



Institutional Student Support and Retention in Math Grad Programs (and Beyond)

Kate Pearce

PhD Candidate in Applied Mathematics

paraDIGMS Lightning Talk

North Carolina State University

Research Advisor: Mansoor Haider



NCSU Math Diversity, Equity, and Inclusion (DEI) Committee

- Formed Summer 2020
- Consists of ~ 9 rotating math faculty/staff, 3 math PhD students, 2 reps from local K-12 org
- Mission (from Fall 2020 report to dept chair):

“Improving the culture of our department, particularly as it relates to diversity, diversifying our department, and using our influence to make the ‘pipeline’ of mathematical talent more equitable”



How? 5 Areas of Emphasis

- 1. Graduate recruitment, retention, support**
recruiting and retaining diverse grad student body, supporting grad students, and removing obstacles to success
- 2. Climate**
making our department a welcoming and supportive place for all students, faculty and staff
- 3. Undergraduate student support**
recruiting undergrads to grad program, mentoring and supporting students through outreach initiatives
- 4. K-12 outreach**
engaging w/ K-12 students to increase interest in math
- 5. Faculty/staff recruitment, hiring, retention**
instituting best practices to recruit, hire, and retain diverse faculty and staff



“New Curriculum” Grad Student Committee

- Brainstorming group of **graduate students**: Ashley Tharp, Catie Acitelli, Everett Meike, Cash Bortner, Ezra Nance, me
- **Driving questions for curriculum**:
 - What **resources, tools, and information** would make/have made grad school more manageable?
 - How can we ensure **diversity, equity, and inclusion** in our department and classrooms to foster a real sense of community?
- **Our thinking**: we can answer the second question in large part by addressing the first
- **Collaboration with DEI Committee** →
Creation of Graduate Student Resource TA
(Ashley Tharp)

Lecture Example: “The Greedy Algorithm” [A. M. Tharp]

Grad School is Challenging

As grad students, we are asked and choose to do things that are

- a) completely new,
- b) hard, and
- c) high-risk

e.g. teaching classes, quals, research, prelim, thesis defense, publishing

They have far off and/or **indefinite endings** and **unclear standards for success**, and they often require that we do **many things concurrently**, which can lead to feeling overwhelmed.

Applying the Greedy Algorithm in your life

What is one area of grad school where you'd like to make progress.

Take 3 square breaths, then finish the sentence:

“In [area], the next right thing to do is...”

If the next right thing is an action, when is the right time to do it?

Iterate until you've done the thing.

[Source](#): Ashley M. Tharp, “The Greedy Algorithm,” First-Year Graduate Student Seminar, NCSU Mathematics, Fall 2021



First-Year Grad Student Seminar feat. “New Curriculum”

- 2 semester, 1 hour/wk, led by teaching professor and graduate resource TA (+ weekly OH, regular check-ins)
- Collaboration with and guest speakers from math department, **College of Sciences, Office for Institutional Equity and Diversity, and Counseling Center**
- Topics include but are not limited to:
 - Inclusive teaching practices
 - Creating work/life balance
 - Beginning and maintaining advisor relationships
 - Giving and receiving feedback
 - Preparing for qualifying exams
 - Counseling resources
 - Departmental/college resources and faculty/staff introductions
 - Career development resources
 - Goalsetting and timelines
 - Tips to make grad school easier



Beyond Grad Classrooms

- DEI goals accomplished towards *Areas 3 & 4*:
 - ✓ Newly-created grad student appointment:
Undergraduate Outreach TA (Catie Acitelli)
 - ✓ **Partnership with existing local organization** (Science House) for K-12 outreach
 - ✓ Departmental **mentoring programs** for both graduate and undergraduate students
 - ✓ Implemented changes/removed obstacles to **grad application and qualifying exam process**
- Long-term goals for structural perpetuity:
 - Hiring full-time TAPs for K-12/undergrad outreach
 - Additional diversity training for department
 - Recruitment and hiring initiatives
 - Bridge programs and summer outreach activities



Conclusions

- **Graduate student involvement** is important for robust implementations of DEI initiatives
- **Collaborations** with existing organizations and university partners is also crucial for far-reaching and lasting impact
- **First-year graduate seminar/curriculum** is excellent mode of delivery of critical resources relating to diversity, equity, inclusion, and student success & wellbeing



Questions or Comments?

Q & A: after lightning talks

Email: kjpearce@ncsu.edu
amtharp@ncsu.edu

Website: math.sciences.ncsu.edu
github.com/kjpearce
amtharp.wordpress.ncsu.edu

Thank you!