Optimized Learning with Virtual Reality
Experiment Procedure

<u>Preparation</u>

The experiment requires the following:

- o Windows 10 laptop
- o Windows 10 desktop with SteamVR
- o HTC Vive Cosmos Elite kit (HMD, controller(s), link box, sensors)
- o Training video
- o Touchscreen test procedure program
- o VR test procedure learning environment program (VLE)

To prepare for the control group, the laptop will have the video and test program running (video paused).

For the experimental group, the desktop will have the HTC Vive Cosmos Elite connected and prepared as well as the VLE running.

<u>Subject Use – Group Selection</u>

The first participant will be assigned to the control group. After that, all participants will be assigned to alternating groups, discounting anyone who chooses to withdraw.

Once assigned to a group, the participant will be run through the experiment immediately, as only one participant will be used at a time.

<u>Subject Use – Control Group</u>

To begin, the control group participant will be sat in front of the laptop and asked to watch the training video intently.

All comments made by the participants will be recorded in writing by the experiment administrator.

<u>Subject Use – Experimental Group</u>

For the experimental group, the participant will be asked to take a seat in a cleared area. They will then be asked to wear the virtual reality HMD and hold the VR controller. The participant will then be briefed on how to use the equipment and how to navigate the VLE.

Once the experiment administrator feels the participant is ready, they will be asked to follow the directions in the VLE until they finish.

Any remarks or difficulties for the participant will be recorded in writing by the experiment administrator.

<u>Subject Use – Test</u>

Once both groups are finished with their individual tasks, both will be asked to perform the procedures they learned as prompted by the test program on the laptop.

All correct moves for each procedure and which move they fail on (if any) will be recorded in writing by the experiment administrator.

<u>Subject Use – Post-Experiment</u>

The following questions will be asked to each participant based on their group membership, and their answers will be recorded in writing:

Control Group

- On a scale of one to five, how well do you feel the training video explained the procedures?
- Would you say the procedures were too easy, just right, or too hard?
- Are there any suggestions you have for improving the experiment?

Experimental Group

- On a scale of one to five, how well do you feel the virtual learning environment explained the procedures?
- On a scale of one to five, how difficult was using virtual reality?
- Would you say the procedures were too easy, just right, or too hard?
- Are there any suggestions you have for improving the experiment?