Lesson 5
Define the Problem and Ideate Solutions

Instructional Time:
50–90 minutes

Objectives

Students will:

- Analyze how social media impacts different groups, including teens, parents, educators, influencers, and policymakers.
- Evaluate key issues such as misinformation, mental health struggles, and privacy concerns through research and discussion, then develop a focused problem statement that defines a specific social media challenge, its affected group, and the desired outcome.
- Collaborate in a Jigsaw discussion, sharing knowledge, exploring diverse perspectives, and brainstorming potential solutions while considering feasibility, impact, and engagement.
- Present a concise solution pitch that clearly articulates their problem and proposed solution, demonstrating their understanding and ability to apply their learning.

Skills for the Future

- Decision Making
- Growth Mindset

Project Word Wall

- Inquiry
- Bias
- Feasibility
- Pitch
- Problem statement

Resources

General

- Teacher Resource Guide
- Lesson 5 teacher presentation
- Student portfolio
- Whiteboard
- Posterboard or digital board (such as Padlet or Mentimeter)

Videos

- Why Iteration Matters in Design (8:25)

Lesson Plan Summary: The Five Es

Engage: Personal Reflection (Go to section)

1. Quickwrite:
   - Guiding Questions:
     - What is one powerful insight your team uncovered in Lesson 4 about how social media impacts people?
     - What's one question you still have or a perspective you feel is missing?
     - Based on your answer to the previous question, what kind of change or improvement feels most urgent or important?
     - How might your insights influence the direction of your team's solution?
2. Whole-Class Debrief

Explore: Jigsaw Discussion on Social Media's Impact (Go to section)

1. Introduce Activity and Share Directions
   - Label tables with numbers.
   - Assign each student a number within their team. Ensure the numbers correspond to the labeled tables in the room (e.g., if numbering 1–5, have five labeled tables).
   - Organize students into Expert Groups.
   - Distribute articles, infographics, or video clips.
   - Send students back to Home Groups.
2. Whole-Class Debrief

Explain: Developing a Problem Statement (Go to section)

1. Understanding the Problem Statement
   - Formula: "How might we [solve this problem] for [this group] in order to [achieve this goal]?"
2. Let's Break It Down
   - Solve this problem: Clearly state the issue you're focusing on.
   - This group: Who is most affected by this problem?
   - Achieve this goal: Describe what you hope to achieve by solving the problem.
3. Team Discussion
   - Teams draft two problem statements

Elaborate: Brainstorm Solutions (Go to section)

1. Watch Video
   - Why Iteration Matters in Design (8:25)
2. Rapid Brainstorm Solution Activity
   - Teams generate at least five possible solutions
3. Compare and Evaluate
   - Feasibility, Impact, and Engagement
4. Final Selection
   - Each team selects one solution

Evaluate: Solution Pitch (Go to section)

1. Team Pitch
   - Prompt: We are creating [solution] to help [group] with [problem] so they can [goal].
2. Exit Ticket: Pitch Reflection
   - Exit Reflection Prompts in Student Portfolio

Introduction

Social media is woven into the fabric of our daily lives, shaping the way we connect, communicate, and even see ourselves. But with its influence comes a range of challenges—misinformation, mental health struggles, and privacy concerns, to name a few. In this lesson, students will dive deeper into the effects of social media on different groups and work toward meaningful solutions. Through reflection, research, and collaboration, they'll gain new perspectives on these digital challenges and take the first step in crafting innovative ways to make social media a more positive space. Students will begin by exploring what they already know and the questions they still need to answer.

Standards and Practices

Common Core Standards: Grades 9–10

- **RI.9–10.2:** Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped by details.
- **SL.9–10.1:** Initiate and participate effectively in discussions, building on others' ideas and expressing their own.
- **W.9–10.1:** Write arguments to support claims with valid reasoning and relevant evidence.

- **W.9–10.2:** Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately.
- **L.9–10.6:** Acquire and use academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level.

Common Core Standards: Grades 11–12

- **RI.11–12.1:** Cite strong and thorough textual evidence to support analysis of what the text says explicitly, and inferences drawn from it.
- **RI.11–12.8:** Delineate and evaluate the reasoning in seminal U.S. and global texts, including the application of constitutional principles and use of legal reasoning.
- **SL.11–12.1:** Initiate and participate effectively in a range of collaborative discussions, building on others' ideas and expressing their own clearly.
- **SL.11–12.6:** Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when appropriate.
- **L.11–12.4:** Present information, findings, and supporting evidence clearly and concisely.
- **W.11–12.5:** Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.
- **W.11–12.7:** Conduct short and sustained research projects to answer a question or solve a problem.

Next Generation Science Standards

- **HS-LS2-8:** Evaluate evidence for the role of group behavior on individual and species' chances to survive and reproduce.

International Society for Technology in Education

- **Computational Thinker:** Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

Teacher Preparation

Preparation

Differentiation Strategies for Grades 9–12

High school students bring diverse levels of experience with digital tools, iterative design, and peer feedback. Use the strategies at the end of this lesson plan to manage cognitive load, scaffold learning, and increase engagement during prototyping.

Building on the Word Wall

- Before each lesson, review existing terms and challenge students to use them in class discussions.
- Encourage students to add relevant key terms from their research and discussions. See the project word wall terms at the end of the lesson for suggestions.
- Add new terms that are integrated into the lesson to your project word wall.

Essential Question: How can we use research, empathy, and design thinking to define the root causes of social media challenges and develop innovative, equitable solutions that meet the needs of diverse communities?

Engage (Back to summary)

Personal Reflection

Teacher Script: *Welcome back! In our last lesson, you gathered real-world perspectives through surveys and media analysis. Now it's time to step back and reflect. Before we jump into developing solutions, we need to process what we've learned and consider how it reshapes the way we define the problem. Research isn't just about collecting data; it's about finding meaning and identifying the root cause. Let's begin today's work by individually reflecting on what we've uncovered and how it might point us toward a solution that truly matters*

Activating Prior Knowledge.

1. Quickwrite (2 min.): Set a timer and provide students 2 minutes to respond to the prompts in their student portfolios.

- Guiding Questions:
  - What is one powerful insight your team uncovered in Lesson 4 about how social media impacts people?
  - What's one question you still have or a perspective you feel is missing?
  - Based on your answer to the previous question, what kind of change or improvement feels most urgent or important?
  - How might your insights influence the direction of your team's solution?

2. Whole-Class Debrief (3 min.): Invite a few students to share takeaways with the class. As students speak, chart their ideas on the whiteboard or on a digital board under categories such as:

- "What We Know"
- "What We're Still Wondering"
- "What Needs to Change"

Tip: Consider using a digital sticky note tool (e.g., ClickUp, Miro, or Padlet) for a visual record of responses that you can carry into the next section. Use the Whole-Class Debrief Template in the Teacher Resource Guide.

Teacher Script: *You've already uncovered powerful stories and themes. These reflections show how social media affects people in complex ways. Now, let's take a wider lens and explore how different groups—like teens, parents, educators, and policymakers—experience these challenges differently. This will help us define a clearer, more impactful problem to solve.*

Explore (20 minutes) (Back to summary)

Jigsaw Discussion on Social Media's Impact

Teacher Script: *Social media doesn't affect everyone in the same way. Different groups face unique challenges, priorities, and consequences when engaging with these platforms. Today, we'll use a Jigsaw activity to dig deeper into those diverse experiences. Each of you will become an "expert" on how social media affects one specific group. You'll analyze short articles, infographics, or videos to understand their perspective, then return to your team to teach your peers what you learned. By the end of this activity, you'll have a more complete and nuanced view of the problem, which is essential before you define what needs to change and how your solution can help. Let's get started.*

1. Introduce the Activity (3 min.): Explain that students will be given a short article, an infographic, or assigned a video clip.

- Students will begin class in their designated teams, known as their Home Group.
- Assign each student a number within their team. Ensure the numbers correspond to the labeled tables in the room (e.g., if numbering 1–5, have five labeled tables).
- Organize students into **Expert Groups** by having them move to the table that matches their assigned number.
- Distribute articles, infographics, or assign video clips to each Expert Group to analyze together.

Tip: This Expert Group structure is especially supportive for students who struggle with reading comprehension or verbal processing. By working collaboratively in a smaller group first, students have the opportunity to process the material, ask clarifying questions, and rehearse their understanding before presenting it to others. This creates a low-stakes opportunity to build confidence and deepen comprehension through peer teaching, making even complex texts or concepts more accessible. Feel free to select examples that best suit your students' needs and learning styles.

- Example Video Clips (1–2 min. each):
  - How false news can spread - Noah Tavlin
  - American Black Journal: The Effects of Social Media on Teens' Mental Health (PBS)
- Example Readings (Very Short, Bullet-Point Summaries):
  - Teens, screens and mental health (WOH)
  - Online Harassment: "Teens and Cyberbullying 2022" (Pew Research Center)
- Example Infographics:
  - Misinformation on social media - statistics & facts (Statista)
  - Social media brings benefits and risks to teens. Psychology can help identify a path forward (APA)

2. Expert Group Learning (5 min.): Have students read/watch their material and identify two key takeaways in their student portfolios.

Tip: Encourage students to skim for main ideas, scan for headers or bolded text, and use visuals and infographics to quickly grasp essential points. Remind them that they're becoming "fast experts"—the goal is to capture the big ideas, not memorize every detail.

- Have students summarize their findings using guiding questions, such as:
  - What is the problem?
  - Who is affected, and how?
  - What are some potential consequences?
- Quick Summary: Each student in the Expert Group shares their key takeaways, and the group collaborates to write one to two concise bullet points on a sticky note, whiteboard, or digital board (such as Padlet).

3. Teaching Others in Home Groups (7 min.): Instruct students to head back to their team/Home Group to share their learning (each group should have a different expert).

- Each Expert will have 1 minute to explain their topic while the other Experts write down one key fact in their student portfolios.

4. Whole-Class Debrief (5 min.): Come together to share key insights and add them to a collaborative space.

- Invite three to four teams to share their takeaways.
- Identify and compile emerging themes on the board or a digital collaboration tool (Figjam, Padlet, etc.).
- Guiding questions:
  - What patterns did you notice across different topics?
  - How do these issues connect to our own experiences?
  - Which problems seem the most urgent to address?

Explain (Back to summary)

Developing a Problem Statement

Teacher Script: *A strong problem statement helps us focus our research and solutions. Instead of saying, "Social media is bad for mental health," we need to be specific: What exact problem are we solving? Who is it affecting? What's the desired outcome? Let's use a guiding formula to craft our statements.*

1. Understanding the Problem Statement (5 min.): Teams will use a formula to narrow down their issue, the group it impacts, and what they want to achieve by solving the problem. Have them record their problem statement in their student portfolios:

- **Formula:** *"How might we [solve this problem] for [this group] in order to [achieve this goal]?"*
- **Example:** *"How might we help teenagers recognize unrealistic beauty standards on social media in order to improve self-esteem?"*

2. Break the formula down for students:

- [Solve this problem]: Clearly state the issue that is being focused on. What exactly is the problem you are addressing? It must be specific enough so you can focus your efforts.
- [This group]: Who is most affected by this problem? Are you focusing on teenagers, parents, educators, or another specific group? You must think about who faces the consequences of this problem and who would benefit from your solution.
- [Achieve this goal]: Describe what you hope to achieve by solving the problem. What positive impact do you want to see? It could be an improvement in mental health, more privacy protection, or any positive outcome that addresses the problem.

3. Team Discussion (5 min.): Breaking It Down

- Have teams draft at least two problem statements in their own student portfolios.
- Have students exchange statements with another group for critique to receive peer feedback.
- Instruct students to revise and finalize one strong problem statement and add it to their student portfolios.

Teacher Script: *Now that your team has crafted a strong problem statement, you've taken a huge step forward—you're not just talking about social media's impact anymore, you've defined a real challenge that matters to real people. But defining a problem is only the beginning. The next step? Turning that understanding into action. Designers, engineers, and changemakers don't wait for the perfect answer; they start generating possibilities. And they know that the best ideas don't always come first—they come from curiosity, collaboration, and creative thinking. Let's see what we can come up with together.*

Elaborate (15 minutes) (Back to summary)

Brainstorm Solutions

Teacher Script: *Imagine you've just been hired by a nonprofit, a startup, or a policymaking team to tackle the very issue your team has defined. How would you make a difference? In this next phase, you'll act like designers, brainstorming as many ideas as possible without judgment. This is your moment to think big, take risks, and imagine solutions that could truly help the group you've focused on. Whether it's a workshop, a*

mobile app, a social media campaign, or something we haven't seen before, your creativity is the spark that turns problems into possibilities. Let's dive into solution design.

Play the video: How to be Creative Under Pressure? (5:07)

1. Rapid Brainstorming Solutions Activity (5 min.):

- Have teams generate at least five possible solutions and add them to their student portfolios. Think about examples such as:
    - A browser extension that flags edited images.
    - A student-led workshop on digital well-being.
    - A TikTok challenge promoting real vs. edited images.

2. Compare and Evaluate (4 min.): Have teams rank their ideas based on:

- **Feasibility:** Can they realistically create or implement it?
- **Impact:** Would it effectively address the issue?
- **Engagement:** Would their audience use it?

3. Final Selection (2 min.)**:** Have each team select one solution to develop further.

Teacher Script: *You've now done what many changemakers, designers, and researchers do: you identified a real-world problem, grounded it in empathy and research, and generated creative solutions. But even the best ideas can fall flat if they're not communicated clearly and compellingly. A strong solution pitch helps others see the why behind your work, and it's your first step toward bringing that idea to life. Let's put your thinking into action through a clear, concise pitch.*

Evaluate (10 minutes) (Back to summary)

Solution Pitch

Teacher Script*: In any real-world setting—whether you're pitching an idea to classmates, a nonprofit board, or a team of engineers—you need to be able to communicate your solution in a way that inspires action. This is your moment to test how clearly your team can express your understanding of the problem and the purpose behind your idea.*

1. Team Pitch (5 min.): Have each team deliver a one-sentence pitch to the class using the following structure:

- **Prompt:** "We are creating [solution] to help [group] with [problem] so they can [goal]."
- **Example:** "We are creating a browser extension that flags unrealistic images to help teens combat comparison culture so they can build healthier self-esteem online."

2. Exit Ticket: Pitch Reflection (5 min.)

Teacher Script: *Next class, you'll take the first step toward building your solution by deciding how best to bring it to life. Will it be a campaign? A tool? A message? Get ready to explore the possibilities. But before we move forward, let's capture what you've learned from today's experience.*

- Student Portfolio Entry: Exit Reflection Prompts
  - What part of your pitch are you most proud of, and why?
  - What's one piece of feedback (from your team or the class) that you want to explore further?
  - How could you improve or strengthen your solution before moving forward?
  - What next step does your team need to take to bring your idea closer to reality?

Teacher Script: *Well done! You've gone through the process of identifying a problem, empathizing with those affected, and brainstorming solutions. Moving forward, think about how you can refine and implement these ideas in real-world settings.*

Project Word Wall

Introduce key vocabulary to establish a strong foundation for discussion and research. Have students define and discuss the following:

- **Inquiry:** An act of asking for information; an official or formal investigation.
- **Bias:** A tendency to favor one person, group, thing, or idea over another, often in an unfair way.
- **Feasibility:** The state or degree of being easily or conveniently done; the practicality or possibility of something happening.
- **Pitch:** A persuasive presentation or speech, often used to propose an idea, product, or project.

Integrate Skills for the Future

Prior to each lesson, add the durable skills students will develop and encourage reflection on how they apply these skills in their project work.

- **Decision Making:** The cognitive processes and actions that result in choosing between two or more alternatives.
- **Growth Mindset:** The belief that talents can be developed through persistent work, learning from risk-taking and mistakes, and input from others.

Differentiation Strategies for Grades 9–12 (Back to top)

Students across high school grades have varying levels of experience with **research**, **data analysis**, and **user-centered inquiry**. Use the following strategies to adjust cognitive load, scaffold learning, and encourage deeper engagement.

Grade 9: Defining Clear Problems Through Empathy

Cognitive Focus: Learning to define a real-world problem from multiple viewpoints.

Objective: Help students identify how social media challenges affect individuals and translate those into clear, user-centered problem statements.

- **Activating Empathy:** Students complete an empathy map for a fictional teen navigating a digital dilemma (e.g., cyberbullying or FOMO).

- **Guided Problem Framing:** Use sentence stems or templates to build confidence in writing clear, specific problem statements.
- **Solution Brainstorming Warm-Up**: Before brainstorming, provide examples of real youth-led digital initiatives for inspiration.
- **Visual Ranking Tools:** Use simple visual tools (e.g., smiley face scales, traffic light ranking) to help students evaluate feasibility and impact.

Grade 10: Deepening Analysis and Peer Collaboration

Cognitive Focus: Analyzing social media's impact on distinct groups and generating relevant solutions.

Objective: Strengthen students' ability to refine research and collaborate on problem-solving.

- **Role-Based Jigsaw:** Assign each student a stakeholder role (e.g., influencer, educator) to bring different lenses into the problem analysis.
- **Critical Questioning:** Use sentence frames for peer critique during problem statement feedback (e.g., "What if we considered…").
- **Solution Matrix:** Guide students in organizing their brainstorming by using a chart that compares potential impact, engagement, and feasibility.

Grade 11: Synthesizing Diverse Data Into Solutions

Cognitive Focus: Synthesizing research, peer input, and media analysis into high-impact design solutions.

Objective: Support students in integrating empathy with evidence to craft ethical, innovative solutions.

- **Data-Driven Problem Statements:** Encourage students to back their problem statements with at least one data point from their research or surveys.
- **Socratic Seminar Prep:** Lead a mini-debate on ethical considerations of digital solutions (e.g., data privacy vs. user personalization).
- **Solution Ideation Using Constraints:** Challenge teams to brainstorm under a constraint (e.g., low budget, youth-led initiative). This promotes creative problem-solving under real-world limits.

Grade 12: Policy and Ethics in Solution Design

Cognitive Focus: Evaluating the ethics, implications, and logistics of proposed solutions.

Objective: Prepare students to communicate and implement solutions with real-world relevance.

- **Stakeholder Impact Mapping:** Students map out who benefits, who might be left out, and potential unintended consequences of their solution.
- **Pitch Critique Circles:** Practice rounds where teams pitch to peers who offer structured feedback using criteria (clarity, insight, and relevance).
- **Policy Extension:** Teams reflect on how their solution could inform or align with real digital policies or platform practices.