

Writing Spaces

Assignments & Activities Archive

Safety & Accessibility Problem Statement

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Safety & Accessibility Problem Statement

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Overview

The Problem Statement is a collaborative assignment that helps students approach writing as a problem-solving tool, incorporate discipline-specific language in their writing, and identify safety or accessibility issues in their community. In teams of three, students identify a safety or accessibility problem on campus or in the local community, and then propose a discipline-specific solution to solve or ameliorate the problem.

This assignment was designed specifically for mechanical engineering students in junior standing; however, it can be easily adapted for a wider student population. To do so, I suggest keeping the safety/accessibility problem theme and replacing the engineering solution with one more appropriate for the students' academic major. For instance, if a student is an economics major, they would focus on a safety/accessibility problem that can be ameliorated with a solution steeped in economics. The same goes for English students, sociology students, biology students, mathematics students, and so on. If you maintain the collaborative nature of the assignment, you may want to group students together who have a shared major, although this is not required.

One benefit of this assignment is that it prioritizes writing as a problem-solving tool, so one does not need to have an engineering (or economics, sociology, biology, etc.) background to teach this assignment but rather a command on writing and communication. While the solution is based on the discipline-specific knowledge that students have accrued up until this

point in their college career, the overall goal is for them to practice communicating that knowledge clearly and effectively through *writing*.

Time Commitment

Three-four weeks

Materials

Students should be provided with a copy of the assignment description (see Appendix) and sample problem statements.

Assignment Process

- Before writing the collaborative Problem Statement, students write an individual Safety & Accessibility Letter, in formal letter format, where each student identifies a safety or accessibility issue that they've experienced either on campus or in the community. This letter is addressed to an educated audience and details what the problem is and why the problem needs to be addressed (who does it affect). Note: the letter should not attempt to solve the problem.
- Next, students are placed into groups of three where they discuss the problem that each identified from their Safety & Accessibility Letter. Then, as a team, they choose one problem to take to the next phase of the project, upon which they write a collaborative Problem Memo (in proper memo format). Again, students are not solving anything here; rather, the Problem Memo requires the team to explain their decision-making process: what problems they discussed, what problem they chose to move forward, and why they chose that problem. The Problem Memo also requires that the team create a Team Charter. A team charter is a contract of sorts that can be a separate document or one section of a

larger document, depending on the assignment. Charters outline the expectations of both the whole team and individual team members, determining such things as meeting times and locations, roles and responsibilities, correspondence mediums, response times, and project schedule. The goal of the Team Charter is to teach students about project management and help hold team members accountable for their portion of the work.

- The final step before the collaborative Problem Statement is an individual Problem Statement Critique. In this assignment, students familiarize themselves with the problem statement genre and identify areas of effectiveness and ineffectiveness that will inform their own Problem Statement.
- For the Problem Statement itself, students need to answer five main questions: 1) *What* is the problem? 2) *Who* has the problem or need? 3) *Why* does this problem need to be addressed? 4) *How* might the problem be ameliorated or solved with engineering (or another discipline)? 5) What are a few *ethical considerations* that you'll need to keep in mind while addressing this problem (think societal, global/national/regional/local factors, such as environmental or public health and safety; economic factors). The sections of each Problem Statement will vary based on how each team organizes their document; however, the sections should be in logical order with descriptive section headings. To aid in this step, students are provided with several Problem Statement examples (see Appendix) as well as time in class to plan the assignment.
- There is one suggested post-assignment for the Problem Statement. After each team's Problem Statements are reviewed and feedback is provided, each team creates a 5-7-

minute presentation about their Problem Statement (both the problem and solution). While the audience for the previous steps were a general educated audience, the audience for the presentation is an executive board that will decide what projects to fund.

Learning Outcomes

Students engaging in this assignment will:

- Employ writing as a problem-solving tool
- Exchange discipline-specific ideas with a range of audiences
- Plan, organize, draft, and revise a piece of collaborative writing
- Identify and articulate ethical issues in their field of study (by way of safety & accessibility).

Learning Accommodations

- Students may choose their participation roles via a Team Charter that outlines the team's meeting times and locations; team member roles and responsibilities; correspondence expectations; and other expectations as needed.
- Material should be presented in multiple formats (written, visual, and oral) to accommodate a variety of learning styles.

Works Cited

House, Richard, R.A. Layton, J. Livingston, and S. Moseley. *The Engineering Communication Manual*. Oxford, UK: Oxford University Press, 2017.

Appendix: Problem Statement Assignment Description

Assignment Goals:

The primary goal of this assignment is to work with your team to write an effective problem statement that identifies the following: 1. A safety or accessibility problem on [University Name] campus or in the [Town Name] community; 2. The importance of the problem; 3. Who is affected by the problem, 4. How the problem can be addressed through general engineering; and 5. The ethical considerations of the solution.

Context:

A Problem Statement is a genre of writing that addresses an area that, in a very basic way, identifies a problem and poses a solution. As you learned from your Problem Statement Critique, you can write a Problem Statement in a variety of ways (refer to Indeed, Nexea, or Six Sigma for examples of various approaches). For this assignment, you are to work with your team to collaboratively write a Problem Statement based on the safety/accessibility problem you wrote about in your Problem Memo. In this Problem Statement, you must offer a solution that can be solved (or addressed to some degree) specifically with engineering. Maybe you've identified a transportation problem that you argue can be addressed with an automotive project. Or perhaps you've experience something during your tenure at [University Name] that could be improved upon with the use of robotics. Use your own experience here as a student of [University Name] and citizen of [Town Name]. Remember to frame your problem as one of safety or accessibility throughout your document.

Audience:

Your audience for your Problem Statement is the [University Name] Executive Advisory Board, so your writing should be professional, clear, and concise, and written for an educated, but not necessarily an expert, audience. While you're writing, think of the kinds of stories

that draw you in and keep your attention. What is it about those stories that pique your interests? That is what you're striving to do here—write an engaging Problem Statement that draws interest and keeps your audience interested. Additionally, you want your Problem Statement to look professional. To aid in this, use appropriate headings and adhere to the required Problem Statement Formatting Guidelines.

Voice:

You may use either passive or active voice for this assignment as long as you're consistent with it throughout your statement (using first-person pronouns—The Team, we, etc.—is fine as long as you're consistent and you provide clear antecedents for your pronouns).

Assignment:

Once you've identified the problem, write a 1250-1500-word collaborative Problem Statement by answering the following questions:

1. **What** is the problem or need that you've identified? (including the location of the problem)
2. **Who** has the problem or need or who is this a problem for?
3. **Why** is it important to solve this problem?
4. **How** might the problem be solved with engineering?
5. What are 1-2 **ethical considerations** you'll need to keep in mind while addressing this problem (think societal factors; global/national/regional/local factors, such as environmental or public health and safety; economic factors)?

Sections:

You are required to have an Introduction section, a Conclusion section, a Works Cited section, and an Appendix (see below). Beyond that, it is up to you to create your internal sections, with descriptive headings, according to your specific topic. You may also use visuals in your statement; however, you must provide appropriate caption/title for them and refer to them in your body text.

Lastly, complete the table below and add it as an appendix to your Problem Statement. The table needs an appropriate title and a brief introduction in the body text (as per our class lesson) and does not count toward the assignment word count.

Name	Project Contribution	% of Contribution

References:

For this assignment, you need to cite 1-2 external sources in your statement to support your idea. Use IEEE style for all in-text citations and references.

Directions:

1. Follow the grammar and writing lessons that you've learned about so far in class.
2. Answer the assignment questions as described above in 1250-1500 words.
3. Use appropriate sections and section headings (including Introduction, Conclusion, Works Cited, and Appendix sections) and format the document according to the Problem Statement Formatting Guidelines.

4. Choose one member of your team to upload your final assignment to Canvas by [due date].

Grading and Feedback

This assignment is worth 100 points; a complete rubric can be found in Canvas.