Peer-Led Team Learning (PLTL) – How Enlisting the Aid of Student Leaders Increases Student Success

Dr. Ana Fraiman
Dr. Kimshi Hickman
Dr. James Becvar

This material is based upon work supported by the National Science Foundation (NSF) under Grant No. DUE- 1937267. Any opinions, findings, interpretations, conclusions or recommendations expressed in this material are those of its authors and do not represent the views of the AAAS Board of Directors, the Council of AAAS, AAAS’ membership or the National Science Foundation.
This presentation is being recorded. The recording and slides will be available in the coming week at

https://aaas-iuse.org

Please note: The discussion break-out groups following the presentations will NOT be recorded.
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- Workshops
- Summer Labs On-Demand
- Resources
- Lessons Learned During COVID
- NSF IUSE Proposal Preparation Toolkit

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Peer-Led Team Learning:
How Enlisting the Aid of Student Leaders Increases Student Success
April 19, 2023 - 2:00-3:30pm EST
AACU-IUSE WORKSHOPS

- Dr. Ana Fraiman, Emerita Professor of Chemistry, Northeastern Illinois University
- Dr. Kimshi Hickman, Assistant Vice Provost for Retention and Completion, The University of Texas at Arlington
- Dr. James Becvar, Distinguished Teaching Professor of Chemistry and Biochemistry, University of Texas at El Paso
What is Peer-Led Team Learning?

Peer-Led Team Learning is a model of active engagement for learning, facilitated by an undergraduate Peer Leader who guides a group of learners in the process of solving problems.

- Provides an active learning experience for students
- Creates a leadership role for the Peer Leader
The Six Critical Components: 
Set of Benchmarks of the PLTL Model

1. Peer-Led “Workshop” sessions are integral to the course
2. Instructors are closely involved
3. Peer leaders are prepared for their role and supported over time
4. The materials are challenging to promote discussion
5. Organizational arrangements are optimized
6. There is institutional support
We are currently preparing students for jobs and technologies that don’t yet exist in order to solve problems that we don’t even know are problems yet.
What are the challenges that you encounter with this new generation of students?
What are 21st Century skills that students need to acquire to be successful? Medical professions, engineering professions, policy professions, and other professions
21st Century skills

- Critical thinking
- Communication skills
- Creativity
- Problem-solving
- Perseverance
- Collaboration
- Information literacy
- Technology skills and digital literacy
PLTL Provides Skills for the 21st Century

- **Communication and reflection**
  - Listening to others’ opinion
  - Oral and written skills
- **Problem solving**
- **Critical thinking:**
  - Conceptualize and analyze a problem
  - Evaluate information from different sources through:
    - Reflection
    - Reasoning
    - Leading to a conclusion
PLTL Provides Skills for the 21st Century (2)

- **Collaboration and Teamwork**
  - Ability to work effectively and respectfully with diverse team members
  - Development of cognitive flexibility
  - Diversity of ways of thinking
  - Understanding the value of individual contributions:
    - There is more than one way to solve a problem

- **Development of Leadership**
The Role of the Peer Leader

Helps learners to:

▪ Make connections to what they already know
▪ Understand that there is a process that is not about the final answer
▪ Consider answers only after a process of learning has occurred
Supporting the Workshop Sessions:
No Answer Key
What? No Answer Key?

Workshop sessions are about:
- Learning how to construct answers
- How to evaluate different answers
- How to test for ambiguity
- How to test for completeness
Organizational arrangements are optimized

- Time and space are major concerns
  - Local conditions apply!
  - Workshop sessions require a space conducive to small group discussion
- Workshops must be scheduled in advance
- Ideally, a workshop is:
  - held for two hours (variability: 45 min. – 120)
  - held once a week with 6 - 8 students (variability: 4-24 students)
  - and attendance is required
- Online workshops have other requirements (e.g., technology)

Peer Leaders, at least their first time, should not have groups larger than a dozen students.
Optional Workshops - Northeastern Illinois University

**Organic Chemistry 1**
- 40% of the students took the seminar (workshop) by choice
- 1% of those students withdrew from the seminar and the class simultaneously 1% of the remaining students failed
- The rest of the students completed Organic 1 successfully
- Overall, the attrition rate in the class decreased 50% from previous years.

**Organic Chemistry 2**
- 44% of the students took the seminar by choice
- 100% of the students who took the seminar in Organic 1 and were taking Organic 2 participated in the seminar.
- 100% of the students who completed the seminar completed Organic 2 successfully
- Overall, the attrition rate in the class decreased by 38%.

Also noteworthy: Peer Leaders improved 25% in the Organic Chemistry ACS standard test after participating in the program.
Discussion

- What are the challenges that you experience with the new generation of students?
- What are the advantages and challenges of PLTL over methods that you are already using in your institution to support students?
Peer-Led Team Learning (PLTL)
The Learning Center Model
The University of Texas at Arlington

- UTA is the largest university in North Texas and second largest in The University of Texas System. UTA is located in the heart of Dallas-Fort Worth and offers more than 180 baccalaureate, masters', and doctoral degree programs with more than 60,000 students engaged in campus or online coursework each year.
- UTA is a Carnegie Research 1 institution and a Texas Tier 1 institution.
- UTA is designated as an HSI and AANAPISI institution.
- UTA ranks No. 3 in the nation for ethnic diversity with a student body composition that is far above the national average.
Strategy for Sustaining PLTL
The Learning Center Model

- At UTA, PLTL is institutionalized through the Academic Success Center (ASC)
- PLTL Funding is provided through the ASC budget
- With the learning center model, you must have dedicated staff to run PLTL
  - Staffing at UT Arlington is the Director of the ASC, a full-time PLTL Coordinator
  - With PLTL expansion, I am funding another PLTL Coordinator role that will be posted within a week
- With the learning center model, the center recruits, hires, and trains the PLTL leaders
  - Leader requirements: 3.0 cum GPA, faculty recommendation, A or B in course
- The ASC oversees the registration process and secures locations for the PLTL sessions
- The ASC oversees data reporting for the program
Our Approach to Faculty Support
Faculty Liaisons

- **Engineering**
  - Faculty Coordinator - Dr. Lynn Peterson, Sr. Assoc. Dean
  - Faculty Liaison – Dr. David Ewing

- **Math**
  - Faculty Coordinator – Dr. Shanna Banda, Assoc. Professor of Instruction
  - Faculty Liaison Precalculus – Dr. Karl Backs
  - Faculty Liaison Calculus I – Dr. Mark Krasij
  - Faculty Liaison Calculus II – Dr. Ruth Gornet

- **Chemistry**
  - Faculty Coordinator – Dr. Greg Hale, Associate Dean
  - Faculty Liaison – Gen Chem I – Dr. Joshua Crowell
  - Faculty Liaison – Chem for Engineers – Dr. William Cleaver
1. PLTL workshop must be coordinated with course faculty and is integral to the course.
2. Close involvement from course faculty with the PLTL Leaders and the workshop.
3. PLTL Leaders are students who have successfully completed the course are trained on teaching/learning strategies, and leadership skills for small groups.
4. Workshop content is **challenging** at appropriate levels, and **integrated** within the course to encourage active learning.
5. Organization of facilities, group size, noise level, and teaching resources are important factors to promote learning.
6. Logistical and financial support will be provided by the institution at the highest levels of administration and pedagogy to encourage innovative teaching.
Our faculty were assisted greatly by The workbooks offered by the PLTLIS organization.

In addition to workbooks for faculty that have workshop problem examples, we also purchased training workbooks for our PLTL leaders.
Two student roles:
- PLTL Leader
  - Qualifications: 3.0 cum GPA; A or B in course
- PLTL Mentor
  - Qualifications: 2 semesters facilitating as a PLTL leader; strong participant and staff feedback

Wages
- Leader – $13
- Mentor – $14
Integral to the course

PLTL implemented in 2 ways:

▪ **Embedded**
  ▪ For the ENGR1251- Engineering Problem Solving, PLTL was embedded in the lab for the course

▪ **Sessions offered outside of class**
  ▪ Offered M-Th between 9am-7pm & Fridays and Sundays 9am – 1pm
Academic Success Center

PLTL Staffing

Asst. Vice Provost
Dr. Kimshi Hickman

Director
Catherine Unite

PLTL Coordinator
Monica Franco

PLTL Coordinator
New

PLTL Leaders
58-64

PLTL Mentors
6-8
Facilities

Central Library
- 5 sessions can run concurrently

Dedicated Classroom
- 1 session at a time
Designated Tuition Dollars

Funding covers:
- Salary for 2 Coordinator I positions
- Leader wages
- Mentor wages
- Materials/supplies
- Training
- Faculty travel stipend - $3,000
- Staff and leader travel for PLTLIS conference
UTA PLTL Disciplines

- Engineering Problem Solving
- General Chemistry I
- Chemistry for Engineers
- Pre-calculus
- Calculus I
- Calculus II
- Calculus III
- General Chemistry II
- Differential Equations
# PLTL Attendance & DFW Rates

## ENGR 1251

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**Total # of Sessions Attended**: 5,046 | 2140 | 2,887 | 2,075 | 2,076

**Total Contact Hours**: 7,569 | 3,210 | 4,331 | 3,113 | 3,114
Possible Future Courses:

Accounting
Linear Algebra
Anatomy & Physiology
Biology
Physics
Breakout Session
Capturing the Creativity and Entrepreneurial Value of Undergraduate Students Trained to Facilitate Learning

Dr. James E. Becvar
The University of Texas at El Paso
Explosive Creativity

- Creativity Catches Fire
- Hands-On Explorations Spur Student Interest
- Chemistry Circus Wows Kids

- Explorations and community outreach are organized by Peer Leaders to encourage student engagement
Creating Leaders
Selected Peer Leader Products
The 23 Year Story

Passing Rate in First Semester General Chemistry at UTEP 1988 – 2022

% Passing = %(A+B+C)

Academic Year
**Funding a PLTL Program**

Lead For America Corporation Donations to Education 2012-2023

LFAC funding provides:
1. Student salaries
2. Pre-semester and in-semester training costs
3. Travel Grants for Professional Development
The Workbook in Action
Chemistry PLTL
(University of Texas at El Paso)
Implementing PLTL

1. Start student-facilitated learning intervention
2. Organize a small set of creative Leaders
3. Have Leaders write Materials – on their own, unpaid time
4. Start a 501c(3) non-profit
5. Assemble materials into a minimum viable product (MVP)
6. Sell MVP and donate royalties to university gift fund
7. Make intervention become self-sustainable
8. Use LFAC, PLTLIS, APLL to help you!
9. Contact jbecvar@utep.edu
Implementing PLTL

jbecvar@utep.edu
Peer-Led Team Learning International Society

- Supports the development of Peer-Led Team Learning
- Provides Resources, a growing Network, and Advocacy
- The **vision** is that Peer-Led Team Learning is integral to excellent educational practice.
- The **mission** is to foster student learning through peer-led teams by supporting practitioners and institutions.
- The Peer-Led Team Learning International Society has a 501(c)(3) designation as a not-for-profit corporation.
Next Steps: Support through the Peer-Led Team Learning International Society

- Submit papers to PLTLIS Journal, *Advances in Peer-Led Learning (APLL) - Next issue: Fall 2023*
- Prepares Peer Leaders through a series of webinars focused on facilitation and leadership
  - PLTLIS workbooks on facilitation
- Prepares Peer Leaders for specific disciplines using existing workbooks
- Helps develop materials in specific disciplines and interdisciplinary areas
- Creates PLTL communities in the United States and across countries
For more information:
www.pltlis.org

• Jim Becvar, University of Texas at El Paso, jbecvar@utep.edu

• Ana Fraidman, Northeastern Illinois University, afraiman@neiu.edu

• Kimshi Hickman, University of Texas at Arlington, kimshi.hickman@uta.edu

Contact: info@pltlis.org

See www.pltlis.org/Resources/Workshop-materials
for Short Guide to the Practice of Peer-Led Team Learning
Peer-Led Team Learning International Society

11th Annual Conference

Hosted by University of Houston Downtown
Location: Houston, Texas, USA
May 31-June 3, 2023
www.pltlis.org

Join PLTL Practitioners and Peer Leaders!
Thank you for attending!

Slides and recording will be available in the coming days.

We value your feedback, please take a few minutes to complete the survey.

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