

This lesson was one in a series designed by my colleagues and myself in TED 624 which addressed the fundamentals of Cell Biology. The instructional time was critical (see TPE 10) because in five classes, the students would discover the pioneers in the discovery of the cell, the organelles that form a cell and their functions, basics of cell metabolism, and my section, how cells associate to form tissues (Artifact E). The social environment (TPE 11) involves a creative way to build a model of a cell, and will be expanded on at the end of this reflection.

In my experience, students should be working from the time the bell rings for the start of class until the ending bell. This is facilitated by a daily warm-up, in this case having the students write the names of all the organs that they know. Students should know early on what the purpose of the lesson is, so that they get an idea of how the lesson fits in with the curriculum. Then demonstrations, modeling, and guided practice should take up the bulk of the class time.

Class time varies from school-to-school. I have taught in some schools with 50 minute classes and others with classes that last almost two hours. The order of the class components remains the same, but more can be covered in a two hour class. Two hour classes are excellent for laboratory science classes because many worthwhile experiments take more than an hour to complete.

Checking for understanding and independent practice are essential, but the independent work should still involve the teacher in his or her role as facilitator. Assessments can be formal or informal and can be varied so that students with different strengths can succeed. Closure is essential so that the students see that the class

objectives were met. There should be some additional exercises held in reserve for those students that finish their work early.

The social environment is critical if one is going to build a community of learners. In the case of this exercise, groups were instructed to build a cell membrane using marshmallows for the phospholipids, candies for the membrane proteins and strands of licorice for flagella. The students are encouraged to share resources (candies) between groups and after all groups have presented their work, they can eat their projects. Eating together, even if it is marshmallows and candy, has a way of encouraging socialization. Of course this cannot be done often, but those lessons prove to be memorable.

My group actually demonstrated the efficacy of this approach, only using sheet cakes without icing as the cell body and various sweets as the organelles. The results were spectacular, with the class forming a closer community after the exercise.

There are many other ways to build community within a classroom, including class-wide and school-wide behavioral support programs. However, any exercise that allows the students to interact in unusual ways is helpful.