Field observation report
Marilyn Havick
Walter Payton High School, Chicago Ill.
http://www.payton.cps.k12.il.us/home/

Submitted Betsy Price
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The school is on the north side of Chicago in an area that is changing from lower socioeconomic to the presidgeous place to live. This was not always true about the area. About 40 years ago Chicago tore down the shantytowns of the predominately black part of town and built large housing projects. When they did this they also tore down the neighborhood stores and businesses. This experiment to eliminate slums and poverty was a huge failure. The concentrated number of people crowded together only concentrated their problems. The crime and poverty rate escalated. The city is now tearing down the projects. Unfortunately for the poor, the new buildings and renovations going up are unaffordable. The area is now attracting people back to the inner city, which is the goal of the city. Some of the projects remain that there is a sizable population of blacks and lower socioeconomic people.

Walter Payton High School was built as a magnet school for the academically upper level and exemplary students. The students have to apply for admission and it is highly competitive. There is an attempt to mirror the minority population of the city. Forty four percent of the students are Hispanic and Black. The rest of the students are White. Of the minority students, 10 to 15 percent of them are from the local projects. The students are chosen on their perceived ability to excel in an upper level school but most need remedial work to keep up with the academics. The school also has a small program for the visually impaired students. There is a large population of Hispanics and a special center is maintained to help them acculturate to the rigors of a fast paced school.

Chicago schools have a testing program that evaluates the students and the teachers. Schools each get a rating and an evaluation that provides teachers and administrators with goals that then need to be met over a given period of time. Students who fail math or reading must attend summer school that is named “a bridge program.” The students at Walter Payton don't study for the tests. The students are good test takers. One surprising factor is that the students from the projects do not take the test. (http://wwwcsteep.bc.edu/ctestweb/chicago/chicago.html) (http://www.igc.apc.org/solidarity/atc/82Edith.html)

The school is only two years old. The design and construction won an award by Midwestern Construction magazine as the best overall project in 2000. (http://www.fwdodge.com/dcp/MWCN/MWBestProjects/MWBstPrj-all.html) The school was built to be a showplace of schools and state-of-the-art technology. The first illustration on the web site about the technology shows a picture of the security system that is operated by an armed guard at the entrance of the school. (http://www.uvrentals.com/2edu/2ed117.asp

The school was named after a popular local sports hero. It is the newest edition to the other two academically elite schools of the city. Because it is new and unproven, the school has not had the

success as the others to attract Chicago's finest. Therefore, they do have more of a mix of regular students than one would suspect. That will probably change quickly in the next couple years as the school builds it reputation.

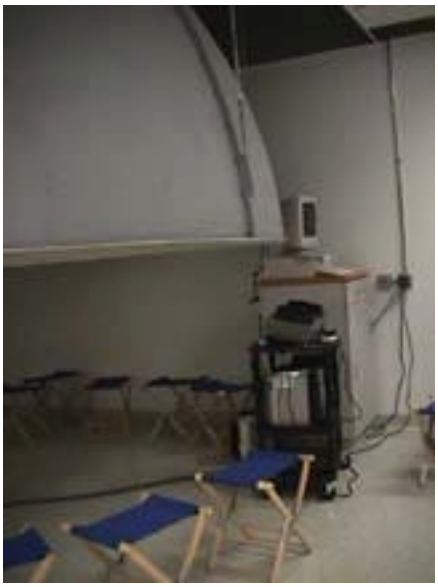
The teachers who planned the school academic design decided that each year they would admit a new freshmen class and enough staff to accommodate them. The first year they only admitted freshmen, the second they added another freshman class. Because they are only in their second year, the school seems very open and airy.

As they add the next two freshmen classes, they will experience overcrowding. The teachers believe that part of the successful discipline is that the students all use one common staircase in the center of the school that can be easily monitored. The teachers have some apprehension about when the next two classes are added since the students will be more spread out using staircases that are not as easily policed. They staircases are on the outside of the two ends of the building and the students are exposed to the neighborhood through the glass walls.

Security is tight in the school. Students are required to enter at the main entrance that filters them through a metal detector. Backpacks are permitted, but are subject to search at any time. There is a very serious guard who checks bags and admits visitors. No one who is not chaperoned by a teacher is allowed to roam the halls between classes. This is a very strict rule.

The biology and chemistry rooms are situated in one section of the school on the first floor. Upstairs on the third floor there is a very large greenhouse. The large windows face the afternoon sun and during the summer most of the plants cannot survive the heat. One teacher has taken a fancy to the greenhouse and spends most of her free time there. When I visited, there were power tools scattered around. The plant lady offered a course where the students made shelves for the plants. There was a large room in the back that had artificial light where the students could conduct fast plan experiments.

There was a planetarium next to the greenhouse. It was a large room with high ceilings and no windows. To enter the room, the teacher had designed a series of curtains similar to what you would find in an old dark room. There was a large dome for the star machine to project the images. Chairs were scattered under the dome. Even though the ceiling was high, the supporting beams were huge. Because of this, the dome could not be hung very high. The students had to duck under the edges of the dome to get in. Marilyn though they could cut through the beams to raise the dome to its proper height, however the massive size suggested they were major support beams. I don't think anyone is going to cut anything. They will have better luck recruiting shorter students.



The Teacher

Marilyn is the head of the science department and has release time for two classes. She currently only teaches two classes a day. Despite this reduced schedule she is at the school everyday from 7:30 a.m. until 5 p.m. She takes her job as department head seriously and spends much of her time planning and working with students. The first day I was there Marilyn was preparing for the next evening's induction of new members to the National Honor Society. It was a new chapter and Marilyn was very proud to have lots of new members. She had her storage room filled with snacks she purchased for the ceremony. The next day she worked from 7:30 a.m. until after 10:00 p.m. that night.

The school district spared no expense to recruit the teachers. All were new to the school and most to Chicago. They sent teams of recruiters to exemplary colleges in the United States. The newest chemistry teacher was recruited from the masters of education program at Harvard and was a Yale undergrad. Marilyn was recruited because of her past history of producing fine scholars from the inner city kids where she last taught. She is a dedicated teacher. For example in her other school she wanted to do biotechnology with her students. She would pile the students in her car and drive over to a local college to do the experiments. She said it took three or four trips each way.

The students react well to her. She is no nonsense and serious, until they take out the microscopes. Then she becomes just one of the students going from scope to scope. She is use to doing hands-on activities with the kids. Like Gena, she makes the students responsible for gathering equipment and setting up the experiments. She just supplies them with a list of materials they need. Most of the labs conducted are open ended and inquiry. The students know the drill of writing down their hypothesis and setting up an experiment with controls.

Marilyn's classroom is well organized and extremely neat. She likes to do hands-on labs and activities. On the walls of the second floor was evidence of last week's activities when the students turned the second floor into a timeline to represent evolution. In the back of the room, the floor had the taped outline of the murdered person for the forensics class.

This is what is on the school's web site

"Ms. Havlik has spent her career teaching at Chicago's Kenwood Academy. In 1996 she received the National Association of Biology Teachers' Outstanding Biology Teacher Award. She has received grants from both the Woodrow Wilson National Fellowship Foundation and Mellon Foundation for Advanced Placement Biology. She serves on the Awards committee of the Chicago Public School's Science Fair. In addition, Ms. Havlik is an Editor for Behavior Matters curriculum, a collaborative project in animal behavior involving the Brookfield Zoo and Northwestern University.

Ms. Havlik and her biology class are featured on the Learning and Teaching Evolutions video produced and distributed by WGBH Public Television. In this program one can watch Ms. Havlik lead her students through a simulation of the Hardy-Weinberg Principle to develop their understanding of population."

The Classroom

The students sit at clusters of bench style tables with high chairs that accommodate four students each. The students could stand, however when they did the chairs had no place to go, but in the pathway between clusters. The classroom was reasonably well designed however the architects didn't plan on the large class size. After the school opened, they had to add an additional cluster and floor outlets. This made the arrangement of desks a bit haphazard and the outlets not quite under the middle of the cluster. The rooms were meant to be spacious, but the added cluster made them crowded.

The clusters were made to run the wires of electrical equipment through the center of the desk down into the permanently placed floor outlets. There was a hub for four computers at each cluster and enough computers for each student. Although the wires did not extend beyond the clusters, the wires that ran down the middle were impressive. The distance from the working space to the floor outlets was long. Because they added an additional cluster, the outlets and hub did not align with the center of the desk. When the students moved the equipment around many of the computers

became unplugged from their Internet connection. I quickly learned when a student was having problems to tell them to check their connections. Even with so many outlets, Marilyn managed to trip over some wires as she circulated around the room.

Three sides of the room are storage facilities for equipment. All of lab equipment was purchased new and there was plenty of it. There is an additional large storage area that also serves as an additional office. It has one teacher computer that Marilyn lets students use during the day. They could come in at any time and it is in use during the free periods as well as before and after school. Marilyn hardly ever looked up when a student went into the room, but she always seemed to know they were there.

Marilyn has a teaching computer with printer at her desk in the front of the room that she uses the most. She has full view of the students and the two doors. The rolling cart for the computers is large enough to hold 30 computers. (Most "classroom" sets of computers I have seen at the trade shows are 15 to 20 computers. Students have to work in pairs.) The designers left plenty of room in the entranceway.

There is a microscope and television screen to one side that the students could use. This came in handy for the visually impaired students who were integrated into her classroom. There was the now predictable classroom computer that no longer worked set up on the counter.

Marilyn has been using the Biology Place for about 4 years. She also has attended the usual run of biotech seminars at Cold Spring Harbor and other universities. She has been an active member of the National Biology Teachers Association for many years.

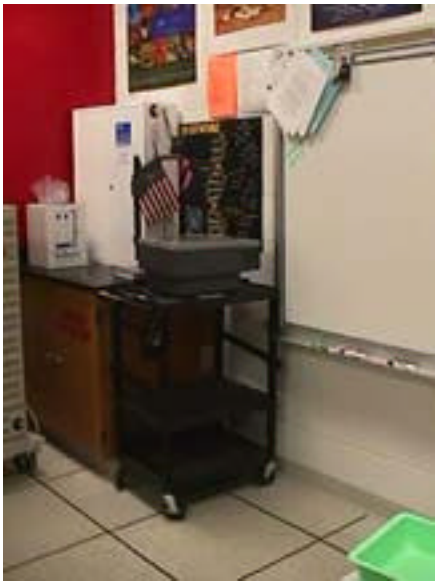
The Computers

The school has three full classroom sets of Compaq e500wireless laptops that was running Windows NT. They were battery powered so the students just unplugged them from the rolling storage unit. The teachers reserve the computers with the school's computer technician. Each morning the computer cart is rolled into the classroom. The technician and teacher conduct a ceremony of handing over the computers. The teacher inspects the cart and the computer to assure she/he has a full set of computers. The tech hands over the keys to the doors and the ceremony ends. At the end of school, the tech reappears and a reverse ceremony is performed. Although there are sufficient computers for all the science teachers, the computers are stored in the tech room.

The computers are fast but it still takes five or more minutes for the students to log on through the password system to get on the Internet. All the students have an account and they must abide by the school's computer rules. One student was not able to log-on to his computer. I went over and asked him

what was the problem and he said he was disabled. Fortunately, before I gave the lecture that disabled meant he was more challenged than other students and it didn't mean he was not able to do things, I realized his account was disabled - not him personally. The week before he had broken the rules and sent a highly disagreeable email to a female student. It was reported to the authorities and for the next two weeks he would not have access to his account. Even though he knew this, he continued to try to log on. He finally gave up after about 30 minutes and joined the student next to him.

- There were three teacher computers in the room. One stuck on a shelf for lack of a better place, one at the teacher's desk, and one in the storage room.
- One overhead
- LCD projector
- Two printers one color
- Electronic computer and television screen



The School Schedule

The students are on a unique schedule that promotes hands-on learning. On Monday, the students attend all their classes for 45-minute periods. On Tuesday and Wednesday, they attend classes on a block schedule. Thursday is only a half day for students because they have special periods where they can opt to take innovative and specialized classes. The teachers can offer any type of class they like and the students sign up for them just as they would college classes. This term Marilyn offered a course in forensics where the students learned biotechnology. At the end of the semester, they used their knowledge to solve a mystery of who killed the science teacher. Friday the students again attend all classes for 45 minutes. When they have days that have assemblies or days off, that day off is treated as if it were the club day. That way, the students never miss regular classes. The week that I observed was a shortened week so I was not able to see how the club day worked.

This type of schedule is perfect for Exploring Life. This unusual schedule comes from Howard Gardner's key school plan. (Key School in Indianapolis http://www.ips.k12.in.us/mskey/ and Howard Gardner Project Zero at Harvard University http://www.pz.harvard.edu/Default.htm) Gardner and other researchers designed these magnet schools in the 70's and 80's to provide teachers with time to vary their teaching style for students' individual differences in learning. One of the most successful was the Key School in Indianapolis. Monday is for lectures; Tuesday and Wednesday are for hands-on activities. Fridays are for review and closure. The format was proven to be highly effective, however it has not produced the systemic change that was predicted to traditional public schools. Because the Walter Payton School began afresh, it was able to initiate some innovative teaching styles.

Observations

The students were doing Chapter 8. The first day was to log on to the site and do the activities prior to the next day's lab exercise. When the students entered the room and saw the computers they immediately pulled them out and began the log-in process. Because the log in procedure took four or five minutes, the minutes were tolerable since the students were also busy settling into the room. When things settled down and Marilyn started the class, most of the students were on line.

There were three visually impaired students who were mainstreamed into the class. The students took turns throughout the year sitting next to them. The person sitting next to them were automatically their classroom aid. The students did the pretest. As soon

as the "classroom aid" finished their test, they read the test to the visually impaired students and marked their answers.

After they completed their pretest, they turned to their computers to do the lessons. Most of the students were on task immediately. There was the faint sound of music coming from a computer in the back of the room. The sounds disappeared when I walked to the back. The music lovers were also the ones who tried to answer the questions before they read any of the material.

While the students were reading, Marilyn handed back to the students the research papers that they turned in the week before. When the students got the paper, they usually abandoned the computer to examine their grade. A couple students reached into the desks and took out calculators to calculate their cumulative grade. All the papers were computer generated however many did not use the spell check because they had misspelled words for which they were marked down.

About this time some of the students began to have trouble with the computers. Some of the activities wouldn't work. When I looked at the first computer the students were using Netscape. When I told them the site wouldn't work on Netscape they said they always used Netscape because the site didn't work well with Internet Explorer. This was very confusing. As with all the other computers in every school the lack of consistence made the solution difficult to fix.

About then the bell rang. The students hurried to get out. Before they could leave all the computers had to be in their slot. As soon as everything was in order, they were allowed to leave. This routine was familiar to the students and they hurried the slackers on so they could get out. One student knocked over a chair and a panel flew off the desk. He quickly put it back together and left.

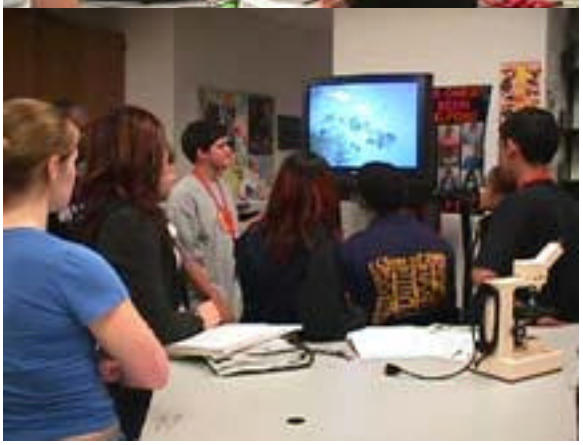
After the students left, I worked with one of the errant computers to determine what the problems were. I downloaded the newest version of Flash and Internet Explorer worked fine. However there was no change with Netscape. I then downloaded the newest version of Netscape and then neither of the browsers worked.

The trouble with the computers took most of my time. Because I was there, Marilyn let me work with the computers while she worked with the students. They were to do the chapter to prepare for the lab the next day. Before she left, she asked the students to bring in pond water. Since they were coming from all over the city, she knew they would get a variety of organisms from different ponds. She strongly believed that the students would get more out of the lab with pond water than they would if they used organisms from Carolina Biological Supply. The kids who remembered to bring in the water were rewarded with 25 extra points.

The next two days the students began dropping off pond water as they entered the school. I didn't go to see, but I wondered what happened at the metal detector when the students brought out their pond water samples. Each student labeled where they got the water and their name.

At the beginning of class, the students were to get out the microscopes, cover slips, and slides. They could get out any other equipment they though they might use. The students seemed comfortable with this and did it quickly. Marilyn did not give them any written directions. The students just had to pay attention to her instructions. Marilyn asked them to begin planning an experiment to determine what types of conditions were optimal for the organisms. They wrote this down on a piece of paper. Marilyn walked around the room making suggestions for how they could improve on their experiment. Then the fun began when she asked the students to draw the organisms they found in the pond water.

It was slow going at first. The students knew how to set up the experiment; they had trouble with simulating abiotic factors. Marilyn had to do some coaching. Some of the students were very challenged to focus the microscopes. When I stopped to help some, they knew the procedure of using a less powerful lens first and then progressing up until they had the organism optionally projected. However they had trouble determining what lens was the one they should start with. To increase the momentum, Marilyn hooked up her microscope to the television. The students would go over to the television to see what they should be seeing and, using that as a guide continued to search in their water.



As students began to discover creatures there was more motivation to see what they had in their water. When a student found an organism they would call out for the rest of the students to see. Students would abandon their microscopes to run over to check out the new organism. Although there was a great deal of moving around, the students were under control. When things began to get too noisy, Marilyn called the organism watching to a halt and asked the students to place their pond water in the conditions they described in their experiment.

Some students put their water directly under lights, some hid them in cabinets, and some put them on a heating pad. They were all quite inventive. Friday and Monday when I was not there they were going to check out how the abiotic factors affected their organisms.

Students comments on the web site

- I used the web site to do my homework.
- I like the web site better than a textbook
- I never read the regular textbook except for studying. I did read the exploring life textbook though.
- I like the textbook rather than the web site.
- I like the pictures on the web site. (Pictures means that they like the interactives.)
- I use the web site rater than the book for homework. I don't like to take the textbook home.
- This is more interesting than the textbook we usually use.
- Getting the right answer on the questions helps me learn because I can go back to the picture and see what my thinking was.
- Getting the right answer makes you not wonder. You can check your answers right away.

Notes on the computer problems

All the schools were having the same problem so I was able to figure out what was making some computers work and others not. The new versions of the plug-ins were all compatible, however not with a combination of new and old plug-ins. When computers go wrong, it creates discipline problems with the students who have been interrupted. The teacher must turn the attention to the computers and not the students.

This particular problem could easily have been avoided if all the teachers had one place to report symptoms and someone to figure out the problem. What needed to be done was the computers re-imaged to get rid of all the various versions of plug ins. Then the new versions of the plug-ins needed to be downloaded. This seems like an easy task and it is. The drawback is that it is time consuming.

At the NECC conference, I learned that most of the schools are adding software so a task like this can be completed over the network and done automatically. This is not going to happen in most systems until after Exploring Life is well into the schools. Until then, this type of function will have to be completed manually. For a classroom set of 30 computers like Marilyn's it would take almost a day to do. However in Marilyn's case, just doing that to the 30 computers is only 1/3 of the time. Because there are three rotating classroom sets, this would have to be done to all 90 computers. Now we are talking about a large chunk of person hours. None of the systems people I met with could have taken on this task in the middle of the year. The reactions of the teachers when the problem occurs convinced me that this type of problem could discourage even the most computer savvy teacher from using the program.

<u>Homework</u>

All of the students had some sort of computer access. Unlike rural districts, fast Internet connections were available to most students. There is an exception of the project students. Not too many years ago, the cable and phone companies would install new connections into the

individual apartments. The crime rate was too high. The workers would not go in and the cable company's insurance companies didn't want them to go. As the projects shrink, this may change if not already. The school had after hours access to computer labs for the neighborhood students.

System Person Interview

Q. What is the priority for fixing computers?

A. First we maintain the server. If it is down everything is down. Then we would do teacher computers and last is the student computers. The central office takes care of most of the administrative computers and those used for payroll.

Q. How many techs do you have for this school?

A. One. Me. We have some of the duties covered by the teachers. One of the physics teachers takes care of the web page. Another teacher does some of the software.

Q. What training do you have?

A. I took technical skills courses from a local tech school in Chicago. I also took some special courses a year ago to update myself.

Q. How do you decide who gets the rolling computer carts?

A. We have three carts for sciences and the teachers just reserve them through me. Havick almost has her own cart she reserves them so much.

Q. How do you keep the plug-ins current.

A. Havick can download her own things. Every summer I re-image the computers and update the software. We refigure all the students accounts then also.

Q. What information would you need to know as a systems manager to keep up with Exploring Life?

A. FAQ's would be helpful. Also the common errors that I would run into. We also will have more content filtering. The main office will provide the program for that. I don't know what will happen then.

Q. The students took a long time to log into their accounts. Is this common?

A. We have four servers that we use in this building. I don't know why it would be so slow. The students have to log into a secure domain. We have an acceptable use policy. If they break it, we need to be able to cut off their accounts. Most of the students don't use their email accounts here; they use Yahoo or one of the other free accounts. We have over 600 accounts. Probably at the most only 10 of those are disabled.

Q. Do you have enough money to maintain the equipment that you have?

A. No In the beginning the start-up budget was very generous. We purchased all the wireless laptop computers. Now we don't have enough funding to replace the batteries when they go down. These computers are waiting for new batteries. They don't last very long and soon we will have to replace all the batteries. How we are going to finance that I don't know. We are going to buying the laptops that run off the power cord, not the batteries. The ones with the power cord are easier to maintain.

Right now all the computers are under warranty so they get fixed for free or just for labor. The computer company technicians do the work. Next year all the warranties will be expired. Then we will have to fix them with our own money and technicians. We have over 200 computers in this building. We won't be able to keep up.

Q. What will happen when more textbook companies begin to use program like this were students use computers everyday.

A. Right now every department here uses computers. Some teachers use the language labs and others use the carts like the science departments have. We took a survey and about 80% of our students have computers at home. But now we only have 500 students. Next year we will have 700 students and our number of computers won't change much.

Lab Review

Marilyn sent in her lab survey, however it came to me garbled. She couldn't find it on her computer so she gave me the following verbal review:

I really liked the labs. Most of the labs come from the BSCS books. They are not new, but they are the favorites.

Q. Many of the teachers didn't like the biotech experiments. Did you like them?

A. Teachers need to get involved with local universities. I took my students to the local college to use the biotech equipment there. We would pile in my car. Sometimes it took three or four trips to get all the students there, but we got there. I am a genetics freak. This high school has all the equipment. Teachers should do biotech. It is not hard. Lots of teachers are still doing dissections. I call them mutilations. If teachers would just practice using the biotech equipment they would feel more comfortable using it. The kids love to use the pipettes. They get really excited.

In my forensics Thursday club we used biotech with a who done it theme. We did electrophoresis. When I was working on my Masters degree I took genetics. In 1986 or 1987 I took the Argon Lab sponsored by Cold Spring Harbor. The first time I did the experiments a parent came out with the equipment. EdVotech has a cart that has all the stuff you need to do

experiments. It is in the comfort level of most teachers. Cold Spring Harbor web site will give free sequences. The University of Arizona has a karyotype that you can download.

I tried the respirator lab. It doesn't work. I used Wisconsin fast plant seeds and it worked.

I really like the labs. They are the best of all the labs I use.

Q. How are the students doing with Exploring Life

A. They love to do it. They also like to read the book. Most of the students are getting the questions correct. The illustrations help them remember. The picture of the farmer. They remember that. The peanut experiment picture helps them remember. The students are not cheating by memorizing with pictures. The kids have to read the book to get the full explanation. If the teachers are enthused you know they will turn-on the students. The students did higher than I would have expected on the test, but my test may be harder than the one they took. Tests don't have to be vocabulary. I like the tests because they are not just vocabulary.

Is there going to be biochem and energy flow in the book? They don't have any pyramids either. (Referring to the cycle of life pyramids.)

The kids relate to Exploring Life more than the other books I use. (BSCS) Do you think they are going to do the single chapter idea? The students like the single chapters because they think it is achievable. Weight is a detriment to textbooks. They don't like carrying the heavy books. Some of the kids have developed sever back pain. Our lockers are not big enough to hold all the books they need for a day.

The kids were using the web site at home. After the kids found out that others were using it all of them started using it.

Visually Impaired Students

The school had a program for visually impaired students. They were picked because they are bright students but their handicap is severe enough that they need assistance. They were marvelously well adjusted and outgoing. They behaved socially very much like the other students. During the class, one of their aids would come in to check on them. At one point the aid noticed that one blind student was letting a student do something for him. The aid pulled the student aside and reminded him that he could allow them to help, but not to do.

The blind students had enough vision that they could see movement and large objects. They were not able to do much on the laptops in Marilyn's room, however they tried. The lab experiment was a success because they were able to use the microscope on the screen. One of the regular students or Marilyn focused on the organisms. The blind students were able to see them on the screen.
During a break, I went with the blind students to their room or "center". There was a large room with clusters of high lab-like desks similar to what Marilyn had in her room. There was a

smaller room with specialized audio-visual equipment. I asked them to show me what the web site looked like on their specialized computers.

One computer had a software program that read text on the screen. It was able to read the web site except for the text on graphics. It must read the html script. On the same computer they could magnify the screen so that they could read the text. Unfortunately, the magnification was so large, that the pictures were completely lost. When the reader was on, they couldn't move the text fast enough to keep up with it. Unfortunately, they were not able to use the computer to read the web. There was a possibility that the reader could be useful for students who had slightly better vision. It would also be interesting to determine if the reading software could be used for students with other disabilities or those who English is their second language.