

NFC STEM SEALS - Research Results and Achievements



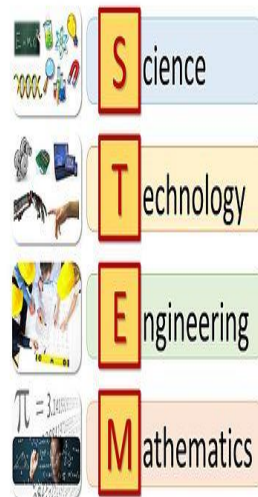
FOCUS & GOAL:

- Connects NFC and regional middle school teachers
- Studies the efficacy of creating collaborative partnerships between middle school and college faculty in developing rural area STEM pathways for students
- Develops inexpensive, rigorous, versatile design challenge modules to expose rural middle school students to STEM
- Promotes a greater awareness of STEM pathways for 6-8 graders;
- Increases readiness for STEM post-secondary study; and
- Generates student identity as STEM-able, STEM- skilled, and STEM-belonging

Because of the pandemic, NFC team had to pivot from an in-person camp to a virtual one while still providing a summer program with rigor and challenge.

Outcomes to date:

Incorporation of STEM in Student Activities



Propulsion systems of remote vehicles

Coding a microcomputer, Google classroom

Design, build, remote control robotic devices

Calibrations, graphing, direction, wind & current impacts

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Utilized Regional Teachers to Develop Age-Appropriate Curriculum

Design Teams

9 teachers gaining experience with the design prototype activities, providing feedback and reflections to the STEM SEALS development team

Review Teams

89 teachers from 6 different schools in the NFC rural counties review materials and be exposed to innovative ways to apply STEM in their classrooms

Dyads

19 Teachers working with students participating in the Summer Institute as facilitators and learners

Design Team educators were given opportunities to program code for RC rovers and boats, to fly drones, practice flight operations with airplane simulations, as well as participate in developing pedagogically and age-appropriate activities for middle schoolers in future STEM SEALS camps.

2020 VIRTUAL SUMMER INSTITUTE (LAND)

8
days

31 participants – 19 educators + 12 students
2 days prep
2 days learning to code Micro:bits
2 days building and coding Rover
2 days of Challenge competition

Pre vs Post Survey Results

Statistically significant increases in confidence of teacher's ability to explain computational thinking and do engineering design tasks.
High engagement with the Design Team educators led to deeper relationships being built, more constructive feedback on STEM SEALS curriculum
Students showed statistically significant improvements in their computational thinking and in their understanding of the Engineering Design Process
“This (STEM SEALS Camp) opened doors for our rural students. It is allowing access to materials and information some would never get a chance to see or experience,” said one teacher facilitator.