Veterans Day STEM Choice Board

TEACHER GUIDE | Kindergarten–2nd Grade | 40–50 minutes

Read-aloud: Hero Dad — https://watch.safeshare.tv/watch/c8cb3642-62ba-4092-97d3-5fd78cae2aba

Purpose: Honor veterans while practicing engineering design, early mathematics, coding, creativity, testing, and improvement. Explain that a veteran is someone who has served in the U.S. Armed Forces; active-duty service members are not necessarily veterans.

Suggested lesson flow

- 5 minutes — Introduce Veterans Day and define veteran.
- 8–10 minutes — Watch Hero Dad; discuss service and ways to show gratitude.
- 3 minutes — Explain the four choices and demonstrate materials/safety.
- 20–25 minutes — Students select one activity; encourage plan → create → test → improve.
- 5 minutes — Students share one improvement and one way their project honors veterans.

Materials at a glance

Station	Prepare
1. American Flag Design	Red, white, blue paper; craft sticks or blocks (choice); star cutouts; glue; scissors; sample flag
2. Patriotic Paper Airplanes	Printer paper; red/blue crayons or markers; optional stickers; masking-tape launch line; tape measure
3. Tower of Honor	ONLY plastic cups, preferably red, white, blue; flat table/floor; optional ruler for measuring (not building)
4. Bee-Bot Thank-You Mission	Bee-Bot and charged batteries; printed 15 cm grid mat PDF; arrow cards; paper thank-you note; optional clear mat

1 | Design an American Flag

Teacher directions: Students design an American flag model using paper, craft sticks, or blocks. Encourage observation of the real flag: 13 alternating red/white stripes and 50 stars on a blue field. Simplify star construction for younger students while explaining the real features.

Differentiate: K: sort colors and make a red/white repeating pattern. 1st: count stripes and explain design choices. 2nd: sketch a plan and revise for accuracy.

Ask: How did your pattern help you? What would you change?

Standards connections: Tennessee Science K.ETS1, 1.ETS1, 2.ETS1 engineering-design practices (grade-specific expectations should be checked); TN Math K–2 counting, patterns, shapes; TN Social Studies national symbols and Veterans Day.

2 | Patriotic Paper Airplanes

Teacher directions: Fold a paper airplane, decorate it with patriotic colors, predict how it will fly, then launch from the same line. Measure or compare distance. Change one fold and retest.

Differentiate: K: compare near/far. 1st: use nonstandard units or a ruler with support. 2nd: record two trial distances and compare results.

Ask: What changed after you adjusted the wings? How did you keep the test fair?

Standards connections: Tennessee Science K–2 engineering-design practices; physical science concepts of motion and pushes; TN Math K–2 measurement and comparison.

3 | Tower of Honor — CUPS ONLY

Teacher directions: Build the tallest freestanding tower using only plastic cups. No tape, glue, blocks, or craft sticks. Towers must stand for 10 seconds without support. Rebuild to improve stability.

Differentiate: K: make a tower and count cups. 1st: compare heights and try a wider base. 2nd: measure height and document a revised design.

Ask: Why did the tower tip? What cup arrangement made the base stronger?

Standards connections: Tennessee Science K–2 engineering-design practices; TN Math K–2 measurement, comparison, and counting.

4 | Bee-Bot Mission: Deliver a Thank You!

Teacher directions: Use the printable 4 × 4 mission map. Place Bee-Bot on START facing right/east. Code a route to VETERAN, avoiding the orange cone obstacles. Students may stop at CARD first to collect a pretend thank-you message. Reset Bee-Bot commands between trials.

Differentiate: K: navigate to a nearby star using 2–3 moves. 1st: reach CARD or VETERAN using turns while avoiding cones. 2nd: reach CARD then VETERAN, debug, and compare routes.

Ask: Which commands worked? Where did your robot turn? Can you shorten your program?

Standards connections: Tennessee Computer Science K–2: algorithms, sequencing, directional commands, debugging; TN Math K–2 spatial reasoning; Tennessee Science K–2 planning and improving designs.

Bee-Bot mat: printing & assembly

Printable Bee Bot Mat

1. Download Veterans_Day_BeeBot_Mission_Mat.pdf (separate file). Page 1 is an overview, not a working mat.
2. Print pages 2–17 at “Actual Size” or 100% (do not select “Fit to Page”). Each tile is exactly 15 × 15 cm.
3. Lay tiles in row-major order: pages 2–5 top row, 6–9 second row, 10–13 third row, 14–17 bottom row.
4. Trim white edges only if your printer adds them; align tile edges and tape together. Finished mat: 60 × 60 cm.

5. Bee-Bot moves 15 cm per forward/back command. Clear previous commands before starting a new route.

Assessment & standards note

Quick check: Did the student plan, create/code, test, explain, and improve? Observe counting/measurement and sequencing as appropriate. The standards above are instructional alignments rather than verified verbatim Tennessee standard codes; check your district's current Tennessee Academic Standards documents before entering codes in formal plans.

Veterans Day social studies connection: discuss national observances, symbols, gratitude, and respectful recognition of people who served.