University Partnership Professional Development Program

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Professional Development (USDOE MSP)

- **Project ACE** (Achievement through Content Expertise)
  - Involved 7 mathematicians from USF
  - 8th largest school district in the nation (over 200,000 students)
  - Participants: ~1000 teachers

- **Florida PROMiSE** (Partnership to Rejuvenate and Optimize Mathematics and Science Education)
  - Statewide initiative, with multiple components
  - Involved 25 STEM Faculty (13 M) from USF, FSU, UF, & FIU
  - Participants: ~2000 teachers over two summers

Undergraduate Education (NSF Grant)

- **KnoTSS** (Knowledge for Teaching Secondary School Mathematics)
  - Co-teach mathematics content course – Geometry
  - Co-teach mathematics methods course – HS mathematics methods
Assumptions

- Teachers, as a unique audience
- Mathematics Knowledge
  - What is known teachers, teaching, and schooling?
  - What mathematics do teachers need to know in order to teach subject matter effectively?
  - How should they come to know this knowledge (e.g., procedurally, conceptually)?
- Model the type of pedagogy that we wanted teachers to use with their students.
Features of High Quality Professional Development Collaborations

- “REAL” Collaborations between Educators & Mathematicians
  - Collaborate: “to work with another person or group in order to achieve something”
    - What is it that you want to achieve?
    - How will you know that it has been achieved?
    - What type of knowledge is being targeted?
    - What processes (e.g., reasoning, communication) are emphasized?

- Identify & Interrogate Assumptions and Expectations

- Finding Commonality among Perceived Differences

- Being open to unfamiliar notions

- Exchanging roles
  - Educator leads the mathematics discussions
  - Mathematician leads the pedagogical discussions
Things to Consider

- Investment of time
- Experiences of the collaborators
  - Approaches to learning math -- “That is how I did it when…”
  - School Experiences
- Sources of Materials
  - Use of existing materials vs. designing new ones
  - Course text
- Potential Pitfalls
  - Final authority
  - Defending positions and rationales
    - Why? – as a personal affront that is critical of personal knowledge
    - Vs.
    - Why? – an opportunity to share and clarify
- University Expectations
  - Research mathematicians
Reflection of Math Faculty

“The advantage of activities and this assumes that there is a discussion at the end of the activity, because a disconnected activity is just worthless. But the benefits of doing an activity with a discussion combined is that it anchors the learning peoples concrete experiences, so they can make a personal link, a personal connection, and those things tend to help make things stick in people’s minds.”

“If I have a choice, yes, yes. I am improving. I will cut a little content to do more in depth”.

“My experience will probably affect how I work with...
What have you gained personally?

"I gained a better understanding of who are the people who go into math teaching in the US and what I should teach them and how I should teach them. (M)

“I have come full circle as far as being a believer in activity-based learning. I wasn’t a believer at the time when we last talked.” (M)

“Got more personal experience that will help me grow as an instructor. I was forced to think about my content [in ways] that I haven’t done—it helped me gain a different perspective.” (S)
Would you continue with such projects?

“Definitely. Hope for the chance. Sometimes we complain about our students. If we don’t get involved we should not complain. Very important. This is what [a key PROMiSE leader] is trying to do—create bridges between the schools and universities. This is very important. (M)