



18th Annual City Tech
Poster Session

Student Support Through Peer-Led Online Math Study Groups

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ABSTRACT

Universities have faced considerable academic challenges since the recent transition to remote teaching during the Covid-19 pandemic. One of the challenges has been and still is to provide adequate support to undergraduate students. This presentation focuses on a modification of the Peer-Led Team Learning (PLTL) model -- *Peer-Led Online Math Study Groups* – designed to support students in online undergraduate math courses. The groups meet online and are led by peer leaders who are Math Education students or graduates. The poster describes the structure of the student support groups and benefits for the participating undergraduate mathematics students.

BEFORE COVID-19

Peer-led Team Learning (PLTL) is broadly utilized at City Tech, serving several Mathematics and Statistics courses on a regular basis.

Typically about 30 classes per semester have some form of PLTL support.

In Spring 2019, City Tech had one MAT 1190 (Quantitative Reasoning) section, 27 MAT 1275 (College Algebra and Trigonometry) sections with integrated PLTL workshops. In addition, there were 7 MAT 1475 (Calculus I) sections and 3 MAT 1272 (Statistics) sections with independent PLTL workshops.

The **integrated PLTL model was introduced** in 2018 primarily for MAT 1275 (non-coreq) and MAT 1275 CO (coreq).

NECESSITY FOR ONLINE GUIDED MATH STUDY GROUPS AFTER COVID-19

- Not all faculty were prepared technologically to transition to online classes. Some classes are still held as asynchronous and others, designed as synchronous, still have limited discussions and especially student-to-student ones.
- Students need more support in online classes and more opportunities to ask questions and find answers.
- Students need more ways to find information, help with navigating courses, find additional useful resources and ways to cope with online courses.
- Students miss the personal contact and communicating with peers.

PEER-LED TEAM LEARNING (PLTL)

PLTL (Peer-Led Team Learning) is a student-centered instructional model where small groups of students work collaboratively on tasks guided by one or more experienced Peer Leaders. Together, the group works through challenging math problem sets that are designed to engage students in problem solving strategies, primarily in groups. PLTL has proven to be an effective model for many institutions.

PLTL BEFORE COVID-19

Independent vs Integrated PLTL

Independent PLTL is a model in which stand alone one-hour workshops are offered, often after the regular class. In this model students work in groups through math problems or other tasks guided by an experienced peer leader.

Integrated PLTL represents a model in which 20-30 min “spells” of group work guided by the peer leader are incorporated in a regular class. A class instructor is assigned one or two peer leaders who are present during the entire class.

RESEARCH QUESTIONS AND DATA COLLECTION PLAN

- What benefits of the Online Guided Math Study Groups do participating students report?
- Are students who regularly attend Online Guided Math Study Groups more successful in their classes?

Data Collection: Course grades will be collected, and surveys administered. A few Online PLTL Workshop participants will be interviewed.

WHAT ARE THE BENEFITS?

Research has shown that mathematics courses supported by PLTL workshops have at least 15% higher pass rates, and at least 15% lower withdrawal rates (Liou-Mark et al, 2013).

Studies of the effect of PLTL in other courses have shown that non-PLTL population has 65.5% passing rate compared to 81% for courses with PLTL workshops, approximately (Cracolice & Deming, 2005).

PLTL programs are found to provide essential support for first-year underrepresented minority STEM students (Liou-Mark et al, 2015; Liou-Mark et al, 2018).

Studies with introductory biology students who participated in PLTL workshops averaged more than a letter grade higher than those who did not (Snyder, Carter & Wiles, 2015).

NEW MODALITIES OF PLTL LEARNING AFTER COVID-19

Integrated and Independent PLTL (Math Peer Study Groups)

Integrated PLTL represents a model in which 20-30 min “spells” of group work guided by the peer leader are incorporated in a regular class. A class instructor is assigned one or two peer leaders who are present during the entire class.

Independent PLTL (Math Peer Study Groups) is a modified model of peer-led study groups. The Peer-led Math Study groups are course specific and are offered twice a week for 90 minutes. Each meeting focuses on a topic and starts with a brief 15-minute review offered by one of the peer leaders. The sessions then proceed as alternating between small-groups discussions and whole-class debriefs led by the peer leaders. The small-group discussions are organized in Zoom breakout rooms. Each breakout room hosts a group of 3-4 students, who collectively work through math problems occasionally guided by the experienced peer leaders.

FLYER

