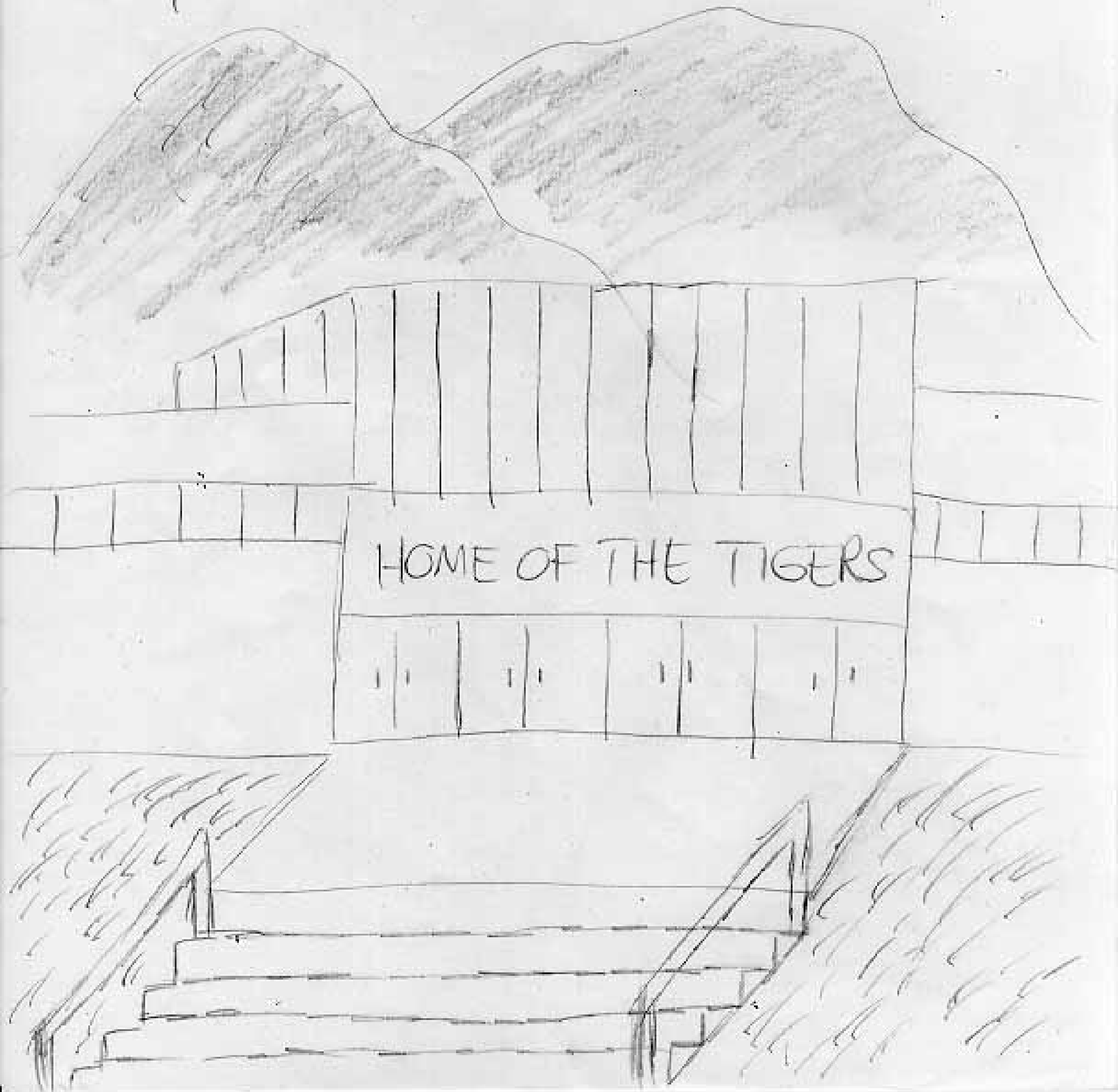
Observation Form

Name Timothy Powell. School SLO HS

Teacher Jenkins Date 1/28 Time 2:00 Class Observed None

Grade N/A Number of students enrolled N/A present N/A Subject N/A

My First View of SLO High School



SCHOOL CALENDAR

1998-99

First Day of School	September 9, 1998
Back-to-School Night	September 23, 1998
Progress Report and Attendance Profile mailed	October 9, 1998
Homecoming	October 30, 1998
Progress Report and Attendance Profile mailed	November 6, 1998
First Trimester Finals	December 1 - 3, 1998
First Trimester Grade Report and Attendance Profile mailed	December 11, 1998
Progress Report and Attendance Profile mailed	January 22, 1999
Progress Report and Attendance Profile mailed	February 26, 1999
Second Trimester Finals	March 15 - 17, 1999
Second Trimester Grade Report and Attendance Profile mailed	March 26, 1999
Progress Report and Attendance Profile mailed	April 23, 1999
Open House	April 27, 1999
Progress Report and Attendance Profile mailed	May 21, 1999
Golden Tiger Awards Ceremony	May 26, 1999
Black & Gold Athletic Banquet	May 27, 1999
24 Hour Relay	May 29-30, 1999
Third Trimester Finals	June 15-17, 1999
Baccalaureate	June 17, 1999
Graduation	June 18, 1999
Third Trimester Grade Report and Attendance Profile mailed	June 25, 1999

HOLIDAYS:

Labor Day	September 7, 1998
Veteran's Day	November 11, 1998
Thanksgiving Recess	November 26-27, 1998
Teacher Work Day (Friday)	December 4, 1998
Winter Recess	December 21, 1998-January 1, 1999
Martin Luther King Jr's Birthday	January 18, 1999
Teacher Work Day (Friday)	January 29, 1999
Washington's Birthday (Monday)	February 15, 1999
Spring Recess	March 29-April 2, 1999
Memorial Day (Monday)	May 31, 1999
Summer Recess	June 17, 1999

TRIMESTER BELL SCHEDULE

MONDAY THROUGH THURSDAY

1	7:50 - 9:05	1st Period - 75 minutes
2	9:10 - 10:20	2nd Period - 70 minutes
BREAK	10:20 - 10:25	Break - 5 minutes
3	10:30 - 11:40	3rd Period - 70 minutes
LUNCH	11:40 - 12:25	Lunch - 45 minutes
4	12:30 - 1:40	4th Period - 70 minutes
5	1:45 - 2:55	5th Period - 70 minutes

FRIDAY

TCT	7:50 - 8:40	TCT - Teacher Collaboration Time - 50 minutes
1	8:45 - 9:50	1st Period - 65 minutes
BREAK	9:50 - 9:55	Break - 5 minutes
2	10:00 - 11:00	2nd Period - 60 minutes
3	11:05 - 12:05	3rd Period - 60 minutes
LUNCH	12:05 - 12:45	Lunch - 40 minutes
4	12:50 - 1:50	4th Period - 60 minutes
5	1:55 - 2:55	5th Period - 60 minutes

Observation Form

Name Timothy Powell School SLO H.S.

Teacher John Jenkins Date 2/4/00 Time 2 25/PM Class Observed Microbiol

Grade 11/12 Number of students enrolled 26 present 24 Subject Microbiol

Objective of Lesson Connect bacteria growth w/ everyday life

Describe the physical arrangement of the classroom,

The class is arranged is small tables w/ 2 pupils per table in 3 columns of 5 rows

How does the arrangement of the room affect teaching/learning for this lesson?

The tables are designed to be mini lab benches w/ space alloted for working on experiments at their tables

What methods are used by the teacher for presenting the content of the lesson?

In this particular class session the teacher used an article about genetically engineered food to connect w/ a lab on microbial growth

Describe students' attention to the lesson. How does the teacher handle distractions?

The students initially start off working together on the assignment but as the periods draws to an end they become increasingly distracted

How do teacher/students use class time?

The teacher uses class time to direct and facilitate learning while the students work in groups to collaboratively exchange info.

What visual aids/manipulatives are used?

The students have fungi cultures growing and use these to help connect them w/ the subject matter. Students make observations and record details

How are students of different abilities addressed during the lesson?

Students were put into groups w/ the idea that the more proficient students could tutor the less proficient students

Describe what students are doing during the lesson.

As expected some of the students are more interested in ~~[illegible]~~ talking about social issues while other students in the group appear more focused on the tasks at hand

What are students to do in response to the lesson?

The students are to answer a series of question on a worksheet designed to assess their understanding of the article

What kinds of questions are asked/answered during class?

A student came up and asked the teacher to clarify one of the questions on his handout.

Describe student interactions during the class.

The student interactions are semi-cooperative. Some students are cooperatively sharing info w/ others are hardly communicating w/ their group members at all.

How does the teacher assess the lesson?

The teacher assesses the lesson informally by observing the groups. He will formally assess student knowledge w/ a test on Monday

How are you responding to the lesson?

My response to the lesson is to collect the article handouts and include them w/ the observation

Green Genes

A new gene-splicing technique brings the heralded agricultural revolution closer to reality

When conventional plant breeding collided head-on with genetic engineering—the revolutionary new technology of the 1970s—newspaper headlines reflected the industry's optimistic mood: "Green Genes!" "The Splice of Life!" "The Second Green Revolution!" Gene splicing promised to deliver a new breed of super-producing, disease-resistant crops.

But it shortly became clear that the world's hopes had been raised too high, too soon. The original gene-splicing techniques had been perfected only in simple, single-celled bacteria. Splicing genes into plants, organisms many times more complex, turned out to be much more difficult.

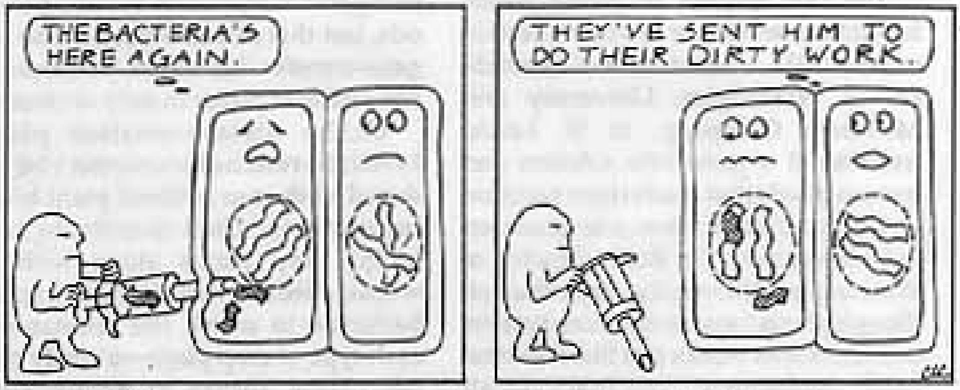
Genetic engineers had first turned to the organisms they were familiar with—bacteria. They recruited a special gene-splicing bacterium to shuttle genes into plant cells. But soon they found that this technique would work in only tomatoes, tobacco, and a few other plants.

It took a combination of electronics and biology to bring gene-transfer technology to the major food crops: corn, wheat, and rice. Researchers recently found that by electrifying protoplasts—plant cells with the cell wall removed—they could transfer genes into the cells without the help of the bacterium. If they could coax these delicate protoplasts into forming whole plants, the technique would allow them to engineer hardier, more productive versions of the world's most important food crops.

Recently, their efforts have met with some success. They have been able to grow genetically altered rice from a single cell to a whole plant. Their results may point the way to new rice plants that can resist drought, disease, and man-made herbicides.

In the early days of plant genetic engineering, scientists used *Agrobacterium tumefasciens*, a natural gene-splicing bacterium already well known to them. All they had to do was splice the candidate gene into the bacterium, a routine procedure by then. From there, *Agrobacterium* would take over, using a natural process to implant the foreign gene in the target cell.

Agrobacterium Method



Since the 1970s, genetic engineers have relied on a bacterium to help them splice genes into whole plant cells, those with an intact cell wall. But this technique works only in plants the bacterium infects: tobacco, tomato, and a few others.

Agrobacterium normally infects plants through wounds left on the stem by insects and other animals. "These bacteria have a special trick," says Dr. Philip Filner, director of molecular biology at Sungene, a San Jose, California, biotechnology firm. "They take a piece of their DNA and splice it into the plant's DNA." The inserted piece of DNA causes the plant cells to multiply abnormally, forming a tumor of cells. The foreign DNA also causes the cells to produce a compound the bacteria like to eat.

To put *Agrobacterium* to work, researchers remove the piece of bacterial DNA that causes the tumor to grow and replace it with the gene they want the bacteria to splice into the plant cell.

Imagine, for example, that researchers at a tobacco company decide they want to create a mint-flavored tobacco plant. They've already isolated and cloned the flavor gene from a mint plant. How do they go about getting the mint gene into the tobacco plant?

First, they cut a small disc from a tobacco leaf and soak the disc in a liquid suspension containing millions of *Agrobacterium* cells, each carrying the mint gene. The bacteria penetrate the cell walls of the wounded cells on the cut edge of the leaf disc, inserting the mint gene into the plant cell's DNA.

The researchers then place the treated leaf disc on a gel containing a mixture of nutrients and plant hormones. The recipe is specially formulated to make the wounded cells divide rapidly, forming a mass of cells called a callus.

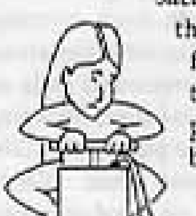
Next, the researchers transfer the callus to a special sequence of hormone mixtures, and tiny plants soon form on the surface of the callus. When the plants get big enough, the researchers select the mint-flavored ones, grow them to full size in the greenhouse, and harvest seeds from them.

Once the mint gene is in the tobacco plant's DNA, the change is permanent and hereditary—the mint gene is passed on to the next generation in the seeds. Now the tobacco company can plant these seeds and harvest the mint-flavored tobacco leaves.

Using the *Agrobacterium* technique, researchers have succeeded in transferring genes for both disease resistance and herbicide resistance—traits that are controlled by a single gene—into petunia, tobacco, and tomato plants, the guinea pigs of the plant world.

The first success in giving plants hereditary resistance to virus infection came in 1985, when a team of researchers at Washington University and Monsanto Company, in St. Louis, transferred a gene into tobacco and tomato plants that made them resistant to tobacco mosaic virus, a serious pest in both species. Dr. Roger Beachy, of Washington University, says that although plants have no immune system, this technique works just like a permanent, hereditary vaccination—all plants derived from the original plant are also protected from the virus.

The St. Louis researchers took an unusual approach: they copied, or cloned, a gene from the virus itself and transferred it into the plant DNA. Virus genetic material is enclosed in a protein coat. When the researchers used *Agrobacterium* to transfer the coat-protein gene from the virus into tobacco or tomato plants, the plants became resistant to infection by the virus.



No one is sure how this works, but Dr. Beachy's theory is that the virus coat protein produced in the plant cells may block all the available spots on the cells where an invading virus normally attacks and starts infection.

Researchers can immunize plants using traditional plant-breeding methods, but that can take years. The new gene-transfer technique produces virus-resistant plants in only six months.

Unlike disease-resistant plants, herbicide-resistant plants can't be produced with conventional plant breeding methods. Until recently, to avoid killing crop plants along with the weeds, chemists had to design a special herbicide to match the resistance of each type of crop plant—a costly process. Now, thanks to *Agrobacterium*, researchers can tailor-make many plants to fit one herbicide.

In 1985, researchers at Calgene, a biotechnology firm in Davis, California, used the bacterium to transfer a gene for resistance to Monsanto's glyphosate (trademark: Roundup), a widely used herbicide, into tobacco plants. Armed with this gene, isolated from a resistant strain of bacteria, the tobacco plants can survive an herbicide spraying unharmed, while nearby weeds are killed.

Unfortunately, the *Agrobacterium* technique works in only the few [illegible] that are naturally infected by [illegible] *bacterium*. And these don't include the crops that most of the world depends on for food: corn, wheat, rice, and other cereals.

Recently, researchers have focused their attention on finding an alternative to the *Agrobacterium* technique. Success came in March of 1986, when a team of researchers at Stanford University inserted foreign genes into corn cells by zapping the cells with a jolt of electricity. In the last two years, several labs using the technique, called electroporation, have been able to splice genes into cereal crop cells.

Specifically, scientists float protoplasts—plant cells stripped of their cell walls—in a solution containing nearly a million copies of the foreign gene. They then pulse 200 volts of electricity—almost twice the normal household voltage—through the solution for 10 millionths of a second. The el[illegible]ric shock opens tiny pores in th[illegible] [illegible]ll membrane, and the foreign gene[illegible] through them into the cell, when[illegible] combine with the plant's DNA.

Once electroporated, the delicate protoplasts are carefully cultured in a special mixture of nutrients and hormones. Protoplasts from the guinea pig plants rebuild their cell walls in a few days. Within a week, the healthy cells begin to divide, and eventually they regenerate whole plants.

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Unfortunately, the commercially important cereal cells proved to be more stubborn and failed to rebuild their cell walls. Without them they couldn't divide and eventually died.

This problem was far from new. For decades, scientists had been trying unsuccessfully to coax cereal protoplasts into rebuilding their cell walls. But recently, inspired by the great promise of electroporation, researchers have renewed their efforts, and their work has paid off. By January of 1987, research groups in England, Japan, and France had regenerated whole plants from protoplasts of rice, one of the world's most important cereal crops.

"This technology will probably be applicable to the other cereal crops within a few years," says Dr. Robert Erwin, Executive Vice President and co-founder of Biosource Genetics, a Vacaville, California, gene-resource company. And scientists hope that when the two techniques—electroporation and regeneration of whole plants from cereal protoplasts—are combined, the result will be the first genetically engineered cereal plants.

In the meantime, molecular biologists at Biosource and other companies like it are busy isolating and cloning genes with the potential to improve crop plants. When the gene transfer technology is perfected, these companies will be ready with an arsenal of useful genes to sell to other biotechnology companies.

So, after a decade of struggle, plant scientists again find themselves on the brink of a major development in genetic engineering. The hype and sensationalism of the 1970s have given way to cautious confidence. But only time will tell what new puzzles scientists will have to solve before the first prod[illegible] of this potentially revolutionary [illegible]ology appear in the marketplace.

—*Jennifer Watters*

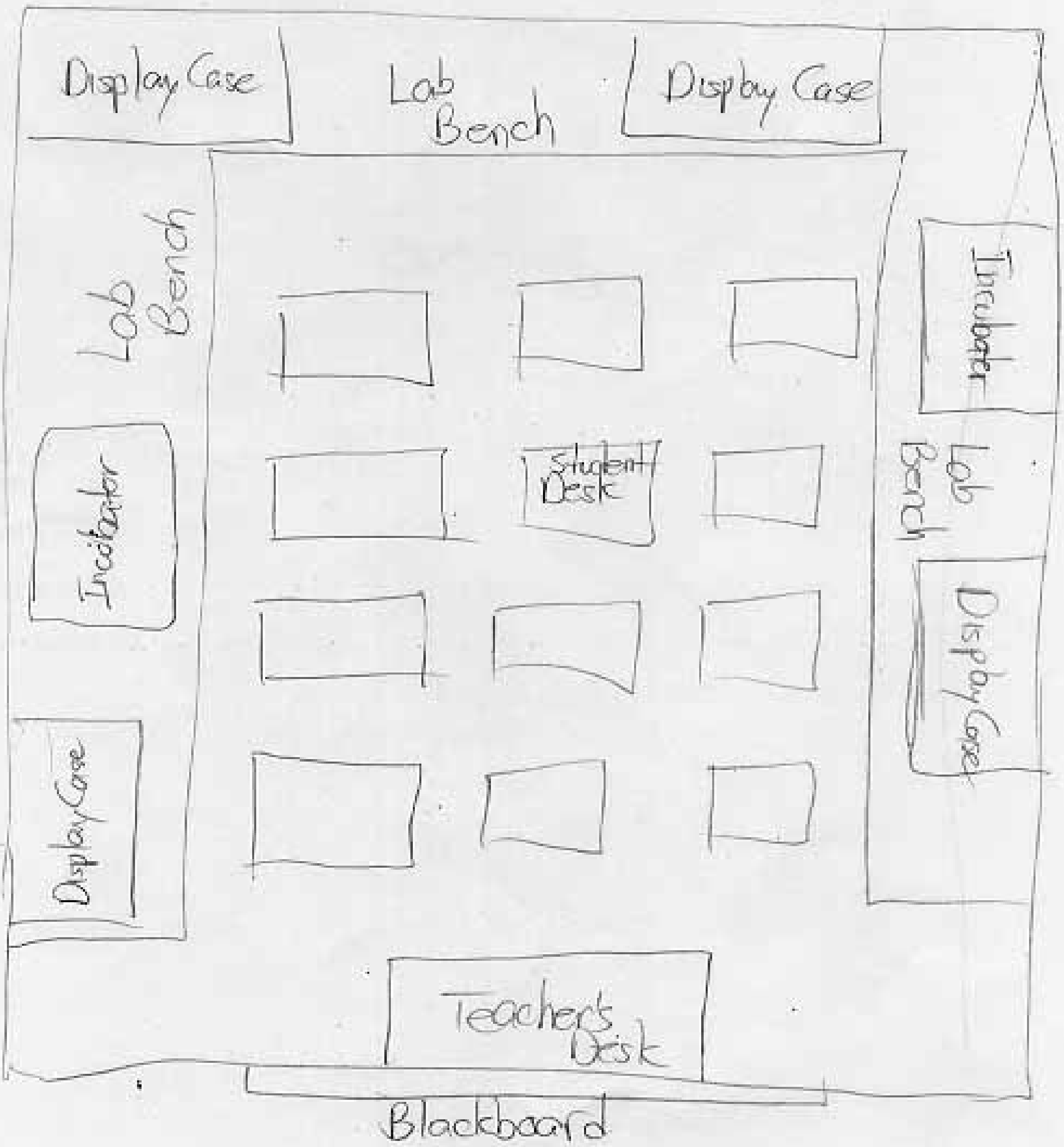
Observation Form

Name T. Powell School SLO H.S

Teacher Jenkins Date 2/11/00 Time 2:00 Class Observed Microbiology

Grade 11/12 Number of students enrolled 26 present 25 Subject Microbiology

Microbiology Lab @ SLO H.S.



2/18 As I entered the classroom I noticed that the atmosphere of the lab was intensely quiet. I whispered to the teacher and asked him if his students were taking an examination. As he nodded yes to me I quietly slipped to the back of the classroom and took my seat. I then began writing this log and making note of various items in the classroom.

On the whiteboard in the front of the classroom the teacher had made an agenda for the students to follow. The first items on that agenda was the quiz that all the students were taking. The next items consisted of the students working on an article related to the subject of Bacteria followed by info on a new mini unit and finally a videotape w/ the same Q&A for the students. I could see even now how the teacher had carefully planned out the period to maximize his students productivity in the classroom and keep them from getting bored by having nothing to do.

As the last student handed in his quiz the teacher collected them all and began reviewing the answers to quiz items and then explained the rest of the agenda for the class period.

The next period of the classroom was spent introducing what the next new unit the class would be studying — the Kingdom Protista. The teacher began by asking the class what was the number one killing agent in the modern world today. After taking several responses from students the answer turned out to be malaria and its causative agent was of course a protist.

The teacher then entered what could be described as a type of lecture period in which he presented various scientific info about the Kingdom Protista. As he introduced each point about the Kingdom Protista he made a small outline on the whiteboard while at the same time showing a transparency of the 5 Kingdoms each of representative examples. I noted that it was at this time that student attention seemed to wane. The teacher made attempts to curtail this by continuing to ask questions, particularly directing them at those students who were more prone to extraneous conversation. In the end I could see what Dr. Herter meant when she said that the lecture method is the least effective method for communicating w/ high school students.

The last part of the class period was spent watching a video on the Kingdom Protista. Although the video was not particularly exciting, I could see how the teacher used the video to re-emphasize those points he had brought up during the "lecture period". The teacher also gave the students a handout w/ questions to fill in from the video and would pause the video at certain points to have students review and answer the questions. This activity lasted up until he dismissed the students for the day. One interesting note was that the video kept everyone attention (including mine) such that hardly anyone took notice of how much time had passed and thus were somewhat surprised when the end of class came.

Timothy Powell
EDUC 300

Reflections on EDUC 300 Observational Experiences

The experiences I have gained while observing Mr. Jenkins science classrooms at SLO HS have provided an invaluable part of my education for EDUC 300. The observational experiences provided me with an up close and personal view of the classroom from the unique position of a neutral observer. Though I am very familiar with the classroom setting for the point of view of a student and even have a little experience teaching others, my observations from this experience have helped me to appreciate both sides of the classroom spectrum.

One thing in particular that has stood out during my classroom observations are the powerful dynamics between the teacher and the students in the classroom. While I had always assumed that the teacher/student relationship always flowed from the teacher to the student, I was quite surprised to observe just how malleable that flow was. In many cases I directly observed how the teacher solicited feedback from his students in order to have them teach the teacher. Having the students take the practical knowledge of the subject and then reconstruct it in a way that was both meaningful and applicable to their lives is what enabled them to truly grasp the subject at hand. The final logical step was simply to have them explain it in a concise and structured manner so as to help them and their fellow classmates retain that knowledge

In looking back on my experiences observing Mr. Jenkins science classes, I am filled with a sense of both intrigue and purpose. Though I have known for some years now that I wished to teach Biology in a public high school, the experiences I have gained from my observations have helped me to solidify my goals. I am now more resolved than ever to pursue my career goal of teaching and will utilize some of the techniques I observed from my experiences to motivate my students to achieve their very best.