

Partners in Success Series: Building a TI Coding and Robotics Program at McAlester Public Schools

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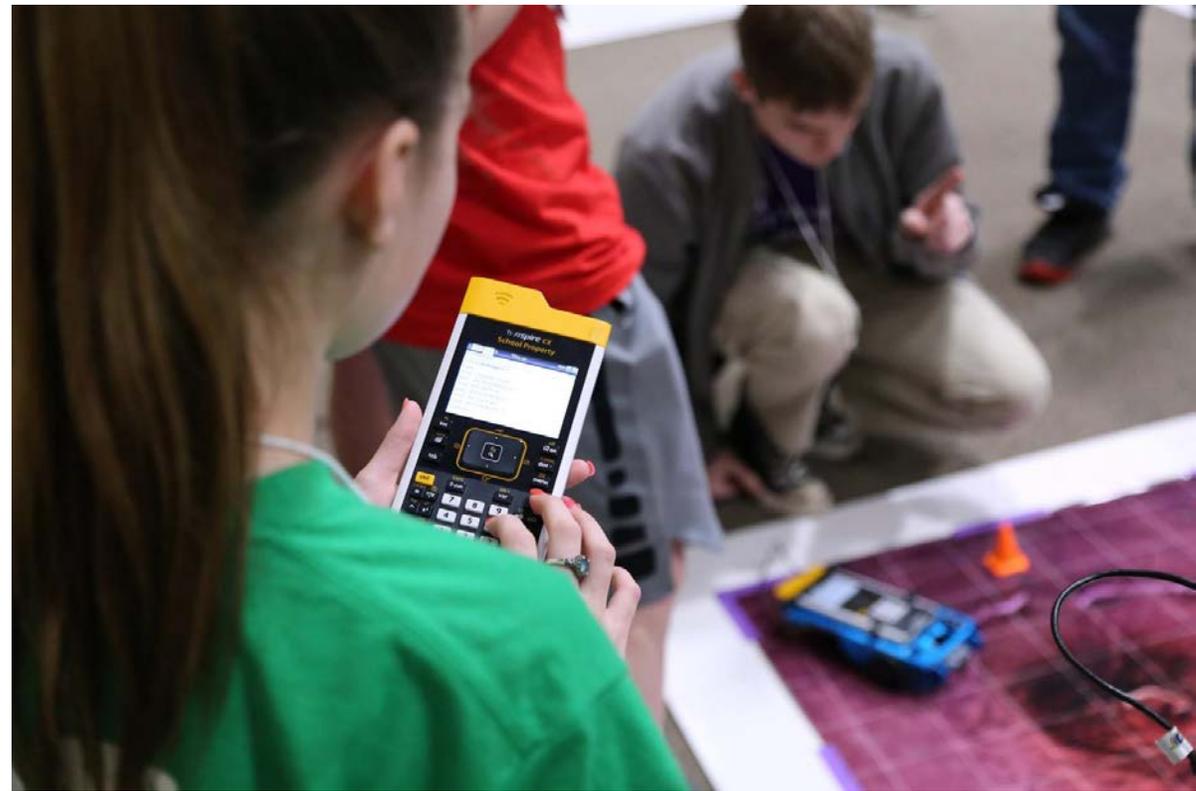


McAlester Public Schools, GEAR UP & Texas Instruments

INNOVATOR & ROVER CHALLENGE



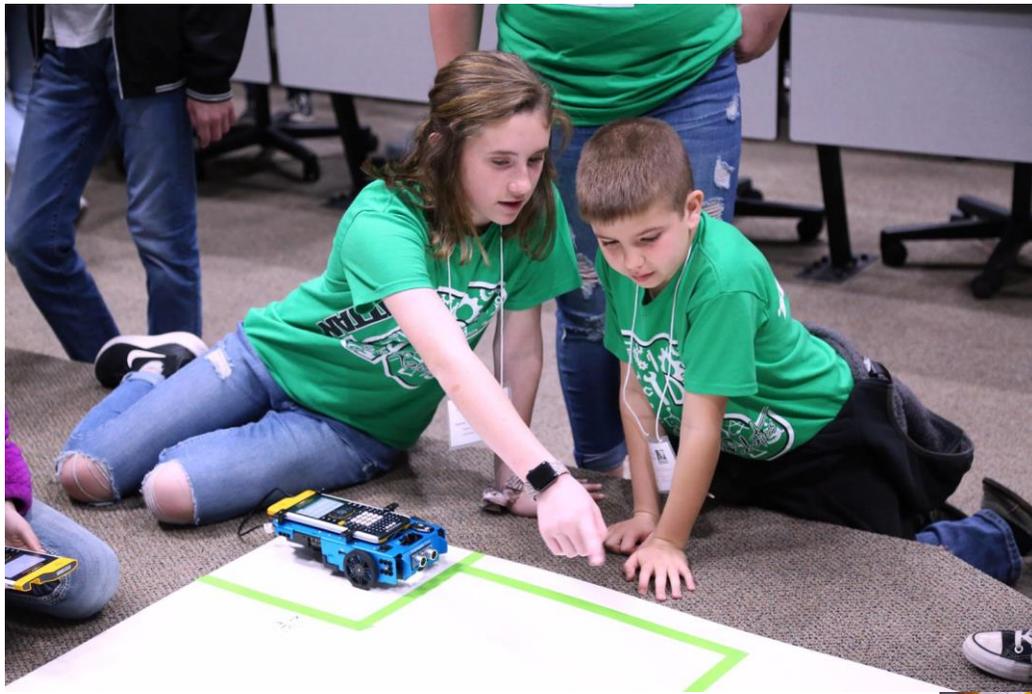




















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INNOVATOR & ROVER CHALLENGE

Our Journey With TI

How We Got Here

1. GEAR/UP grant provides Navigator, N-spire, training and provides coaching days starting 2012
2. Tim attended the T³ International Conference in Orlando in 2016
3. Tim and Bret and 5 others attended T³IC in San Antonio, TX in 2018 (Tim and 2 others presented for the 1st time)
4. STEM Camps Begin Summer 2017
5. Robotics class starts for 2018 - 2019
6. Tim and Bret present at T³IC in March 2019, Baltimore MD
7. Rover Challenge in April 2019
8. Aeronautical Engineering class starts for 2019-2020

Why Did We Do This?

Why an Innovator/Rover Challenge?

1. We realized our GEAR/UP grant was ending.
 - a. What is coming next?
2. New equipment without an implementation strategy.
3. We wanted a focused rationale to draw teachers/students into engaging with the technology.
4. We wanted to give more students a place to belong.
5. Given all that GEAR/UP and TI had done for us, we felt a responsibility to live out the T³ Mission.

How Did We Do This?

How to Attract Volunteers and Participants?

1. Get site administration, central office staff, and school board involved
2. Tap your TI coach/GEAR/UP staff
3. Get the STEM teachers involved
4. Contact parents
5. Contact applicable industry leaders in your area
6. If you intend to make your event annual, devise a plan to pay your staff.

Preparing the Competition (Hardware Team)

1. Check in/Check out hardware
2. Make sure all devices are updated
3. Make sure devices are in good working order, have necessary cables, and fully charged.

Preparing the Competition (Challenge Development Team)

1. Gather resources and suggestions for challenges
 - a. Start with 10 Minutes of Code and ask colleagues
2. Create challenges
 - a. Be unique and consider your intended audience
3. Develop the leveling system for all levels of participants
4. Write challenge descriptions
5. Create easy-to-understand scoring rubrics for each challenge

Sample Rubric

Scoring:

- Challenge # 3 (Draw a bowtie)
 - 20 Points
 - Make the first turn.
 - 40 Points
 - Make the second turn.
 - 60 Points
 - Make the third turn.
 - Bonus: 80 Points
 - Complete the bowtie to within 2 inches of the starting point.

Challenge Description:

Teams are to complete the following tasks in order with the TI Innovator Rover:

1. Drive the rover forward any number of units.
2. Turn the rover right at 120 degrees.
3. Drive the rover forward any number of units.
4. Turn the rover left at 120 degrees.
5. Drive the rover forward the same number of units as in step 1.
6. Turn the rover left 120 degrees.
7. Drive the rover forward the same number of units as in step 2.
8. Complete the bowtie drawing within 2 inches of the starting mark.

Sample Codes

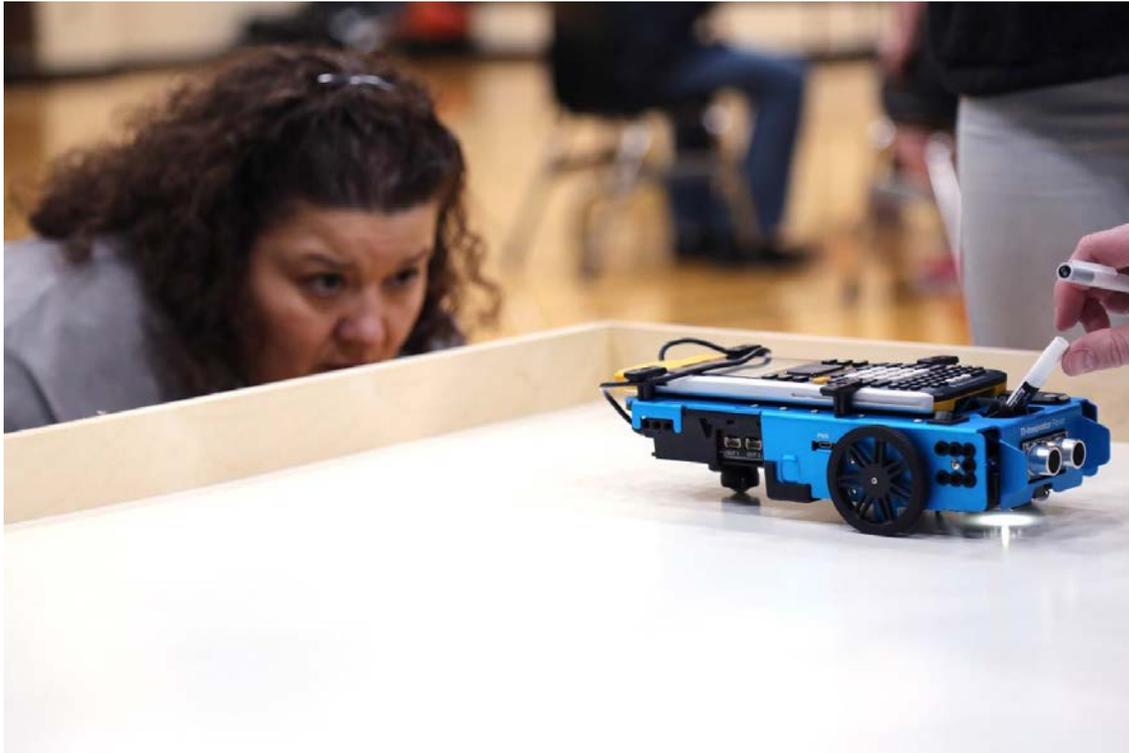
```
1.1 1.2 *Doc RAD 4/8
* avg
Request "How many grades?",n
total:=0
i:=0
For i,1,n
  Request "What is the grade?",g
  total:=total+g
EndFor
Disp "Your average is", $\frac{total}{n}$ 
EndPrgm
```

```
1.1 Challenge ...tie RAD 8/8
* challenge3
Prgm
Send "CONNECT RV"
Send "RV FORWARD 5"
Send "RV RIGHT 120"
Send "RV FORWARD 8"
Send "RV LEFT 120"
Send "RV FORWARD 5"
Send "RV LEFT 120"
Send "RV FORWARD 8"
EndPrgm
```

Preparing the Competition (Logistics Team)

1. Secure the competition site
 - a. Plan bigger rather than smaller
2. Figure out how to set up the challenge
 - a. Arrange furniture as necessary
 - b. Be mindful of where the rover is going to drive
 - c. Competition/work space separated
3. Rules and regulations for the competition procedures
 - a. These were provided to coaches before they arrived
 - b. We reviewed them with the students before we began
4. Make sure you plan for contingencies

Our Competition Tables



How We Advertised

- Contacted other people in our GearUp Cadre
- Contacted other schools in our district
- Contacted our TI representative and coaches
- Word-of-mouth to anyone that would listen
 - Whatever you are involved in
- Social Media
- Advertisement can be cheap if you let it

Preparing for the Competition (How Costly Is This?)

- In total we spent about \$900
 - Spent roughly \$650 on supplies
 - Funded partially through grant money
 - Funded partially through local donations
 - Spent roughly \$250 on promotion
 - All promotional material and posters were provided by the Eastern Oklahoma State College Gear/UP Department

Competition Day Procedures

Meet with Judges

- Model each challenge
 - Be sure that you have written the code yourself and can actually do this without copy and paste
- Provide a detailed rubric for what to expect with their challenge
- Discuss how to award points with the leveling system
- Let them ask questions!!!

Meet with Scorekeepers

- Provide a brief training on how to record the scores accurately
- Discuss how the points are going to be totaled cumulatively
- Discuss how to utilize the volunteers that served as runners to collect score sheet
- Placing based on natural breaks in the accrued points
- Let them ask questions!!!

Sample Scoresheet

					40
Team # 12	School				
Members					
	Level 1	Level 2	Level 3	Bonus	
Challenge #1					0
Challenge #2					0
Challenge #3					0
Challenge #4					0
Challenge #5					0
Challenge #6					0
Challenge #7					0
Challenge #8					0
Challenge #9					0
Challenge #10					0
					0

Set Up Competition and Work Space

- Make sure these areas are separated
- Set up models of the necessary challenges for practice runs
- Students work in work area and test in test area only!!!
- Monitor the work area so that coaches coach not code
 - Make sure the monitors are familiar enough to facilitate thinking without giving away the challenge

Distributing and Collecting Equipment

- ***Don't do what we did!!!!!!!!!!***

What other
questions do you
have for us?

Contact Info

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GO FORTH
AND CONQUER...

And don't forget to come see us
at T³IC in Dallas!