Problem Framing and Definition

I. What is a problem framing?

Problem framing is a crucial stage in design thinking and problem-solving that involves **analyzing, understanding, and defining the problem** in a comprehensive and **meaningful way**. It serves as the foundation for developing effective solutions by ensuring everyone involved has a shared understanding of the issue at hand.

Here are some key aspects of problem framing:

1. Exploration and Discovery:

- It's an **exploratory phase** where we gather information through research, user interviews, observation, and other methods.
- This phase involves **identifying different aspects of the problem**, considering the **context and background**, and exploring various **potential causes and contributing factors**.
- It's also about **challenging assumptions** and considering the problem from **diverse perspectives** to gain a well-rounded understanding.

2. Defining the Scope:

- Problem framing helps us **define the boundaries** of the problem, ensuring we're not addressing irrelevant aspects or trying to solve everything at once.
- By defining the scope, we can **focus our efforts** on the most critical aspects of the issue and develop more **targeted solutions**.

3. Laying the Groundwork:

- The outcome of problem framing is a **deeper understanding of the problem** and its various facets.
- This understanding puts the groundwork for **creating a clear and concise problem definition**, which is a crucial step in guiding the design thinking process towards effective solutions.

In essence, problem framing helps us:

- **See the bigger picture:** Gain a comprehensive understanding of the problem and its context.
- **Identify root causes:** Uncover the underlying factors contributing to the issue.
- **Challenge assumptions:** Question existing beliefs and consider alternative perspectives.
- **Prepare for problem definition:** Set the stage for crafting a clear and actionable problem statement.

II. What is a problem definition statement?

A problem definition statement is a clear, concise description of an issue or unsatisfactory situation that needs to be addressed. The key aspects of a good problem definition statement are:

- It defines the problem specifically and unambiguously. Vague or broad problems are harder to solve.
- It provides relevant context and background, so readers understand why the problem matters and its significance.
- It focuses on outcomes or impacts rather than assigning blame. It's a neutral statement of facts.
- It uses quantitative and qualitative evidence like data, examples, stories to demonstrate the scope and scale of the problem.
- It considers multiple stakeholders and perspectives rather than just one view.
- It does not propose a solution. The goal is to simply define the core problem, not prescribe how to fix it.
- It establishes a sense of urgency for addressing the problem by outlining risks and consequences of inaction.
- It is written in clear, concise language non-experts can understand. Jargon and technical terms are avoided.

Here's an example of a problem definition statement:

"Students struggle to find reliable and engaging learning resources online, leading to frustration and decreased motivation. How might we design a platform that curates high-quality educational content and personalizes the learning experience for each student?"

This statement clearly identifies the **user group** (students), **their problem** (finding reliable resources), **the consequences** (frustration and decreased motivation), and the **desired outcome** (a personalized learning platform).

By making an effective problem definition statement, we set the foundation for successful design thinking. It ensures that everyone involved is aligned on the core issue and fosters a user-centric approach to finding solutions.

Both **problem framing** and **problem definition** are crucial steps in design thinking and problem-solving, but they serve slightly different purposes:

Problem Framing:

- **Broader scope:** Problem framing is a **broader process** that involves **analyzing, understanding, and defining the problem in its entirety**. It considers the context, background, and potential causes of the issue.
- **Exploration and Discovery:** It's an **exploratory phase** where we gather information, identify different aspects of the problem, and **consider various perspectives**.
- **Outcome:** The outcome of problem framing is a **deeper understanding of the problem** and its various facets, laying the groundwork for a **clear and concise problem definition**.

Problem Definition:

- **Specific and actionable:** Problem definition is a **more specific and focused statement** that clearly outlines the **core issue** we aim to address. It's a **concise sentence or question** that captures the essence of the problem.
- **Focus and Direction:** It provides **clarity and direction** for the design thinking process, guiding the team towards finding **effective solutions**.
- **Outcome:** The outcome of problem definition is a **well-defined statement** that precisely identifies the **problem and its impact**, facilitating the development of **targeted solutions**.

Here's an analogy:

Think of **problem framing** like exploring a new city. You wander the streets, gather information, and get a general sense of layout and different districts.

Problem definition is like choosing a specific destination in that city. You've narrowed down our focus and know exactly where we want to go, making it easier to plan our route and navigate towards our goal.

In summary:

- **Problem framing**: **Exploration and understanding** the problem in its entirety.
- **Problem definition**: **Clear and concise statement** outlining the core issue to be addressed.

III. Framing the Problem in design thinking

Framing the problem is a crucial step in design thinking, allowing us to **approach the challenge from new perspectives** and **unlock innovative solutions**. It involves **shifting our eyes** to see the problem in a different light, potentially revealing **hidden opportunities** and **unforeseen approaches**. Here are some key benefits of framing the problem:

- **Sparks creativity:** By challenging assumptions and exploring different viewpoints, we can generate **new ideas and solutions** that may not have been considered initially.
- **Uncovers hidden insights:** Reframing can help we **identify underlying causes** and **deeper complexities** of the problem, leading to more effective solutions.
- **Expands the scope of possibilities:** By considering alternative perspectives, we may **discover entirely new directions** for addressing the problem, potentially leading to more impactful solutions.

A. Effective Techniques for Framing:

- **Ask "why" questions:** Drill down to the **root cause** of the problem by repeatedly asking "why" this happens.
- **Challenge assumptions:** Question the **underlying beliefs and limitations** associated with the problem.
- **Consider alternative perspectives:** Look at the problem from the **viewpoint of different stakeholders** or through **unconventional lenses**.
- **Explore analogies and metaphors:** Draw inspiration from **similar situations or unrelated fields** to spark new ideas.
- **Reverse the problem:** Flip the problem on its head and consider the **opposite scenario** to gain a fresh perspective.

Here's an example of framing the problem:

Initial problem: Students struggle to find reliable and engaging learning resources online, leading to frustration and decreased motivation.

Reframed problem: How might we create a **learning experience** that is **personalized, interactive, and enjoyable**, motivating students to actively engage with the material and **take ownership of their learning journey**?

By framing the problem, the focus shifts from simply finding resources to **creating a holistic learning experience** that addresses the underlying causes of student frustration and disengagement. This opens up possibilities for solutions beyond traditional online resource platforms.

Remember: Reframing is an iterative process. Experiment with different techniques and encourage diverse perspectives to **maximize the potential for uncovering innovative and impactful solutions**.

B. Framing Techniques for Innovative Solutions

Framing problems in design thinking is like putting on a different pair of glasses. It allows us to see the challenge from a fresh perspective, uncovering hidden aspects and fostering innovative solutions. Here are some powerful techniques to help us frame problems effectively:

1. The Power of "Why":

- **Ask "why" repeatedly:** This simple yet powerful technique helps us **drill down to the root cause** of the problem. Don't settle for the initial answer; keep asking "why" until we reach the fundamental reason behind the issue.
- **Example:**
  - **Initial problem:** People are not using our public transportation system.
  - **Why?** Because it's slow and inconvenient.
  - **Why is it slow and inconvenient?** Because there are long wait times and unreliable schedules.
  - **Why are there long wait times and unreliable schedules?** Because there aren't enough buses, and the infrastructure needs improvement.

By asking "why" repeatedly, we uncover the **underlying factors** contributing to the problem, allowing us to address them more effectively.

2. Exploring Diverse Perspectives:

- **Step outside our shoes:** Look at the problem from the **viewpoint of different stakeholders** involved. Consider the perspectives of users, employees, competitors, or even seemingly unrelated parties.
- **Example:**
    - **Problem:** Students struggle to stay engaged in online lectures.
    - **Teacher's perspective:** Lectures are well-structured and informative.
    - **Student's perspective:** Lectures are long and monotonous, lacking interactivity.
    - **Technical support:** The online platform might have usability issues.

By considering different viewpoints, we gain a **multifaceted understanding** of the problem, revealing potential solutions that cater to diverse needs and perspectives.

3. Identifying the Root Cause:

- **Go beyond the symptoms:** Don't just focus on the **surface-level manifestations** of the problem. Dig deeper to identify the **fundamental cause** that's driving the issue.
- **Example:**
    - **Problem:** Customers are canceling their subscriptions to our service.
    - **Root cause:** Customers feel the service is overpriced and doesn't offer enough value compared to competitors.

By identifying the root cause, we can address the problem at its core, leading to **more sustainable and impactful solutions**.

Additional Techniques:

- **Challenge assumptions:** Question the **underlying beliefs and limitations** associated with the problem. Are there any assumptions that might be hindering creative solutions?
- **Think outside the box:** Consider **unconventional approaches** and draw inspiration from **unrelated fields** to spark new ideas.
- **Reverse the problem:** Flip the problem on its head and consider the **opposite scenario**. What would it look like if the problem didn't exist, or if it was the desired outcome?

We remember that framing is an **iterative process**. Experiment with different techniques, combine them creatively, and encourage diverse perspectives to **maximize the potential for uncovering innovative and effective solutions** to our challenges.

Case study : Triage system for emergency department

- **Initial problem:** Long wait times, crowded waiting rooms, and high levels of stress for patients and staff in emergency rooms.

- **Framing:** The project framed the problem as designing a system that improves patient flow, reduces stress, and fosters communication between patients and healthcare providers.
- **Solution:** Implementing a triage system to categorize patients based on urgency, providing real-time updates on wait times, and creating designated waiting areas for different patient needs.

IV. Techniques for identifying problem statements

Identifying and framing a problem statement effectively is crucial for any problem-solving endeavor, including design thinking. Here are some techniques we can use:

A. User-Centric Approaches

1. Diverge and Converge Brainstorming:

- **Diverge:** Individually or as a group, brainstorm all the potential problems, challenges, or pain points we observe. Write down everything without judgment or censorship.
- **Converge:** Once we have a comprehensive list, come together to discuss, analyze, and categorize the identified issues. Look for patterns, recurring themes, and connections between different problems. Gradually refine the scope and identify the most pressing or impactful issue to focus on.

2. 5W Problem Framing Canvas:

- This method uses a visual framework to explore the problem from different angles. Create a canvas divided into sections for **Who**, **What**, **When**, **Where**, and **Why**.
- Fill each section with information related to the problem:
    - **Who:** Who is affected by the problem?
    - **What:** What specifically is the problem?
    - **When:** When and how often does the problem occur?
    - **Where:** Where does the problem occur?
    - **Why:** Why is this a problem? What are the consequences?
- By systematically addressing these questions, we gain a deeper understanding of the problem and its context, facilitating a more informed framing of the statement.

Example

Here is an example of a Triage System in an Emergency Department using the 5W Problem Framing Canvas:

1. What:

• **Problem Statement:** Prolonged patient waiting times in the emergency department triage system.
2. Why:
• **Root Causes:**
• Insufficient staffing during peak hours. • Inefficient triage processes leading to delays in assessment. • Limited use of technology for streamlined data entry and retrieval.
3. Where:
• **Scope and Context:**
• Occurs within the emergency department triage area. • Impacts patients seeking urgent medical attention.
4. When:
• **Timeline and Occurrence:**
• Peak times during evenings and weekends. • Consistent occurrence leading to patient dissatisfaction.
5. Who:
• **Stakeholders and Impact:**
• Directly impacts patients in need of urgent care. • Staff members dealing with increased workload and stress. • Hospital administration concerned with patient satisfaction and quality of care.

Using the 5W Problem Framing Canvas:

a) **Collect Data:**

- Conduct interviews with both healthcare professionals and patients to gather insights on the triage system's challenges. Analyze historical data on patient flow during different times.

b) **Visual Representation:**

- Create a visual representation of the problem using the 5W canvas. Populate each section with relevant data, such as statistics on waiting times, staff availability, and patient feedback.

c) **Collaboration:**

- Facilitate collaborative sessions involving emergency department staff, administrators, and technology experts to gather diverse perspectives and insights.

d) **Refinement:**

- Iterate on the canvas as new information emerges. Discuss potential solutions and improvements collaboratively, ensuring that the canvas evolves with a deeper understanding of the problem.

3. Empathy Mapping:

- This technique helps we step into the shoes of our target users and understand their experiences, frustrations, and needs related to the problem.
- Create a canvas divided into sections like **Says**, **Does**, **Thinks & Feels**, and **Pain Points**.
- Gather information through user research, interviews, and observations to populate each section.
- By understanding the user's perspective, we can frame the problem statement in a way that resonates with their needs and challenges.

4. The 5 Whys:

- This technique involves repeatedly asking "why" to uncover the root cause of the problem.
- Start with the initial problem statement and ask "why" does this happen?
- Continue asking "why" to each subsequent answer, drilling down deeper into the underlying factors.
- By identifying the root cause, we can frame the problem statement more precisely and address its core issue.

Example

Problem: A significant increase in the number of abandoned shopping carts on an e-commerce website.
1. Why did the number of abandoned shopping carts increase?
• **Answer:** Users are reaching the checkout page but not completing the purchase.
2. Why are users not completing the purchase on the checkout page?
• **Answer:** Users are encountering unexpected shipping costs during the checkout process.
3. Why are there unexpected shipping costs during the checkout process?
• **Answer:** The e-commerce website recently implemented a new shipping fee policy for certain regions.
4. Why was a new shipping fee policy implemented without proper communication?
• **Answer:** The decision to implement the new policy was made by the finance team to address increased shipping costs, but there was no communication plan to inform users about the changes.
5. Why was there no communication plan to inform users about the new shipping fee policy?
• **Answer:** The finance team did not collaborate with the marketing and communication teams when implementing the new policy, leading to a lack of coordination in communicating the changes to users.

5. "How Might We..." (HMW) Brainstorming:

- This technique encourages creative problem-solving by framing the problem into actionable questions.

- Start with the problem statement and rephrase it as a question beginning with "How might we..." followed by a verb that describes the desired outcome.
- Brainstorm as many "HMW" questions as possible, exploring different approaches and solutions.
- This process helps generate diverse perspectives and spark innovative ideas for addressing the problem.

Example of "How Might We..." (HMW):

Problem Statement:

- Long waiting times in the emergency department triage system.

"How Might We..." Questions:

1. How might we reduce waiting times for patients in the emergency department?
2. How might we improve the efficiency of the triage process during peak hours?
3. How might we leverage technology to streamline patient assessments in the triage system?
4. How might we enhance communication and coordination between triage staff and other departments?
5. How might we provide a more comfortable and informative experience for patients during the triage process?

Ideas Generated:

- Implement a fast-track system for less critical cases.
- Introduce a mobile app for patients to receive real-time updates on their wait times.
- Explore teletriage options to assess patients remotely.
- Enhance staff training for faster and more accurate assessments.
- Integrate IoT devices for monitoring and managing patient flow.

The "How Might We..." technique transforms problem statements into opportunities for innovation, fostering creative thinking and collaboration within a team. It encourages a positive and solution-oriented mindset, ultimately leading to the development of actionable and innovative ideas.

B. Elaborating Effective Problem Statements

A well-crafted problem statement is the foundation of successful problem-solving, particularly in design thinking. It serves as a roadmap, guiding our efforts towards finding solutions that truly address the core issue. Here's a breakdown of key elements for crafting effective problem statements:

1. User-Centricity:

- **Focus on the user:** The problem statement should revolve around the **needs, challenges, and frustrations** faced by our target users.
- **Emphasize user impact:** Clearly articulate the **negative consequences** users experience due to the problem, highlighting its significance.
- **Use user voice:** Integrate **quotes or stories** from user research to add authenticity and user perspective.

2. Clarity and Specificity:

- **Avoid ambiguity:** Use clear and concise language that **unambiguously defines the issue**.
- **Define the scope:** Clearly outline the **boundaries** of the problem to avoid addressing irrelevant aspects.
- **Quantify when possible:** If applicable, use **data or metrics** to quantify the extent of the problem and its impact.

3. Actionable Framing:

- **Focus on the "how":** Instead of simply stating the problem, phrase it as a **question** that begins with "**How might we...**" followed by a desired outcome.
- **Spark creativity:** This format encourages **exploring different solutions** and fostering innovative thinking.

4. Evidence and Data:

- **Support our claims:** Back up our problem statement with **data, research findings, or user quotes** to strengthen its credibility.
- **Demonstrate the need:** Use evidence to showcase the **importance of addressing the problem** and the potential benefits of finding solutions.

5. Iteration and Refinement:

- **Consider multiple perspectives:** Gather feedback from diverse stakeholders to **refine the problem statement** and ensure it accurately reflects the core issue.
- **Be open to adaptation:** As we gather more information and insights, be prepared to **revisit and refine** the statement to maintain its accuracy and relevance.

V. Conclusion

Design thinking relies on effective problem definition, user-centricity, and framing. These skills empower creative solutions that truly address the core issues. The course emphasizes clarity, actionable framing, and iterative refinement for problem-solving success.

Resources :

1. Problem Definition and Design Thinking:

- IDEO U: https://www.ideou.com/
- The Design Thinking Institute: https://dschool.stanford.edu/
- Interaction Design Foundation: https://www.interaction-design.org/
- "Design Thinking for Dummies" by David Kelley and Tom Kelley

2. Reframing Techniques:

- "Change by Design: How Design Thinking Transforms Organizations" by Tim Brown
- "Creative Confidence: Unleashing the Creative Potential Within Us All" by Tom Kelley and David Kelley
- "The Art of Innovation: Lessons in Creativity from IDEO, America's Leading Design Firm" by Tom Kelley

3. Case Studies:

- IDEO website: https://www.ideou.com/
- Stanford d.school website: https://dschool.stanford.edu/
- Designit website: https://www.designit.com/