MARYVILLE UNIVERSITY

Build A Battle Bot
Grade Band Elementary

Physical Science	Next Generation Science Standards
1-PS4-1	Explore how light, sound, or motion can signal a bot's movement.
3-PS2-1 to 3-PS2-4	Investigate how forces (pushes/pulls) affect motion and collisions.
4-PS3-1 to 4-PS3-4	Design systems that convert stored energy into mechanical energy (smart motor = motion).
5-PS2-1	Explain how force and balance determine whether the bot stays upright during battle.
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	Explain relationships among design parts (e.g., "the center wheel keeps the bot stable").
SL.3.1 to SL.5.1	Collaborate in teams, plan strategy, and evaluate results.
SL.3.4 to SL.5.4	Present bot features and performance using appropriate vocabulary.
Writing	
W.2.2 to W.5.2	Write how-to or explanation texts about how the bot was built and trained.

Measurement and Data	Mathematics
2.MD.1 to 5.MD.2	Measure speed, angles, distance, or time to strike/defend.
4.MD.5 to 5.G.2	Apply angles and coordinate planning in the bot's navigation and movement patterns.
Operations & Algebraic Thinking	
3.OA.3 to 5.OA.3	Use numerical expressions and patterns to control motor behavior.
Geometry	
5.G.1-2	If graphing movement or motor outcomes.
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	Collect and use data (speed, stability, win/loss rate) to refine bot training.
AP.K-5.2	Develop and test code sequences that control battle bot motion.
AP.K-5.3	Break down tasks—balance, strike, recover—into programmable sequences.
AP.K-5.4	Test and refine programs based on feedback or performance.
IC.K-5.1	Understand digital tools (smart motor, sensors) in real-world robotic design.