

**BIRDEE UNIT 1
DIGITAL PORTFOLIO**

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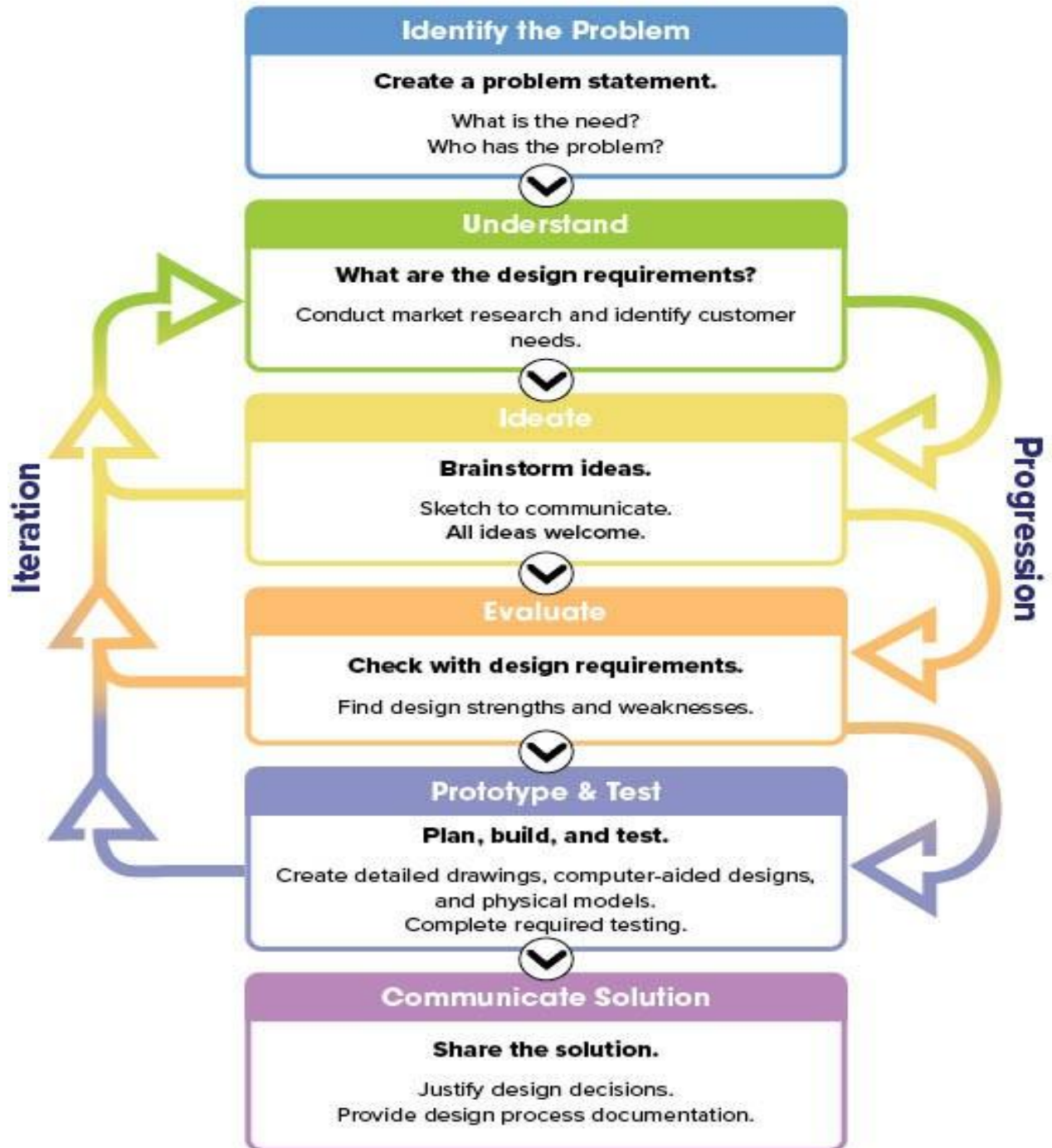
EEK 5

Name:

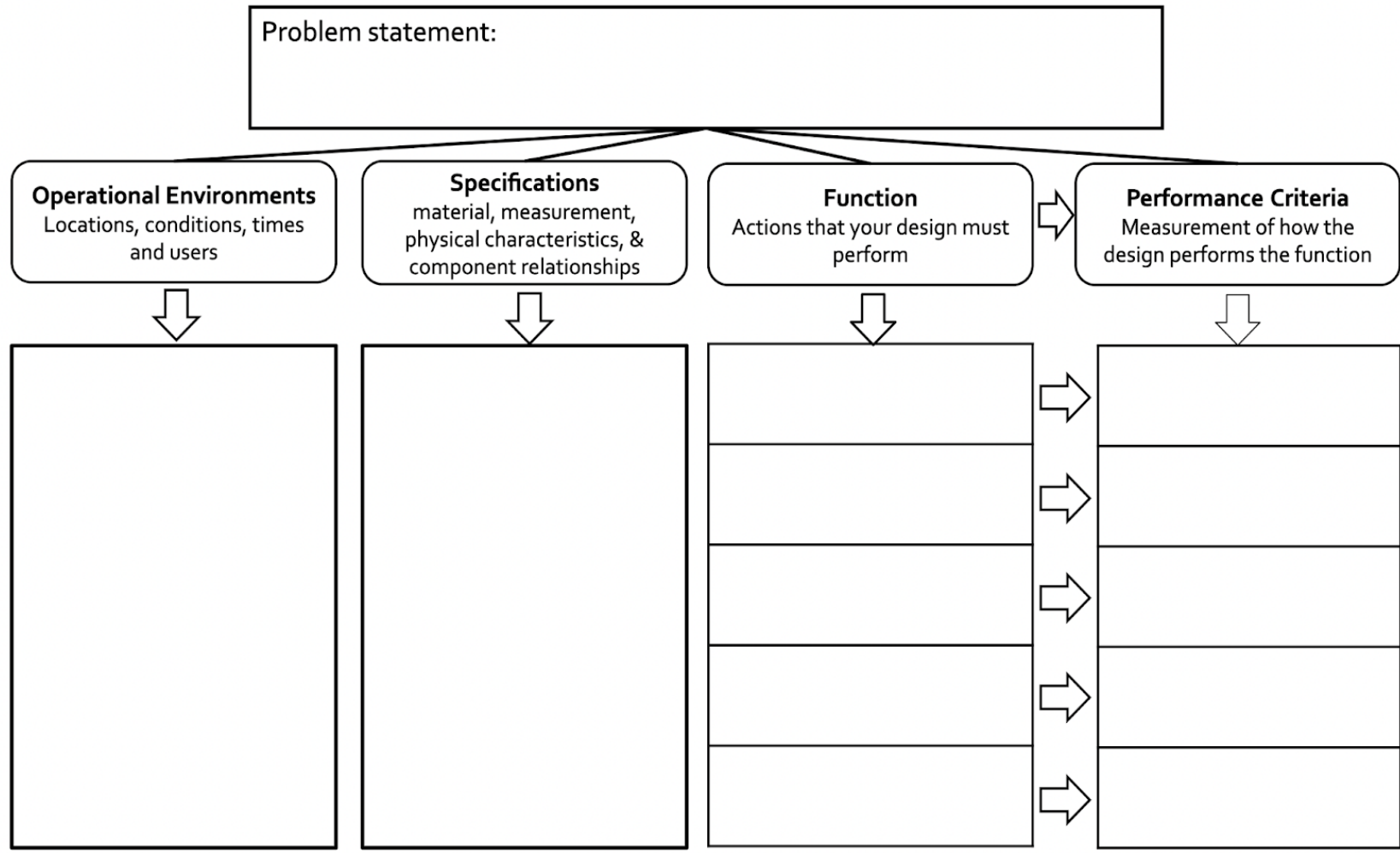
Date



Engineering Design Process



Lastly, sort the information from the Client Memo II into the organizer below. Compare this organizer to the one you created in 1.3.1 and update requirements in the EDPL. Note: There may not be new information for all sections in the organizer below.



1.5.2. Conceptual Design 2

Group: _____

Date: _____

Part 1:

1. What were your “big takeaways” from conducting the thermal regulation experiment? List three ideas that struck you as important for product design.

2. What new information did you learn in the second client memo?

3. What design were you considering prior to the thermal regulation experiment? Give a brief description below.

Part 2:

Considering all the ideas you and your group ideated in 1.5.1, **scroll down** and sketch the idea you think fulfills the design requirements of the problem the best. Be sure to include labels and short descriptions. When you are done, upload your final sketch for today to “Ideate” in the EDPL.

Part 3:

4. How has your design idea changed because of information you learned in the thermal regulation experiment?

5. In what ways is your design idea improved because of the modifications you have made to the design? Reflect on the science behind what is happening. Feel free to describe with words or include drawings/diagrams.

6. How does this new design compare to the design requirements of the design challenge?

Part 2:

Sketch your conceptual design below. Remember the best sketching practices!



1.5.3. Morpho Matrix Ideation–Headphones and Earphones

Name: _____

Date: _____

Look at the headphones on the board and write down the different *structures* the different headphones use to accomplish each function. Draw a diagram or write the name of a headphone that uses this structure in the box.

Function	Structure 1	Structure 2	Structure 3	Structure 4
Function 1: Produce sound				
Function 2: User can control sound through phone or computer				
Function 3: Have stable connection between sound device and user's ears				
Function 4: Blocks users from hearing other sound				
Function 5: Easy to store and keep track of				

1.5.4. Morpho Matrix

Name and Group: _____

Date: _____

First, write down *functions* your solution needs to have in the function column. Then, ideate different *structures* that can accomplish each function. Sketch your structure idea in the box and include a description and any labels that are necessary to understand your idea.

Function	Structure Idea 1	Structure Idea 2	Structure Idea 3	Structure Idea 4	Structure Idea 5
Function 1:					
Function 2:					
Function 3:					
Function 4:					

Be sure to keep track of which Structure Idea you are taking from each Function. You will log what you are combining by circling the structure ideas on the table above. Use a different color pen for each combination.

Next, sketch the design that comes from combining the structure ideas you circled above. Label the components of your design.

Combination 1:



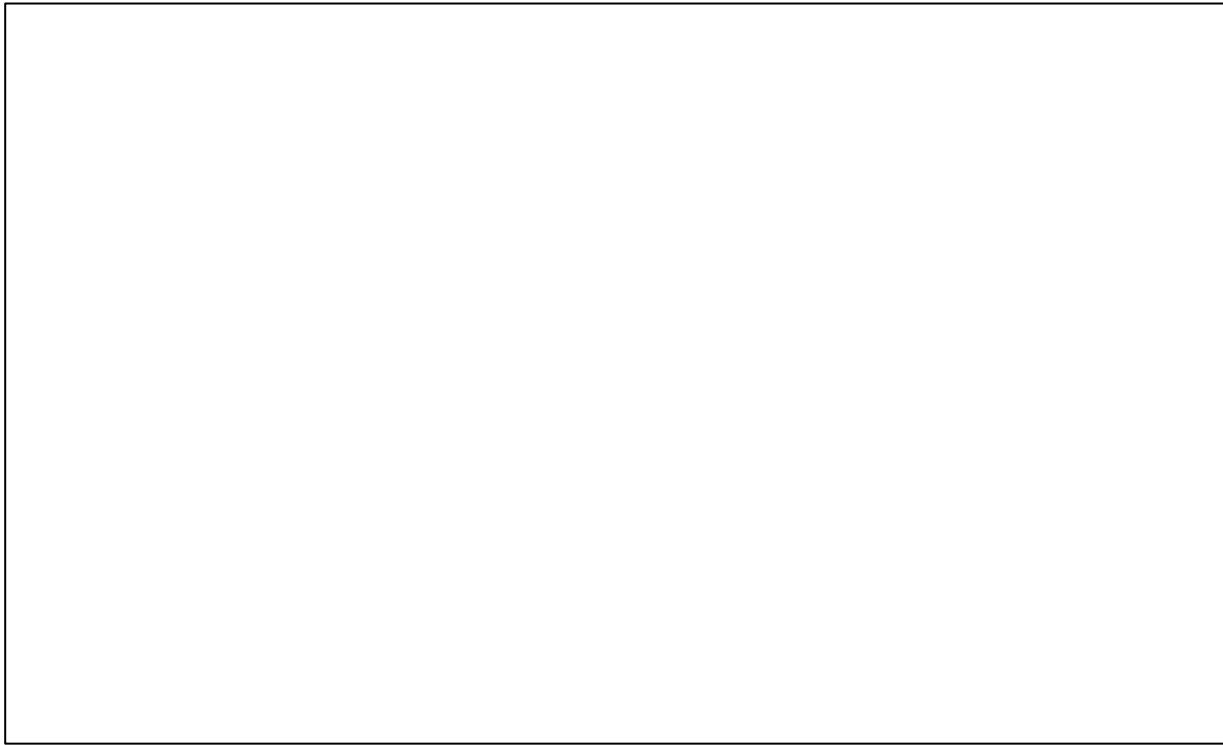
1. How well does the Combination 1 design idea meet your requirements?

2. What changes, if any, do you need to make to the Combination 1 design idea so that it fulfills the requirements? List these changes here and make those changes to your sketch of Combination 1 using a different pen color.

3. What are the strengths of this design idea? What are the weaknesses?

Now, you will create another combination from your morpho matrix. Circle the structure ideas you choose for this combination in a different color pen than you used above.

Combination 2:

A large, empty rectangular box with a thin black border, intended for drawing or writing a design idea for Combination 2.

1. How well does the Combination 2 design idea meet your problem requirements?

2. How is Combination 2 different from Combination 1? Does it fulfill the problem requirements better?

3. What are the strengths of this design? What are the weaknesses?

4. Which design would you move forwards within the design process?

Upload your best design to Ideate in the EDPL.

1.5.5. Conceptual Design 3: Initial Prototype

Group: _____

Date: _____

Part 0: Evaluate

Log into the EDPL and go to the “Evaluate” tab. With your group, evaluate your three uploaded conceptual designs. Choose if each conceptual design is likely/unlikely to fulfill a requirement and give a reflection (or explanation) on your choice.

Part 1: Sketch

Review your prior materials and designs and choose which design best fulfills the problem requirements. Working with your group, you will sketch an initial prototype from this design, identify materials needed to complete the prototype, and create a plan for gathering the materials needed to build your design.

Sketch your initial prototype in detail with dimensions (Width x Length x Height). Label each portion of your system.



Sketch your zoomed in details if needed here:	
Subsystem 1:	Subsystem 2:

Part 2: Plan your materials/prototyping methods for each portion of your system.
 Prototyping Materials should be inexpensive and readily available materials (paper, cardboard, old fabric samples, tape, glue, brads, etc. They will need to bring in these materials to the next class.

Component	Material / Prototyping Methods	Person Responsible?

Part 3: Check: Did your group integrate what you have learned about existing solutions, inspiration from biological systems, and heat transfer to this prototype?