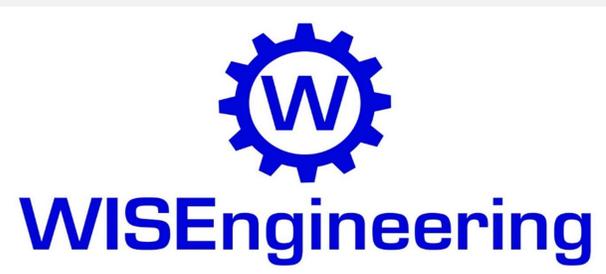




# Wise Guys & Gals

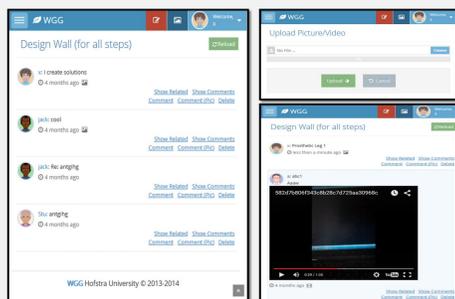
*Boys & Girls as WISEngineering STEM Learners*  
 Drs. Dave Burghardt (PI) and Deborah Hecht (Evaluator)

**In Partnership with:**  
 Brookhaven National Laboratory, Center for  
 Advanced Study in Education, Boys & Girls  
 Club: Glen Cove, Hempstead, New Rochelle,  
 Mount Vernon, Variety, Bellport, Hicksville,  
 Grenville Baker, Oyster Bay,  
 Charlottesville, VA

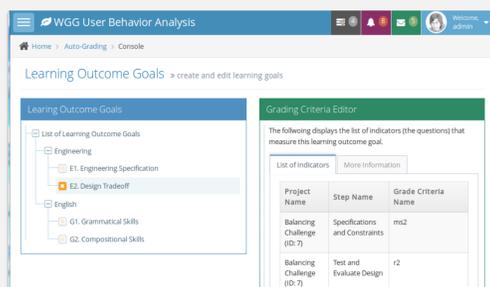


**THE WISEENGINEERING LEARNING ENVIRONMENT:** Created at Hofstra's Center for STEM Research, the innovative, freely available, online learning environment connects and blends the strengths of virtual design and physical modeling while also facilitating collaboration and community connections. It serves as a delivery system, PD platform, means for sharing ideas, and research tool.

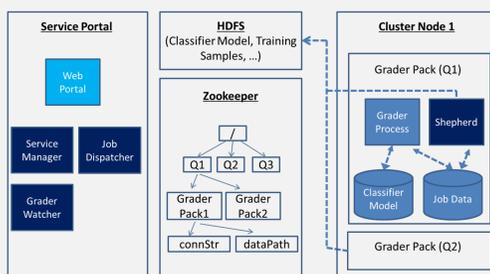
Collaboration: Comments, Pictures & Videos



Learning Goals Embedded And Identified



Instant Grading Cluster



## Project Overview

**WHAT IS WISE GUYS & GALS (WGG):** WGG is an Informal STEM program that engages early adolescents (middle school age youth) in innovative and engaging blended (on-line and hands-on) STEM based engineering challenges. WISEngineering, the open source online learning environment, that supports WGG, connects and blends the strengths of virtual design and physical modeling while also facilitating youth collaboration and collection of data for research.

**TARGET AUDIENCES:** Early Adolescents (Middle school age youth) at Boys & Girls Clubs (B&GCs), B&GC staff, informal educators and informal STEM researchers.

**HYPOTHESES:** Engineering design activities that are engaging for early adolescents and provide research data can be created using an interconnected learning and informed engineering design framework. B&GC staff can be taught to deliver the activities. Youth at B&GCs will be able to complete the design challenges and use the various features of WISEngineering. Data collected through WISEngineering can assess youth learning in multiple areas (e.g., appreciation of STEM, STEM content knowledge, engineering design thinking, etc.). WGG will be transformative for B&GCs seeking to adopt STEM based activities for their youth.

**RESEARCH AND EVALUATION:** WGG seeks to understand how an informal STEM blended learning environment created for informal STEM is used, particularly in a setting where youth can choose to "drop in or out." We are examining how the virtually collected data that allows for WISEngineering's just-in-time feedback to youth and facilitators are used within an informal setting and studying youth and facilitator learning, attitudes and engagement.

**ACHIEVING OUR GOALS:** The project has developed and piloted 15 STEM activities, exceeding our goal of 11. WISEngineering has been refined to work on mobile platforms, automatically grade narratives, and export data for research. We created a video explaining Children's Engineering, a Facilitator's Guide professional development videos. Ten B&GCs are participating and we have a waiting list of 26 BGCs wanting to join the project.

**CHALLENGES WE'VE EXPERIENCED:** Learning Facilitators at the BGCs are product not process focused and sometimes did not follow implementation guidelines or adhere to implementation schedules (i.e., B&GC Directors wanted WGG used every other week however only two clubs successfully following this model.) Few B&GC Facilitators have education background and are more familiar in implementing arts and crafts activities.



Award  
 DRL 1422436