



## 2021 Virtual HBCU-UP/CREST PI-PD Meeting



## STEM Education Research

### Implementation Project: Preparing the Pipeline of Next Generation STEM Professionals



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All findings and opinions are those of the authors, not necessarily of the funding agency or AAAS.

# Project Overview

- The primary goal of this project is to develop a student pipeline for the 21st century STEM workforce. This proposal has three objectives: (1) to increase student enrollment in STEM undergraduate degree programs; (2) to involve students in experiential research and internships; and (3) to review and redesign STEM curricula, and enhance STEM pedagogy.
- This grant has proposed many innovative teaching, research, students support, and pedagogical practices to prepare students from underserved communities for future STEM workforce.

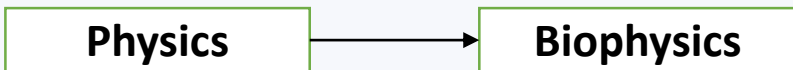
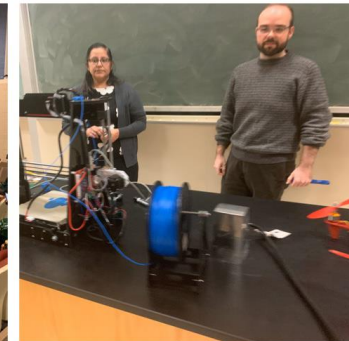
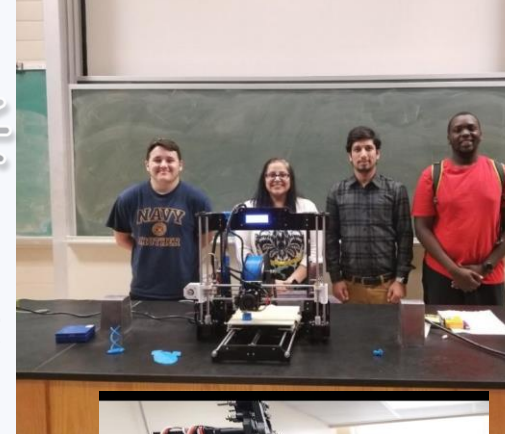


# Best Practices/Successes

Physics Club, 2016- Present, KSU

## STEM ACTIVITIES/Initiatives

- **Physics Club:** The Physics Club is currently focused on building a strong community not only among those students that study Physics but students pursuing degrees in STEM majors at Kentucky State University.
- **Teaching-Research STEM education model:** Implemented teaching-research education model in my classes by adding more interdisciplinary STEM approach in explaining and formulating problems. Improvising teaching methods to encourage collaborative STEM based learning in the group that can improve student engagement.

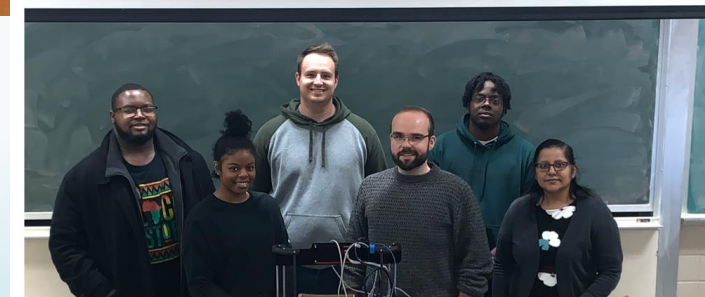


### PAST activities

- Physics Club: Field trip to Toyota plant, Physics Club: Field trip to DOH in Frankfort, KY
- Exploring STEM opportunities at KSU: Internships, fairs and tutoring options.
- Student presentations. 3D printer, robotic arm and Drones.

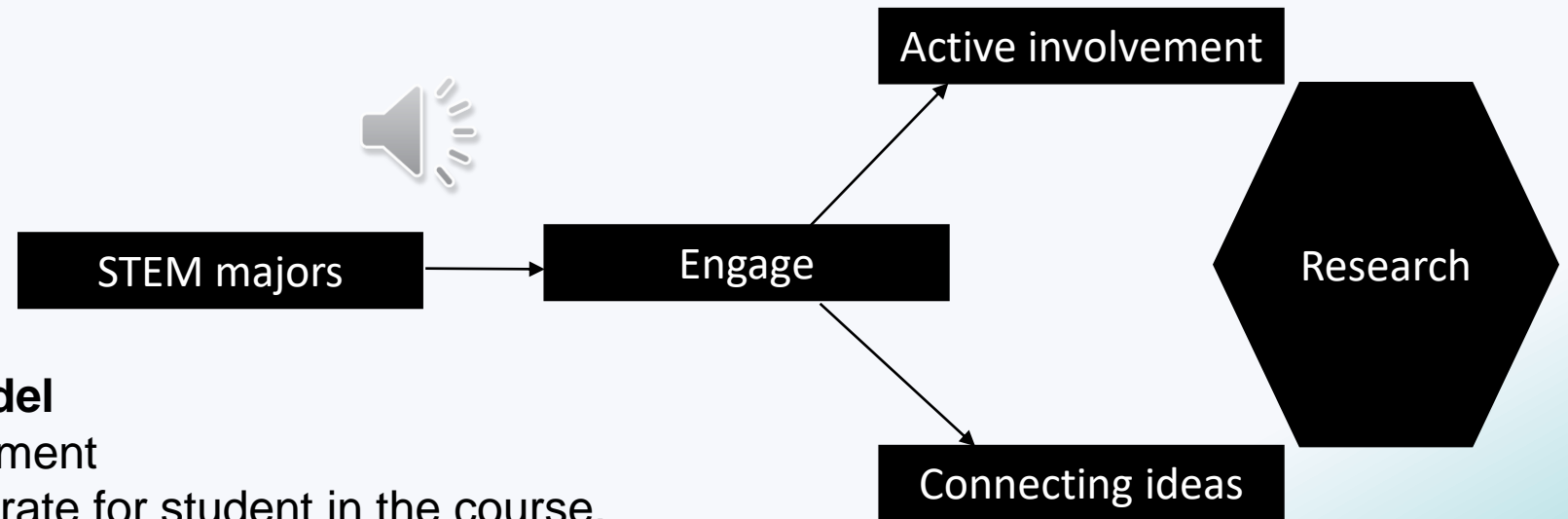
### PRESENT activities 2020-

- Physics club seminar series 20-21 ( focus on STEM in understanding COVID-19).



# Implications

- Studies of college classrooms reveal that, promoting learning just through lectures are not nearly as effective as other means for developing cognitive skills.



- The model

## **STEM Teaching-Research Model**

- promote student engagement
- improve overall success rate for student in the course.

## **Physics Club**

- encourages students to connect with STEM peers and enhance collaborative learning.
- cater interest towards increase enrollment in STEM courses.

# Identified Gap(s) for Future Collaboration or Enhancement

## Gaps

- Student engagement.
- Engaging student to think critically.

## Potential Fix

- Designing new interdisciplinary STEM focus courses.



Peer Lead Team Learning and recitation sessions coupled with lectures will focus on bridging educational disparities within the student profile.

- STEM-tech savy: course-related assignments using educational apps as well as assistance from tutors to expose students to STEM teaching and research.
- STEM Clubs and Capstone courses: more hands-on learning skills that can help acquire future STEM jobs.