Cougars and Hope Academy Math Program

Dr. Mark Tomforde
University of Houston
University of Houston (Mascot is the Cougar)

- Flagship University in the University of Houston System
- Approximately 35,000 students
- Math department has 35 faculty
- Undergraduate degree as well as Masters and Ph.D. programs in Math
- Located in Houston’s Third Ward
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Hope Academy
- A “second chance” high school
- 95% African-American and 5% Hispanic
- Located a few blocks from the University of Houston
- Math is the area with worst performance on standardized tests (often a major obstacle to students graduating from high school)
Each Monday we bring approximately 15 high school students from Hope Academy to UH for a 2-hour math lesson.
Each week’s lesson is given by a different person on a topic of their choice. We have had

- Professors from UH

- Individuals from Reasoning Mind (a local nonprofit)

- A field trip to a Robotics Lab at Rice
We have UH undergraduates and graduate students serve as facilitators that help when students break into groups

UH Facilitators (Undergraduate and Graduate students)
Goals of CHAMP

• Involve Underrepresented Groups in Mathematics.
  - Focus on Exposure rather than Content
  - Develop “Habits of Mind”

• Encourage Students to go to College and consider a STEM major.
  - Tours of Campuses in Houston
  - Discussion of College Application Process
  - Introduce to Administrators that can help

• Make the Program Replicable
  - Volunteer effort / no grant support
  - Use simple supplies (e.g., pennies, string, cups)
  - Post lessons on website

• Measure and Improve the Program’s Effectiveness.
  - Give surveys examining students attitudes before/after
  - Compare standardized exam scores before/after
Novel Aspects of CHAMP

• Use Only Volunteer Effort
  - No payment, no course credit, only intrinsic rewards
  - This improves participation of facilitators and instructors
  - High school students realize we are there for them

• No Outside Funding
  - Keeps focus on students
  - Grants often waste of time (applying, administering, reporting, justifying) that could be better spent on students
  - Keeps program replicable
  - Makes sure people are involved due to intrinsic motivation

• High Teacher to Student Ratio
  - Instructor, two to three faculty, five or more facilitators at each lesson
  - Focus on individual attention for students
  - Do not expand too fast
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Some more pictures . . .
21
Add 1, 2, or 3
Good #s 1, 5, 9, 13, 17, 21
22
Add 1, 2, 3
Thank you!

http://www.math.uh.edu/champ
Habits of Mind

1. Nurture Curiosity and Ask Questions.
2. Use Critical Thinking.
3. Understand the Value of Learning From Mistakes.
4. Think Flexibly.
5. Think Interdependently.
6. Develop Persistence.
7. Communicate with Clarity and Precision.