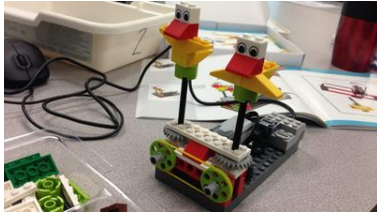


### Visible Elements in Photo



- LEGO structures: Two bird-like figures (with googly eyes, red fabric beaks, yellow LEGO bodies, green LEGO bases) mounted on black axles.
- Motor-driven platform: A red and yellow LEGO base with green wheels, connected to black electrical cords and what appears to be a motor controller.
- Instruction sheets: Printed build guides visible on the white surface, showing assembly diagrams.
- Electronic components: Black cords, a motor controller (visible as a black box with studs), and a computer mouse in the background....

### Reasonable Inferences

1. From the motor-driven platform + bird figures: The system is designed to create motion or animation; the birds are mounted as moveable parts intended to dance, spin, or perform a choreographed action when the motor activates.
2. From instruction sheets + organized LEGO kits: This is an active student project or lesson unit where students follow building plans and experiment with motorized mechanisms.
3. From the cord connections and controller: Students are learning about electrical circuits, power transfer, and programmable/controlled motion as part of a robotics or mechanical engineering unit.

### Engineering Task

#### K-2 Challenge:

"Build a Dancing Bird"

Use LEGO blocks to make a bird that can move or dance. Your bird needs:

- A head with eyes
- A colorful body
- Something that looks like a beak or wings
- A way to attach it to a moving part so it can bounce, spin, or wiggle when we turn on the motor

Can you make your bird look happy and fun? Test it—does it move the way you want?

#### 3-5 Challenge:

"Design a Motorized Puppet Theater"

Design and build a LEGO structure that holds two or more puppet characters (using the bird design as a model). Your system must:

- Use a motor to make at least two puppets move independently or in coordination
- Support the weight of the puppets without tipping over (base must be stable on a flat surface)
- Complete one full cycle of motion (e.g., both puppets dance together, then stop) within 5 seconds
- Be built entirely from LEGO bricks and include a labeled diagram showing how the motor transfers motion to each puppet

Success criteria: Puppets move smoothly, the structure doesn't tip, and motion repeats consistently for at least 3 cycles.

## EDP Phase Targeted

Imagine / Plan (with early Create / Test elements)

This phase fits because the photo already shows a working solution (motorized LEGO puppets). Students can observe the existing design, infer how it works, and then plan their own puppet system by modifying or replicating the approach—rather than starting from scratch with a raw problem. The instruction sheets visible in the photo support the planning phase. Students will quickly move into building and testing their own versions, making this a high-engagement, solution-focused activity.

## Suggested Materials

- LEGO bricks and base plates (various colors, including body blocks, connectors, and wheels)
- Small DC motors (6V or 12V, commonly available in LEGO Technic sets)
- Battery pack or USB power supply with motor controller
- Black electrical cords or USB cables (already in classroom)
- Googly eyes, foam pieces, or fabric scraps for character features
- Optional: printed build instructions or design templates

## Estimated Time

Two 45-minute sessions (or three 30-minute sessions):

- Session 1: Observe the existing design, discuss how motors transfer motion, and plan puppet characters on paper.
- Session 2: Build LEGO structures, attach motors, test motion, troubleshoot, and iterate.

## Why This Works for Teachers

This task directly addresses NGSS ETS1.B: Develop a Model (K–5) and ETS1.C: Optimize the Design Solution, as students must plan how mechanical parts (motor, axles, LEGO connectors) work together to create visible, repeatable motion—a concrete, observable outcome that motivates iteration and refinement.