Work Completed

This week was concentrated on designing the support system to be used to hold the bearing block. The support system was based on wooden dowels that would run through the bolt holes. These dowels would provide the main support for the bearing block. They would then be open on the top end and the bottom end would run into a block of wood that would be attached to the base of the game. See Fig. 1 for a depiction of this design. The bolt holes of the bearing block have a diameter of 0.452 inches. The wooden dowel has a diameter of 0.5 inches. The dowel thus must be sanded down to snugly fit into the bolt holes of the bearing block. It was decided that this would best be done by hand sanding the dowels because any power sander would break the dowel or decrease the dowel diameter too much. Approximately 0.05 inches was taken off of the dowel. The bearing easily slid onto the dowel and then stopped as the diameter of the dowel was slightly decreased. It was decided that the bearing should be able to slide down the dowel and have a few inches above it. This is because as the wheel is spinning the bearing could slightly vibrate and if the dowel did not run well through the bearing it could have a possibility of falling off the dowel.

After completing the sanding, the way in which the rest of the support system was to be constructed needed to be analyzed. Kristen went to the machine shop early afternoon on Monday February 19, 2007. Kristen was able to meet with Rich to discuss further possibilities. After analyzing the design with Rich it was decided that the dowels would not supply the necessary support. Due to the wheel having a diameter of 24 inches, and the shaft of the wheel going through the bearing block, a large amount of support is necessary for the bearing block. It was decided to rid the dowels and instead use a larger wooden block that the bearing block could directly be bolted into. This wooden block would then be directly attached to the base of the game, as first introduced.

![Diagram of Design I]

Figure 1: Design I
in the previous design. This wooden block would then have a hold drilled in the middle of it to allow the shaft to go through without making any contact with the wooden block. See Fig. 3 for a depiction of this design.

![Diagram of updated design](image)

**Figure 2: Updated Design**

The size of the base of the game affects all components inside the base. Thus a base needed to first be found. Original dimensions of the base of the game were 18” x 18” x 6”. The base needs to be at least a quarter of an inch in thickness in order to supply necessary support. A proper base was found at [www.usplastics.com](http://www.usplastics.com) (Fig. 3). The base to be used is made out of a heavy duty plastic with dimensions of 21.5” x 13” x 6.75”. This base is a little bit longer and a little less wide. There needs to be enough space inside the base to fit the wooden block and all electrical components. Thus this base will be optimal. The chosen base also has ribbing on the bottom to supply additional sturdiness. The color of the base is blue adding to the visual appeal of the project. This helps because it will not need to be painted. Stickers can be attached to the outside displaying “Wheel of Fortune”. A spray coating can then be used to protect the stickers from falling off.

Knowing the dimensions of the base of the game, the bearing block support system dimensions could be established. The shaft coming from the twenty-four inch diameter mold well will be five inches long and one inch in diameter. The bearing block is 4.84 inches wide and 1.8 inches thick. The wooden block with be approximately five inches wide and three inches high. In order for the wheel and mold well to be offset (due to clicker apparatus), the wooden block cannot be placed directly in the center of the base. It is optimal to have the wooden block to be placed roughly eight inches from the side of the base of the game. The base of the game was ordered on Tuesday February 20, 2007. This will arrive at the beginning of next week. Construction of the support system will begin on the following Wednesday or Thursday depending on when the base arrives.
Contact was made with Mike Zenker regarding the mold well. He has been able to locate a mold well that we are able to use. He is visiting the supply warehouse and will then be able to give us a possible shipping date. He was able to tell us that the diameter will be twenty-four inches. Knowing this diameter has allowed us to make plans for constructing the pie pieces.

Future Work

The support system for the bearing block will be completed. Appointment has been made with Rich in machine shop for either Wednesday February 28, 2007 or Thursday March 1, 2007. This date is dependent on the arrival of the base of the game. It is best to build entire support system having all of the components. While waiting for the base to arrive the wheel can begin to be constructed. The mold well will hopefully arrive next week. Construction on getting the pie pieces ready can begin. The sheets of PVC can be cleaned, sanded, layered with epoxy and painted. This will allow the wheel to be constructed as soon as the mold well arrives.

Project Review

This week proved to be a success. Although the project was delayed when the initial design for the bearing block support system needed to be changed, the new design was quickly made and construction will soon begin. The base of the game and wheel should be constructed before spring break allowing for testing to begin upon arrival back. This is ahead of schedule and will allow for us to fine tune the project.

Hours Worked

13 hours