

Promoting STEM Education Via the Design and Fabrication of a Simulated Lunar Vehicle

Henrique Casagrande
Mechanical and Aerospace Engineering Department

Overview

UAH students designed and built a Moonbuggy to compete in the 2010 NASA Great Moonbuggy race. Critical design experinece was gained as well as STEM outreach efforts.



Figure 1 – UAH Students at NASA's Great Moonbuggy Race



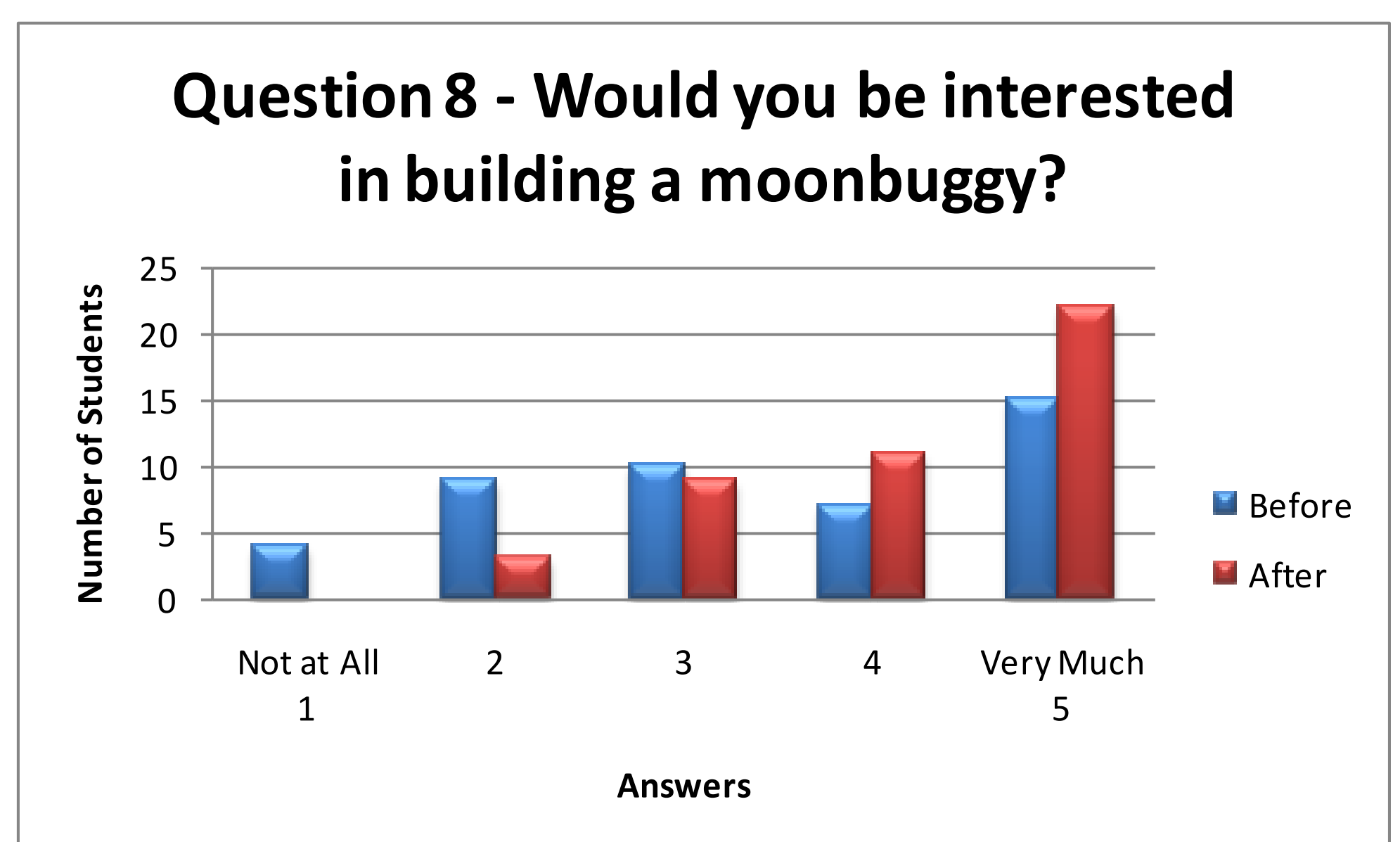
Figure 3 - Student Angela Mitchell welding the moonbuggy frame



Figure 2 – UAH students at the finish line

Key Findings

Using tools such as the UAH Moonbuggy, which is designed, fabricated and tested by UAH students, provides excellent outreach opportunities to younger students. The UAH team has impacted hundreds of students worldwide. The graph below provides results from outreach efforts in Switzerland.



Graph 1 – Results for the outreach effort in Switzerland

Impact

The UAH Moonbuggy is a tool that exposes young students to STEM related activities and has encouraged many of the students to follow STEM careers and work on similar projects.



Figure 4 – UAH students at Discovery Middle School, Madison, Alabama



Figure 5 – Discovery Middle School outreach effort

Explanation

STEM outreach is the primary pupose of the research. However, the knowledge and experience acquired by MAE students while designing and fabricating the lunar vehicle provide critical skills equivalent to that acquired in the aerospace industry.

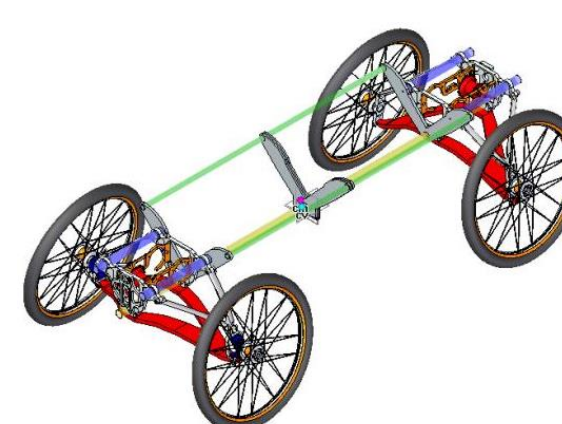


Figure 6 – Moonbuggy CAD model

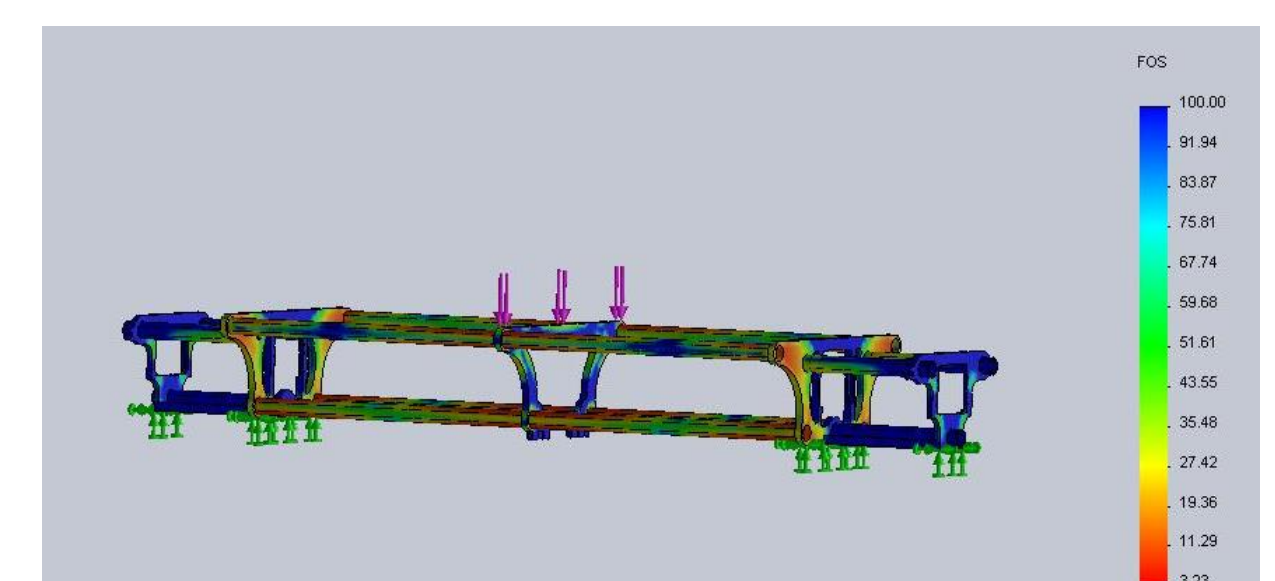


Figure 7 – FEA FS results

Acknowledgements

Dr. Christina Carmen, Faculty Advisor, UAH Mechanical and Aerospace Engineering Dept
Alabama Space Grant Consortium (ASGC)

