

LAB NOTEBOOK

Lincoln High School Innovation Challenge Team

Lincoln High School Coordinator: Meg Kilmer

Mentors: Nicholas Sayre, Brian Truong

Lincoln Students: Alden Akeman, Garrett Cheadle, Jared Chin, Louis Duvoisin, Flynn

Hutchinson, Paige Hval, Louie Liu, Yiling Liu

2/22/14

Meeting #1

Counseling Center in LHS

lunch time

- Introductions, discussed what problems we think the elderly face

3/1/14

Meeting #2

PSU Fourth Avenue Building

3:30pm

- Discussion of deadlines, objectives, deliverables
- Tour of the EPL lab
- Brainstormed interview questions for the elderly (See table below)

Caretakers	Elderly	other stuff to maybe just notice at the nursing home...
What are the greatest challenges of caring for the elderly?	What works for you? (more self sufficient) **not quite sure what that means...	bathrooms-- can it accommodate walkers or wheelchairs?
What are your daily jobs?	Is there anything you miss doing?	telephones-- elderly have their own or one is provided in room?
What would help you take care of elderly people?	What are daily challenges you face?	general notes about the rooms
What is the most common problem the elderly tend to have?	What are you afraid of doing?	
When do you notice the elderly seem to be particularly happy or unhappy?	What angers you?	

Do the elderly get exercise? If so, what type / how long?	What is your pet peeve?	
Do the elderly seem to have mobility issues or have trouble getting around to places?	What does a typical day in your life look like?	
What type of meals do the elderly receive?	What tasks take you the longest to accomplish?	
Do the elderly go shopping for their needs or is everything they need provided to them? If they go shopping, then through what mode of transportation? Do they seem to like shopping?	Do you travel out of the nursing home often? If yes, where /purpose?	
In an emergency, what are the typical procedures to be followed?	Do you contact your family often? And through what form of communication?	
	Do you exercise?	
	Is there anything you wish was different about the nursing home?	
	If you could change anything about the nursing home right now, what would it be? (eg enough lighting, cleanliness..)	

EPL tour, Nathan Berges and Nicholas Sayre demonstrated the EPL lab.

3/6/14

Meeting #3

2545 SW Terwilliger Blvd, Portland, OR 97201 (elder care facility)

- interviewed elderly people to see what types of problems they face, or what they think other people at the nursing home have issues with, took notes
- toured nursing home a bit to see its architecture and room styles

3/13/14

Meeting #4

Counseling Center @ LHS

3:30 pm

- went over interview notes
- made list of general themes and recurring ideas
- Brainstormed a table on the recurring problems that older generations face

Problems/ Requests
Deciding when they need to move into a retirement home
Driving and transportation in general. Public transportation is not very helpful as it is sometimes not equipped for seniors.
Hard to stay active in community events. (e.g. community service)
Would like an easier way to communicate with family members besides phone calls.
Want a get together with close friends without the hassle of cooking & cleanup.
Forget to take pills, lay them out and just forget to take them.
* Climbing on stools to reach high things is very hard.
* Falling is a big fear.
Maintaining their homes (cleaning gutters, windows, etc.)
Changing lightbulbs

Possible Solutions
Way to connect unemployed/volunteers to elderly who can't maintain their home
Support of the staff is great
Teach how to use modern technology
Better design for online hospitals/other services
Help recognize when people do need to move to an assisted living home.

- **wrote a proposal** : After interviewing a dozen senior citizens at Terwilliger Plaza the Lincoln High School innovation challenge team has determined that a common problem faced by the elderly community is the safety of their living environment. We propose the re-design of household appliances and layout of rooms to maximize safety and improve usability. We hope to create a room design that will both increase the confidence and comfort of elders, and reduce their risk of injury within their own living spaces.

3/20/14

Meeting #5

Counseling Center @LHS

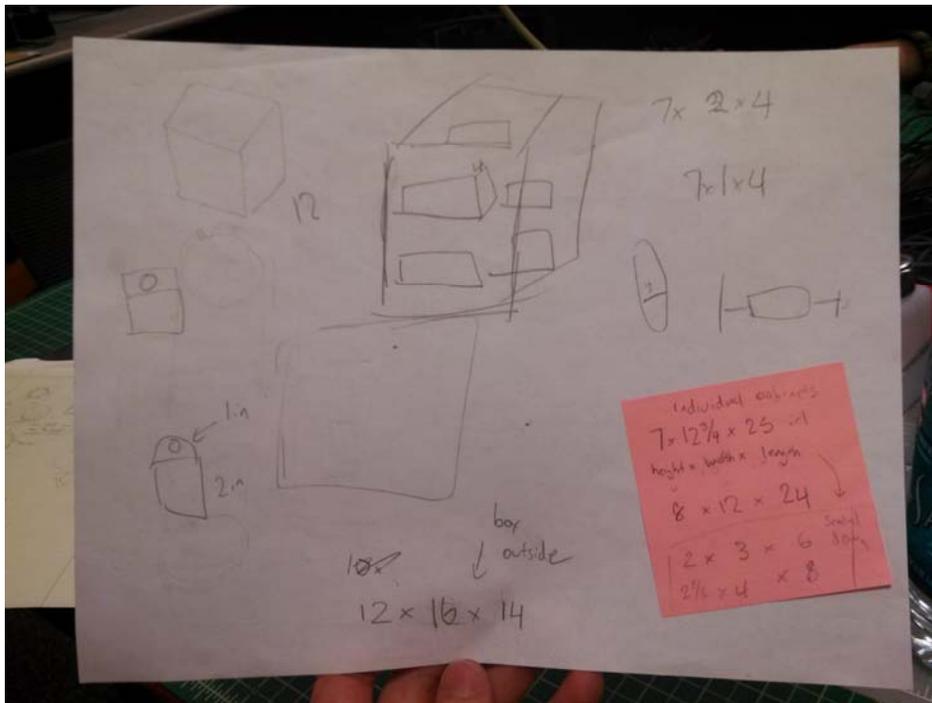
- Nick explained how we needed to revise the proposal
- **revised proposal written:** After interviewing a dozen senior citizens at Terwilliger Plaza, the Lincoln High School Innovation Challenge Team has determined that a common problem faced by the elderly community is the accessibility and ergonomics of storage space. Many seniors were not comfortable with storing items in higher places as they did not want to climb chairs to access the items. They also did not want to stoop to reach items in lower places due to the physical strain. We propose a home carousel storage system that enables the elderly to store items in normally inaccessible areas and have easy access to them. The current options are reaching devices, but they are inconvenient and ineffective. Our solution allows objects to be stored and accessed at a comfortable level for the elderly. Our product will use motors to move its cabinets and sensors to prevent limbs from being caught inside. We hope to create a product/prototype that enables the elderly to store anything they need without the worry of straining themselves.

4/3/14

Meeting #6

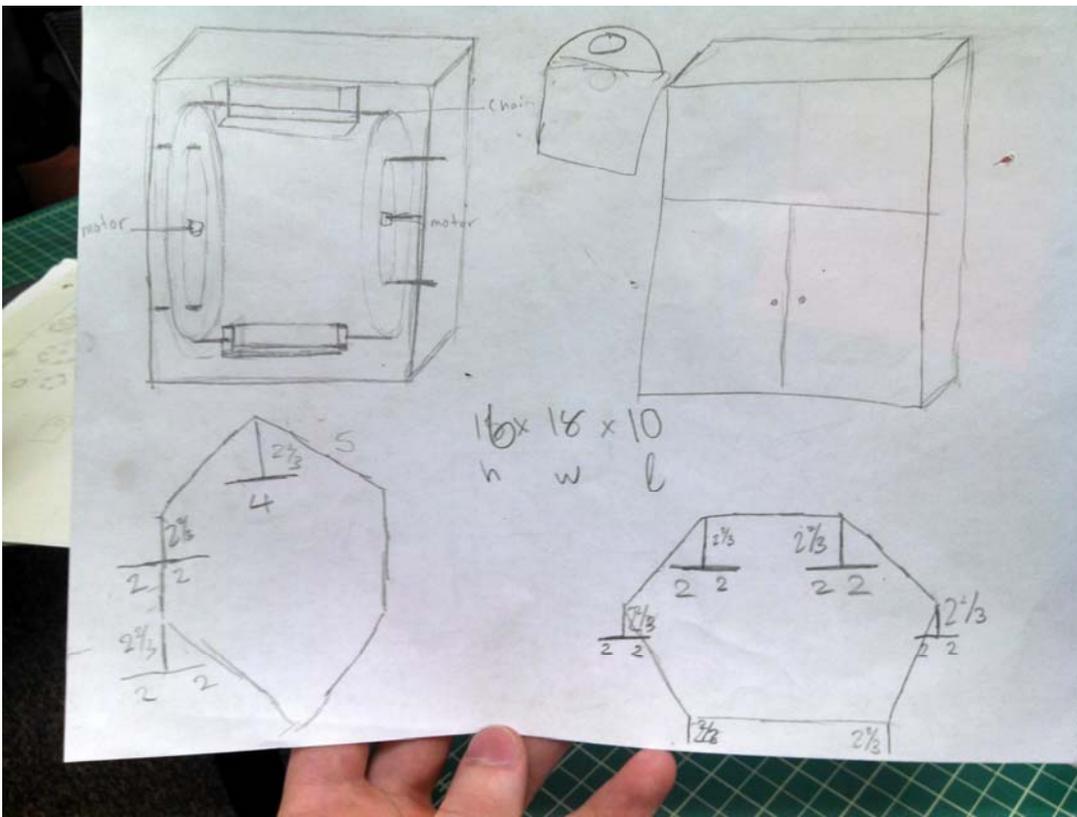
Counseling Center @LHS

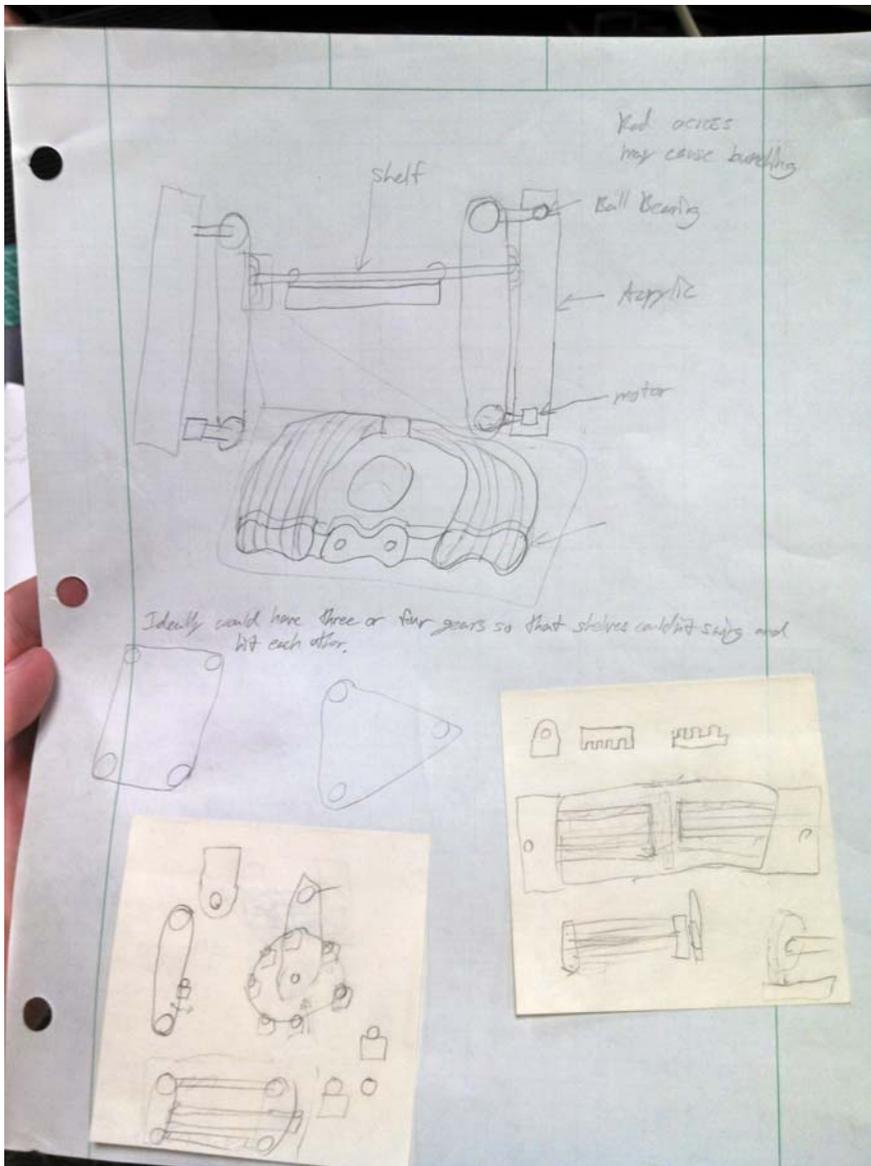
- went over drawings and ideas on how the carousel should look like



Louie: Deciding on the dimensions of the shelves

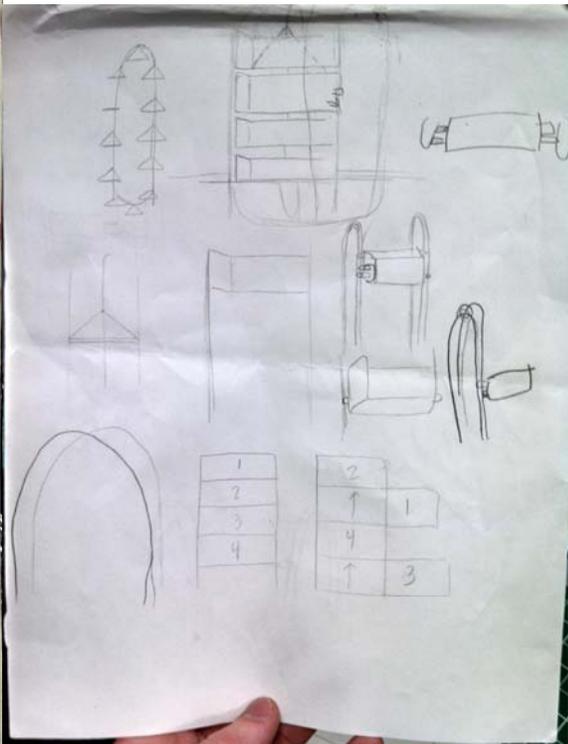
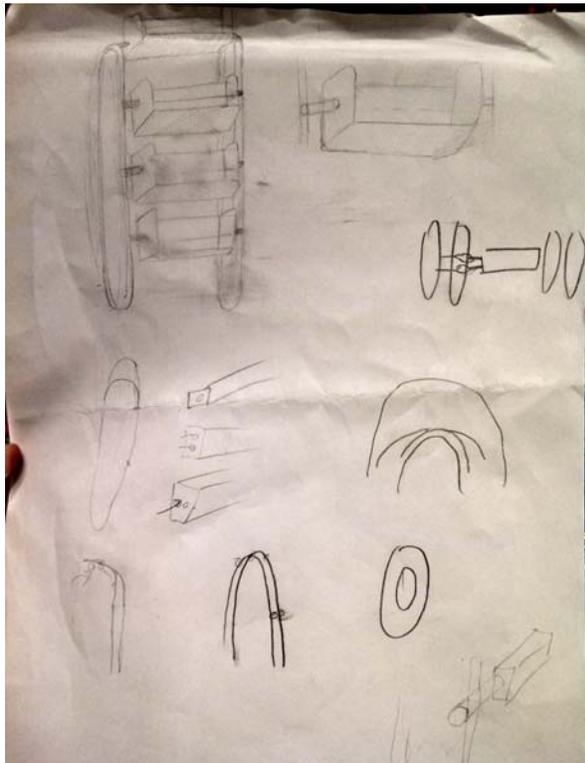
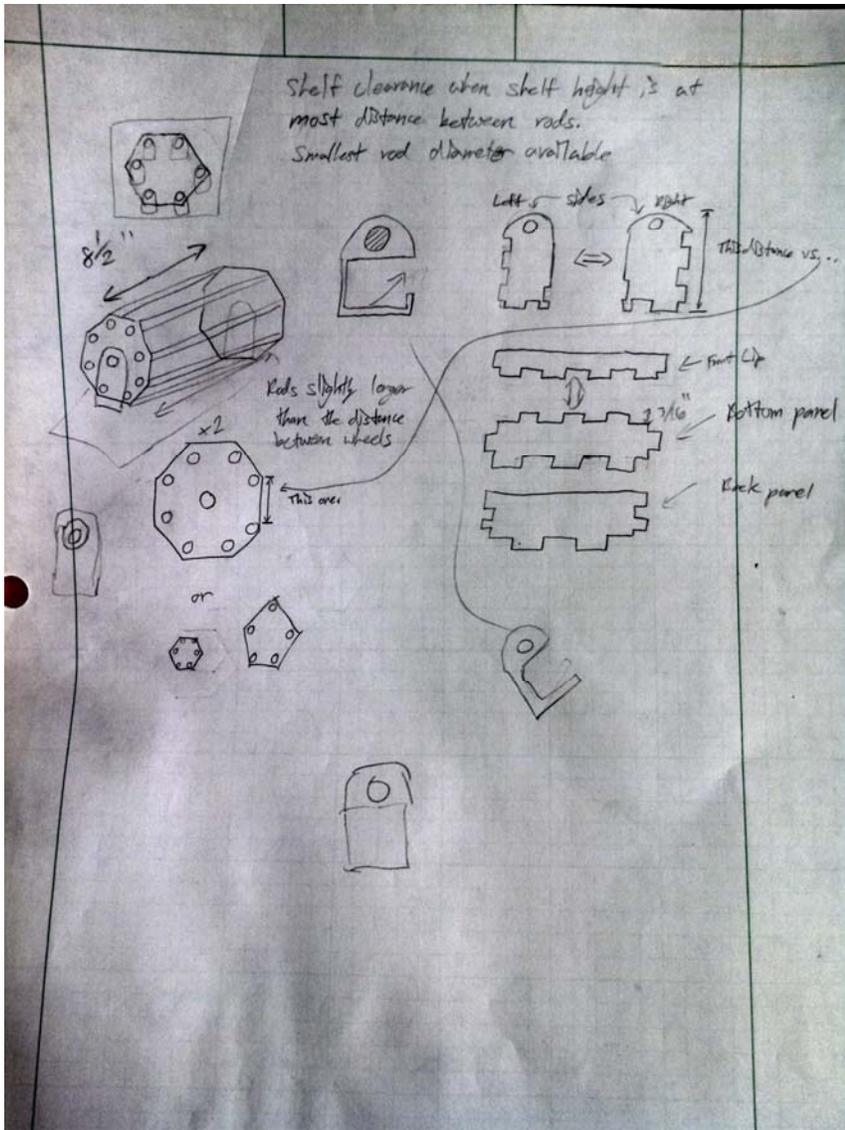
Louie: Determining the dimensions of the entire model. Looked at real life shelves for reference.





Nick: Determining how the “motorized track” will work for the prototype

Nick: Moving away from the “motorized track” idea and designing two horizontal plates. This drawing is much closer to our actual prototype than the previous drawings.



Paige: Figuring out whether the carousel would run on two tracks that would be placed on the edges of the shelves, or on a single track in the middle of each shelf.

4/5/14

Meeting #7

PSU EPL

3 pm

- Set the dimensions of the carousel
- Discussed the poster
- Collected EPL safety waivers
- Worked on carousel design

4/10/14

Meeting #8

PSU EPL

4pm

- Draw a 3D figure on the structure of the prototype (Hexagonal)
- Use Laser Cutter to create the hexagon side-plate (which ended up not being used for the prototype because it wasn't geometrically perfect and laser cutting wasn't really perfect ish)
- Looked at available parts to possibly use in making the storage system



Photo of the hexagon made (was not actually used in the real model)

4/13/14

Meeting #9

PSU EPL

2pm

- created side-plates, made of acrylic
- widened holes in the side-plates so the rods would fit. Nick brought in rods.
- Made a shelf and put it on one of the rods.



Photo of one of the shelves- made out of acrylic



Photo of the plates, shelves, and rods combined. We still need to add a motor, base, and more shelves.

4/17/14

Meeting #10

PSU EPL

4 pm

- made stand for the cabinet
- Completed poster and lab notebook
- Decided to mix the shelves between bamboo and acrylic
- Decided to increase side plate size to prevent shelves from colliding with each other