Research Experience for K-5 Educators to Enrich the STEM Ecosystem in Alachua County

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Introduction

- The 4th MRET at UF (see Figure 1 for all participants) that brings together engineering research_**scientists**, **K-5 educators**, and **industry** professionals.
- Elementary educators' **beliefs** and **attitudes** toward **STEM** have a significant impact on their **students**' attitudes and **confidence** in STEM subjects.
- Despite this, there has previously been **inadequate exposure** for K-5 **educators** to learn and integrate STEM concepts and then confidently **support STEM interests** and skills in their classrooms.

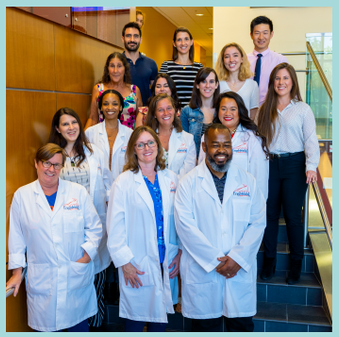

Figure 1: Participants of the 4th MRET at UF

Methodology

- Year 1-3: **Decentralized** experience at different research labs.
- Year 4: **Centralized** teaching lab approach for all educators.
- K-5 educators were exposed to **tissue engineering concepts**:
  - Mechanically characterize tissue samples
  - Hydrogel fabrication
  - Using engineering design principles to mimic native tissue properties

Figure 2: K-5 Educators Exploring Tissue Engineering in a Centralized Teaching Lab

Results

- Educators participated in an **authentic** engineering experience in the controlled **teaching laboratory** environment for **morning** sessions, followed by **afternoon** sessions **dedicated** to **curriculum development**.
- This structured **engineering** and **curriculum** experience facilitated technical and PD relationships amongst all educators and teaching team members.

Figure 3: Illustrations of the Morning and Afternoon Sessions

Conclusion

- **Translate the engineering design process into classrooms** such as **tissue characterization**, **prototyping**, **data analysis**, and **iterative design**.
- Elementary educators are able to **confidently** teach STEM concepts and lay the foundation of **STEM interest** and skills for their students.
- Empowered individual educators with the skills required to **impact the larger public education community**.
- Successfully recruited representatives from **68% of Alachua County** elementary schools to participate in this program and will **continue to expand** our efforts in our goals of enriching the STEM ecosystem.

Figure 4: Facilitating STEM Interests in the Next Generation of Students

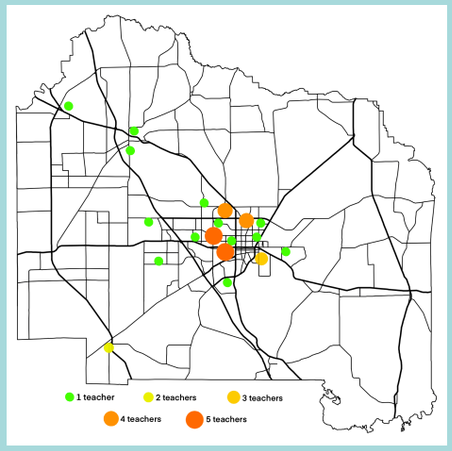

Figure 5: Alachua Elementary Schools Coverage Map

The goal of the program is to ***empower*** individual K-5 educators to ***translate*** the ***engineering design process*** into their ***classrooms*** to impact the larger ***public education community***.

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