# NON-INTRUSIVELY ENGAGING STUDENTS IN THE COLLEGE CLASSROOM

Tracy Jackson
Tulsa Community College
Assistant Professor of Mathematics
tracy.jackson@tulsacc.edu
918.595.7247

## RATIONALE

### An Unexpected Difference

As a K12 educator for 26 years, I quickly became accustomed to calling on students to answer questions in my classroom on a daily basis.  With this type of experience under my belt, I was surprised at my hesitancy to call on students in my college classroom.  As I reflected on this dichotomy, I determined two possible reasons for this difference.

### Relationships and Trust

When I was teaching high school, I spent one hour per day five days per week for two full semesters with my students (180 hours).  I got to know them very well – both strengths and weaknesses.  I knew which students could rise to the challenge of answering difficult questions and which would need me to provide scaffolding for them to be successful.  I had the time to build relationships with these students and they trusted me to provide them with educational opportunities geared to their individual abilities.  In contrast, I spend 1.5 hours per day two days per week for sixteen weeks with my college students (48 hours).  This 73% decrease in time makes it much more difficult for me to build the same type of relationships with my college students.

### Unknown Backgrounds

Another notable difference between my high school and college students are their diverse backgrounds.  When high school students enter the classroom, you can be fairly certain that every student in the room has recently completed the prerequisite for the course.  This may not be the case in a college classroom.  It's very possible to have students directly out of high school with widely ranging abilities along with non-traditional students who are decades from their last math class.  This can cause anxiety in students faced with answering math questions.  What to do?

## ADDRESSING THE PROBLEM

As a full-time Assistant Professor of Mathematics at Tulsa Community College, I've noticed that the same four or five students answer the questions that I pose during my PreCalculus II class.  While I'd like more participation from a variety of students, I've been hesitant to call on students during class.  This hesitancy can be attributed to the fact that I don't want to embarrass students who may not be able to answer a question correctly and I also don't want to cause anxiety or apprehension in my students.  I began to brainstorm ideas that would allow me to increase the level of student engagement during class.  My prior assumption was that students who didn't voluntarily participate during class had no desire to participate during class.  A question that must be considered is:  What if students WANT to participate, but are afraid or embarrassed of answering incorrectly in front of their peers?  Is there something I could do to minimize this fear of failure and/or embarrassment?

## THE IDEA

I determined that I would need to attain a certain level of trust – fairly quickly – with my students in order to accomplish my goal.  The first problem to overcome would be how to gain trust with my students in a very short amount of time.  Then an idea occurred to me:  What if I asked my students' permission to call on them prior to doing so?  Was there a way that I could let a student know prior to a particular class period that I would be calling on him and, possibly, even let the student know which example or problems he would discuss with me?  What if I went a step further and ASKED the student for permission to call on him?  Phrasing my proposal as a question and giving the student the CHOICE to participate meant that I would have to allow the student to decline.  My hope was that asking for permission to call on a student would lead to an increased level of trust which could result in an affirmative student response.

I decided to begin with four or five students and my first selections would be those students who currently participated during class.  I sent an email to these students explaining my Student Engagement Exercise and asking for their permission to call on them during class to help me solve an example from the book.  The email specified which day I would be calling on the student as well as the PREDETERMINED problem or example that he or she would be asked to discuss.  I made it clear that the student could accept or reject my proposal with absolutely no penalty.  I also assured the

student that the risk would be minimal, i.e. if the student needed some help to complete the problem, I would gently 'coach' them through it.  Finally, I asked the student to respond to my email invitation to let me know if they accepted or rejected my proposal.  After sending the first five email invitations, I waited for the responses.  I received three acceptances, one rejection, and one student did not respond.

During the next class period, I called on the students who accepted my invitation and asked them to discuss the specific problem outlined in each individual email.  Two of the three students who accepted were able to complete their example with little to no help from me.  The third student had difficulty about halfway through the example but was able to complete the problem with some minor coaching from me.

After the first round of participation, I created a survey in Survey Monkey to send to participating students afterward.  Participating students were sent an email with the survey link included.

The following week, I sent email invitations to ten more students – five students in my Monday class and five more students in my Wednesday class.  Three weeks later, every student in my class had received an email invitation.  As I received the email acceptances and declinations, I logged the student responses on my class roll sheet.  Students who accepted were called on during class; students who declined were not.  Surveys were sent to students following their dates of participation to gauge their feelings about the experience.  Surveys were collected and the results were tabulated.

**IMPACT ON STUDENTS (Data can be shared with participants if entry is selected.)**
The data suggests that my prior assumption was incorrect – students who do not speak up and participate during class are not necessarily saying that they don't want to participate.  The data suggests there exists some fear and apprehension tied to the ability to speak up (survey question #5).  Survey question #2 revealed that 29% of students reported feeling anxious, nervous, and/or unsure about speaking up and participating in a classroom discussion; however, 100% of students reported that they liked being asked whether or not they would be willing to participate, 100% reported that having knowledge about which example they would be discussing alleviated doubt about participating, and none of the students reported feeling unsure or embarrassed about their participation after the discussion.  In fact, 100% of students reported feeling accomplished and 86% were proud of their contribution.

In addition, 86% of the students who participated said that they would be willing to participate in a classroom discussion again, provided they knew ahead of time what day they would be called on and which problem they would be discussing and 71% of the students who participated indicated that, moving forward, they would be willing to participate on a regular basis without the benefit of any advance notice.

Since the initial trial (Spring 2019), I've reproduced this investigation with an additional two classes during the Summer 2019 term.  A total of 27 out of 34 students participated during the summer term.  Of the students who participated, 100% reported that they appreciated the email invitation and 100% reported that they would be willing to participate again on a regular basis without the benefit of any advance notice.  Another notable success was that 90.91% of the students who participated reported feeling accomplished and/or proud after having contributed to the classroom discussion.