ties into your rationale/reason.
3. Provide a COMPLETE list of **materials**.
4. Detail ALL **procedures** and **experimental design** processes that you are going to follow. Be sure to include exactly how data is going to be collected. If you are using data that you do not collect directly, include the source of that data. If you are working at more than one site, please explain what will be done where (i.e.: What is being done at school vs. home?).
5. Identify ANY and ALL **potential risks** and safety precautions you need to be aware of in completing your project. This should include the building of any apparatus needed to collect data for your project. Include this information on the Risk Assessment Form 3.
6. Describe the procedures you will use to **analyze the data/results** to answer your research question(s) or hypothesis(es).
7. List the **major references** (for example: science journal articles, books, internet sites, etc.) that you read in your background exploration in the proper works cited format. If you plan on using vertebrate animals in your project, one of these MUST be an animal care reference. *Please note that Wikipedia should NOT be listed as a major reference.*

If your project includes Human Participants, Vertebrate Animals and/or Potentially Hazardous Biological Agents (microorganisms, rDNA, tissue), then your research proposal MUST also include the details listed on page 11.

If changes are made during the course of the experimentation, such changes can be added to the original research proposal as an addendum, recognizing that some changes may require returning to the IRB or SRC for appropriate review and approval. Also, some research proposals in the areas of engineering design, mathematics and computer science may be less detailed and change many times throughout the course of the research. In these cases, a **Project Summary** should be amended to the original research proposal

Middle School - Research Proposal Instructions cont.

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Human Participants: Prior IRB approval and Form 4 *are* required. An Informed Consent Form and Qualified Scientist/Mentor (Form 2) *may* be required by the IRB.

a. Describe in general the type of people who will participate in your study (age range, gender, racial/ethnic composition, etc.). Be sure to identify any protected groups of people (minors, pregnant women, prisoners, mentally disabled or economically disadvantaged).
b. Where will you recruit your participants? How will they be invited to participate?
c. What exactly will the participants be asked to do? Include any surveys, questionnaire or test questions that you want to use. If you plan on using something that you did not create, does it require permission? How often and for how long will each participant be asked to commit to?
d. What are the potential risks or discomforts *(remember to think about emotional as well as physical*) to the participants? How will you minimize those risks?
e. What are the potential benefits to the individual participants as well as to society in general?
f. Will you be collecting any identifiable information (i.e. name, age, grade, phone numbers, birth dates, emails, etc.)? Is this a confidential or anonymous study?

   Confidential studies may collect identifiable information but must be kept separate from the data being analyzed using a number key that only the researcher and adult sponsor has access to.

   Anonymous studies don't collect any identifiable information along with the study so that not even the researcher or adult sponsor knows who gave what answers.
g. How will you inform participants about the purpose of the study, what they will be asked to do, that their participation is voluntary and they have the right to stop at any time? This can be done via an Informed Consent Form or on the survey directly if informed consent is not required by the IRB.

Vertebrate Animals: Prior SRC approval and Form 5A or 5B *are* required. A Qualified Scientist/Mentor Form 2 *may* be required by the SRC.

a. Briefly discuss potential ALTERNATIVES to vertebrate animal use in your project and a detailed justification for using vertebrate animals. Explain the potential impact or contribution to society this project may have.
b. All procedures must be DETAILED and include methods used to minimize potential discomfort, distress, pain and injury to the animals during experimentation. If chemicals or drugs are used, concentrations and dosages MUST be exact.
c. What is the species, strain, sex, age, etc. of the animals being used? How many animals will you be using in the study and why is that number appropriate? What is the source of the animals?
d. Where will the animals be housed (cage/housing size, bedding, etc.). What will be included in the daily care of the animals (food, water, exercise, etc.)?
e. What will happen to the animals at the end of the study?

Potentially Hazardous Biological Agents: Prior SRC approval and Form 6A *are* required. A Form 6B and Qualified Scientist/Mentor (Form 2) *may* be required.

a. What biological agent (microorganism, rDNA, tissue, cell line, etc.) are you using and where did it come from?
b. What Biosafety Level did you determine your project involves and why?
c. How are you going to keep yourself and others in the lab safe while you are working with the biological agents?
d. How are you going to dispose of the biological agents once your project is complete?