

## Guide to Resources

The *TETRIX® Builders Guide* by PITSCO Education is a guided experience that takes users through an initial robot build and activities using the TETRIX system.

To allow for quick success, lessons provide users with an initial robot build. Extension activities add functionality and complexity to the model. To move students into a problem solving domain, Challenges provide creative opportunities to apply concepts and skills with focused goals and support materials.

### The TETRIX Builders Guide activities include:

#### Lessons

- Three progressive building experiences provide new users with guidance to build a basic chassis, add wheels, motors and motor controllers for movement, and then add a remote control system that will get the robot moving effectively in approximately four hours.
- **Included resources:** Activity Overviews, Building Guides, Reference Guides, and Video Tutorials for creating an effective radio controlled robot.

#### Extensions

- Each extension activity can be completed in any order, as an add-on to the R/C Ranger Bot, in approximately one and a half hours.
- To expand the capabilities of the robot created in Lessons 1 to 3, three Building Extensions (Arm and Gripper, Harvester and Transporter, and Dispenser) are included with detailed step-by-step building guides.
- Also included are: Activity Overviews and Reference Guides.

#### Challenges

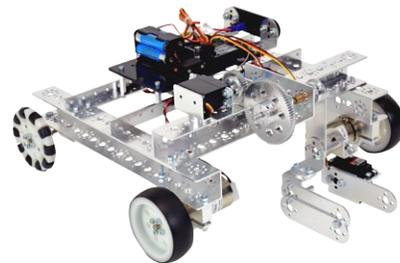
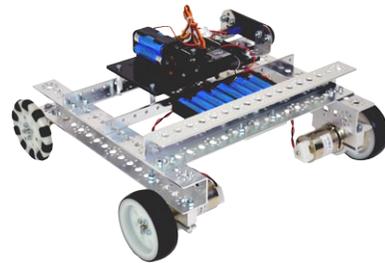
- To allow users to apply the skills and experience gained in the Lessons and Extensions, three Challenges are included:
  - Creative Challenge
  - Driving Challenge
  - Competition Challenge
- The Creative Challenge is open-ended to encourage innovation and creativity in problem solving using the concepts and skills learned throughout the Lesson and Extension experiences.
- The Driving Challenge and the Competition Challenge include Activity Overviews, Sample Building Guides, and Reference Guides to be used for inspiration.
- All of the Challenges provide opportunities to build and operate with a specific goal in mind.
- Each activity can be completed in four to six hours, depending on the experience and capabilities of users.
- Each activity may be adapted for greater or lesser complexity.

### Activity Overviews for all of the above include:

- Building objectives.
- A list of steps needed to prepare for the activity.
- A list of the materials needed to complete the lesson.
- A list of all the resources that are available to guide users throughout the building process.
- Best practices for building.

### Building Guides include:

- Step-by-step illustrated building instructions.
- Best practices and teachable moments.
- General advice on using the TETRIX system effectively and safely.



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**Reference Guides for all lessons, extensions, and two of the challenges include:**

- Curriculum expectations matched to national standards in STEM (Science, Technology, Engineering, and Math).
- Suggestions for classroom organization and setup.
- A step-by-step progression through the TETRIX® Builders Guide materials for classroom use.
- Best practices for building.
- Guiding questions to stimulate student learning and critical thinking.
- Innovation and inspiration activity suggestions to build enthusiasm and reinforce curriculum objectives.

**How It Should Work Videos for all programs include:**

- Demonstrations of the TETRIX robot completing its objective.

**Learning Grid includes:**

- Quick reference to assist educators in their planning.
- Expectations matched to national standards and the National Academy of Sciences in science, technology, engineering, and mathematics.

**Lesson-Planning Routes include:**

- Suggested progressions for educators to move through the lessons, extensions, and challenge activities according to goals and time constraints.

**Engineering Journal Worksheet includes:**

- A reproducible worksheet to encourage critical thinking and reflection on the engineering process as activities are completed.

**Additional Guides and Resources for Reference or Troubleshooting include:**

- Safety Guide.
- General Best Practices Guide for building robots with the TETRIX system.
- Quick-Start Guide.
- Hand-Tools Guide.
- R/C Ranger Bot Control Guide.