

DBM 215 Project Outline Template

Define - Interview A fellow classmate for 10min. Within this time, take note of the issues they face in their day-to-day life in the space provided below. Try and get insight on this issue.

Person Interviewed: Jennifer Edward - Mom

Question: How has your day been?

Response: It's been good, I've been having a fine day so far.

Question: Do you like your current work schedule?

Response: It's a good schedule. The only thing I don't like about it is how early I have to get up to get ready.

Question: Why do you have to get up early to get ready? Is there a lot you have to do?

Response: I have to take a shower and then get ready and pack my lunch for the day. It takes a lot of time.

Question: How is your experience getting ready?

Response: It's fine. The only real trouble I experience is that I get too hot when in the bathroom and it's a daily annoyance - especially during the summer.

Question: Why does it get hot in the bathroom when you are getting ready?

Response: I get ready after I take a shower in the morning and afterwards it's too hot and humid.

Question: Have you thought of anything to make getting ready easier in the bathroom?

Response: I added a fan in the room to try and make it better, but because of where it is at, it gets in the way, and I wind up taking it out of the room which defeats the purpose.

Question: Do you have to get ready in the bathroom?

Response: Yes, that is where all my stuff to get ready is and there is no other place in the house that is reasonable to get ready in.

Question: Are there any vents or windows in the room?

Response: There is a vent but is not an intake vent and has no active circulation. Also, there is a window, but it is sealed shut so I cannot open it to vent the room.

Question: Would it help getting a different fan to do a better job of circulating and cooling the air?

Response: I would really like to be able to use my current fan as it is expensive, and I like how it matches the rest of the decor in the bathroom.

Identify - Using the above notes, create a concise problem statement for what the issue is they are facing. 1-2 sentences in length.

I need a method in which to cool/reduce steam in the bathroom for when I am getting ready because it gets too hot and humid.

Guidelines:

- Identify a realistic problem
- Take comprehensive notes for future reference
- Create a concise problem statement that encompasses all aspects of the problem discussed
- DO NOT create a solution for the problem

Criteria	Rating (25 points total)				
Interview	Complete and comprehensive Interview Notes	Sufficient interview notes	Interview notes, lacking interview participation	Minimal notes and lacking participation	No submission
Problem Statement	Comprehensive Problem statement	Sufficient Problem Statement	Missing clear description of problem	No clear problem defined	No submission

Brainstorm - Take 10min and brainstorm solutions for previously identified problems. Use sticky notes provided in class. After the 10min is up, rank the top 5 solutions in the space given below

Possible Solutions:

- Add ventilation system
- Replace fan with dehumidifier
- Add fan to window in room (replace window)
- Take colder showers
- Floor air conditioner instead of a fan or dehumidifier
- Create/Designate a different room to get ready in
- Add more fans to the bathroom
- Take shorter showers
- Relocate Fan to improve efficiency
- Leave bathroom door open when showering

Identify - Use the below solution selection matrix to identify your top 2 solutions. Use a 1-5 rating scale with 5 being most desirable. The total score will provide the rank of the solutions

Solution	Effectiveness (1-5)	Manufacturability (1-5)	Non- Complexity (1-5)	Cost (1-5)	Total
Add ventilation system	5	2	1	1	9
Replace fan with dehumidifier	4	2	2	2	10
Take shorter showers	3	5	5	5	18
Add more fans to the bathroom	2	4	5	1	12
Relocate fan to improve efficiency	4	4	3	3	14

Top Two Solutions:

Take Shorter Showers & Relocate Fan to Improve Efficiency

Guidelines:

- Brainstorm for 10min
- Write every possible idea that comes to mind, no idea is too far from reality
- DO NOT stifle ideas during brainstorming session
- Rank the top 5 solutions, come to a consensus with teammate
- Use solution selection matrix to decide the solutions that will move to the next phase

Criteria	Rating (25 points total)			
Brainstorming Participation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No submission

Select – Given the 2 best solutions identified in the previous activity, you are now going to Model and plan the efforts to create a physical prototype out of everyday materials. List the materials and plan of action below.

For this part of the project, I decided to perform another interview to present the client with the solutions and have them make a final decision before design and fabrication.

Person Interviewed: Jennifer Edward - Mom

Question: So, I have some solutions to present you. These were the top two outcomes for your specific problem.

Response: Great! I am happy to hear you were able to find some resolutions to my problem.

Question: The top two solutions that I came up with were to take shorter showers or to relocate the fan to improve its efficiency. Do either of these sound reasonable to you?

Response: Well, despite how taking shorter showers may do more good and solve my problem, sometimes I just like to take longer showers and so that solution wouldn't work fully for me.

Question: Okay. So, you've chosen that you want to relocate the current fan. Do you have any preferences to where it gets relocated?

Response: Ideally somewhere other than where it is right now. At the moment, I have to bring in a standing fan and so it takes up a lot of space and I have to put it away when I am done, adding more work to my plate.

Question: That's understandable. So anywhere but the floor is a good relocation.

Response: I think a good area for relocation, if possible, would be right next to the vanity. That way, I can also use the fan for more than just when I shower. I can use it for partially drying my hair or cooling me off when I am using the mirror. I think it would also be good for having on whenever someone is in the bathroom.

Question: Fantastic, that sounds like a perfect place. Now that I have all that information I can get started on design and fabrication.

Response: Thank you, I can't wait to see how it turns out!

After having a second interview with the customer, I went through different ideas on how I could mount the fan to the side of the vanity – or close to that position. I decided that the best solution would be to make a fixture to hold the fan onto the wall or ceiling. I then began deciding what material, color, and fabrication process I would use to relocate the fan. I decided since the fixture would not be under high stress and would be inside in moderate conditions, I would use PLA for the material. I also decided since the fan was black that I would use the color black. Finally, it would be most practical to use FDM machining to create the fixture as it is the most cost and time efficient process. I do plan on creating a simulation with restrictions and requirements in place to test out all of the variables before I go straight to printing.

Guidelines:

- Map out a plan of creation for the initial prototype
- Create the desired prototypes using the materials provided in the classroom
- Perform "testing" of design to determine usability
- Select a final design for prototyping