Problem Statements Worksheet

Problem Statements are concise and provide clarity about the problem frame. Your problem statement should begin with one or two sentences describing a vision of what is possible if the problem is solved. Next, describe—in one to two sentences—what the specific issues are. This should include who, what, when, where and why. Finally, in one to two sentences, describe the primary symptoms of and evidence for the problem. Do not include solutions in your problem statement!

Expect to write your problem statement multiple times to capture changes in your understanding of the problem.

Instructions

Read the examples in the first few problems below and answer the reflection questions. Some of the examples are annotated. In a final, professional version, the annotations would not be included. Some of the questions have right answers, but others have multiple possible answers. In the later questions, you’ll practice writing your own and evaluate them.

1. Read scenario 1 and versions of problem statements showing how they can evolve, then answer the reflection questions.

Scenario 1: Management at a chemical plant identifies that the most expensive chemical is not typically used efficiently, unless it is used under specific conditions. They contract an instructional designer to create a job aid to ensure the chemical reactor is operated optimally. The reactor includes 15 stages, six chemicals, and gauges for setting pressure, temperature, and rate at each stage. Data suggest workers tend to apply settings from a similar reactor, resulting in waste.

- **Version 1:** If the chemical plant operates at optimal efficiency, the research and development department will have funds that allow them to innovate new and lucrative processes (a practical, economically-motivated vision). Currently, the problem is that the plant is not operating efficiently (what), and workers (who) commonly (when) apply settings to the primary reactor (where) from another reactor, resulting in waste of the most expensive chemical (what). Management (who) assumes the workers (who) do not understand the reactions and consequences of their actions (why).

- **Version 2:** If the chemical plant operates at optimal efficiency, the research and development department will have funds that allow them to innovate new and lucrative processes (a practical, economically-motivated vision). Currently, the problem is that the plant is not operating efficiently (what). Based on interviews with workers (who), it is clear they understand the reaction, but have found the equipment never functioned according to specs (what). It is unsafe to run under optimal settings (what), but they have never (when) communicated this to management (who) because of power dynamics (why) between workers (who) and management (who).

- **Version 3:** If the chemical plant operates at optimal efficiency, the company will waste less, contributing to their triple-bottom line mission, allowing them to be a leader in minimizing the use of conflict minerals (a sustainability-minded vision). Currently, the problem is that the plant is not operating efficiently (what). Based on interviews with workers (who), it is clear they understand the reaction, but have found the equipment never functioned according to specs (what). It is unsafe to run under optimal settings (what), but they have never (when) communicated this to management (who) because of power dynamics (why) between workers (who) and management (who).

Reflection questions

a) What is the shift in how the problem is framed from version 1 to version 2? What prompted this shift?
b) What changes about the vision from version 2 to version 3? How might these different visions shape the design process? For instance, consider conversations with stakeholders about the problem, and how you might approach conversations with a client who is reluctant to allow funds or time for needs assessment.

2. **Read scenario 2 and the versions of problem statements written by an experienced and an inexperienced designer, then answer the reflection questions.**

**Scenario 2:** Beth is hired by a dietician to create instructional materials—printed handouts—for parents/guardians of children with special dietary needs based on a specific disability. The dietician provides published, effective dietary standards based on the specific disability and shares that some of the terms in the standards are hard for families to understand. The production budget is small and timeline tight. The organization provides a set of images they previously created and want used in the handouts. Beth has an instructional design graduate student, Amir, working for her as an intern. She asks the student to write the problem statement, but she also drafts her own:

- **Amir’s version:** Printed handouts of dietary requirements will make it possible for parents of children with disabilities to provide appropriate nutrition. The problem is that parents don’t know what their children need. By designing printed handouts that include QR codes to link to dietary standards and website with recipes, parents can access accurate information.
- **Beth’s version:** If parents are empowered to make feasible changes to the diets of their children who have condition-specific needs, the children will have fewer health emergencies and improved quality of life. Children may experience acute and chronic health concerns if their condition-specific dietary needs are not met, but parents, even if they are informed about the dietary standards, may not know how to apply these, given their lifestyles, cultural foods, and finances, and also considering that children may reject or dislike certain foods.

**Reflection questions**

a) Can you identify the who, what, when, where, and why in each statement?

b) Can you find something that should not be in Amir’s statement?

c) List as many differences as you can between Amir’s version and Beth’s version.
   1. Who is included in each statement?

d) What feedback do you think Beth might give to Amir?

3. **Read scenario 3 and the draft problem statement, then answer the reflection questions.**

**Scenario 3:** A university’s instructional technologies committee selects and implements a learning management system (LMS), heavily guided by their own expertise, along with issues related to copyright law, tight institutional budget concerns, and interfacing with systems for registration and grading. As a consequence, instructional designers are hired primarily based on their capacity to provide technical support for the cumbersome, difficult to use LMS. To ensure they can support the faculty, they create a highly structured course shell.

- **Draft problem statement:** If a university has optimized their LMS and trainings, faculty will be able to support effective student learning, leading to post-graduation success in both career and citizenry. The problem is that the LMS is cumbersome for faculty to use, even when they have used it previously, and amidst a tight budget, a highly structured course shell and focus on technical design limits the ways faculty might effectively prepare students.

**Reflection questions**
a) Can you identify the who, what, when, where, and why in the statement?
b) A new director of online education is hired. She conducts focus groups to hear from faculty and learns that many have been using an open access LMS instead of the one chosen by the university, even though the open access LMS is possibly even more difficult to use. How does this change the problem, if at all?

4. Read scenario 4 and the draft problem statement, then answer the reflection questions.

Scenario 4: A district purchases science kits and curricula for teachers in Phoenix, AZ. While the resources seem useful, the teachers realize there are issues. For instance, the curriculum teaches "Fall is when the leaves change colors," but the teachers know their students have never seen leaves change color. They meet during a cross-school professional development session to address these issues, guided by curriculum leads who graduated from an instructional design program. The leads ask the teachers to work in groups to write problem statements.

- Group A: If our science curricula are rigorous and effective, more students will pass their state mandated tests. The current problem is that we have been given kits that are not relevant for our kids, and because the kits were expensive, we have to use them. The textbooks we used previously are falling apart, so returning to them is not an option. Several schools lack adequate computers for kids to use.
- Group B: If our science curricula are effective, our students will be engaged in and excited by science, and they will want to continue to study science in the future. The problem is that the science kits are not relevant for our students, though they are aligned to our science standards (the older textbooks are not). By creating culturally-responsive introductions to each activity in the kit, we can ensure our students will learn.

Reflection questions

a) Can you identify the who, what, when, where, and why in the statement?
b) Can you find something that should not be in Group B's statement?
c) How do the vision statements differ? How do you think this could change the ways they approach solutions?
d) Imagine you are one of the curriculum leads. Rewrite the problem statement.

5. Read scenario 5 and then draft a problem statement. Use annotation (like we used in scenario 1) to show who, what, why, when, and where.

Scenario 5: An instructional designer is tasked with migrating courses from a decommissioned LMS to a newly adopted one. None of the content or sequencing is to be changed. The two LMSs differ greatly in many ways (e.g., how objects are connected to courses, and the order in which settings must be selected, the number of features available).

a) Draft your own problem statement:

6. Choose your own problem scenario and then draft a problem statement. Use annotation (like we used in scenario 1) to show who, what, why, when, and where.

a) Describe the problem scenario
b) Draft your own problem statement
c) Check your work:
   i. Does it include who, what, why, when, and where?
ii. Does it begin with a vision of what is possible?
iii. Does it include a solution? If so, remove it!