Objectives

- Compare and contrast other 4-H club programs with a robotics program
- Identify resources, and planning tools to recruit participants and parent
- Describe basic programming techniques and demonstrate the use of basic tools to develop a program for a LEGO type robotics unit
- Describe FIRST and its potential for inclusion in a 4-H program

Comparison

What makes up a “successful” 4-H Club?

What does a successful robotics club look like?
Program Definition

› What Objectives do you want to achieve?
› How often would your club meet?
› What time of day?
› Where?
› What resources do you need?
› Who could you contact for “help”?
› What kind of budget will you need?

Who’s out there to help?

› National initiatives:
  - STEM (Science Technology Engineering & Math)
  - Several National and International Programs
  - FIRST
  - VEX Robotics
  - GEAR Tech21
› Local / Regional opportunities:
  - Workforce development programs?
  - Local HS or Colleges?

Basic Curriculum Ideas

› Activity 1: Simple Machines
  - What defines a “machine”?
  - Where can you find examples in the room?
  - Can you make a sketch of one of these?
  - Write a short description of how you would use this machine
Programming

- Logic
  - Logic Diagrams
  - Control Narratives

- Programming Activity (Human ‘bot)
  - Teams of two...
  - Define a task
  - Design your “program”
  - Test your program with your “bot”

Programming – First Steps

- Increase the “communication”

- Flow charting...
  - Why bother?

- Activity: Define a process using a flowchart

The “Brain”...

NXT CPU-1

RCX Brick-1
Mind Storm Programs

- Activity 2:
  - Using the practice sheet provided, build and program a machine to complete one of the practice tasks:
    - How did this activity go?
    - What changes would you make for a group of youth?
    - What worked?
    - What else would you need to improve?

FIRST: Getting Started

- What is FIRST?
- What does it offer?
- How can a group get involved?
  - Schedule, costs, events etc.

FIRST (For Inspiration and Recognition of Science and Technology)

- 4 programs: Youth from grades 2 - 12 in age appropriate events that combine teamwork with science, technology and problem solving.
  - FIRST Jr. LEGO League / LEGO League
  - FIRST Tech Challenge & FIRST Robotics
FIRST (For Inspiration and Recognition of Science and Technology)

FIRST Jr. LEGO League / LEGO League

The Challenge

Every September, FIRST releases a Challenge, which is based on a real-world scientific topic. Each Challenge has two parts: the Robot Game and the Project. Teams of six to ten children, with one adult coach, participate in the Challenge by programming an automated robot to earn points on a themed playing field.教师 licensed and developing a solution to a problem they have identified (Project). Teams may choose to attend an (optional) brainstorm, hosted by one of our Operational Partners.

Current Challenge

The 2011 Food Factor Challenge will be released online in September

Teams in your area(s)

- http://www.usfirst.org

FIRST Resources

- http://www.firstlegoleague.org/challenge/teamresources
- http://www.usfirst.org/roboticsprograms/fll
- http://www.youtube.com/flglobal

Other Resources

- Carnegie Mellon University
  - http://www.education.cmu.edu/roboticscurriculum/index.html
  - http://www.computing.academy.com/unit-lessons/nxt2.0/content/
- GEAR Tech-21
  - http://cbest-cmu-edu-4devangel
- Catlin Gabel School; Oregon
  - http://www.FL-freak.com/