



How do Early Math Instructors Teach? First Findings from Project Launchpad

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Need

Many STEM organizations across STEM disciplines offer teaching-related professional development (TPD) to early-career faculty, and many people believe that they are important—often based on personal experiences. Yet there is little research about the impact of TPD on new instructors' practices and careers. In this project, a study we call Project Launchpad, we examine whether and how early-career teaching professional development aids participants' growth as teachers, scholars and leaders.

Methods

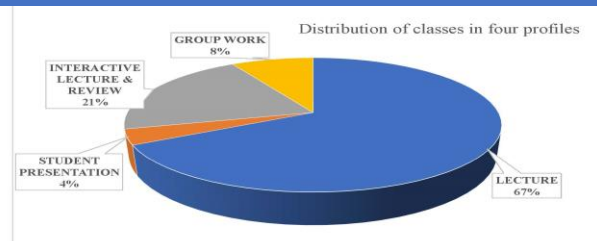
- Using the Toolkit for Assessing Mathematics Instruction (TAMI-OP) we coded every two minutes of class time for 11 student behaviors and 9 instructor behaviors.
- Using Latent Profile Analysis (LPA) we identified groups of classes with similar teaching styles .
- Classes were taught by Project NExT and other mathematics instructors. We have 6125 2-minute observations from 215 classes and 23 teachers, all observed before they participated in professional development.
- We also surveyed 164 instructors with the TAMI-S asking about how instructors teach their courses before experiencing professional development.

Guiding Question

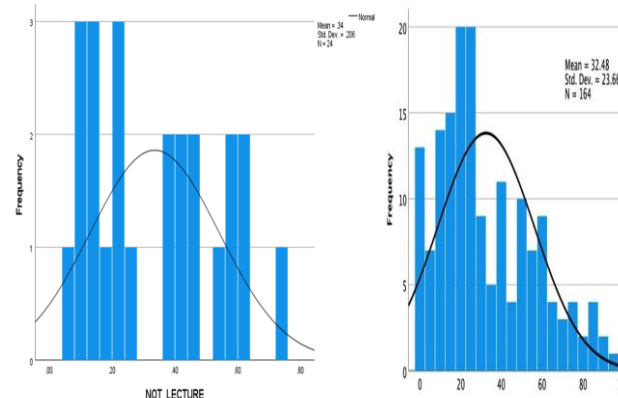
What short- and longer-term outcomes arise from intensive, discipline-based professional development on teaching for early-career STEM faculty? For this poster we ask: How do instructors teach *before* experiencing professional development?

Outcomes

	Descriptions of profiles
Didactic Lecture N = 145, 67%	<ul style="list-style-type: none"> Average of 80% lecture and teacher writing on the board Some question and answer but most questions ask students to provide information v. reasoning Fewer activities and less balance of time between activities
Student presentation and review N = 8, 4%	<ul style="list-style-type: none"> Highest prevalence of student presentation High prevalence of review of work and instructors moderating discussions Instructors start lecturing later in class and do more activities
Interactive lecture and review N = 44, 21%	<ul style="list-style-type: none"> Mixture of review by the instructor, lecture, and integrated group work High number of class activities Greatest balance of class time among activities
Group work N = 18, 8%	<ul style="list-style-type: none"> Average of 75% of class time spent in group work In most group sessions the teacher interacts with students Very little presence of other activities



Most classes (67%) are primarily didactic lecture. Other types of teaching include group work, interactive lecture and student presentation.



Observation and survey results converge showing almost equal percentages of time spent by instructors using activities outside of lecture.

Project NExT

Project NExT (New Experiences in Teaching) is a professional development program for new or recent Ph.D's in mathematical sciences.

More information found at:
<https://www.maa.org/programs-and-communities/professional-development/project-next>

Broader Impacts

By clarifying whether and how professional development experiences help instructors launch careers as teachers and leaders, the research results will help leaders and funders of these programs make research-informed decisions about the design and implementation of their programs.

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