Work Completed:

The first week of senior design began with a review of the parts and components that had arrived from various suppliers. The only real components that had come in for this project were the 4 Voice Pads by Talking Products. Once the packages were open the products were inspected for size and outer construction. The instruction pamphlet that came with the product was read and the device was tested for functionality. Once the device was verified to be working it was dissembled.

The first thing that was done was the outer plastic layer was cut away so that the internal electronics could be inspected. It was found that there are 3 watch size batteries that power the device. Also the speaker was found to be 8 Ohm 25 watt. This indicates that it can be used for a lot more power and amplitude than the current setup. The volume of the system was found to be adequate for a normal environment. However, based on the clients impairment that volume maybe to low.

To increase the volume of the device an amplification system was devised based on the LM386 amplifier. The positive wire from the speaker was cut and plugged into the setup of the amplification system. Using a proto-board the entire setup was constructed. Upon use of the system it was found that the gain was set too high for the input signal and the amplifier was saturating and given a low quality signal. The last thing that was done is an update of schedule.

Future work:
• Find a setup for the proper gain on the amplifier.

• Construct a belt to house buttons and hold onto the bottle.

• Ensure that the speaker we currently have is sufficient to provide the volume needed.

### Backpack Lever Arm

Week 1 Report  
1-21-08 through 1-25-08

**Work Completed:**

The initial process done was to inspect the components that were received. This included the hinges, microchips and attachment clips. Once this was done we decided to construct a mockup of the actual device from cardboard. This was done using the size of the hinges as guide. Using this model will be key in the future months in order to anticipate how the device will look and function.

After the mockup was constructed a search for a way to attach the device to the wheelchair was begun. The search came up with the Quick Klamp Pipe Fittings by Farmtek. These clamps allow for rounded pipes to be fitted in various positions around a second pipe. The particular one that is planned for use is the Quick Klamp Crossover. This will be used to attach limb one to the back of the client’s wheelchair.

![Figure 1: Segment Arm Mockup](image)
Future Work:

- Order motors for the device.
- Get advice from machine shop about materials needed.
- Get acquainted with the PIC compiler.