

Create Picture-Only Assembly Instructions

Difficulty Advanced	Time 2 class periods	Type Engineering Challenge
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Background

An international customer needs assembly instructions that can be understood without translating text.

Engineering Problem

Disassemble an approved object and create picture-only instructions that another student can use to reassemble it.

Learning Objectives

- Create exploded and sequential technical visuals
- Identify assembly order
- Communicate safety and orientation visually
- Test instructions with a user

Materials

- Approved object with 5-15 components
- Phone or camera
- Sketching tools
- Page-layout software or paper
- Parts tray

Procedure

1. Select and photograph the assembled object.
2. Disassemble it carefully while recording the order and orientation of every part.
3. Create a numbered parts layout photograph or exploded sketch.
4. Plan 6-12 assembly steps.
5. Create one image for each step using arrows, highlights, and orientation symbols; do not use explanatory sentences.
6. Add visual warnings where a user could reverse, force, or damage a part.
7. Give the instructions and mixed parts to another student.
8. Observe without speaking, record confusion points, and revise at least two images.

Engineering Requirements

- Use no explanatory sentences in the assembly steps
- Include all parts exactly once
- Show orientation and movement clearly
- Include at least one visual safety or caution symbol
- Allow a test user to complete assembly without verbal coaching

Constraints & Safety

- Object must be instructor-approved

- No powered or spring-loaded device may be opened without permission
- Keep all parts contained and return the object to working condition

Deliverables

- Parts layout or exploded view
- 6-12 picture-only steps
- User-test observation notes
- Two documented revisions
- Final instruction sheet

Reflection Questions

1. Where did the test user hesitate?
2. Which visual symbol worked best?
3. How did you show depth or orientation?
4. What would you change for a younger user?

Engineering Tip

Keep the camera angle consistent unless a new view is necessary to reveal a hidden feature.

Common Mistake

A beautiful image may still be unclear. Every image must answer: what moves, where, and in which orientation?

Stretch Goal

Redesign the instructions to fit on one double-sided sheet while remaining usable.

Career Connection

Technical illustrators and manufacturing engineers create assembly and service instructions for global users.