Step by step organizers:

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1. Decide what it is that you want to teach and how robotics will be an effective organizer.

Are you using robots to reinforce and teach math concepts, engineering competencies, programming, teamwork, problem solving, or are you preparing your students for competitions?

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2. Determine groups of students

Below are some ideas to consider when assigning groups of students:

• *All work should be done in teams of 2 or 4 students per robot. Teamwork is a crucial skill in the modern workplace, and the challenges of the robotics activities lend themselves to group solutions.*

• *Odd numbers of students on a team can often lead to problems with one student being left out and not doing anything. Groups larger than 4 are generally too large for all the students to have something important to do.*

• *For classrooms, two students per robot is ideal; for clubs and teams, many coaches need to have a higher student to robot ratio based on resources.*

• *Consider one of the VEX Competitions available at our site or through RobotEvents.com.*

• *First-time coaches typically do well with about 8 students. If possible, recruit other mentors for your team to lead the subgroups within your team.*

• *Define roles on the team and have students change roles on a regular basis, allowing them to share responsibility for all aspects of building, programming, etc.*

1. Engineer (Builder)

2. Software Specialist (Programmer)

3. Information Specialist (Resource Collector)

4. Project Manager (Manager)

• *In order to build leadership and management skills, assign students to all lead roles and hold them accountable for team responsibilities.*

• *For classrooms, single gender teams are preferable; research has found that boys use an autocratic decision making process excluding girls from participating in many of the technical lead roles. For clubs and teams, single gender pairings are recommended, when possible.*

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3. Identify technical and logistical requirements

Below are some ideas to consider when preparing space for a robotics classroom:

• ***Robots*** *– Robotics Academy recommends one robot for each team of 2 students. Also, the teacher should have several backup robots in case of emergency situations.*

• ***Computers*** *– Ideally, one computer for each robot / team of students. Most of the students' activity will be independent and self-directed as they iteratively program / test / debug their solutions multiple times during each practice. Multiple computers will provide easy access to the programming language, eliminate "traffic jams" and inadvertently changing another team's program.*

• ***Classroom / Practice area****:*

1. Classroom – The space should be large enough to accommodate all the student teams, computers, practice tables, a projector for lessons, and storage area for the robots.

2. Practice – This will be different in every instance. If you have the room, you should consider purchasing the VEX Robotics Competition Field used in official VEX tournaments. The arena is well designed and enables a great playing surface for competitions. The only issue is that it is large. More information about the fields is available at http://www.vexrobotics.com/competition

3. Storage – To keep parts organized and accessible for teams, parts organizers are necessary. There are many options – portable organizers, drawer cabinets, boxes, caddies, etc. These are readily available online and at local hardware and crafts stores. Check out the storage pdf for some storage ideas (available on the getting started page).

4. Supplemental Parts (PDF) to use with the VEX Curriculum (available on the getting started page).

5. Machinery and Tools (PDF) for teaching robotics (available on the getting started page).

*• **Network** – The software and curriculum will need to be loaded on each computer or available via the network on each computer. Programs should be included in the regular system backup or leader should make a backup to a separate disk or memory stick.*

• ***Projector*** *– Teachers will find it valuable to review videos, building instructions, etc. with the entire class.*

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4. Prepare a budget and funding

Below are some ideas to consider to budget a robotics classroom and find funding:

• ***Classroom****– A typical classroom budge consist of robots, programming language, curriculum, materials, competition fees, etc. The final cost for your robotics program will depend on the size of your team, activities, etc. You will receive best pricing if you select bundles pricing which is shown in the "**Selecting Hardware**" tab at the top-left of this page.*

• ***Storage*** *– This is a must have for any teacher implementing a VEX robotics program. Your budget will be dependent upon the selection of the cabinets, storage containers, and bins that you choose. The proper storage compartments as well as classroom procedures will make teaching robotics much easier.*

• ***Potential Funding Sources*** *– Be sure to acknowledge your sponsors at every opportunity, e.g. print their names on your team shirts, etc.*

1. School district

2. Local businesses

3. Local non-profit organization

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5. Connect with other educators

Below are some ideas to consider when wanting to connect with other educators:

• *Find another robotics team in the area and ask to attend their practice sessions. This is a useful way to observe and make notes for first-time coaches.*

• *Robotics Academy*

• *Robotics Educators Conference*

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6. Attend teacher training

Certified Online and On-site training programs are available from the Robotics Academy. Visit the Teacher Training page for up-to-date information on the next training sessions.