Tower Block Remover
Grade Band Elementary

Physical Science	**Next Generation Science Standards**
1-PS4-1	Investigate how movement and energy affect objects.
3-PS2-1	Explore the relationship between force, motion, and stability.
4-PS3-4	Design a device that converts stored energy(smart motor) into motion with a specific outcome.
5-PS2-1	Use data to explain force and interactions, especially when trying to prevent the tower from falling.
Engineering Design	
K-2 3-5-ETS1-1	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
K-2 3-5-ETS1-2	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints.
K-2 3-5-ETS1-3	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Reading	**English Language Arts (Reading & Writing)**
RI.2.3 to RI.5.3	Describe steps in the design process and how the parts of the smart motor contribute to success.
SL.2.1 to SL.5.1	Collaborate with peers, share ideas, give and receive feedback.
SL.3.4 to SL.5.4	Present findings and explain how coding the motor affected the outcome.
Writing	
W.2.2 to W.5.2	Write an explanation of how your design works and what you changed to improve it.

Measurement and Data	**Mathematics**
2.MD.1 to 5.MD.2	Measure distance or force needed to move the block.
4.MD.5 to 5.MD.3-5	Apply understanding of geometry (angles of movement) to guide motion of the arm.
Operations & Algebraic Thinking	
3.OA.3 to 5.OA.3	Create numerical expressions to set motor parameters (timing, rotation degrees).
Mathematical Practice Standards	**Modeling & Problem Solving**
MP2	Reason quantitatively about garden space and sensor data.
MP4	Model a real-world problem using math.
MP5	Use appropriate tools (e.g., sensors, measurement tools, graphing tools).
Computer Science	**Missouri K-5 Draft Standards**
DA.K-5.1	Gather performance data (How many tries did it take? Which sensor setting worked best?).
AP.K-5.2	Create and test sequences of commands for the smart motor (training the movement).
AP.K-5.3	Break down a complex problem (removing a block safely) into smaller, testable parts.
AP.K-5.4	Train the Smart Motors to improve the precision and reduce tower wobble.

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v. 05.02.25