Problem Statement

If you are focusing on a problem, be sure to define and state it specifically enough that you can write about it. Avoid trying to investigate or write about multiple problems or about broad or overly ambitious problems. Vague problem definition leads to unsuccessful proposals and vague, unmanageable documents. Naming a topic is not the same as defining a problem.

Weak

Coda file system. [This definition is too vague; it suggests a broad topic but not an approach to the topic.]

Improved

Protecting against temporary link failures in mobile computing: A design for the coda file system.

Weak

Engine starting and warm-up behavior.

Improved

Effects of fuel enrichment on engine starting and warm-up behavior.

Problem statements often have three elements:

1. the problem itself, stated clearly and with enough contextual detail to establish why it is important;

2. the method of solving the problem, often stated as a claim or a working thesis;
3. the [purpose](), [statement of objective]() and [scope]() of the document the writer is preparing.

These elements should be brief so that the reader does not get lost.

[problem and its context] A recent trend in the design of new aircraft is the addition of winglets, which are small fins attached to the ends of the main wing. After an aircraft has taken off and is cruising, winglets improve its performance by reducing the drag caused by the main wing. However, during the critical stages of aircraft takeoff and landing, the winglets cause two problems. First, they cause vibrations in the main wing, commonly called buffeting. Second, they cause the aircraft to lose some control of yaw, the motion of the nose right and left. In a study funded by NASA [Ref. 2], the main wing of a DC-10 transport aircraft was outfitted with winglets, and it experienced significant buffeting during takeoff and landing.

[approach of the current research] In our current project, we examine winglet-induced buffeting in three wing designs. We record buffeting and yaw under experimental wind-tunnel takeoff and landing conditions for (1) a wing without winglets, (2) another wing with conventional winglets, and (3) a wing with spheroid winglets. Our objective is to determine the degree to which differences between load lifts on the wings and their winglets during takeoff and landing are causing the performance problems we have described.

[purpose and scope of current document] In this study, we develop theoretical models of winglet load lifts and compare these to the lifts of wings and winglets actually recorded during testing conditions.

--Tan T. Trinh, "Winglets at Takeoffs and Landings"

TASKS TO HELP YOU BUILD THE PROBLEM STATEMENT

Toward the end of the semester, you will be asked to write a small problem statement for a research effort you have identified through reading published research You will not be asked to carry out any actual data collection, but to instead think through the arguments that need to be made about why and how the research should be carried out. The problem statement is usually the first chapter of a dissertation or the heart of a funding proposal to some agency. The point of the problem statement is to outline the problem to be address and suggest a method by which the problem could be solved (or at least better, more fully understood). The following general questions are posed to help you begin to put together your problem statement; not all questions are appropriate to your problem. These questions have been derived from various guides for writing research proposals and are given here only to suggest a structure for your 5-8 page effort. (Please double space your effort and use type font size 11 or 12 pt.)

Tentative   **Title:**

_____

Introduction

1. Can you think of a dramatic illustration or quote that can set the tone or catch the readers interest for your study? What first awakened your interest?

2. Put yourself in the position of a reader of your problem statement. Would <u>you</u> want to continue reading after the Introduction? Can you place a

<u>general</u> question at the end of the Introduction to intrigue or capture reader?

The Problem Statement - The Heart of a Study

3. Is there something societally wrong, theoretically unclear or in dispute, professionally disturbing, or historically worth studying? Is there a program that needs evaluation and assessment? Try to develop a question which your study would attempt to answer. Then preface that question with enough of an explanation of the problem so that others will understand the question when you finally give it.

4. Discuss the statement with a classmate or with the instructor. Refine the statement so that the reader can restate accurately what your addressed problem is.

Importance/Purpose of the Study

5. Is this really what you want to concentrate on? Why? Give at least 2-3 reasons why the problem you have chosen is important and valid. To you? To the profession? To society?

6. Specify at least two concrete examples of the problem.

7. To what published work, statistics, trends or theoretical controversy does your study relate?

8. Does your study have as a goal to change something? To understand something? To interpret an event or situation? State your goal completely, remembering that the goal is some form of investigative activity.

9. Now, restate the goal succinctly and clearly. Have a classmate or the instructor read it and then see if they can restate your purpose or goal clearly after reading your statement.

10. Restate the goal again beginning with the phrase "The purpose of this study is ... ".

Propose a Possible Methodology

11. Revisit the method we covered earlier in the semester. Which of them could you conceivably use and describe the possible strengths and weaknesses. If there is no clear best choice, consider more than one possibility.

12. If you can reduce your problem and research inquiry to the variable level (usually based upon some previous research you have identified), suggest some variables that you might examine.

Significance (for your own assessment)

13. Place yourself in the position of responding to someone who says "so what" to your study/project. How would you provide a persuasive rationale to such a person?

14. What can happen if your study is done? not done? How will things change? Or not change?

Evaluation Criteria: Clearly Written, Innovative idea (would add new knowledge to the LIS field if carried out), Well organized, Amount of Effort Evident in Finding, Support for Your Decisions,

Understanding Demonstrated of Research Fundamentals, Presentation (punctuation, grammar, etc.)

1. <u>Problem Statement</u>

   The third part of a planning document is the Statement of the Problem. We identified the problem in the Assessment Section by using statistics. Do not forget ----- Foundations and agencies are interested in people problems --- not the problems of your agency. Be sure to couch your problem statement in terms of people problems. In our example, we might say the problem is that the Agency Services Program only reached ___% of the people in need, leaving ___% with unmet needs.

   The fourth part of a planning document is the Statement of Objectives. The fifth part of a planning document is your plan or Methodology for solving problems you've identified. The plan for correcting the problem is your Proposal, because a Proposal is a **planning** document. The sixth part of a proposal is your evaluation. Here you document how well your project went and how you will answer the question: "How well did you meet your objectives?

   Now, go back and look at an example of the six sections of a planning document. This example will help you logically move from the Introduction section of the proposal to the Methods section.

   Mission

Know what you are about. (Teaching new clients about agency services)

Assessment

How well are the needs being met? (Reaching 50% of the potential clients)

Problem

What is the problem? (We need more money, because we don't have the funds to reach all the potential clients)

Is that the best way to word your problem statement?

Remember to couch your problem in **people-oriented terms**. Like this problem:

 "Half the potential clients in our target area don't have the information they need to access the specified service."

See how the problem is now related to **people**, and not to your organization's lack of money.

Now, we can go to the fourth part of a planning document-- the Statement of the Objectives. Objectives describe what is to be achieved.

By 2002, 100% of the potential clients in the district will be able to access the specified service.

Then, the fifth part is the Methodology, which describes how your objectives will be achieved.

Last, but very important, is the Evaluation, which describes how well you meet your objectives. In your proposal show how you will collect data so you can document what percent of the potential clients in the district are able to access the specified service.

Let's recap. A proposal is a plan that requires **proof** and deals with **people problems**. If you carry your written dialogue through the six steps required in a planning document, your document will tell your reader:

A. Who/what you are;
B. How successful you are at doing what you do;
C. What the problem is and what additional help is needed;
D. What your objectives are;
E. How you plan to go about meeting your objectives and solving your problem;
F. How you will document how well you met your objectives and solved the problem.

Steps A and B above are usually handled in the Introduction section of your proposal.

Step C is your Statement of the Problem section in your proposal.

Step D is your Objectives section.

Step E is your Methodology section.

Step F is your Evaluation section.

A proposal is a plan that deals with people problems. In it you clearly outline the problem and how it will be resolved. The six parts of a proposal are:

7. Mission Statement: Identify who you are and what your agency does
   8. Assessment: Identify people's needs using data
   9. Problem Statement: State the people problem
   10. Objectives: State what the people can achieve, or the project's outcomes
   11. Methodology: Outline how you will resolve the people problem
   12. Evaluation: Document how you will measure success or attainment of the objectives

This plan is your proposal. It is your tool for showing the funding agency that your project or research should be funded. With it in hand, you're ready to play the grant game! In the next section Objectives will be discussed more fully