Method

The overall purpose of scientific research is to Describe, Predict, Control, and Explain. Research is a word that can have many different definitions pending the audience. According to Leedy in 1974, simply glancing at particulars and writing them down is "fact finding" (Leedy, 1974). It has been established that the origin of action research originated through the work of Kurt Lewin, an American psychologist in the 1940's. Through the years the emphasis of action research has been altered pending the purpose of the research. Action Research has been driven by two distinct traditions. The education tradition is linked to a British culture which connects "research to improvement of practice". American culture utilizes Kurt Lewin's developments to bring about social change (Norton, 2009).

Characteristically, Action research begins with a question. Upon a delivery of a question, a research plan typically follows. Declaring a clear statement of the problem is an essential for defined research. The flow of the plan shall stem through the main problem into sub problems. The overall course of the research will root from hypothesis. Quality research will not only organize data to support a hypothesis, but also expose a clear meaning.

Focus Questions:

1. Is the academy promoting retention in high school programs?

2. Does the curriculum provide focus of career readiness?

3. What actions are required to improve the overall success of the academy?

Examining the potential effects of a successful implementation of an engineering career academy at the middle school level could encourage student success and learning through (a choosing engineering as an elective in high school, b) intent of further industry certifications and c) further pursuit of engineering related careers. This study illustrated the importance of developing academies which model industry skills and knowledge at the middle school level. Developing programs uniform with industry standards could ensure that the United States continues to develop students who are prepared to enter into competitive engineering and technology careers. There seems to be a need to strengthen the link between student academic performance and workforce preparation. This can happen with an academy program focusing on rigor, relevance and relationships which model the work place objectives and skills.

During this project, a survey research method was utilized to better understand the current status of the academy. Activities were developed to complete research involving the school districts Quick Query system to research student data such as reading levels, ethnic background, state testing scores, age, and gender. This research delivered information needed in discovering the population of students the schools engineering program is reaching. An annual self assessment of the academy was evaluated by a district administrator to ensure the teaching and learning of the academy in remaining engaging and of high quality while aligned with academy standards of practice. Current high school teachers were surveyed to better understand expectations of current students and middle school academies. Finally a pre certification exam

was administered to academy students to gauge a level of knowledge and preparedness regarding industry certification.

Program Demographics

Haile Middle School is located in a rural setting which is defined as less than or equal to 2.5 miles from an urban area. 44 full time teachers with an average teaching experience of 8 years, a total of 336 students eligible for free and reduced lunch. Enrollment consists of 974 students, and a 22:1 student/teacher ratio. The Manatee County School District Quick Query system was used to assess the student enrollment of current academy students. Among the students enrolled, 95.6% are Male, and 4.4% are Female. Ethnic backgrounds include 86.96% White 4.35%, Black, and 8.7% Hispanic. Age levels include 91.3% age 13, 4.35% age 14 and 4.35% age 15. 21.74% of these students have an Individual Education Plan and 4.35% of migrant status. Reading levels were evaluated using the Florida State standardized testing system. Reading levels range from 1-5, with one being a low level reader and five being high level. Reading levels ranged as follows: 26% level 2, 30% level 3, 26% level 4 and 17% level 5. Math levels were also evaluated using the same system. Math levels of academy students were as follows: 17% level 2, 34% level 3, 26% level 4 and 21% level 5.

One Industrial Technology certified teacher oversees the academy. Demands of large class sizes seem to have decreased the quality of learning in the program. This pressing issue is a doubled edged sword. Larger classes expose more students early on to engineering careers; however, high level teaching and learning requires more one on one student teacher interaction. In this situation the instructor becomes more of a facilitator than teacher, which guides students to more exploratory learning closer to the experience of career environments.