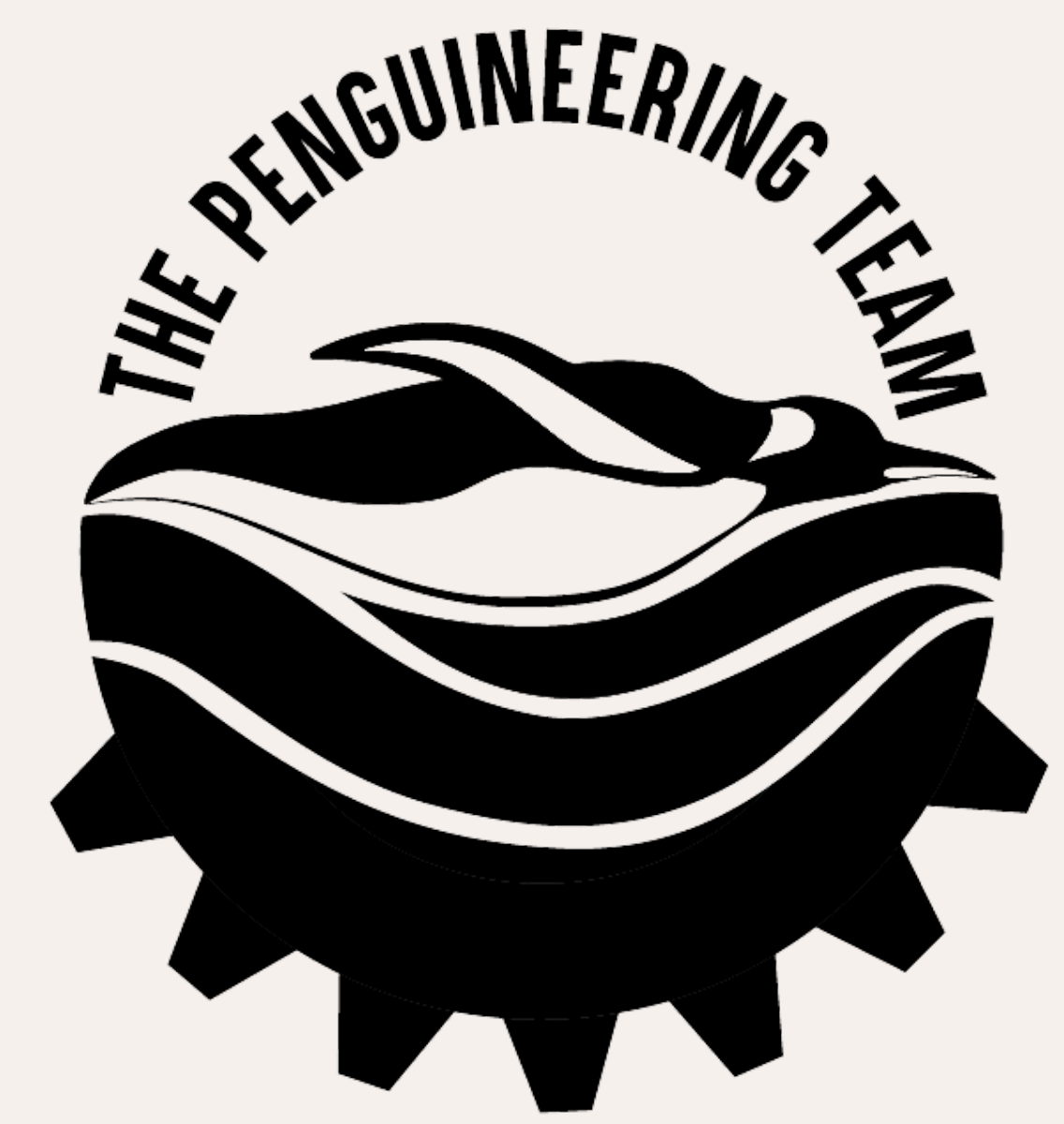


Pengineering Communications: Sharing Robotics and Semiaquatics with the World

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Introduction

- Hypothesis, "A hands-on approach to children's conservation education will result in the highest level of engagement from audiences for outreach events."
- Published findings: children are eager to learn through engagement and competition
 - Study only tested physics lessons
- Previous research: personal interviews, outreach events



Objective

- Determine the most effective way to teach children
 - Utilize for communicating research findings
- Teach children about sustainability
- Inspire future scientists

Methodology

Field research:

- Personal interviews with professionals in children's education

Small-scale outreach:

- Limited-size outreach event
 - Following COVID-19 safety guidelines

Large-scale outreach:

- Expanded outreach event
 - Over 100 registrants
- Temporary exhibit at Smithsonian Museum
 - Presented to 31,527 guests



Small-Scale Outreach Event: Walking in Robotic Wonderland



Large-Scale Outreach Event: Penguin Palooza

Results

- 100% of interviewees preferred hands-on methods
- Children physically interacted with hands-off lessons
- Guests at Penguin Palooza had fun while learning
- Children prefer activities with specific end goals
- Most guests chose not to color
- Guests took crafts home



Analysis

- Field research and relevant articles confirmed hypothesis
 - Most educators prefer hands-on teaching methods and
 - Children prefer activities and competition
- Children proactively engage with lessons
 - Insist on learning through experience
- Hands-on methods were overall effective at Penguin Palooza
- Children avoid long-term activities at events with more to do
- Children desire to continue learning through activities at home



Conclusion

- The most effective way to teach children is through hands-on methods
 - Educational games with direct results
 - Water balloon popping, picture matching
- Children's events should be designed with ample opportunities for lesson engagement
- Long-term activities should be avoided at events
 - Can serve as follow-ups or souvenirs



Next Steps

- Host Penguin Palooza in New York City on a larger scale
- Investigate effectiveness of various hands-on learning opportunities among a broader audience
- Design Penguin Palooza to be fully accessible to disabled children
 - Test effectiveness of teaching methods among children of varying abilities