# Glove-Shaped Hand Manipulative and Application Integration for Hearing People to Learn Basic American Sign Language (ASL)

Aquino Lopez, Sharlotte (School: The San Juan Math, Science and Technology Center)
Aquino Lopez, Shanttale (School: The San Juan Math, Science and Technology Center)

Puerto Rico has a deaf adult population of 8.4%. This community has encountered many difficulties while communicating with the hearing people. The deaf community should feel safe while using their language without having the pressure of learning how to speak for the hearing people to understand them. Therefore, this research intends to encourage hearing people to learn basic Sign Language using an innovative manipulative as motivation. It was intended to design and create a glove-shaped hand manipulative integrated with an application for the hearing people to learn and practice the alphabet while doing the signing. This manipulative consists of five finger flex sensors that, while attached to the hand, it can detect in which angle each finger is, allowing the reading of the parameters to complete the program in Arduino. The glove-shaped hand manipulative with the Arduino program can read the parameters of the letters “A”, “B”, “C”, “D” and “E” correctly with the finger flex sensors that were required for this research. These letters can be seen on an LCD, showing the letter that the hearing student wants to generate; this way, the learning process is effective since the student can visualize the response. For the future work of this research, a sensor will be added to detect motion since this would give more accuracy to the parameters. With the creation of this new manipulative an alternate and cost-effective option is now available and will also aid in improving the effectiveness of ASL classes.

**Awards Won:**