A Mathematics Learning Community on Inclusive Teaching

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In higher education as a whole there is increasing awareness of, and sensitivity to, issues of Diversity, Equity, and Inclusion. This is manifest in their increased visibility institutionally, and in national forums, as well as initiatives at different scales. It is therefore an opportune time to consider these issues, perhaps not least because work can be done at multiple levels, from personal to institutional.

... statements about trends in higher ed are rigorously supported by anecdotal evidence.
Institutional Context

- The University of Michigan is part of this national fabric. We have a **Campuswide Strategic Plan**
  1. Create an Inclusive and Equitable Campus Climate
  2. Recruit, Retain and Develop a Diverse Community
  3. Support Innovative and Inclusive Scholarship and Teaching

... and **College initiatives**

- And (some) **Institutional support**.
  - FCIT Grants (up to $1000)
  - DEI Innovation Grants (up to $5000)
Departmental Context

- Our Department of Mathematics is fairly big
  - About 60–65 T/TT faculty, 65–75 postdocs, 15 lecturers, and 130 graduate students.
  - Teaching 250–370 undergraduate class sections/semester
  - With a highly structured Introductory Program (our course before calculus, calculus I, and calculus II).

- And has done some work on education and reform:
  - Calculus reform (1992–present)
  - IBL center (2004–present)
  - Seminar on Teaching Mathematics (2003–present)
A Learning Community on Inclusive Teaching

- A FCIT grant ($1000) from our CRLT; work with Nina White, to whom most of the credit should go.

  “...inclusive classroom practices can help address [attraction and retention of minorities]... We will create a community of instructors who will discuss these issues... [to attain] the knowledge and resources to better support [these students]... Our new group—Inclusive Teaching in Mathematics—will build on existing communities in the Department of Mathematics with deep interests in effective teaching... [meeting] through the winter semester to discuss readings and research, and will bring in outside speakers, to accomplish its goals.”

- Premise: Prerequisite to meaningful Departmental change are
  - Exploration and background, and
  - Building a core of instructors with knowledge and appropriate skills.
LCIT: Structure and Set-Up

- Invitation to all faculty and graduate students in mathematics, and members of the School of Education.
- Four discussion sessions, one outside speaker, one concluding discussion. ...plus a number of follow-up and subsequent sessions
- Discussion sessions met over lunch (provided by grant funding)
  - For each: specific readings, with discussion leaders.
  - Synopsis, questions, discussion.
  - Partial model: IBL lunches in Department.
- Supplemental funding from within the Department covering speaker travel

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• Readings for 3 April, 2018
  - In this session, we will look at inclusion and assessment. Harrison Bray and Nina White will lead a discussion following supporting readings. Please fill out this survey before 11:59 pm on Thursday, 3/29, to help the leaders prepare.

  Supporting readings:
  - Assessing Assessment, by Lynn Steen. This is the introduction to the MAA assessment volume linked in.
  - Framing Equity, by Rochelle Gutierrez. This is pp.5–6 in this document, and questions for discussion.
  - Optional: complimentary readings are in the MAA Instructional Practice Guide. The sections on asset and equity, pp.157–166 are particularly relevant for our discussion. We especially recommend the equity readings.

• Readings for 7 March, 2018
  - In this session, Nancy Kress, from the University of Colorado, Boulder, will speak on instructional strate...
When to meet?

- **Math Teaching Seminar** (Mondays, 5:15–6:30pm), or
- **Overlap other seminars** (Most days, 3pm–), or
- **Lunch** (conflicting with teaching schedules).

Finding appropriate readings

- **Rely on local experts.**
## Outcomes: Meetings

### Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/6/2018</td>
<td>Discussion 1</td>
<td>Context &amp; background</td>
</tr>
<tr>
<td>2/20/2018</td>
<td>Discussion 2</td>
<td>Inclusivity &amp; strategies</td>
</tr>
<tr>
<td>3/7/2018</td>
<td>External Speaker</td>
<td>Instructional strategies</td>
</tr>
<tr>
<td>4/3/2018</td>
<td>Discussion 3</td>
<td>Inclusivity &amp; assessment</td>
</tr>
<tr>
<td>4/17/2018</td>
<td>Discussion 4</td>
<td>Implicit bias &amp; synthesis</td>
</tr>
<tr>
<td>5/30/2018</td>
<td>Concluding Discussion</td>
<td>Closure &amp; questions</td>
</tr>
</tbody>
</table>

### Sample Readings: Discussions 1, 2

1. Position on Access and Equity in Mathematics Education (NCTM)  
   Teaching with Women in Mind (AMS Notices)
2. 6 Ways Math Instructors Can Support Diversity and Inclusion (AMS teaching blog)
3. Toward Inclusive STEM Classrooms: What Personal Role Do Faculty Play? (CBE–Life Sciences Education)
4. How a Detracked Mathematics Approach Promoted Respect, Responsibility, and High Achievement. (Theory Into Practice)
5. CRLT exercises
Outcomes: Community Numbers

- **Attendance** was generally good.
  - Winter 2018 events averaged 16 attendees, 37 in total, with 15 attending at least three sessions.
  - Attendees were approximately evenly split between T/TT faculty, lecturers, post-docs, and graduate students (though graduate students were the least-well represented).

- **Collegial and open discussions** were the norm.
  - ...which may reflect Departmental culture.
  - But: note graduate student attendance.

...and self-selection
**Goal:** “[to attain] the knowledge and resources to better support [these students]…”

- Inclusivity in teaching *is a big issue*.
- We definitely *increased awareness, and knowledge, and*
- *increased individuals’ resources.*

**Implied Goal:** facilitate change in instructors’ teaching.

- This is *harder to measure.*
While it is difficult to measure impact in the classroom, we came to a number of key insights:

- **Avoid a deficit perspective:** Look for and emphasize students’ understanding and competence, not errors.
- **Assign competence:** Recognize students’ success and contributions publicly.
- **Manage groupwork:** Take an active role during groupwork to support inclusive group dynamics.
- **Create classroom community:** Focus on increasing students’ sense of belonging in class, and in mathematics.
- **Be self aware:** Of implicit biases, habits and language.
And these raised a number of new questions:

- How do we create community?
- How do we better recognize what we need to be aware of and change?
- How do we make all of these things natural parts of our teaching?
Outcomes: Artifacts and Discernable Impact

- This talk.
- (Forthcoming...) post for the AMS inclusion/exclusion blog about our work.
- Work on our new instructor training program.
  - Week-long program, for all new graduate students and post-docs.
  - Increased focus on inclusive teaching, with a CRLT workshop at the start of the week and some interleaving of topics throughout.
Conclusions and Reflections

- Our Community did arrive at some key insights,
- And an underlying framework to think about issues of inclusivity:
  - **Levels of Action**
    - *Individual*, *Programmatic*, and *Departmental*
  - **Programmatic actions:**
    - Think critically about assessment structures in large, coordinated courses.
    - Highlight contributions of mathematicians in underrepresented groups.
  - **Departmental actions:**
    - Work with our instructor training programs:
      *Clearly note that our teaching is not de facto inclusive,* and
      *Provide instructors with strategies*
Conclusions and Questions

- ... and these led naturally to more questions
  - How to balance uniformity and resistance to academic dishonesty with promotion of a growth mindset and sense of belonging?
  - How to show underrepresented mathematicians and implement strategies meaningfully and authentically?
A Continuing LCIT

- Two meetings in Fall 2018
  With residual funding—due to Departmental support, and cheap lunches.
- Application for renewed funding for Winter 2019
  - Increase graduate student engagement
    Graduate students teach many of our introductory courses, are a substantial part of our department, and may be teaching for years to come.
  - Improve inclusivity of our Community
    Survey attendees who came only once.
  - Improve application of instructional strategies
    Focus discussions, follow-up surveys.
  - Continue engagement with Department and Introductory Program
    Work on new instructor training, larger programmatic issue.
Complementary Activities

- Exam analysis project
  - Internally funded (CRLT grant of $10,000, plus $5,000 of Department funding).
  - Goal: Analyze Introductory Program exams, to determine characteristics and changes over time, and how these may speak be more (or less) inclusive of underrepresented groups.

- Increased mastery assessment in our large enrollment courses
  - Pilot test in differential equations
  - Proposal for Introductory Program
Concluding Thoughts

- Our departmental environment facilitated the LCIT
  - Departmental culture
  - Departmental engagement

- We benefit tremendously from University resources

- ... But neither of these are necessary for this work
  - Individual classrooms can be inclusive, and this has always been the case.

- Our scale and uniformity is a challenge and an opportunity
  - My course, this fall: 3 copied lab reports, 60 students with a common homework solution.
  - But: we have an administrative structure and authority to affect change.
Resources and Links

- Gavin LaRose: glarose@umich.edu
- LCIT page:
  http://www.math.lsa.umich.edu/~glarose/dept/teaching/lcit.html