A Robot In Two Weeks **DBEST** - Instructional

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Goals & Schedule

- Organizing discussions
- Building the team
- Planning and assigning responsibilities
- Designing and constructing the basic robot

MON	TUE	WED	THU	FRI
TW1	TW2	P & R	P & BD1 - wiring	BD1 & BD2 - body
P & BD2	BD3 - wheel	BD3 & BD4 - assembly	BD4	BD5 - refine



This schedule allows for one hour each weekday.

Discussion Topics

- □ Transmitter / receiver (electrical)
- Component placement (center of gravity) Brainstorming techniques
- Development process

- Wheel size and its traction (friction)
- Teamwork

Brainstorming

A method of problem solving or project planning in which all members of a group spontaneously contribute ideas.

Brainstorming objectives

- 1. Identify topic
- 2. One idea / person / turn
- 3. Can pass till all pass
- 4. Open discussion of ideas
- 5. Vote top 3 and tally votes
- 6. Pros and cons of best ideas
- 7. Vote top 1 and tally votes

Development Process

- Concept exploration
- Design
- Production Testing
- Integration

Development Process Objectives

Specific. goals clearly set
Measurable. refined quantities
Attainable. realistic but challenging
Relevant. be results oriented / progressive
Trackable. time limits for accomplishments

Teamwork

Teamwork essentials

- Trust
- Team spirit
- Cooperation
- □ 5 10 minutes-- lecture on "team
- □ Three 30-minute team building activities

Teamwork Success Factors

Purpose. team's function & goals
Process. actions, procedures, & operations
Communication. share ideas
Involvement. everyone participates
Commitment. willingness to give 100%
Trust. believe and rely on each other

- □ Effective communications
- Diversity
- Problem solving and decision making
- □ 10 20 minutes-- team member introductions

Team Activity Suggestion (1)

Playing field



Rules

- □ Assemble as many items in 5 minutes (as an individual and then as a team)
- □ Place randomly the parts in 3 areas
- □ Make the item from 5+ parts

Suggestion for the item

- □ Box from K'NEX sticks and corner pieces
- □ A bag of 3 coins tied off with a rubber band

Team Activity Schedule (2)

Playing field



Rules

- □ Cross the finish line in 5-10 seconds
- □ If the team cannot accomplish the task within the time period, set the time goal to 1/4 the first attempt time
- □ Allow only 3 attempts

Team Activity Suggestion (3)

Playing field



Rules

- $\hfill\square$ Touch each disc in ascending order
- □ Allow only 2 minutes for planning before each attempt
- Only one student can cross the boundary to touch a disc-- violation ends the attempt
- □ Reduce time goal by half of previous attempt

Coaching

- □ Schedule meetings and activities
- Coordinate transportation for meetings, mall day, competition, etc.
- □ Assist with project targets / milestones
- □ Assign tasks / schedule for coaches, teachers, parents, and / or guest lecturers

Suggestion for student teams

- Documentation / scribes
- Design
- Driving / strategy
- Assembly
- Test
- Image / art

Topics for demos or lectures

- U Workshop equipment and safety
- □ Physics (structure, levels / pulleys/ etc.)
- Documentation /presentation skills

Coaching Is

- □ Mentor / guide / teach
- □ Motivate and be a good example
- □ Help team ask the right questions
- □ Schedule meetings and activities
- Help with setting

Coaching Is Not

- □ Take over or force ideas
- Design or build the robot

BEST Award

Embodies the concept of Boosting, Engineering, Science and Technology

- Participation
- □ Sportsmanship
- □ Teamwork
- Creativity
- Positive attitude and enthusiasm
- □ School and community involvement

Three Criteria Categories

- □ Advance preparation -- 50 points
- □ Competition day evaluation -- 30 points
- □ Judges discretionary -- 10 points

Advance	Concept promotion		
preparation	Engineering process		
	Community and school involvement		
	Use of technology - Web, CAD, etc		
Competition Day	Spirit (poster, band, etc)		
Evaluation	Sportsmanship		
	Interviews		
Oral presentation	A brief 5 minute oral presentation – no video		
·	Performed by at least two team members		
	Excerpt from BEST 2000 story included		
	Convince the buyers that your robot is an original design		
	Explain why it is the best design		
	Explain how you built the robot		
Judges discretionary	Reward teams that set new benchmark standards, develop new or innovative approaches		
·····,	Enable judges to balance fairness of opportunity among teams by assessing points based on teams' school and community size, resources		
	Assess evidence of preparation of documentation by the students		

Basic Design - Components



Basic Design - Electrical Wiring



Basic Design - Body



10" x 15" Wooden Board

Basic Design - Wheel



Construction:

8" wooden circle with 1" hole - tire 2" plastic circle with > 1/4" hole (1" thick) - coupling 2 wooden screws fasten the tire and coupling for the coupling, drill a < 1/8" hole for the coupling 1/8" screw

Basic Design - Assembly

