The impact I had in implementing my 1st course redesign with technology at CSU Dominguez Hills is one that I hope will show an increase in the passing grade and eventually to a faster passing rate of our students who need to take general chemistry for their major. Currently our DFW for chemistry is high and it is this reason that I decided to participate in developing a different way to teach chemistry. That way is by flipping the classroom and using a different style of teaching that has been used for several years now that has a strong impact on students understanding and success called Team-Based Learning (TBL). TBL is a small learning group method where individual work is done outside the class and team work is completed in the class. These teams can be used to mimic the professional job market and will push to further develop the essential skills needed to be competitive and prepared. By doing TBL in the class, students will develop the skills and values to do science, while allowing the student to apply class materials and get instant feedback on the work being done.

Having completed the 2016-2017 academic year, I was able to start in the SP2017 semester. The redesigned was proposed for our introduction to chemistry at CSUDH which is CHE108 for a class of only 36 students. We meet 3x a week for 70 min TTH and F in the morning. The students selected for my redesigned course were mostly freshmen with 7 students being sophomore and junior. I was fortunate to be in one of the ALC room which can hold up to 54 students. However, I only had 36 students which meant 6 groups with 6 students per group. In making the decision to make the groups, I looked at each student major and decided to include at least one discipline for each group member. For example, one chemistry, one biology, and so on as well as include a non-freshman since I had 7 of them. I intention were to have a diverse group of individual with different major background interests and a veteran of CSUDH who could show the students who had been here at least one semester or ask for advice.

I did put together a welcome and a little information of the professor using the video software Camtasia. The video would be used to know who their professor would be, share a little of my interests besides chemistry, and hopefully not be intimidated. I did take this as a learning lesson for the student as I did give the students on their first day quiz 0, which were questions from the welcome video. This would set the tone for how important it would be for the students to constantly read and check both their CSUDH email and Blackboard, while retaining what they had just seen in the video. This quiz 0 was just extra credit so it did not affect them their score except start them off with 3 points, so over 100%. I did forget to mention in my ePortfolio that I did make Syllabus videos for all 10 pages of the course redesign. The advantage of having presented these syllabus videos is so I would not take any lecture time since they were to see the videos at home anytime they want. Instead, this allowed me to hit the ground running with the first lecture day being used to explain TBL and then perform a case study scenario as a group. This was the ice breaker for the 36 students, 6 students per group to get to know each other, exchange emails, and most importantly beginning working as a group to address the questions in the case study. They all had to agree on the characters and had to represent themselves as one of the characters. Little did they know this would be the start of 16 weeks of being in a redesigned course that many never heard or thought they would be taking such a class in college.
In having spoken to Dr. Angel Pu, a colleague also in the department of chemistry and biochemistry and who is also a CRT participant, had implemented her CRT in the FA2016 for CHE108. In preparing for my CRT CHE108 course in the SP2017 she helped to with my syllabus for ALC and the first item were the quizzes. These quizzes would test the student knowledge of what they had to read at home since the was purpose of TBL, is have individual work be done at home and team work to be completed in the classroom in a group. There were two types of Quizzes given which is how quiz 0 was presented as a practice to what the real quizzes would be once the assigned reading started. Students would take the quiz individually first, ranging 20-24 min. They would use a scantron to put their answers and circle their responses on the quiz. All questions presented for all quizzes were done as multiple choice, no open response questions. Once the student completed their individual quiz, they would be collected as well as the scantron and then the group quiz 0 would be issued to each group. Only one group quiz for all the students to participate which they had to each write their names on the group quiz 0 sheet as well as a scratch scantron form, that had multiple versions with a star covered that when revealed was the correct choice. Only 6 of these scratch scantron forms, 1 for each group would be required. The students would get the same allotted time as the individual quiz but now the members could communicate and try to determine the correct answer to questions. This is where the team work portion of the redesign starts as they must all agree what they correct answer would be to get all the points. If not, they are penalized with one point but can try again. Each time they scratch before the 5th scratch area, then question is worth zero what is left is the star. The individual quiz questions were worth 4 points each and if they got it wrong the regular scantron, they got the entire question wrong. Whereas the group quiz, they had 4 attempts to get it correct, with each attempt worth one point. The samples of the individual and group quiz are presented in assessment finding section of my ePortfolio. The data for how the students would perform is also presented in the ePorfolio. What was interesting of the students results of the quizzes as the semester progressed the more students were starting to do better as noted by the tanned color fillings. Overall, student group results were always in the range of 70%-99% which means the students would always do much better than in the individual quizzes. It was mentioned to the students, which is why I displayed both results on Blackboard and the average quiz result until the end of the semester, so they would not have to rely on the Group score so heavily because they would also be affected by the individual scores. This also demonstrated to each student they must do well on both quizzes if they want to be successful for the semester.

Next, the other important part of the redesigned course involves the Worksheets and Unit Activities for a given chapter that could last 1 or 2 weeks. These tasks will be used to reinforce the concepts/topics of what they had read at home by practicing lots of problems in the lecture and as a group. There are 6 worksheets, with multiple pages of practice problems to be done, and 7 unit activities that are hand on and some requiring equipment such as balances, household chemical products, solutions, etc… and more problems and critical thinking of the questions asked based on the data collected. One of the important goals we want the student to achieve is not only a good foundation for understanding the concepts that are important in chemistry but they must be able to apply what they have learned to any time of problem. This means developing a student problem solving and their critical thinking skills to deal with any situation they may be presented. They then would take these skills and continue to apply to the next level of courses and even into the work force. During these task is when the group would be working together to solve these problems and questions asked. It is okay for them to start individually but eventually be strongly interacting as they go these tasks. During my experience, group members would...
take a problem and when they were done would go to the white board in the ALC room and write their response but then actually explain the other students how they derived the answer. Others broke into 2 pairs of 3 and each took a page working together but then would have the last 15-20 min to share their results to each other. Upon completing the day task or pages, since some were 10-12 pages in work for an entire week so plan accordingly, my job as the instructor would be to go through the assignments with them as a class. This means having the answer key done and used the LCD overhead projector to display and walk through the problems. This is very important in providing instant feedback on who they are performing to understand the concepts/topics they have been reading at home. By going through each question, I would ask if they needed any help/clarity on a problem. If no one said anything the I move on but when someone did or wanted to ask a question that is when I would engage them and explain why it was this answer or have you thought of this to solve this problem. At times, I did run into problems with the time I had remaining in class while going over the tasks. This depending on the chapter being done where calculations and how to begin solving the problem or a step that involved looking at a previous chapter would be mixed to answer the question. If time did expire, I would have to pick up the next lecture period to finish my explanation for those questions and then begin the new task of questions or pages to be completed. Having gone through these tasks also meant students had the correct answer but I did collect them as they are part of their overall total score for the class, either due before they left class or the next lecture meeting. Grading these worksheets and unit activities were easy since they were completed and correct however, there were students who missed class or perhaps did not complete what they had been asked. This is emphasis the importance of the student needing to continue their work even outside of the class. Once the pages or sections of the task had been completed they could see their Peer-Led Team Learning (PLTL) assistant to help, myself, or even as a study group. As the instructor, you need to remind them what they can and cannot work on home because if they complete the entire packet at home it defeats the purpose of working on the problems or tasks while in their group in lecture. There was one assignment where I told them to please leave them on desk which was to be collected but would be returned the next lecture period as we continued working on the problem. The reason is some of the students wanted to complete the entire assignment, which is great and I would have no concern in the traditional style of teaching but in the redesign course that is not what was needed yet.

Having given them quizzes, worksheets, unit activities as the source to help them master the concepts/topics they read per chapter, an exam would be given. The exam consisted multiple choice and free response questions. This would be 70/30, 60/40, and 55/45 as the chapters would involve more problem-solving skills that would require work to show how students come up with the answer. Basically, more concepts in the beginning and more quantitative work at the end. There is no curving of these exams and these exams were the same that were given to the other 2 CHE108 courses that were being taught in the traditional way. It had been decided that it did not matter how the exam was structured, just as long the content and materials had been covered, which they were since the outlines were the same for all 3 syllabi, then one exam would be needed for all three courses. This was done with input by the other 2 faculty, discussing the level of the problem, questions that should be asked that pertain to something discussed as important, and fairness. Although having one semester of introduction to chemistry is not enough time to really master the material, or even a year, the one thing we decided in the department of chemistry and biochemistry is to make sure we hit the important topics/concepts/materials they will need to be prepared when then get to general chemistry.