Evidence-based teaching: how do we all get there?

(issues, discussion questions, and resources)

(find this document containing URL pdf links at web.nmsu.edu/~davidp)

(if you’d like to continue the conversation, join https://lists.uoregon.edu/mailman/listinfo/active-math)

AMS Committee on Education Guided Discussion, Joint Mathematics Meetings 2019
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Some steps to “getting there”

1. training graduate students and early career mathematicians;
2. developing departmental experts who can lead and mentor;
3. offering wide-scale programming for department chairs;
4. updating inventory tools of teaching practices for observations and training;
5. shifting program evaluation towards active learning and deeper, more authentic learning outcomes;

And some challenges

6. large lectures, and the challenges they present for interaction, including individual feedback, group work, and whole-class discussion;
7. dissemination of teaching materials currently biased towards lecture format.
8. culture, inertia, and incentive systems.

**And you can see the last page for some resources**

Question 1.

- What would you most like to see happen soon in your department and institution toward widespread adoption of active learning pedagogy?

- What would you personally most like to do or work on toward adoption of active learning pedagogy?
Question 2.

- What are the steps you see in order to achieve what you identified in Question 1?

- What are the main challenges you and your colleagues would need to overcome?

Question 3.

- What are existing resources and models which you can build on?

- What do they help address and what do they leave open from the steps and challenges you identified in Question 2?
• How do you see using them in your plan to achieve your goals from Question 1?

Question 4.

• What do you feel is needed (not covered by what you found in Question 3) locally, regionally, or nationally, in order to support what you would like to do or see happen?

• In particular, what kind of curricular or training materials or other supports (e.g., clear recommendations to administrators) would you like to see developed nationally?

• And what kinds of professional networks would you like to have available so that you can share experiences and insights with others in similar contexts and/or having similar goals, as you engage in this work?
Resources

- NSF press release [Enough with the lecturing](2014)
- CBMS statement [Active Learning in Post-Secondary Mathematics Education](2016)
- Guidelines for Assessment and Instruction in Statistics Education (GAISE) (2016)
- MIT Electronic Seminar on Mathematics Education
- AMS Blog on Teaching and Learning Mathematics
- College Mathematics Instructor Development Source (CoMInDS), MAA
- Project NExT (New Experiences in Teaching), MAA; & Project ACCCESS, AMATYC
- Undergraduate STEM Education Initiative, AAU
- Student Engagement in Mathematics through an Institutional Network for Active Learning (SEMINAL), APLU
- Academy of Inquiry Based Learning
- Journal of Inquiry-Based Learning in Mathematics
- Initiative for Mathematics Learning by Inquiry (MLI)
- IBL Special Interest Group of the MAA
- Transforming Post-Secondary Education in Mathematics (TPSE Math)
- Process Oriented Guided Inquiry Learning (POGIL)
- Innovative Teaching Exchange, MAA
- Innovations in College-Level Mathematics Teaching, AMS
- Learning Assistant Alliance; & Learning Assistant Program (UC Boulder)
- Accelerating Systemic Change Network (ASCN)
- NSF Division of Undergraduate Education
- MAA Progress Through Calculus studies
- AMATYC Webinar series
- Center for the Integration of Research, Teaching, and Learning
- Active learning resources from David Pengelley: [https://web.nmsu.edu/~davidp/](https://web.nmsu.edu/~davidp/)
• Active learning resources from Robin Pemantle, including pedagogical tips, and materials for calculus and teacher preparation courses:

  https://www.math.upenn.edu/~pemantle/Active-resources.html

• Active learning course materials from Matt Boelkins, Steve Schlicker, and Ted Sundstrom, for courses in
  
  Active Calculus (single and multivariable): https://activecalculus.org/
  
  Active Preparation for Calculus: https://gvsu.edu/s/0U1
  
  Mathematical Reasoning: Writing and Proof: https://scholarworks.gvsu.edu/books/9/

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