

Peer Led Team Learning (PLTL): A Multidisciplinary Intervention to Ensure Success in STEM Gatekeeper Courses

Lance Shipman Young, Ph.D.
Associate Professor of Chemistry
and James King Jr. Faculty Fellow
Division of Life Sciences

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About STEM at Morehouse College

Approximately 750 Students and 80 Faculty comprise the Divisions of Life Sciences of Science and Mathematical and Computational Sciences

Retention of students generally and in the sciences specifically is an institutional priority.

THE QUANDRY:

Despite being one of the nation's top producers of African-American males with MDs, and PhDs in Chemistry and Physics, gatekeeper courses in the sciences are a critical point of attrition for science majors.

Introduction of Peer Led Team Learning (PLTL)

- The PLTL Workshop model engages teams of **six to eight students** in learning sciences, mathematics and other undergraduate disciplines guided by a peer leader in a manner that is wholly student-led, student-driven.
 - ✦ provides an active learning experience for students
 - ✦ creates a leadership role for undergraduates
 - ✦ engages faculty in a creative new dimension of instruction
- ✦ PLTL workshops are NOT:
 - ✦ tutoring or traditional recitation sessions (teacher-centered)
 - ✦ a vehicle for primarily remedial work
 - ✦ instruction in the traditional sense

History of PLTL at Morehouse

2004 - Present

- Peer Led Team Learning (PLTL) originated as an intervention in General Chemistry courses in 2004.
- Implementation in other science disciplines began in the fall of 2005.
- PLTL was ultimately implemented in Chemistry, Biology, Mathematics, Psychology, Computer Science and Physics.
- The success of implementation across STEM disciplines enabled us to host a national conference in 2009 and a powerhouse among HBCUs and MSIs more generally.

Measuring Success

Gatekeeper Course	Average Successful Completion Rate (2003-2006)	Average Successful Completion Rate (2006)
General Biology 111	53%	66%
General Chemistry 111	52%	64%
Calculus I	57%	78%
Physics I	68%	93%*
Statistics (Psychology)	60%	66%

The Benefits of PLTL Implementation

- Student/Faculty Interactions Outside of the Classroom (Peer Leader)
- Reliance on Collaborative Learning
- Guaranteed Practice Time
- Freedom to Discuss Scientific Concepts in Challenging but Non-Threatening Environment
- Opportunity to Engage in Critical Thinking
- Development of Leadership and Communication Skills as Part of Learning Science



Are there behaviors the successful science students have that unsuccessful students do not have?

Are these behaviors transferable between students?

Funding PLTL at Morehouse

- ◆ PLTL at Morehouse College has been supported by grants from the Department of Energy, National Nuclear Security Administration, the National Institutes of Health (MBRS-RISE), the Department of Education (MSEIP) and the National Science Foundation (HBCU-UP) .
- ◆ Approximately \$100,000 was expended annually to implement PLTL across multiple gatekeeper courses in five STEM disciplines at programmatic height. These funds cover the following expenses:
 - Peer Leader Pay
 - Peer Leader Training
 - Faculty Pay
 - Faculty Training
 - Program Evaluation

Where are we now?

- ◆ In 2013, the program experienced a series of convergent challenges that ultimately resulted in a 2-year hiatus.
- ◆ In 2016, Corning provided funding to the Department of Chemistry enabling a PLTL renaissance (program costs ~ \$15,000 annually).
- ◆ We currently offer PLTL in general and organic chemistry, serving over 200 students and 14 peer leaders, with plans to relaunch in other disciplines based on demand and availability of funding.
- ◆ The need is to institutionalize our program for the foreseeable future.

Contributions to the Success of PLTL

- **PLTL at Morehouse College grew through a combination of division leadership and support and strong faculty leadership and investment to collaboratively build infrastructure, develop policies, identify and provide training opportunities for both faculty and students, and implement a coordinated program of intervention with a shared evaluation strategy.**
- **Faculty investment and commitment are the most important elements of a successful PLTL Program.**
- **Administrative and student buy-in follow faculty leadership and strong RESULTS.**