Philosophy of Teaching
Lisa Over

The fundamental goal of education is for all students to develop the knowledge and skills they need to become good problem solvers, informed and reasonable decision-makers, independent learners, and thoughtful, responsible citizens who are collaborators and who respect themselves and others. The specific goal of education is for each student to explore and discover his or her own set of unique interests and abilities and to develop the specific knowledge and skills needed to pursue a fulfilling and sustaining career.

To realize these goals, both students and teachers must cooperate and take responsibility for their roles. Both the student and the teacher are necessary components of the classroom. If either one is missing, there is no classroom and there will be no learning. The responsibilities of the teacher and the student are different but equally important.

The role of the student is to acquire the knowledge and skills described by the standards of the courses they take. Students must construct their own knowledge by creating meaning for themselves. They must be prepared and available to engage with the material and with others in order to build on their prior knowledge and experiences.

The role of the teacher is to design and facilitate an active, enriching, and safe learning environment that provides opportunities for students to construct their own knowledge and skills and that guides students on this quest. Some components of such an environment with examples of how I have implemented or plan to implement them follow:

Active learning opportunities

Whenever possible, I design hands-on activities with a real world focus to engage students with otherwise abstract concepts. To illustrate the Central Limit Theorem, I asked students in my Fundamentals of Statistics class to draw several random samples from a population of test scores and to calculate the average score for each sample. All students plotted their results on the board to create a histogram of the averages. This exercise illustrated the Central Limit Theorem in a concrete way, which improved student understanding over simply asking them to read the theorem.

I engage students in homework or test review; I avoid just going over every problem. It is easy to watch an instructor do problems and to think you understand. But this is a passive learning scenario that does not give the students the practice they need. Instead I challenge students to evaluate their own work and to ask specific questions that will help them solve the problem.

Multiple Representations

I facilitate learning through a variety of methods so that all students have an opportunity to use their strengths to learn. In my *Fundamentals of Statistics* class, I assigned a research project where students chose a topic of interest to them, developed a research question, and designed a research study to answer their question. Students engaged with statistics in a real-world context as they conducted research and applied what they were learning in class to summarize and analyze their results.

Students have different learning styles and benefit from lessons that engage them in multiple ways. Mathematics lends itself well to a variety of representations such as verbal descriptions, diagrams, tables, graphs, and formulas. Graphic organizers provide a means for students to represent and organize information in various forms, which helps them process and remember new information. During my student teaching, one student who was an English language learner struggled with the different types of lines and their respective equations. To help him process and remember the similarities and differences of parallel, perpendicular, and coincident lines, I created a graphic organizer where students could model these three concepts verbally, visually, and with formulas. Not everyone took advantage of this, however, the ELL student did fill it out and proceeded to get every related question on the test correct.

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Building on prior knowledge

Prior knowledge includes knowledge and skills from prerequisite courses as well as new knowledge recently acquired in the current course. To assist students in recalling concepts or procedures learned in previous courses, I either write relevant formulas or definitions on the board for students to reference or I engage students in a short anticipatory set consisting of problems that use the required prior knowledge.

To help students navigate the new content in *Fundamentals of Statistics*, I provided a course map at the beginning of the class as part of the syllabus and course schedule. The map illustrated the "big picture" of doing statistics and showed students how each section fit into that big picture. I referred to this course map and to prior lessons to promote understanding of what we were doing and why we were doing it.

Collaborative learning opportunities

Collaboration is an important component to learning and occurs whenever students, with or without the teacher, solve problems or brainstorm ideas together. In teaching *Fundamentals of Statistics*, I incorporated workshops into my lessons where I encouraged students to discuss problems with a partner. I also encouraged students to work together on their research projects. They could help each other design surveys, collect data, and edit each other's graphs and written explanations. The objectivity that a peer brings to a problem is invaluable.

Expectations and Feedback

Students know what I expect from them through lesson objectives and rubrics. Each one of my lessons begins with an outline of learning objectives, which are written to the student in the format, "After this lesson you will be able to…" For projects and large assignments, students receive a rubric that details the project requirements and how the points will be distributed among them.

Students receive feedback from me in many forms. After a lesson, I may ask students to solve a problem relating to the lesson so I can verify they understood the material and address any gross misconceptions before moving on. I also provide solutions to homework and assessments and encourage students to compare their answers and ask questions during review. On graded assignments or assessments, I provide written feedback in the form of short notes about errors or student growth/improvement.

Motivating students

Real-world activities or word problem scenarios help students to see the relevance in what they are doing and can motivate students to be prepared and available. The research project I assigned in *Fundamentals of Statistics* allowed students perform real research to answer a question that interested them. They gathered and evaluated their own data in the same way a researcher would.

If students are unprepared, miss excessive classes, or otherwise seem to struggle with the material, I reach out by email or verbally in class to encourage them to come to class or to visit my office hours. One student in my *Fundamentals of Statistics* class was taking the class for third time. She had a significant amount of math anxiety so my mission was to get her to my office hours as much as possible. She responded whenever I reached out to her. I worked with her on her homework and research project, and she successfully completed the course.

Safe learning

I encourage students to ask questions and to be considerate when others ask questions. There is validity to every question. All students benefit from the answers or discussion generated from other students asking questions. The obvious can sometime elude any of us when we are learning a new concept or skill; it is okay to need a reminder or to need something explained in a different way.