

# **Peer-Led Team Mentoring as a Method of Active Learning**

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# Background

- **Attrition in Science, Technology, Engineering and Math (STEM) majors is largely attributed to poor academic performance during the first year**
  - **At MC >25% of first-year STEM students do not return sophomore year as STEM majors**
    - **9.5% change majors at MC; 17% transfer**
  
- **Attrition due to difficulty in, and lack of preparation for, the introductory course sequences in these majors**
  
- **“Gateway” Courses**
  - **At MC 141 first-year students took General Chemistry I (72% of all first-year STEM majors)**
  - **26% of these students withdrew or failed course (18% of all STEM majors); can not proceed in their major**

# What Can Be Done to Improve Performance & Retention?

- Number of “best practices” have been demonstrated to be effective:
  - Summer “Bridge” Programs
  - Early Undergraduate Research Opportunities
  - Revising First-year Curriculum
  - **Peer-led Team Mentoring / Learning**

# Peer-Led Team Mentoring (PLTM)

- **The Peer-Led Team Mentoring (Learning) Model utilizes peer-led group activities among students to enhance student understanding of science and engineering topics**
- **PLTM provides an active learning environment that creates leadership roles for undergraduates and engages faculty in a creative method of teaching**
  - **[www.pltl.org](http://www.pltl.org)**

# Potential Benefits of Adding PLTM to the Course

- **Encourages students to be more independent and self directed learners**
- **Increases the leadership, teaching and mentoring skills and sense of responsibility of peer leaders**

# PLTM: Step 1 Identify Mentors



- Upper-class students who previously took the class and did well
- Outgoing personality
- Dependable

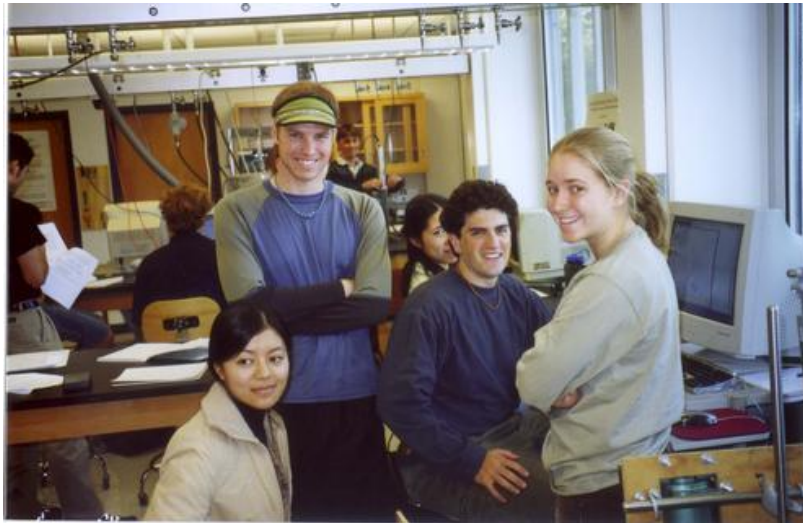
# PLTM: Step 2 Train Mentors

- Orientation Session
- Explain expectation of them and of students
- Provide mechanism to “re-introduce” concepts



# PLTM: Step 3 Build Sessions Into Course for **All** Students

- **Problem:** Students do not like being singled out and/or would not take advantage of tutoring/mentoring
- **Solution:** All students receive mentoring



# PLTM: Step 4 Hold Regular Mentoring Sessions



# PLTM: Step 5 Assess Program



# Numerous Ways to Organize PLTM

- **What have you done in the past in terms of PLTM logistics?**
  - **Required/Not required participation**
  - **Group size and selection (self pick?)**
  - **Graded/Not graded**
  
- **If you have not participated in PLTM what are the biggest logistical issues you might face incorporating it into your course?**
  - **How have those who have experience with PLTM managed these issues?**

# How Effective is PLTM?

- For students?
- For tutors?
- For faculty members?

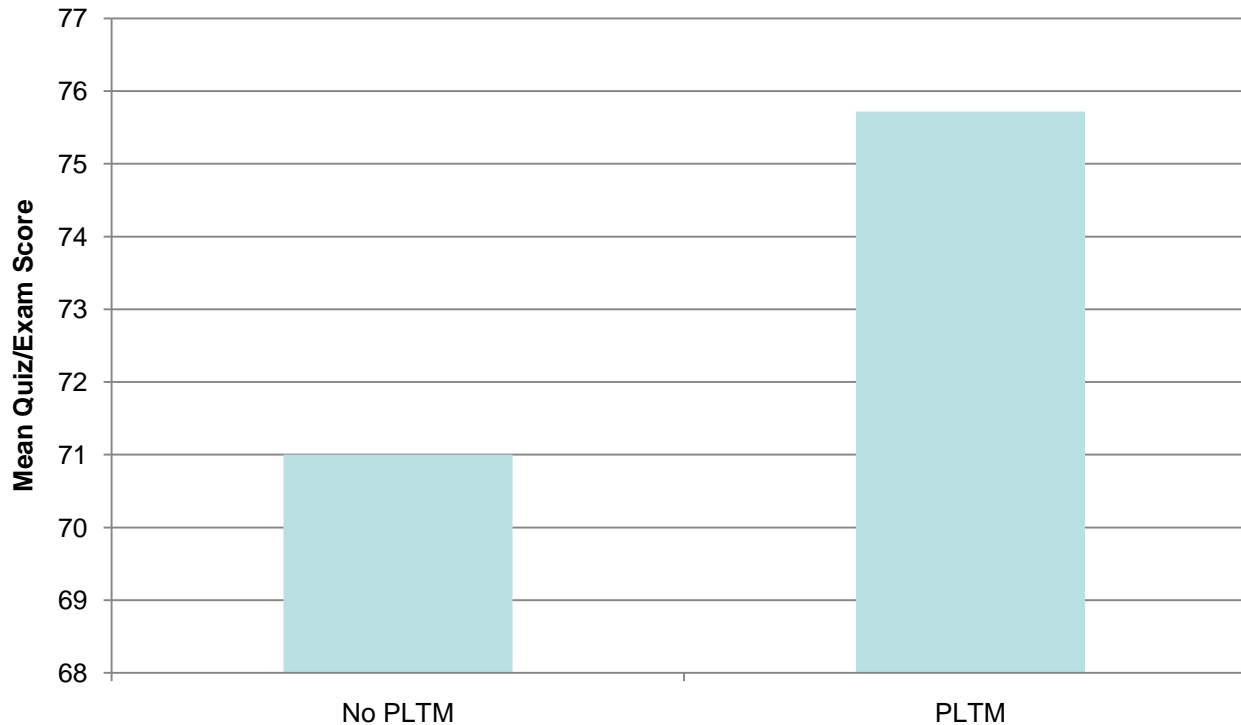
# Anatomy and Physiology II

- **First-year required course for health science, sports medicine and athletic training majors**
  - **n=70**
  - **Recruited 6 mentors (4 seniors, 2 juniors, 3 women, 3 men)**
  - **Held sessions bi-weekly with groups of 4-6 students and one peer mentor**
  - **Worked on case studies, reviewed student questions relevant to lecture content**

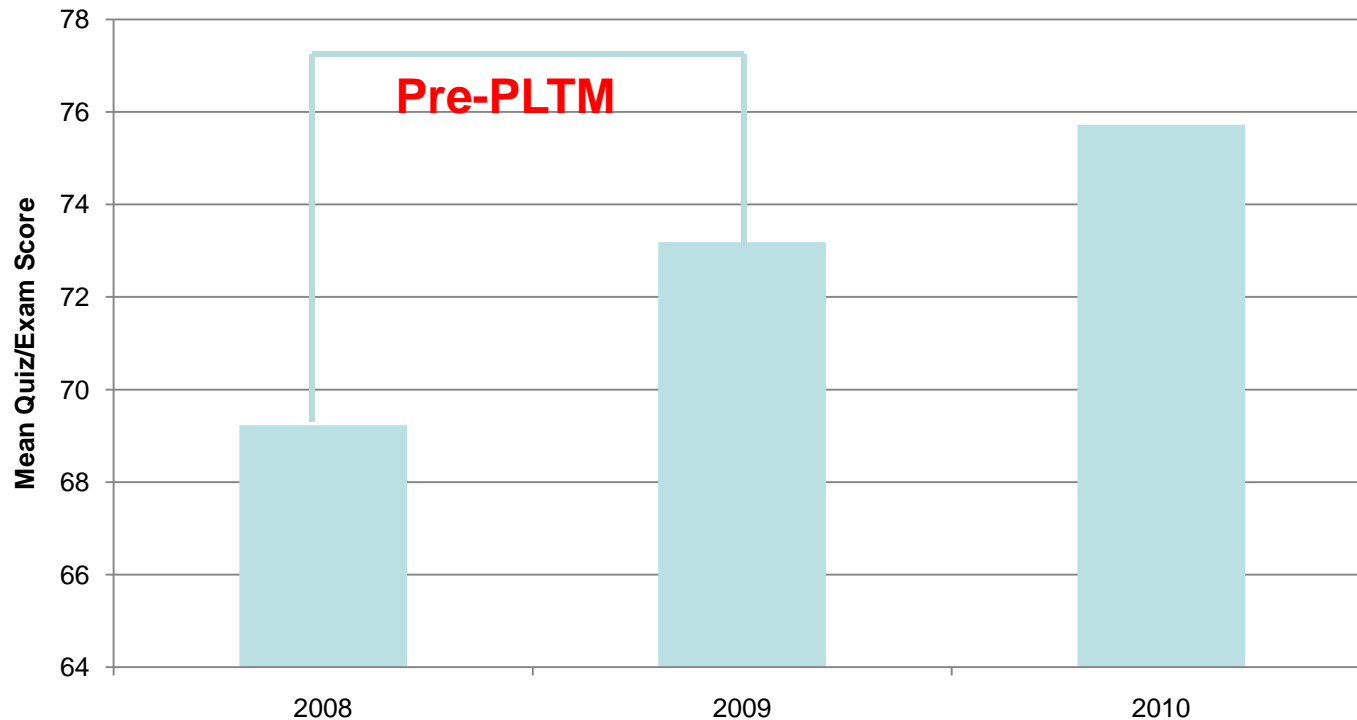
# Assessment Questions

- 1.) Did the addition of PLTM increase performance on exams/quizzes?**
  
- 2.) What were the perceptions of PLTM from the students?**
  
- 3.) What were the mentors perceptions of PLTM?**

# Effects of PLTM on Academic Performance



# Effects of PLTM on Academic Performance



# Student Perceptions of PLTM

- **Students filled out SALG (Student Assessment of Learning Gains) survey at end of semester anonymously**
- **Survey included 6 quantitative questions (likert scale) and 3 open-ended questions**

# Student Perceptions of PLTM

## Student Assessment of Learning Gains (n=53)

How much did each of the following aspects of class help your learning?	1. no help	2. little help	3. moderate help	4. much help	5. great help	Mean
1. Attending Peer Lead team mentoring (PLTM) sessions	29%	21%	15%	10%	1%	2.2
2. Working with your PLTM tutor	19%	21%	22%	10%	1%	2.5
3. Using PLTM to help you apply material in class	24%	19%	19%	10%	1%	2.4
4. Using PLTM to provide feedback about your understanding of course material	24%	19%	22%	6%	1%	2.4
5. Using PLTM as a way to study for quizzes	29%	15%	21%	7%	3%	2.2
6. Using PLTM to promote discussion/collaboration with other students	24%	21%	21%	10%	1%	2.3

**Although 25-30% of the class did not find PLTM helpful, the majority of class believed PLTM helped learning to some degree**

# Mentor Perceptions of PLTM

- Mentors filled out a survey with 3 open ended questions at the end of the semester

# Mentor Perceptions of PLTM

## Mentor Open Ended Responses (n=6)

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### 1.) How did you benefit as a result of being a PLTM tutor?

- Improved communications skills (5/6)
- Better able to effectively teach and explain information to students (5/6)
- Helped to review and improve anatomy and physiology knowledge (5/6)
- Reviewed the content for board certification exams (2/6)

### 2.) What were the benefits of the PLTM program for the A+P II students?

- Small groups were a comfortable learning environment for peer interaction (3/6)
- Applied basic knowledge of anatomy and physiology to practical situations (2/6)
- Helped students to communicate with peers (2/6)
- Consistent mentor presence was helpful for asking questions and discussing the content (2/6)

### 3.) What improvements would you make to the PLTM program?

- Students must come to the sessions with questions about topics they want to review (3/6)
- All groups should attend the tutoring sessions in the same week for consistency (3/6)
- PLTM material should be in line with the weekly lecture discussions (2/6).

**Mentors believed participation in PLTM was beneficial for them and for the students and had suggestions for program improvement**

# Faculty Perceptions of PLTM

- **Excellent way to promote active, independent learning**
- **Beneficial experience for students as well as mentors**
  - **Some students will not be “into it”**
- **Requires significant time organizing/managing**

# How to Deliver Content During PLTM Sessions

- **Case Studies**
- **Activity Sheets**
- **Others?**

## Conclusions

- **Student performance improved during the year PLTM was implemented**
  - **Not clear if direct influence of PLTM**
- **The majority of student's felt PLTM helped them learn**
- **Peer tutors believed they benefited from PLTM program**

# References

- [www.pltl.org](http://www.pltl.org)

# Acknowledgements

- **Students from HSC 1123 Anatomy and Physiology II course at Merrimack College**

