

# Research Project Chronology

## Session #1

- Talked about what the LEGO FIRST NO LIMITS Research Project was and what the rules are.
- The group brainstormed different ways to present information at the competition.
- The group voted to do a short skit (about 5 minutes) and make a poster (to discuss invention details for about 5 minutes.).
- The group brainstormed different community locations to research. These included the school, Town Hall, Lake Potanipo, the soccer field, the baseball field, the convenience store, and the library.
- The group voted to chose the **Brookline Public Library**.

## Session #2

At the library: we took lots of notes and made floor plan pictures and talked to the librarians.

Investigate the first floor of the library. We decided to just focus on the first floor and not the upstairs which is for junior readers.

We Made Measurements: dimensions to create a floor plan; measured ceiling and shelf height; counted number of book shelves; weighed the heavy books (up to 10 lbs).

Investigated Library Sections: Book shelves for non-fiction, fiction, and reference books. Carrousel for paper back books. Audio books on smaller shelves. Videos and CDs and DVDs and cassette tapes on carrousel and small shelves. Photo copy machine. Display cabinets. Magazines and Newspapers. Sofa. 2 Work Tables. Bathroom. Elevator.

Talked to the Librarian:

- Learned the history of the library. Converted church in 1992 brought up to Federal ADA codes including ramp, door handles, elevator, bathroom accessibility, and 36 inch aisles between shelves.
- Learned that originally the library was supposed to be big enough for Brookline for 20 years, but it is already 'at capacity' for seating and 'over-capacity' for book storage.
- The top book shelves are now being used and they are too high for people to reach without a step stool.
- Some of the aisles are less than 36" because of the paper back carrousel and the other small shelves.
- The floor is congested space. It is difficult for people with walkers. Most handicapped people can get plenty of help though from the librarian. There are services for vision and for hearing impaired. The library can deliver books to people who are home bound.
- The parking lot is very limited.

### Session #3

- We Researched the ADA Specifications for public places and for libraries. We learned that a wheel chair needs a 5 foot diameter to turn around. We learned about Braille and other navigation tools for vision impaired people.
- We looked at the on-line information about the Brookline Public Library.
- Brainstormed things people do at a library including finding books, returning books, reading, taking notes, etc.
- We voted to combine several activities: first searching a catalog for a book then retrieving the book from a shelf. The challenge really is to be able to get a book down from a shelf. Handicapped people might have difficulty doing that at the Brookline Public Library.

#### The Problem:

A handicapped person has difficulty locating books and getting them off the book shelf.

#### *Hmwk:*

Think about how a robot could solve the problem.

Think of a name for the robot invention.

### Session #4

With our junior mentor/coach Sarah, we brainstormed robot solutions for the problem of getting a book off the shelf at the library. We drew some pictures of what the robot might look like and what it needed to be able to do. We named our solution the “Pick-N-Give”.

#### The Solution:

Our Pick-N-Give is a robot that will find a particular book on a shelf and deliver it to a computer workstation. At the computer, a handicapped person can search for books. The computer and the Pick-N-Give can interact with people who are vision impaired, hearing impaired, or lack the motor skills to operate a computer the way most people do. The library will be designed to accommodate the Pick-N-Give and give access to all people to the computer workstation.

### Session #5

We worked with Beth Sulin to create a first draft of the skit. We talked about different people who might be at a library. We talked about how different people react to new technology. Some people want new inventions and are excited to learn about new things. Other people are apprehensive about electronic appliances having had difficulty in the past when trying to learn or use a new system. Finally, some people want new technology but fear that the cost would be too much for the benefit. A rough floor plan was drawn and ideas for how to put a “Pick-N-Give” into the library were explored.

### Session #6

At the Library: we took more measurements and some digital photos. We met with the librarian to ask more questions. We practiced our skit. We edited our skit.

### Session #7

We practiced our skit. We edited our skit for the last time.

### Session #8

We practiced our skit. We assigned parts to individuals. We each (there that day) drew large pictures of the Pick-N-Give robot.

#### ***Hmwk:***

Everyone will practice their part of the skit.

### Session #9

We practiced our skit. We discussed the poster. We voted on what the layout would be and what elements would be there: title, history of library, picture of Pick-N-Give, pictures showing the problems of congestion in the library, etc. We discussed the new floor plan to accommodate the Pick-N-Give. We discussed 'serendipitous' results (accidental or not planned positive outcomes) of having this new technology: more places chair can turn around, line-of-sight for librarian to bathroom door, hearing impaired can sign to each other over larger area, more seating space, more computers, and more shelf space). We added some navigation tools for vision impaired people. We voted on the best Pick-N-Give drawing and then voted on the details that would be included in the final drawing. We decided the back of the poster could be our book shelf prop. We decided we don't really need a wheel chair for the skit.

#### ***Hmwk:***

Alyssa will draw the Pick-N-Give and the book shelf.

Everyone will practice their part of the skit.

### Session #10

We practiced our skit. We colored the books on the book shelf.

#### ***Hmwk:***

Jacob will glue down the poster elements and create the Title and some of the text blocks.

Jacob also created a notebook of our research project.

Everyone will practice their part of the skit.

### Session #11

We reviewed and admired the poster. We practiced our skit. We had a rehearsal of our skit and poster presentation for Sarah, our junior mentor/coach. Sarah asked us questions.

#### ***Hmwk:***

Everyone will practice their part of the skit.

### Session #12

At the Library: We presented our skit and poster to the librarian. We plan to give a thank you letter to the librarian after our presentation on November 20, 2004.