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This Is Not Just Tutoring

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Abstract

MAT1175, the first credit-level math course at City Tech, covers topics in algebra and geometry. Many students at this level display a lack of skill and motivation. The embedded peer-led workshop provides a strong support to help students succeed. Led by trained peer leaders, students work diligently and collaboratively on new math concepts as well as fundamental skills. Faculty instructor and peer leaders integrate different techniques and creative ideas to cultivate a supportive environment and stimulate learning. The peer leaders and students share some of their favorite activities and reflections in this paper.

Amelise Bonhomme's Activity

One of the activities that worked well with the students in my group was the timing activity. The students in my group were given a module and were told to complete the hardest problem in the module; it was a long division problem. They all started together, as though it were a quiz, and were timed as to how long it takes to finish the problem and finish it correctly. I thought this activity went well because it required each of them to focus on what they were doing, and to challenge themselves. Most of the group finished within 5 to 10 minutes, of these students more than half did not complete the problem correctly. We had a discussion afterward about the importance of timing and completing a problem correctly and then we re-did the exercise with another problem. On the second trial of the exercise the students took their time to complete the question. It took many of them between 20 to 25 minutes to complete the question. However, this time the questions were completed correctly.

Reflection: The students in my group like to take turns being a leader, and even if they complete the module ahead of everyone else they will go back and help others with completing the module. Nancy was struggling with the math in the beginning and I spoke to her about math tutoring on Fridays in N723, and doing practice questions on her own. She said to me that she reviews her notes, goes to tutoring, and uses Wolfram Alpha® to study. Nancy had even asked if there were any other techniques she could be given so that she could study more and get the grade she wants.

I try to encourage the students to put their effort into their work. I try to relate the math course to their majors. Some tend to ask how the math applies to the career they would like to pursue as though there is no correlation between the two. Conjoining math to their career goals actually helps them better themselves in the subject. It's a really good feeling to have when the students are feeling accomplished and excited to prepare for their next exam once they've realized how important the subject matter is to them. It no longer becomes a hassle to have them work because the subject has become personalized.

Gendaris Tavera's Activities

As a workshop peer leader in MAT1175 I have implemented, during the workshop sessions, many theories that I have learned during the pedagogical class that all peer leaders have to take. One of the activities that I have put into practice with the students from my workshop is asking them to go to the board and work out the problems that are presented on the modules. They found it helpful to see the problems clearly on the board and then comment on how the problem is being solved by one of their classmates.

Sometimes I put the problem on the board and ask them to tell me what step to take in order to solve the problem. In this case I am just serving as the scribe and the students are guiding me to the final answer. If one of them makes a mistake they can see it and correct it by discussing the questions and the methods that were used to solve the problems. By going to the board they can work out the problem step by step.

Another method that I used during the workshop sessions was the pair problem-solving which consists of having two or three students where one is the listener (asking questions) and the other should be the problem solver (explaining their steps), and switching roles; a third person can be an additional problem-solver, or act as an observer. The roles are then changed. I collected some feedback from the students about this method and they said, "I think work in group is helpful to me because they will correct my errors," and, "I think the group discussions were helpful." In other words, the students find that working in small groups help them to clarify their doubts about certain problems and also by discussing their answers with other classmates they can figure out where they made a mistake.

What the students like from the workshop is:

- They can review their quizzes and exams
- More time to practice math
- The modules review everything that was covered in class
- In a smaller group it is easier to ask questions

In my group, students found interesting the activity of finding the errors. Sometimes they would tell me, "What is wrong with this problem? It looks good to me," not realizing that those were common mistakes that many students make because they assume the problem "looks" good. Then I ask them to work out the problem to prove that the solution looks good. When they go through the problem they see where the mistake is. They found that the mistake could have simply been a sign mistake, a wrong way of using the foiling method, not eliminating correctly, or not factoring correctly.

Alma Plaku's Activity

Constructing a structure using straws can be trick

During the fifth week of the workshop in Math 1175 students were challenged to work on a contest activity. They were asked to construct a symmetrical structure in 15 minutes (Figure 1A). Their goal was to build the highest and strongest structure with no more than 15 plastic straws (Figure 1B). During the building process, students used different techniques and ideas by bending and attaching the straws together. I observed tension among the students. A heavy book is thrown onto the top of the constructed structures. The results of the structures from the 5 groups were recorded and the winners were announced. Some of the structures collapsed because they were not stable enough or connected tightly. Students tested physical strength and stability of the structures. This activity was considered challenging for the students because they had to construct a stable and

symmetrical structure in 15 minutes, with no more than 15 straws that would be able to stand (Figure 1C).



Figure 1A



Figure 1B



Figure 1C

Reflection: Math gives us the opportunity to use our minds to use reasoning and come up with solutions. Math activities can be an effective way to have fun and expand one's mind. Students are challenged with new and unusual activities. The students will expand their horizons and ability to think. In a questionnaire that I presented to the students they responded by saying that they prefer working in small groups and helping each other. Also, one of the activities that they liked the most was when a member of the group did the problems on the board because they were able to see how they solved the problem and if they made any mistakes they would correct them at that moment.

Juan Mejia's Activity

Explaining a mathematical problem to a person can be very difficult. Perhaps it is because we all learn differently. Some people are capable of learning by reading a conceptual question, whereas others learn by observation. Learning by observation, in my opinion, is the most effective way to understand a mathematical concept, since every student can visualize how a theorem relates to the problem

In my workshop, Mat1175, Fundamental of Mathematics, I like to show my peers similar examples to the ones they have in the modules. By doing this I am trying to show them that every problem is similar. Also, when the students in my group ask me for the answer to a specific problem, I don't give them the answer. Instead, I write a similar problem on the board and then I work it out. By doing this, they are able to imitate my solution in terms of their problems.

Beyond Mathematics: A real life experience

College is difficult by itself. When I started college, in the first two semesters I sat down in all my classrooms and I never said a word or even asked a question of my professors, even though my head was full of doubts. Perhaps I felt fear, embarrassment or I had no idea what college was like. At that point in my life, I never realized that there are amazing professors, who are always willing to help, support and guide you through "the college experience."

What I am trying to say is:

- Ask questions in class, remember it takes less than a minute to ask something but you will remember it forever.
- Talk to your professors: this is the first step in creating a mentor-student relationship.
- Talk to other students: In college you want to create an environment where you feel comfortable, so don't limit yourself. There are many students who have the same problems as you and they may be willing to help you. By doing this, you will be able to develop new skills you never knew you had.

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