# Examination of Interface Designs Which Maximize Communicative Output in Disabled Children Using an Augmentative Communication Device during a Robot-Controlled Play Scenario

### By: Kerstin Blazina, Jamie Friesen & Kristen Slauenwhite

### Supervisor: Al Cook & Kim Adams

## Abstract

The purpose of this study, which is part of a larger interface design study, is to expand on evidence suggesting that the use of robotic play with disabled children who have a decreased ability to play, may promote the development of their motor, cognitive and linguistic skills. It focused on determining which alternative or augmentative communication (AAC) device navigation system and control mode combination results in the most communicative output. Navigation systems included: ‘all-in-one page’ or ‘linked’ and control methods included: playback pre-programmed movements or direct-control buttons, with both having additional buttons for communication. Children, aged 5-7, both with and without disabilities, were taught how to use the AAC device to make comments and to give directions to help a zookeeper feed and water his animals. Results showed that all but one child produced the least frequent output when the display was linked with direct control of robot commands. However, there existed a difference between the conditions that resulted in the most frequent communicative output. The older children without disabilities produced the most frequent AAC output when the display was linked with playback control of robot movements. The youngest children without disabilities had the highest output rates with the Linked and AIO conditions. By comparison, children with disabilities produced the most frequent AAC output on average when the display was AIO and when the robot movements were playback.