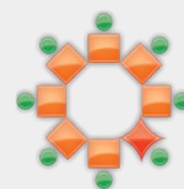


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PLTLIS Tenth Annual Conference:  
Abstracts for Hybrid Presentations



Hosted by Washington University in St. Louis  
St. Louis, Missouri



Peer-Led  
Team Learning  
International  
Society

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# Track Theme Descriptions

## **Professional Skills Development**

A skill set is a collection of experiences, abilities, and skills. Through their technical skills, natural abilities, interests and curiosities each individual brings forth their unique perspective towards the establishment of their own set of skills. These skills can be developed over time through both education and experience and are crucial towards future professional success. We have learned that through the PLTL experience students, peer leaders, faculty and staff develop a strong set of transferable professional skills. These skills can encompass both soft skills (i.e., interpersonal skills, leadership, teamwork, etc.) and hard skills (i.e., data analysis and language fluency). Often enough these skills are developed not in a vacuum but collaboratively, as is the case with the development of these skills in the PLTL program. Presentations under this theme will explore the vast set of skills that are both important towards the success of a peer-led workshop program and in the development of individuals (from facilitation to leadership) in this community through theory, research, and practice.

## **Workshop Development**

The centerpiece of any Peer-Led Team Learning program is the workshop itself. A workshop, by nature, is meant to be dynamic and thought-provoking. The nature of this has been evaluated and enshrined in PLTL's Critical Components. When developing the content for the workshop it is important to make the problem set challenging, directly connected with the course content, and team oriented. One of the strengths of PLTL as an educational practice is the inclusivity of multiple perspectives when developing materials and training. Through the wealth of knowledge and experiences from all stakeholders, workshops have been continuously improved upon to spark contemporary curiosities and through different modalities improve engagement. The presentations under this theme will explore a variety of different implementations of content and skills presented in the workshop setting. These sessions span multiple disciplines and may take the perspective of research, theory, and/or practice, but all will focus on the development of the centerpiece of PLTL, the workshop.

## **Program Development**

There are certain elements with variations that are important to consider when establishing and sustaining a PLTL program. These elements are represented in one way or another within PLTL's Critical Components. Through the wealth of knowledge and experience from PLTL practitioners worldwide, this community has developed models for program implementation, sustainability, management, training, research, and evaluation. Each institution has its own set of challenges, some common among other similar and dissimilar types of educational institutions, while other challenges are unique to the institutional context. Each institution has contributed to enhancing and evolving the PLTL model to reflect and adapt to the ever-changing educational landscape. We, as a PLTL Community, have learned that a strength among its members is the willingness to actively listen and learn from each other. This is another opportunity to gain insights into each other's program and bring home actionable ideas for the evolution of our own models of practice. The presentations under this theme will explore the vast variations in PLTL programs from the perspective of implementation, sustainability, management, training, research, theory, evaluation and practice.

# PRE-CONFERENCE WORKSHOP

## WEDNESDAY, JUNE 1, 2022

### *Pre-Conference Workshop*

#### **Introduction to the Peer-Led Team Learning Model**

- **James E. Becvar**, The University of Texas at El Paso
- **Chao Dong**, University of Texas of the Permian Basin
- **AE Dreyfuss**, Peer-Led Team Learning International Society
- **Ana Fraiman**, Northeastern Illinois University
- **Mitsue Nakamura**, University of Houston Downtown
- **Sofia A. Delgado**, Peer Leader, The University of Texas at El Paso
- **Nick Huynh**, Peer Leader, University of Houston Downtown
- **Allison McKee**, Peer Leader, University of Houston Downtown
- **Jacob Najera**, Peer Leader, The University of Texas at El Paso
- **Taylor Newton**, Peer Leader, University of Houston Downtown
- **Jonathan Tipó**, Peer Leader, The University of Texas at El Paso
- **Azfar Vahidy**, Peer Leader, University of Houston Downtown.

**Part 1:** The workshop introduces the experience of working in collaboration with colleagues to solve a problem, facilitated by a trained Peer Leader. The focus of the process of learning is highlighted as well as the critical attributes that students gain. The Peer-Led team Learning model's Six Critical Components are introduced.

**Part 2:** Three components of the PLTL model are introduced, with collaborative exercises that support participants' understanding of each so that they will be able to choose how to apply the concept to implement the program. Faculty roles and responsibilities, recruiting and training Peer Leaders, and the rewards/challenges in implementation are discussed.

**Part 3:** The importance of challenging problems to promote interaction, the issues of integrating peer-led workshops into schedules and physical and virtual spaces, and the attention to issues of assessment for the implementation of PLTL at participants' institutions will be explored through exercises and discussion.

# PRESENTATIONS & WORKSHOPS

## THURSDAY, JUNE 2, 2022

### *Workshop – Professional Skills Development*

#### **Learn How to Learn Math Concepts - Workshop Style**

- **Mitsue Nakamura**, University of Houston Downtown
- **Mary Jo Parker**, University of Houston Downtown

We have demonstrated over the years that students learn STEM concepts better by attending the Peer Led Team Learning (PLTL) workshops and actively collaborating with their peers. We have also shown that the peer leaders can be trained well workshop style, using the philosophy of PLTL. This presentation shares an experimentation of using the PLTL pedagogy to teach students to “Learn How to Learn Math Concepts.” Many students study many hours, but they forget to address how they are studying. Attendees of this presentation will experience how classes of College Algebra and Calculus I students addressed this issue by working on workshop material titled “Let  $f(x) = . . .$ ”, and discovered the different ways to practice homework problems, and how to create a review sheet of their own for an exam. We will also share how we expanded this workshop material for Chemistry, Biology, Computer Science and Data Science.

### *Oral Presentation – Program Development*

#### **Leveling Up - Using PLTL to address the impact of the pandemic on learning**

- **Kimshi Hickman**, University of Texas at Arlington

An overview of a summer program utilizing the PLTL foundations to help incoming FTIC students get off to a strong start in their first term.

### *Oral Presentation – Workshop Development*

#### **The Necessity of Simplicity: Mnemonics**

- **Annalise Gonzales**, The University of Texas at El Paso
- **Abigail Valles**, The University of Texas at El Paso
- **James E. Becvar**, The University of Texas at El Paso
- **Geoffrey B. Saupe**, The University of Texas at El Paso

Learning a new chemistry subject every week can be difficult and overwhelming without additional help with abstract concepts, terminology, and previously unknown formulas. Peer Leaders in the chemistry Peer-Led Team Learning (PLTL) program at the University of Texas at El Paso often use mnemonics as an aid to learning new content. Mnemonics are typically introduced at an early age, and usually in an English class. However, mnemonics can be utilized throughout students’ education for chemistry and other subjects. Mnemonics are a useful facilitation tool in chemistry workshops; many of these have been passed down by previous Peer Leaders and have withstood the test of time. One example of chemical mnemonics is “OIL RIG” (Oxidation Is Loss and Reduction Is Gain [of electrons]) used to understand the oxidation-reduction process. Incorporating mnemonics into the learning curriculum aids memory and the strategy can be applied in many learning contexts. In this session we will discuss several mnemonic strategies for use in learning chemistry.

# PRESENTATIONS & WORKSHOPS

## THURSDAY, JUNE 2, 2022

### *Workshop – Professional Skills Development*

#### **The Process of Facilitation**

- **AE Dreyfuss**, Peer-Led Team Learning International Society

While learning course content is the primary purpose of peer-led workshop sessions, crucial to the success of the workshop team are the dynamics of the sessions, which involve the relational aspects between the workshop participants and the peer leader. This workshop will focus on introducing processes of group dynamics and creating awareness of aspects of the mechanics of building a team regardless of course content. This workshop is designed for peer leaders and other facilitators of group activities. This session is based in experiential learning and will not be recorded. In-person participation only. Length of workshop: 2.5 hours

### *Oral Presentation – Program Development*

#### **Forging New Alliances, Exploring New Training Models**

- **Nadia Kennedy**, New York City College of Technology
- **Ariane Masuda**, New York City College of Technology

This presentation focuses on the benefits of alliances forged with the Mathematics Education program on campus, and specifically on recruiting and training mathematics education students to act as leaders in peer-led study groups, a role that requires a certain level of pedagogical decision making. As such, it introduces the use of pedagogical models adopted from mathematics teacher training that focus on unpacking the role of the peer leader, modeling peer-leading practice, and using rehearsals in a structured environment, followed by feedback from instructor and peers. This model aims at training peer-leaders in asking good questions, in being responsive to students' needs and identities, and in scaffolding student learning.

# PRESENTATIONS & WORKSHOPS

## THURSDAY, JUNE 2, 2022

### *Workshop – Workshop Development*

#### **Exploring Microbes: A Workshop for Non-Majors**

- **Ellis Paulk**, Florida International University
- **Jose Alberte**, Florida International University

At Florida International University, Peer-Led Team Learning is an optional course component for students taking Introduction to Microbiology, a non-majors microbiology course with mainly pre-nursing students in attendance. The workshop that we will be presenting occurs in the last meeting of the semester and functions as a complete review of the content covered within the Introduction to Microbiology course. In this workshop, students are given a scenario in which they are tasked to identify an alien pathogen, define its characteristics, and give recommendations on how to contain its spread. The meeting begins with a brief introduction of the scenario. Students are then challenged to work collaboratively to answer a series of prompts, such as, “Describe your pathogen’s structure and how it contributes to its virulence?” Students by the end of the workshop evaluate their findings and containment strategies collaboratively. The purpose of this final workshop is to foster a better understanding of microbiology using a project-based modality in which the students are required to think critically, draw connections between concepts, and practically apply the information they have learned throughout the course in a fun and collaborative manner. This presentation will discuss the workshop itself and the important points to consider when developing a workshop module that is meant to be the last workshop session of the course.

# PRESENTATIONS & WORKSHOPS

## THURSDAY, JUNE 2, 2022

### *Oral Presentation – Program Development*

#### **Leadership Opportunities in a Peer Assisted Learning Program**

- **Jennifer Lundmark**, Sacramento State University
- **Brianna Davis**, Sacramento State University
- **Polly Demyanchuk**, Sacramento State University
- **Nathaniel Shultz**, Sacramento State University
- **Mariah Taylor**, Sacramento State University
- **Matthew Krauel**, Sacramento State University
- **Vincent Pigno**, Sacramento State University
- **Corey Shanbrom**, Sacramento State University

The Peer Assisted Learning program at Sacramento State University (PAL) was established in 2012 with one section supporting introductory chemistry. It now serves 17 courses with high DFW rates in Biology, Chemistry, Mathematics, Physics, and Statistics, enrolling approximately 1,400 students annually. Adapting the Peer-Led Team Learning model, PAL Facilitators do not teach, tutor, or even confirm answers; they do ask scaffolding questions, provide encouragement, and ensure that all group members participate in problem-solving. The program employs a unique tiered leadership structure in which students can serve as a Facilitator, Lead Facilitator, or Supervisory Facilitator. Moreover, opportunities to augment workplace skills are widespread, and include work with the Cultural Competency Ambassador team, the Leadership Development team, or the Research Activity Discussion group, as well as representing the program at faculty workshops and community events. In this presentation, participants will engage with student Facilitators on topics related to leadership development that have been identified as particularly impactful to their professional growth: Assertive Communication and Empathy Misses. Using materials designed for our program, audience members will engage in student-moderated discussions and polls about the value of these topics in training peer leaders.



# PRESENTATIONS & WORKSHOPS

## THURSDAY, JUNE 2, 2022

### *Oral Presentation – Workshop Development*

#### **Employing the PLTL Philosophy in Study Skills Workshops in General Chemistry at Wash U**

- **Megan Daschbach**, Washington University in St. Louis

The General Chemistry sequence here at Wash U, like many introductory STEM courses, places emphasis on the development of critical-thinking skills and creative problem-solving methods. Thus, there are not only advanced content-related objectives in this course, but sophisticated process skills are also a requirement for achieving academic success. First-year students must therefore adapt their study habits and approaches to mastering the material in order to realize a deeper level of understanding. While some students are capable of this through self-reflection, careful assessment of submitted work, and other forms of metacognition, many need additional resources and mentorship to develop a personalized approach to attaining the deep understanding of the course material they desire and need. The instructors of General Chemistry have designed a study skills workshop that is offered every year in the first semester, following the administration of the first exam. This study skills workshop, which is open to all General Chemistry students, employs aspects of the PLTL philosophy to aid students as they adapt to rigorous university-level STEM courses. This presentation will explore the development of this workshop and its components.

### *Oral Presentation – Program Development*

#### **Diversity, Inclusion and Well-being: A Holistic Approach to Peer Leader Training**

- **Jay Schroeder**, Washington University in St. Louis
- **Jay Sriram**, Washington University in St. Louis

Peer leader training, one of the pillars of the PLTL model, has gone through dynamic changes at WashU in the past decade. Following the institution's commitment to increase student diversity on campus, the PLTL team at WashU has expanded and adapted programming and has continually enhanced peer leader training to support the evolving needs of the students. With the rapid increase in student representation from under-resourced backgrounds, the importance of training leaders in diversity, equity, and inclusion increased considerably. In addition to our standard training topics, such as group dynamics, facilitation skills, problem-solving strategies, and growth mindset, we then added inclusive facilitation strategies, mental health and well-being, and strategies to uphold academic integrity. Gradually, the scope of our peer leader training broadened to support the well-being of not only the students but also the peer leaders. In this presentation, you will hear about the evolution of the peer leader training at WashU, the topics we cover, and the ways in which we support our peer leaders.

# PRESENTATIONS & WORKSHOPS

## THURSDAY, JUNE 2, 2022

### *Workshop – Workshop Development*

#### **Peer-Led Team Learning Analysis Through Bloom's Taxonomy**

- **Rahel Bokretzion**, Dominican University
- **Emily Alessandri**, Dominican University
- **Andrea Garcia**, Dominican University
- **Leslie Valdez**, Dominican University
- **Jacquelin Gutierrez**, Dominican University

Bloom's taxonomy is a learning model that classifies learning objectives into varying steps based on the task's complexity. It ranges from basic memorization of knowledge to a higher level of analysis and evaluation leading to deeper understanding of the task. This model is useful to help students build their knowledge from the ground up to encourage higher-level cognitive skills. Time demands in the STEM classroom can prevent faculty from dedicating enough time for students to gain this higher level of understanding. One of the Peer-Led Team Learning program's goals is to facilitate active learning in a small group setting by incorporating problems that encourage students to think more critically. Each Peer Leader undergoes training at the beginning of the semester and weekly throughout the semester to adequately apply critical learning under the model. Additionally, weekly faculty training allows Peer Leaders to design their own worksheets for the following workshop. Attendance rates in the classroom and workshops are evaluated to determine if the program benefits students more when they attend more frequently. Descriptors for the study were gathered to determine the average, median, and standard deviation of scores of students involved in PLTL. A correlational study was conducted to observe the relationship between attendance and grades. A regression was also run to evaluate the extent of which challenging problems, under the Bloom's taxonomy model, predicted student attendance. Lastly, student surveys were evaluated by running a regression to determine if the workshop material predicts student confidence in the classrooms. These analyses of workshops, classifications of the types of problems by complexity through Bloom's taxonomy, and the comparison of attendance rates with grades allowed us to better understand the effects of the program.

# PRESENTATIONS & WORKSHOPS

## THURSDAY, JUNE 2, 2022

### *Oral Presentation – Professional Skills Development* **Professional Growth as a Peer Leader**

- **Luis R. Duran**, The University of Texas at El Paso
- **Ariana Ramirez**, The University of Texas at El Paso
- **Geoffrey B. Saupe**, The University of Texas at El Paso
- **James E. Becvar**, The University of Texas at El Paso

Confidence within an academic environment is developed over time. Beginning the PLTL program as a new Peer Leader comes with the challenges of feeling intimidated, anxious, and out of place. Going through the experiences PLTL offers fosters growth in the Peer Leader. For example, receiving feedback and taking the time to self-reflect contributes to making an individual a more effective peer leader. As the semester progresses, new peer leaders start breaking out of their shells; they discover what methods to facilitate learning are most effective, they begin to build an overall sense of community, they try out new approaches, and they learn how to take setbacks as learning opportunities. With time, the Peer Leader becomes more comfortable within the PLTL community. This newfound confidence cannot only be attributed to experience but to having a safe and welcoming environment that enhances the professional and personal growth of the peer leader. As one gains experience, it becomes clear that learning is a continuous process. Even as seasoned peer leaders, adversity tests one's confidence. As time passes, it becomes evident that adaptability is vital for the continued professional growth of the peer leader.

# PRESENTATIONS & WORKSHOPS

## THURSDAY, JUNE 2, 2022

### *Oral Presentation – Developing Study Skills for Chemistry* **Developing Study Skills for Chemistry**

- **Jeremiah DavisBell**, The University of Texas at El Paso
- **Andrea Sarinana**, The University of Texas at El Paso
- **Geoffrey B. Saupe**, The University of Texas at El Paso
- **James E. Becvar**, The University of Texas at El Paso

First semester students do not always have effective study habits. This leads to students becoming overwhelmed by the work required to become successful in highly abstract and quantitative chemistry courses. Chemistry students need to be exposed to different study habits that are personalized to each individual and efficient for chemistry. In General Chemistry, students are required to co-enroll in Peer-Led Team Learning (PLTL) workshops with the lecture. In PLTL, peer leaders show alternative ways to understand the topics and give the students tools to improve their understanding on their own. An important tool for studying chemistry can be discussion of real-world applications of the topics, followed by the execution of the formulas and methods used to solve a chemistry problem. When dealing with more conceptual topics, it is recommended that students make acronyms and use flashcards. Students need to develop broad study skills. These skills gained in their workshop can also be applied to their studying for other courses. By exposing students to these different tools, they can develop their own study skills, and feel more confident and competent in understanding key topics.

### *Oral Presentation – Professional Skills Development* **Facilitating Learning Through Video Tutorials**

- **Sergio Saucedo**, The University of Texas at El Paso
- **Sofia A. Delgado**, The University of Texas at El Paso
- **James E. Becvar**, The University of Texas at El Paso
- **Geoffrey B. Saupe**, The University of Texas at El Paso
- **Mahesh Narayan**, The University of Texas at El Paso

As second semester General Chemistry Peer Leaders at The University of Texas at El Paso (UTEP), we have noticed that students respond well to guided problems and video tutorials. Providing video tutorials to students allows them to obtain help and extra practice when it is most convenient to them. Students have reported having trouble identifying outside resources that best apply to them and the content covered. Our videos are tailored to their coursework, providing the advantage of targeted assistance. The Peer Leaders for second semester General Chemistry have created optional worksheets for students to practice on their own. Using the UTEP Learning Studio, a room dedicated to video and audio project production, we have created video answer keys for these supplemental worksheets. These worksheets are optional activities for students and in the future will be incorporated into the workbook to better facilitate learning.

# PRESENTATIONS & WORKSHOPS

## THURSDAY, JUNE 2, 2022

### *Oral Presentation – Professional Skills Development*

#### **Peer Leading in Perspective: Why You Should Consider Peer Leading in a Discipline Other than Your Own**

- **Masiel Velarde**, The University of Texas at El Paso
- **Geoffrey B. Saupe**, The University of Texas at El Paso
- **James E. Becvar**, The University of Texas at El Paso

No matter what your major is, you can be a contributor to the peer leading program in another discipline. At UT El Paso, the peer leading community in chemistry invites students from a wide range of academic disciplines, especially those who are not Chemistry majors. The rich diversity provides different and valuable perspectives to the General Chemistry course material. Diversity in this case means a variety of interests, academic disciplines, strengths, and backgrounds. Peer Leaders with diverse backgrounds engage and connect with those students who are not interested in the science (in this case chemistry). This helps keep students from becoming disengaged in workshop and having the “I’m only here for the credit” mentality. We have observed that students have taken the content from their Chemistry course and applied it to other areas of their academic studies, shaping them to be better prepared and more attentive students. Having skills and a unique background will be an integral part of making connections and encouraging students who may feel that Chemistry is not something they require or are interested in.

# PRESENTATIONS & WORKSHOPS

## THURSDAY, JUNE 2, 2022

### *Oral Presentation – Professional Skills Development*

#### **The Journey from Freshmen to Becoming Peer Leaders**

- **Allison McKee**, University of Houston Downtown
- **Nick Huynh**, University of Houston Downtown
- **Taylor Newton**, University of Houston Downtown
- **Azfar Vahidy**, University of Houston Downtown

In Peer Led Team Learning (PLTL) at the University of Houston-Downtown (UHD), there is a trend that the freshman starting their college experience being involved and surrounded by Peer Leaders tend to develop more interest in becoming a Peer Leader themselves. For many first-time college students, their first introduction to PLTL and Peer Leaders is in the START program. This program takes place the week before classes start. Its main purpose is to get the freshmen to meet and become accustomed to collaborating within their respective Peer Leader facilitated groups. In retrospect, the majority of the freshmen cite the START program as what first sparked their interest in PLTL as it is a form of leadership and collaboration that none of them had been exposed to before. The freshmen get to experience first-hand how their Peer Leader can foster better relationships within their group. The bond between the Peer Leader and their students has been seen to last beyond freshmen's first semester. The students themselves spend greater amounts of time on campus compared to freshmen who did not have Peer Leaders, and usually will stay together with members of their group. Beyond this observation, there is shown to be greater retention with the freshmen who were in the START program and freshmen seminar with the PLs in academic organizations such as the Scholars Academy (SA) and in UHD in general, versus those who did not. Having experienced what it is like on the receiving end, many of the freshmen take the next step to become a Peer Leader so that they can in turn help the incoming students as they once were, and this is what helps to continue the cycle. The expectation is that by expanding the PLTL into other aspects of students' college experience, there are more benefits to be gained. At UHD, while the expansion of PLTL is mainly in relation to the freshmen cohort, it is believed that the increased retention and academic success that they experience can also be brought to other cohorts via PLTL as well.

# PRESENTATIONS & WORKSHOPS

## FRIDAY, JUNE 3, 2022

### *Oral Presentation – Professional Skills Development*

#### **Inclusion Skills in Practice: PLTL Leadership**

- **Mark Jareczek**, Washington University in St. Louis
- **Regina Frey**, University of Utah

Through the Peer-Led Team Learning (PLTL) model, undergraduate peer leaders foster an inclusive and productive learning environment that facilitates collaborative and active student engagement with problem-solving materials and builds students' confidence in their discipline abilities. Studies in PLTL have shown cognitive and affective benefits to both students and peer leaders, and PLTL has been shown to be effective in diverse environments. Given a need for leaders in STEM and chemistry, specifically, to create inclusive environments, we conducted a study to explore the impact of peer leading on peer leaders' perceptions of inclusive practices and skills, and students' perceptions of the leader's skills. In this study, an inclusion-skills survey was developed, and responses were collected from both new and experienced active chemistry peer leaders ( $n = 35$ ) across two time points (Fall of 2020 and Spring of 2021). Leaders reported moderate to high levels of confidence on most of the 18 inclusion-oriented items. A free-response question on inclusion-skill development was analyzed and responses were coded into three skill categories: Environmental, Collaboration, Monitoring, which yielded workable insight into what types of inclusion gains are seen by PLTL leaders from experiences in the program. Data from peer leaders were triangulated with a 2020 student survey ( $n = 207$ ) on PLTL experiences, echoing the skills the leaders reported cultivating in practice: (1) students described leaders' ability to practice collaboration and environmental inclusion skills and (2) highly rated leaders on items regarding group inclusion. Thus, service as a peer leader under the PLTL model may be one avenue by which to prepare future STEM leaders to adopt inclusive practices.

# PRESENTATIONS & WORKSHOPS

## FRIDAY, JUNE 3, 2022

### *Oral Presentation – Program Development*

#### **Born in the USA - Exploring the PLTL Model in U.K. Higher Education**

- **Lesley Howell**, Queen Mary University of London
- **Redwan Shahid**, Queen Mary University of London

Peer Led Team Learning (PLTL) is an educational tool that has been successfully implemented in the USA for many years now. In 2018, a delegation from Queen Mary University of London (QMUL) visited Florida International University (FIU) to observe PLTL in action. Impressed by the impact it has had on FIU students and as part of ongoing work exploring approaches to student engagement and belonging at QMUL we have piloted the implementation of PLTL in two undergraduate chemistry courses at QMUL. Specifically, we will present the “QMUL” approach and how we attempted to address the six critical components of PLTL. We will discuss the (potential) challenges we predicted/faced such as timetabling and recruitment of peer leaders and finally we will evaluate our findings. Initial data from one module suggest an improvement in overall module averages, an improvement in progression rates and a reduction in attainment gaps. Encouraged by this initial data, we will also present our future plans for a wider roll out of PLTL at Program Level.



# PRESENTATIONS & WORKSHOPS

## FRIDAY, JUNE 3, 2022

### *Oral Presentation – Program Development*

#### **UTEP PLTL Council**

- **Paulina Torres**, The University of Texas at El Paso
- **Diego Maldonado**, The University of Texas at El Paso
- **Jeremiah DavisBell**, The University of Texas at El Paso
- **Brooke Dorsey**, The University of Texas at El Paso
- **Luis Duran**, The University of Texas at El Paso
- **Jonathan Tipo**, The University of Texas at El Paso
- **Alan Murgia**, The University of Texas at El Paso
- **Geoffrey B. Saupe**, The University of Texas at El Paso
- **James E. Becvar**, The University of Texas at El Paso

At the University of Texas at El Paso First Semester General Chemistry PLTL program, a group of experienced Peer Leaders are selected to hold positions in the Council. The Council is student-initiated and run by Peer Leaders who help maintain the organization and efficiency of the PLTL Program. Two Head Peer Leaders lead the Council with supporting member roles that serve to manage different core aspects of the program. For the Spring 2022 semester, the Council consisted of seven roles including an Abstract Coordinator, a Workbook Revisions Coordinator, New Peer Leader Engager, and Workshop Evaluation Master. The Head Peer Leaders serve as liaisons between the group of Peer Leaders at large and the General Chemistry professors. A major responsibility of the Council is assisting with the selection process of new Peer Leaders each semester and the preparation of a student-led, weeklong Training Institute for Peer Leaders. The Council helps build a support structure for the UTEP PLTL community, from students to professors.

# PRESENTATIONS & WORKSHOPS

## FRIDAY, JUNE 3, 2022

### *Oral Presentation – Professional Skills Development*

#### **The Benefits of Teamwork for First Semester General Chemistry**

- **Andrea Sarinana**, The University of Texas at El Paso
- **Andrea Granados Baca**, The University of Texas at El Paso
- **Geoffrey B. Saupe**, The University of Texas at El Paso
- **James E. Becvar**, The University of Texas at El Paso

First semester general chemistry at the University of Texas at El Paso (UTEP) is a challenging course with many PLTL workshop sections. Peer Leaders facilitate learning and encourage students to develop skills, understanding, and success in chemistry through active learning techniques. Peer Leaders have frequent training and meetings that encourage the use of group and active learning skills in workshops. This presentation aims to provide a better understanding of the benefits that PLTL teamwork brings to learning as well as provide the tools for effective and smooth interaction between students in small groups. The students with guidance from their Peer Leader collaborate to solve practice problems. Interactive games are used, where the students work together to solve problems and compete against other teams. Teamwork can help students see the steps they need to use on a problem from a different perspective. Cooperative activities promote understanding, reveal weaknesses, and encourages students to ask more questions to their peers, Peer Leaders, and professors. By working in teams students can catch each other's mistakes and provide tips on how to correct them. With this experience in groups, students build confidence in their chemistry skills through helping or receiving help.

### *Oral Presentation – Program Development*

#### **Social Network Analysis (SNA) and PLTL: Analyzing the Interactions in the Peer Leader Community**

- **Jose Alberte**, Florida International University

A social network is a group of individuals and the relations that define them. Apart from focusing on the individual (who are viewed as interdependent) in the social network, Social Network Analysis (SNA) may also connect individuals to other phenomena. These ties between individuals can also be considered opportunities for the transfer of resources (even knowledge). Central to SNA are the connections between social units and the observed associated outcomes represented by these connections. An actor (social unit) is discrete individual or collective social units. For example, a Peer Leader (PL) facilitating a workshop would be considered an actor, as would a Group Discussion training group within the program. It is assumed that an actor plays a role in influencing the larger social structure. To delve into the Peer Leader (actor) social network within a PLTL Program, a PL-centered SNA survey was administered to explore these social network connections within their workshops, training sessions, and within the overall program structure. Along with the discussion of how to conduct mixed methods SNA research in this context, preliminary results in the form of sociograms will be presented.

# PRESENTATIONS & WORKSHOPS

## FRIDAY, JUNE 3, 2022

### *Oral Presentation – Program Development*

#### **Improving Peer-Led Team Learning and Peer Leader Training Through COVID-19**

- **Nadia Mills**, University of the Virgin Islands
- **Meria Marcel-Lewis**, University of the Virgin Islands

Preliminary findings from the UVI Growth Model Research project show an increase in students' mathematics self-efficacy and a decrease in mathematics anxiety (Mills, N., Tucker-Blackmon, A., McKayle, C., Stolz, R., Romano, S., 2019). These changes were not statistically significant, but they did show a positive trend for this intervention. Further analysis of the results shows that although the overall mathematics anxiety of students decreased, the response to “I get nervous when taking a mathematics test” began with a high mean and increased over the semester. As a result, the *BCSER Project: Improving Peer-led Team Learning and Peer-Leader Training to Increase Undergraduate Student Achievement in Mathematics* was created. The project's objective is to enhance our PLTL curriculum and leader training modules to target the psychosocial factors that positively impact students and the peer leaders. The COVID-19 pandemic created new challenges such as converting to cyber PLTL and conducting peer leader trainings online. In this presentation, we will share our transition to cyber PLTL and its impact on course pass rates. We will also share our peer leader training module and preliminary findings from data collected during Spring 2022. We will discuss descriptive measures on the impact of the new training program on peer leaders' mathematics self-efficacy, mathematics anxiety, perceptions of intelligence, leader effectiveness, and student engagement.

### *Workshop – Workshop Development*

#### **Battleship Among a Sea of Compounds and Elements**

- **Madeline Olivas**, The University of Texas at El Paso
- **Rene Aguilar**, The University of Texas at El Paso
- **James E. Becvar**, The University of Texas at El Paso
- **Geoffrey B. Saupe**, The University of Texas at El Paso

The core practice in peer leading is to engage students and - most importantly - incentivize their own curiosity to the point where they themselves develop into efficient team learners. This integral part of the peer-led program develops through practice. Repeated and consistent opportunities must be provided to gain the intentional result that students facilitate their own learning by interacting with each other, not only due to the actions of the authority figure in the room. At the University of Texas at El Paso (UTEP) this classic game of battleship embodies teamwork with the unit of success being to sink the opposing teams' ships. However, this rendition comes with a catch: to fire a shot at the opponent individual students take turns answering a chemistry related problem correctly. In practice at UTEP, double-sided free standing (magnetic) whiteboards are used to divide the line of sight between the two teams of three or four students in general chemistry workshops. For presentation purposes, participants will be organized into teams and practice a round of simple Chemistry Battleship, then be asked to derive their own questions and, if time allows, play another round using the derived questions.

# PRESENTATIONS & WORKSHOPS

## FRIDAY, JUNE 3, 2022

### *Workshop – Program Development*

#### **Confidence in the Chemistry Workshop**

- **Reagan Hudson**, University of Texas Permian Basin
- **Rylyn Reyes**, University of Texas Permian Basin
- **Sofia Delgado**, The University of Texas at El Paso
- **Milka Montes**, University of Texas Permian Basin
- **James E. Becvar**, The University of Texas at El Paso

The key to success is often linked to believing in oneself, also called confidence. Peer Led Team Learning (PLTL) is used at institutions to help students succeed in the classroom through group collaboration. The program is often used for classes with high Drop/Fail/Withdraw (DFW) rates, which often frighten students from enrolling and/or questioning their success. The goal of PLTL is to improve the success for all enrolled students but places a greater focus on those who are historically underrepresented. Enrollment numbers of first-generation college students, who are typically challenged by socioeconomic disadvantages, have increased over the last several years; however, these students continue to face adversity, which impedes timely academic success. Students at The University of Texas at El Paso (UTEP) have the advantage of a large group of peer leaders facilitating over 400 students per semester, this program is over twenty years since its inception. The University of Texas Permian Basin (UTPB) peer leaders have been facilitating close to 150 students over the past three years. This research aims to compare the effects of gained confidence through attending PLTL workshops in student success at the two different PLTL Chemistry programs, UTPB and UTEP. Factors such as the maturity of the program and size of the population, as well as peer leader experience, confidence, and training play a role in student engagement, gained confidence, and ultimately student success. This presentation will cover the two universities, the definition of confidence, potential survey questions and an open forum for questions/advice.

### *Oral Presentation – Program Development*

#### **We're All in the Same Boat: PLTL at Washington University**

- **Lisa Kuehne**, Washington University in St. Louis
- **Jay Sriram**, Washington University in St. Louis
- **Prasheil Mandava**, Washington University in St. Louis

Washington University offers PLTL in three departments for nine different courses. Upsets or even collisions are possible when multiple entities are vying for the calmest water with respect to funding and other logistics. For the most part, though, it is smooth sailing. We will discuss the partnerships that make it possible to sustain a large, positive PLTL presence on campus while dealing with external disruptions (such as a global pandemic) and internal challenges.

# PRESENTATIONS & WORKSHOPS

## FRIDAY, JUNE 3, 2022

### *Workshop – Workshop Development*

#### **Explorations and Their Function in PLTL**

- **Jonathan A. Tijo**, The University of Texas at El Paso
- **Alan Murguia**, The University of Texas at El Paso
- **Geoffrey B. Saupe**, The University of Texas at El Paso
- **James E. Becvar**, The University of Texas at El Paso

Explorations are a fundamental portion of the first semester General Chemistry peer leading program at the University of Texas at El Paso (UTEP). Explorations are small scale experiments that take the concepts out of the book and into real life. The purpose of these explorations is not only to provide simple and fun examples of difficult topics for students, but to increase student engagement and understanding. This workshop will run through the history of explorations and provide insight into how Peer Leaders are trained to facilitate explorations at UTEP, including the new introduction of an exploration workshop. We will also discuss how outreach explorations provide an interest in STEM to members of the UTEP community, including open houses and school visits. Examples of long running explorations will be discussed along with an opportunity to brainstorm and craft explorations that will suit the needs of individual Peer-Led Team Learning programs.

### *Oral Presentation – Professional Skills Development*

#### **The Practice of Reflection: Being a Reflective Member of the PLTL Community**

- **Jose Alberte**, Florida International University

The power in learning is in the ability to actively engage with content. Reflection provides the power to engage the learner about the process of learning and articulating thoughts about learning and associated actions. It helps build the scaffold necessary to bridge together effective processes and successful outcomes. There are many schools of thought on reflective practices and strategies to implement when reflecting. This workshop will discuss these strategies and will actively demonstrate the use of reflective practice as contextualized by a Peer-Led Team Learning program. Participants of this are encouraged to look for a single sharable image that they feel reflects who they are. This image will be used in the first collaborative activity.

# PRESENTATIONS & WORKSHOPS

## FRIDAY, JUNE 3, 2022

### *Oral Presentation – Professional Skills Development*

#### **Developing Interpersonal Skills Through Peer-Led Team Learning: An Exploration of the World**

- **Diego I. Fierro**, The University of Texas at El Paso
- **Sofia A. Delgado**, The University of Texas at El Paso
- **Jeremiah DavisBell**, The University of Texas at El Paso
- **Geoffrey B. Saupe**, The University of Texas at El Paso
- **James E. Becvar**, The University of Texas at El Paso

Curiosity is a mind-maker. Curiosity causes people to grow. The world evolves through curiosity. As first semester General Chemistry Peer Leaders at The University of Texas at El Paso, there have been many things that have helped us understand the world outside of content-based academics. Through our experience of being Peer Leaders, we have refined interpersonal skills that can be used outside of Peer Leading, such as tackling a problem as a team. With the modern era emphasizing the importance of diverse populations, PLTL allows students from diverse backgrounds and experiences to unite and form a thriving community. It is through PLTL that we as a group of diverse and like-minded individuals have been able to express our curiosity for the world and aid each other in understanding it. This presentation will discuss how diversity impacts the professional development of students and Peer Leaders and how PLTL can impact Peer Leaders in their understanding of the world.

### *Workshop – Workshop Development*

#### **Intermolecular Forces Roulette**

- **Sergio Saucedo**, The University of Texas at El Paso
- **Sofia A. Delgado**, The University of Texas at El Paso
- **Geoffrey B. Saupe**, The University of Texas at El Paso
- **James E. Becvar**, The University of Texas at El Paso
- **Mahesh Narayan**, The University of Texas at El Paso

At The University of Texas at El Paso (UTEP), chemistry laboratory-based activities (dubbed “explorations”) are used to supplement Peer-Led Team Learning (PLTL) in first and second semester General Chemistry. They allow students to see the real-world applications of the content covered in lecture and in the workshop. Proper laboratory safety, including lab coats, gloves, and goggles, are always used in these activities. To help demonstrate the concept of intermolecular forces, various substances are dropped onto a latex balloon to see which would cause the balloon to pop. The substances selected include polar and nonpolar examples, as well as diluted aqueous acids and bases. The students are provided the structure of latex, an organic polymer. The students are invited to draw the structure of the substances provided and predict their effects on the balloon. Volunteers are then invited to hold the balloon as the Peer Leader drops the substance selected by the student. After the students identify which substance pops the balloon, a discussion is led as to why this substance interferes with the structure of the latex.

# PRESENTATIONS & WORKSHOPS

## FRIDAY, JUNE 3, 2022

### *Oral Presentation – Workshop Development*

#### **Authoring PLTL Packets in General Chemistry at Wash U**

- **Megan Daschbach**, Washington University in St. Louis

Here at Washington University, PLTL packets are developed “in house” by course instructors and PLTL program directors. In General Chemistry, PLTL packets are designed to be the “capstone” problem set, the third of three problem sets, containing the most challenging questions of a given unit. This presentation will explore the teaching philosophies employed in the development of the three types of problem sets used in the course as well as showcase how these three problem sets work collectively to achieve our learning and process-skill objectives.

# PRESENTATIONS & FOLLOW-UP DISCUSSIONS

## SATURDAY, JUNE 4, 2022

### *Oral Presentation*

#### **A Novel Video-Based Training Resource to Explore Challenges to Student Participation in PLTL Workshops**

- **Maria Cecilia Barone**, University of Rochester
- **Joe Dinnocenzo**, University of Rochester
- **Robin Frye**, University of Rochester
- **Karen Gilbert**, University of Rochester
- **Nicholas Hammond**, University of Rochester
- **Rachel Rimmel**, University of Rochester
- **Kyle Trenshaw**, University of Rochester

Peer-led Team Learning has been widely used in undergraduate STEM education for over two decades. However, a closer examination of the experiences of students in peer-led sessions reveals that social comparison concerns, lack of sense of belonging and other factors can act as barriers to student participation in groupwork, which in turn can limit a successful implementation of the PLTL model. At the University of Rochester, we are developing a video-based resource based on interactive theatre to help peer leaders recognize and mitigate barriers to student participation that can occur in PLTL Workshops. The student participation issues included in this resource have been identified in partnership with peer leaders and instructors at the University of Texas at El Paso (UTEP) and Rochester Institute of Technology (RIT).

In this Workshop, participants will:

- discuss common barriers to student participation in PLTL Workshops;
- watch a simulated PLTL Workshop scene that illustrates student participation issues;
- share reactions to the scene with other participants;
- explore the student characters' perspectives on the issues presented in the scene through a series of pre-recorded interviews;
- discuss assumptions about student participation in the scene;
- reflect on applicability to their context.

We will also briefly discuss future plans, including development of a second training module, testing of the training modules at UTEP and RIT, and the eventual broad dissemination of the training resources to the PLTL community.



# PRESENTATIONS & FOLLOW-UP DISCUSSIONS

## SATURDAY, JUNE 4, 2022

### *Oral Presentation*

#### **From Zero to Zoom - Launching PLTL in a Pandemic**

- **Kimshi Hickman**, University of Texas at Arlington
- **Catherine Unite**, University of Texas at Arlington
- **Monica Franco**, University of Texas at Arlington

PLTL was launched at the University of Texas at Arlington in a pandemic and has rapidly grown to support six courses. This session will look at how this program is implementing the six critical components for a PLTL program. Hear our story and take part in process documentation in this interactive session and document your business processes.

### *Oral Presentation – Professional Skills Development*

#### **Handling Difficult Situations in a PLTL Workshop**

- **Dina Abed**, The University of Texas at El Paso
- **Meril Saied**, The University of Texas at El Paso
- **Georgina Martinez**, The University of Texas at El Paso
- **Geoffrey B. Saupe**, The University of Texas at El Paso
- **James E. Becvar**, The University of Texas at El Paso

At the University of Texas at El Paso (UTEP), Peer-Led Team Learning (PLTL) workshops are a required, linked part of the lecture course and are guided by the Peer Leader (PL), a former general chemistry student who has done well in course content and has received extensive training in formulating teamwork and group activities in diverse environments. Mock sessions addressing challenging scenarios need to be included during pre-semester training. Additional training, including weekly group discussions among the PLs, can foster an environment where experienced PLs discuss advice and ideas to resolve situations that may arise during the workshop. With this guidance, the PLs will receive the necessary tools and skills to act on the spot while maintaining the flow of the workshop. We will discuss how these barriers to learning can be addressed by the PL by altering seating arrangements, implementing inclusive activities, and motivating students. The final result is a more comfortable environment with increased engagement, communication, and participation in workshop, leading to the maximization of the students' potential and comprehension of the content.

# PRESENTATIONS & FOLLOW-UP DISCUSSIONS

## SATURDAY, JUNE 4, 2022

### *Workshop – Workshop Development*

#### **Factors, Multiples, and Prime Numbers**

- **Meria Marcel-Lewis**, University of the Virgin Islands
- **Serena Shillingford**, University of the Virgin Islands
- **Carissa George**, University of the Virgin Islands
- **Shamir Smith**, University of the Virgin Islands
- **Nadia Mills**, University of the Virgin Islands

At the University of the Virgin Islands, Peer Led Team Learning (PLTL) is a required course component in two mathematics foundations courses, Introduction to Algebra Concepts I & II. The workshop we are presenting occurs in the first course of the sequence and provides a proof and reasoning approach to the concepts of factors, multiples, and prime factorization. In the introductory activity of this workshop, students create multiple rectangles with equal areas. To facilitate this workshop, the peer leaders divide the students into 2-3 groups and provide students the necessary manipulatives to create as many different rectangles as possible with 16 and 24 square units represented by algebra tiles and/or grid paper in 7 minutes. The group that finishes first with the most correct responses is recognized at the end of the competition. The activity continues with a discussion about how the number of rows and columns in the rectangle relate to the total number of square units used. The groups then repeats the activity using the numbers 13 and 23. Next, there is a discussion about the difference between the first and second rounds. By the end of the workshop, students will be able to articulate the concepts of factors, multiples, and prime numbers using a proof and reasoning approach.

### *Oral Presentation – Professional Skills Development*

#### **LTPLTLT: Linking The Peer-Led Team Learning Team**

- **Lisa Kuehne**, Washington University in St. Louis
- **Isabel Sangimino**, Washington University in St. Louis
- **Nicholas Glass**, Washington University in St. Louis

As practitioners and administrators, we spend many hours developing team-building and other leadership skills in the student leaders. What do our students do with these skills (if anything) after they graduate? We describe a recent initiative (designed and implemented by current leaders) to use a LinkedIn group as a means to connect with alumni with similar experience.

# PRESENTATIONS & FOLLOW-UP DISCUSSIONS

## SATURDAY, JUNE 4, 2022

### *Oral Presentation – Program Development*

#### **Why Faculty Development Is Important**

- **Ana Fraiman**, Northeastern Illinois University
- **AE Dreyfuss**, Peer-Led Team Learning International Society
- **Chao Dong**, University of Texas Permian Basin

In STEM gateway courses, faculty are often caught in extensive requirements dictated by the academic associations of the respective disciplines. This presentation will share a recent effort where faculty had weekly opportunities to consider how their teaching practices could be more supportive of students' learning. Participants will gain an understanding of experiential faculty development through examples of interactive practices that tie teaching to the attributes necessary for students' conceptual understanding.

### *Workshop – Program Development*

#### **Putting Into Action Ideas from David Arendale's Workshop**

- **David Arendale**, University of Minnesota
- **Sofia A. Delgado**, Facilitator, The University of Texas at El Paso

What are one or two new behaviors that could be added to your PLTL session? Numerous ideas for new actions were generated by David's comments and the small group discussions with one another. This short session gives participants an opportunity to discuss ideas for change and the actions necessary to make it happen at your home institutions.

### *Workshop – Professional Skills Development*

#### **PLTLIS Research- Focus Group Session: Peer Leader Self-Efficacy**

- **Jose Alberte**, Florida International University

Using a mixed methods research methodology, PLTLIS is beginning the process of building a scale to quantitatively assess a Peer Leader's self-efficacy. The very first stage of this is to see what the experts in the field have to say on the topic. This includes all PLTL practitioners, Peer Leaders, faculty, staff, learning specialists, etc. This session will be conducted in the style of a research focus group to begin exploring the process of building the Peer Leader Self-Efficacy Scale.