NSF Research Experience for Teachers in Dayton, Ohio

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We have had two NSF RET Grants

• Engineering Innovation and Design for STEM Teachers, University of Dayton (2011-2013)

• Collaborative Research Experience for Teachers: Inspiring the Next Generation of a Highly-Skilled Workforce in Advanced Manufacturing and Materials, Central State University, University of Dayton and Wright State University (2015-2017)
Key Elements in the Program Design

• Leverage regional strengths
  • Innovation, manufacturing, DRSC, WPAFB, numerous diverse colleges in the area, partnerships with industry....

• Intentional professional development beyond just the research experience
  • Curriculum design, innovative pedagogy, career awareness, technical communications, industry applications, networking, how to talk to students about engineering, library research....

• Hand pick faculty, research and/or industry mentors

• Involve undergraduate engineering students as much as possible

• Build community
“Big Wins” or Conversation Starters

- STEM for all
  - The impact of RET experiences on K-8 teachers and special education teachers
- STEM for literacy, creative confidence, risk taking
- Community of STEM advocates
  - The role of the RET in networking and community building
“Big Wins” or Conversation Starters

- Changing the conversation – RET enhances teachers’ understanding of engineering and engineering careers and increases self efficacy;
- Not only the what, but the how – Teachers embrace innovative pedagogical techniques and try new things;
- Passion drives success – the success of the RET program is highly dependent on the passion of the PI’s, mentors, participating teachers and community stakeholders.
A Teacher’s Perspective

• Inquiry-based curriculum development:
  • For many of us, this was our first experience with developing curriculum;
  • Provided us with the opportunity to connect what we were doing in the lab with what we are teaching in the class
  • Was a significant component to our professional development;

• Industry tours and guest lectures:
  • Made STEM more real
  • Helped us to understand how important STEM is and our role in that!
A Teacher’s Perspective

• Research and Symposium:
  • Provided us with the opportunity to see what engineers do and understand the integration of science and math with engineering and non STEM disciplines
  • Helped us to feel more confident about our knowledge of engineering and some basic STEM skills