

LEGO ROBOTICS DAY CAMP



Leading Questions during robot building phase

The Golden Rule of Mentoring

MENTors use MENTAL powers to MENTor their team – until we perfect ESP, that means talking your team through the problem-solving process!

Learning happens when we do it ourselves. Your job as a PA is to offer encouragement and to get your team to think about the problem and work through the process of solving it. Do not give your team the answers right away. Offer insight by posing questions to think about along the way, often answering campers' questions with more pointed questions of your own. This is not always possible; you will have to use your own judgement as to when it is appropriate. You don't want your team to get too frustrated. Since you are working very closely with the teams you must also see to it that each team member helps build the robot and program it and has a voice in solving problems.

Setting up and opening the kits - look at how the parts are organized.

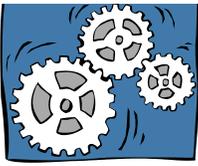
Q: Do you see an order or pattern to how they are in the trays?
Where are the motors?The RCX?the wires? ...the gears?

Pick out a few random parts and ask...

Q: What do you think this part's job might be? How can these parts be joined together?

Open team notebook to robot instructions - Point out the box with the needed parts. Explain the notation, number of pieces needed, length of bars, axles. Importance of matching the pieces exactly to the picture. Holes? No Holes? Right length?

Help team decide how to take turns building the robot - How about taking turns finding parts, putting them together, and checking the finished step against the directions. Do you have a favorite job? Shall we take turns by step, page, or time?



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Team begins to build the robot - Occasionally ask at different points during the building process:

Q: Why do you think the purpose of this part is? Do you think it makes the robot stronger? Does it help the robot to move?

Q: Why do you think the designers of this robot decided to use this part? What else do you think this part could be used for?

Encourage team to check their robot frequently to make sure the parts are snapped together tightly.

When you attach the motors point out the axils on the sides and that they move. Let each team member touch it.

Q: What do you think you are going to attach to this piece? What would happen if you attached a wheel to the axle? What would happen if you attached something other than a wheel to the axle? What could it be used for?

When attaching wires from the RCX to the motors, explain the INPUT PORTS (1,2,3) and OUTPUT PORTS (A,B,C) on the RCX. Let them press RUN on Program 1. Point out how the axles on the motor moves.

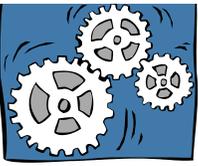
Q: How does that do that? What's making the axle spin?

Team attaches the touch sensors as hand held devices - Point out the part of the touch sensor that moves in and out.

Q: How do you think the touch sensors work? How can they be helpful?

Q: When the both touch sensors are pushed in what happens?

Q: When the left one is push in and right one isn't what happens? Do the reverse. What happens? What does the motor do when you push the touch sensors?



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When adding the light sensor - look at the light sensor and point out the lights at the bottom.

Q: What do you think this part is for?

Have the team hook up the light sensor to the port on the instructions and show the team how to use the VIEW button.

Have them experiment by holding the light sensor over light and dark materials. Observe the meter readings.

Q. What was reading over something black? White? Other colors? With good overhead light? With poor overhead light?

Q: How do you think you can use this information to get the robot to do what you want?