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**Enhancement of Public Speaking Paved through Peer-Led Team Learning**  
Narges K. Kalantarian, James E. Becvar, Mahesh Narayan, and Geoffrey B. Saupe

Abstract

The Department of Chemistry at the University of Texas at El Paso now uses an innovative constructivist approach to address the individualistic learning styles of students in general chemistry. Through funding from an NSF-STEP grant, UTEP has adopted a strong Peer-Led Team Learning (PLTL) curriculum in second semester general chemistry to emphasize team-based, student-directed learning. Students in this three-credit-hour course are required to attend only two hours of lecture each week by adding a small-section two-hour Workshop overseen by a peer leader. Previously, measures of the effectiveness of PLTL Workshop have focused on evaluating the impact on the students taking the chemistry course. However, peer leaders overseeing the Workshop show significant professional growth including enhancement in their public speaking skills. Surveying current, pre and post peer leaders from our institution prompted the creation of an instrument to assess this enhancement. We report here on the gains of the leaders in confidence and ease in speaking in front of groups. Further evaluation suggests these gains may be directly correlated with semesters spent as a peer leader.

Introduction

The importance of public speaking in science or any field cannot be understated (Bouchier, 2000; Chura, 2007; Bowe, 2011). When a scientist tries to explain the specifics of her or his ideas or research results to an audience, especially to an audience with little to no background, any miscommunication can lead to misunderstandings or detrimental effects such as being under- or non-funded for groundbreaking ideas and projects. In the teaching role, good public speaking ability aids greatly in the portrayal and adaptability of the professor to yield successful understanding among her/his students. These considerations provide only small examples illustrating the important contribution that good skill in public speaking has in the fields of research and teaching.

Full, meaningful, and contextual public speaking experiences are often lacking in the undergraduate years. This is not the case for peer leaders who practice public speaking each week in front of 'kinder, gentler' audiences as they guide content understanding in Peer-Led Team Learning (PLTL) (Gosser and Roth, 1998; Gosser et al, 2001; Cracolice et al, 2001) Workshops, often two or more Workshops per week.

Long noticing this attribute of apprenticeship and practice in public speaking as an aspect of a strong PLTL Workshop program (Becvar, 2004), this project aimed to investigate and begin to quantify the impact of the experience of leading on the public speaking and confidence-level-development of student peer leaders through a self-evaluation process (Gafney and Varma-Nelson, 2007).

Methods

A survey was conducted of 16 student leaders from the University of Texas at El Paso PLTL Program (Becvar, 2012; Becvar, et al, 2008). Leaders responded to self-evaluate their public speaking skills by answering questions via a survey instrument. The questions aimed to understand the student's impression of how much the peer leading experience has impacted them. Three different audiences were targeted for this survey: leaders in the first semester of their peer leading experience (n = 6), more experienced peer leaders (n = 7) as well as student leaders after the peer leading experience had ended because of graduation (n = 3). Peer leaders addressed the following four statements related to public speaking; each statement had “strongly agree, agree, neutral, disagree and strongly disagree” as answer choices.

Statement 1: Before becoming a peer leader, I was anxious to speak before a large audience.

Statement 2: I now feel less anxious when speaking before a large audience.

Statement 3: As compared to before, I feel less intimidated when speaking to individuals of higher authority.

Statement 4: I now feel less anxious when speaking before my workshop.

### Results and Discussion

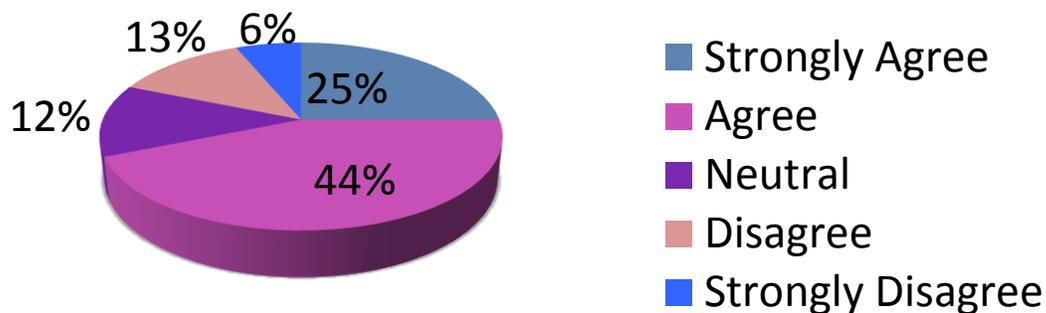


Figure 1. “Before becoming a peer leader, I was anxious to speak before a large audience.” (n = 16).

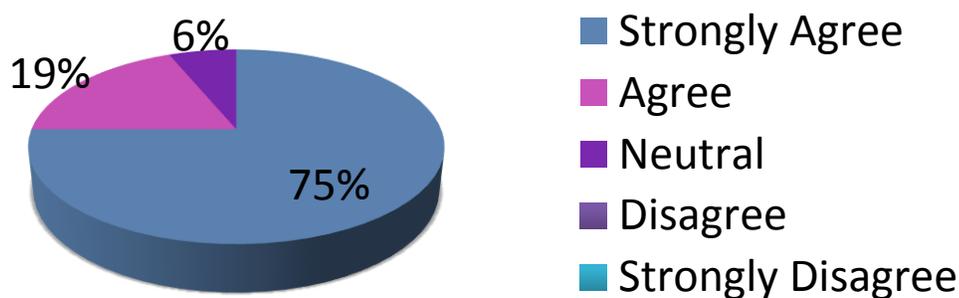


Figure 2. “I now feel less anxious when speaking before a large audience.”(n = 16). 75% of the respondents strongly agreed that they feel less anxious while 6% were neutral.

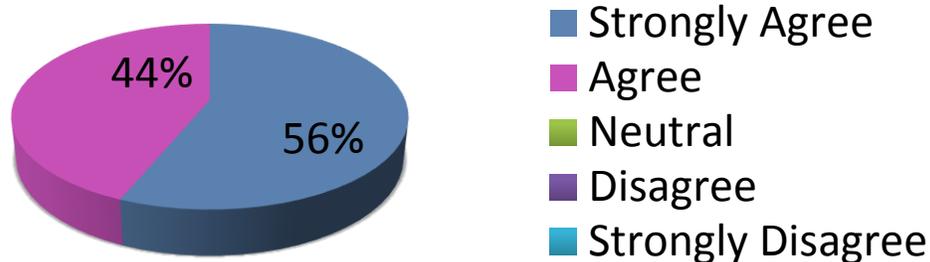


Figure 3. “As compared to before, I feel less intimidated when speaking to individuals of higher authority.” (n = 16) 56 % strongly agree while an additional 44% agree that they feel less intimidated while speaking to individuals of higher authority. No other choices were taken.

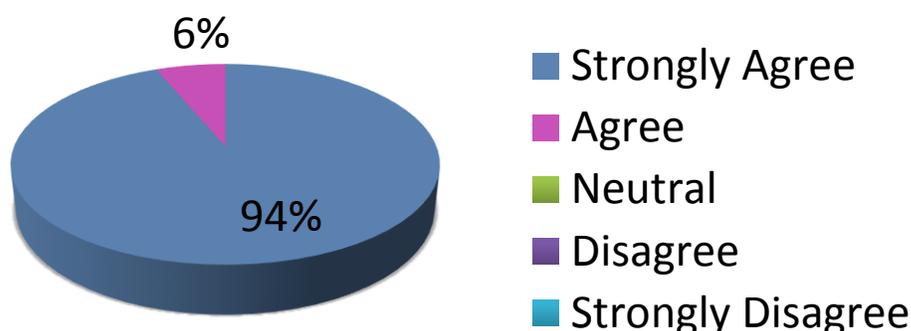


Figure 4. “I now feel less anxious when speaking before my workshop.” (n = 16) 100 % of the peer leaders agreed to some degree.

Figures 1 to 4 present the results from this initial survey. The survey attempted to gain insight into the degree that the peer leading experience had had on the peer leaders’ public speaking skills. Comparing Figures 1 and 2, the experience of leading can be seen to have impacted and improved confidence level and reduction of anxiety in speaking in front of large groups.

One aim of the questions in this initial survey was to assess the degree of anxiety associated with different speaking scenarios. For example, the anxiety or discomfort associated with speaking to large audiences or to an authoritative figure might well differ from the discomfort level in front of a small number of students in a Workshop or when surrounded by peers. This contention is amply demonstrated even with the small number of respondents in this survey (Figures 4 and 3 versus Figure 2). It is interesting to note that almost all students agreed that their peer leading experience had helped them improve not only speaking in their Workshops but also had reduced their anxiety in front of large audiences as well as in the presence of individuals of higher authority. This is attributed to the frequent Workshops that the leaders have overseen throughout the semesters as well as the many discussions and meetings that they had held with the professors teaching the classes. Although the responding peer leaders initially came into the PLTL experience with various speaking anxiety levels, they all agreed that the peer leading had helped them improve their public speaking skills.

#### New Survey Instrument

The initial survey questions in the Instrument used for the peer leaders from UTEP do not address factors that might directly or indirectly affect public speaking skill or skill development. Nor do

these results and questions ferret out indices of anxiety attributes. Finally, these questions do not address whether any progression in speaking ability might be correlated with the number of

1. What do you do with your hands while presenting information to a large audience?
  - A. Keep them perfectly still (1)
  - B. Fidget (0)
  - C. Move them enthusiastically (0)
  - D. Gesture naturally (2)
  
2. How do you remember what to say in your presentation?
  - A. Use Note cards with the main points for each topic (1)
  - B. Read off a script word for word (0)
  - C. Presentation slides have all the relevant information on them (1)
  - D. Just try to memorize all I will say (1)
  
3. How anxious are you when presenting to a large audience?
  - A. Very anxious (0)
  - B. I am relaxed as long as I have prepared carefully (2)
  - C. It depends on how many people are present (1)
  - D. I get stage fright, but tend to recover once I engage in the presentation (1)
  
4. How do you present to a large audience?
  - A. I read from my script and seldom make eye contact with the audience (0)
  - B. Talking about my subject comes naturally and I interact with the audience appropriately (2)
  - C. I deliver the presentation as I have practiced it, but any interruptions from the audience can quickly distract me (1)
  - D. I am too anxious to consider presenting in front of a large crowd (0)
  
5. How do you look when presenting to a large audience?
  - A. I tend to shake or sweat (0)
  - B. I look nervous and my voice does not sound natural (0)
  - C. Even if I'm a bit worried, I don't tend to let this show (2)
  - D. I look nervous at first, but become more confident once I engage in my presentation (1)
  
6. How do you maintain your audience's attention?
  - A. I interact with the audience and vary the pace of my presentation (2)
  - B. My material is interesting enough to keep people's attention regardless of how I present it (1)
  - C. I stop talking once I think people show signs of boredom/distractions (0)
  - D. I use sound effects & lots of different fonts and colors in my presentation materials (1)
  
7. Do you use humor in your presentation?
  - A. There is a joke nearly on every slide. I want my audience to enjoy themselves (1)
  - B. There is no humor at all (0)
  - C. I use humor periodically to keep my audience relaxed and involved (2)
  - D. I always start with a joke to get people's attention (2)
  
8. How would you feel if you learned you were to speak to the university president in a few minutes?
  - A. Completely confident, I always have something to discuss (2)
  - B. I would feel sick and have to cancel the meeting with them for short notice (0)
  - C. I will make sure another person is presenting with me (1)
  - D. Nervous, but I'll get over it within a few minutes into the talk (1)
  
9. How many semesters you have been a peer leader (indicate 0, if none)? \_\_\_\_\_

Figure 5. Survey Instrument used in the study conducted at PLTLIS, May 2012. The numbers in parentheses indicate the point rubric system used to score responses of the peer leaders. Higher overall scores are taken to correspond to better public speaking skills (See Figure 6).

semesters the leader had been involved with the experience of leading. A new survey instrument was constructed (Figure 5). The nature of this survey lends well to evaluating the individual student's confidence levels as well as evaluating the public speaking capabilities. These considerations prompted the development of this second survey instrument, a revision of a previously published survey by Dr. Mathew Strawbridge (Strawbridge, 2012) found on the Managers Guide Website. The new survey instrument was provided to peer leaders attending the PLTLIS Annual Meeting in May 2012. This new instrument takes into account anxieties associated with the size of the audience as well as the anxiety level anticipated when presenting to a person of high authority. The Survey Instrument includes a scoring rubric delineating the relative point values assigned to the answer choices based on Strawbridge. The higher the point value assigned, the more important the quality of the answer toward the question.

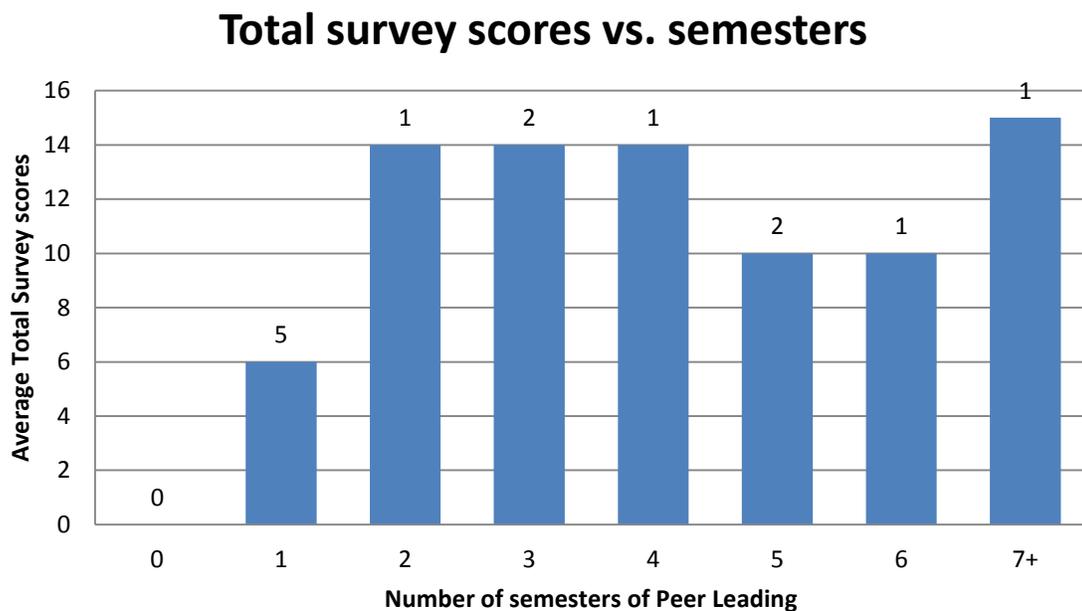


Figure 6. Public speaking skill scores summed from the Survey Instrument (Figure 5) correlated with the number of semesters students had been peer leaders. The numerical values above each bar represent the number of respondents within the respective category. (n=13).

The results of summing the survey scores and correlating them with the number of semesters the respondents had experienced leading is presented in Figure 6. The number of respondents in each category (number of semesters served as a peer leader) is shown at the top of the respective bar in Figure 6. Based on the scoring rubric of Strawbridge (2012), the higher the total summed score on a given survey, the better the public speaker. Although the number of respondents is quite small, a general trend can be observed indicating public speaking strength increases with number of semesters as a peer leader.

A thorough evaluation of public speaking improvement associated with the experience of peer leading is intended for a future study where a larger sample size should be obtained along with pre- and post- Peer Leading evaluation of the students' respective abilities. Therefore, involvement and contributions of ideas from other campuses is requested to enhance the method to measure improvement in speaking in public and to assess future success and advancement.

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