

Art Lesson Idea: Da Vinci's Designs

This lesson utilises collaborative LEGO building to explore the intersection of **art, science, and engineering** as exemplified by Leonardo da Vinci's inventive designs, following the manual's five phases.

Phase 1: Planning

- **Lesson Subject:** Art/Design Technology
- **Lesson Topic:** Leonardo da Vinci: Art, Invention, and Observation
- **Learning Objectives (SMART-aligned):**
    1. Students will be able to **identify** at least two key design principles from Da Vinci's sketches (e.g., observation, use of mechanical advantage).
    2. Students will **collaboratively build** a functional or non-functional LEGO model based on a Da Vinci machine sketch (e.g., a simple bridge, a flying machine component).
    3. Students will **explain** how their model demonstrates Da Vinci's use of **observation** from the natural world.
- **LEGO Model Focus:** A **simplified working model or artistic interpretation** of a design from Leonardo da Vinci's notebooks.

Phase 2: Checking-In

- **Objective:** Assess student emotional well-being and set clear expectations for the structured start of the lesson.
- **Activity: "Invention Inspiration" Starter (7 minutes):**
    - Display an image of a famous Da Vinci sketch (e.g., the Ornithopter or a gear mechanism).
    - State the objectives clearly.
    - **"LEGO Goals" Activity:** Ask each student to build a small, simple LEGO piece representing one part of their mind that's ready to *create* and one part that needs *help* focusing, setting a positive and focused tone.

Phase 3: Social Communication

- **Objective:** Engage students in collaborative problem-solving using structured roles to develop communication skills. This phase also forms the core focus of the learning pedagogy.
- **Activity: Collaborative Design & Build (20 minutes):**
    - Students work in small groups of three, rotating the roles of **Builder, Engineer, and Supplier**.
    - Provide each group with a drawing or simplified instructions for one of Da Vinci's basic machines or architectural concepts.
    - The **Engineer** describes the parts needed for the **Supplier** to find and gives directions to the **Builder** on assembly, fostering purposeful collaboration and communication skills.

Phase 4: Learning

- **Objective:** Incorporate the desired learning aims by narrating the academic concepts through the finished LEGO model.
- **Activity: The Architect's Narrative (15 minutes):**
    - Groups present their completed Da Vinci LEGO model.
    - Students must explain the **function** of the original Da Vinci design and then describe how their **model's construction (choice of bricks, connections, structure)** reflects the principles of art, engineering, and observation used by Da Vinci.
    - **Group Discussion:** The class discusses the differences between the abstract model from the Art lesson and this functional/structural model, reinforcing the idea of *metacognitive process* through the creations.

Phase 5: Reflecting on Learning

- **Objective:** Assess, evaluate, and reflect on the impact of the learning, including academic and informal aspects.
- **Activity: Design Review and Application:**
    - **Assessing Learning Targets (Formative):** Use a quick "Ticket Out the Door" prompt: "What is one thing you observed in nature today that Da Vinci would have sketched for a new design?".
    - **Reflect and Apply:** Students journal their thoughts on how the **structured roles (Builder/Engineer/Supplier)** helped (or hindered) their ability to understand and execute the engineering design, promoting personal introspection and insight.