

## **A Reflective Portfolio: Teaching with Technology**

### **Teaching Philosophy**

I have been involved in teaching for almost 30 years. I taught every grade from 4th thru college. Over that time, I've been gradually developing my educational philosophy. I have taken into consideration not only my student's education but my own as well, I am a perennial student.

My philosophy consists of a few things, First, "All people can learn". It sounds simplistic, however, as I have gone through life and met those who really struggle with what they are being taught, it was not for their lack of trying. This just means I have to adapt my strategy. I have often told my students, "If you have a question, ask and if that question has been asked, already ask me again. I will continue to work with you until you get it." With patience I found, all people can learn.

We tend to remember two types of teachers we have had in the past. The good and the bad. When I was in high school, I encountered a teacher that to this day I have trouble classifying. I will never forget the day he threw me out of class while saying, "You are too stupid to learn! Get out!" Since I started my academic career, I am constantly reminded of that day. I promised myself from the very start of my career 30 years ago, that I would never do that to anyone. Patience is important when dealing with any student, I guess my former just didn't have any with me.

Second, "A person will not learn or understand something until they are ready." This is when that "Ah ha!" moment occurs. I remember it clearly happening to me. I went through high school doing miserably in math. I scraped by. When I decided to take some courses for my Masters' Degree in Science. I remember sitting in a Physics class and the Instructor, who happened to be explaining some mathematical equation suddenly switched some numbers around while he was solving the problem. My hand shot up and I asked, "You can switch numbers like that?" He answered, "Yes!". It was

as if a flood gate had opened. It made sense. All those years I had spent suffering through Math and now at 35, it seemed so simple. I have since taken other math classes and taught myself what I need to know.

Every student that I have, will eventually understand what I am teaching. It may not be today or even this semester, but it will pop up somewhere in their life because I believe a person will not learn or understand something until they are ready.

Third, I make it clear at the beginning of every class I teach. I tell the students, "Just because I stand in front of you, does not mean I know everything. I will learn just as much from you as you from me." We don't know what knowledge students bring to the classroom. I only know what I bring. If a student knows more about a topic, it can add to my own knowledge and I will allow them to pass on their knowledge to others. I am not the type of teacher that looks at my knowledge as complete and doles it out as I see fit.

Last and most importantly, we are all the same just our ages and backgrounds are different. I am no better than anyone else in the room. I have had my share of professors who made me feel inferior because they had their degree and I knew nothing. Being fair to all, is something I strive to do and be, even if a student is not fair to me.

### **Successful Lessons**

I have found that the best lessons I have had are those that involved a hands-on experience. The one that really stands out in my mind, is one I like to do every time I teach "Introduction to Physical Science (SC111). It involves Toys.

Prior to the activity we discuss the concept of a thought experiment. It is a fairly simple idea. All you need to do is to start with some problem that you wish to solve. In many cases it cannot be solved because the equipment needed to use in the actual

physical experiment is inaccessible or has yet to be invented. Take Galileo for example, he wanted to understand the nature of motion. He thought that if a ball rolled down a ramp, it would continue to roll indefinitely as long as it was unimpeded by some obstacle. He also had some other ideas he thought about in regard to motion, some of which I try to have the class prove. As part of the discussion, the students must think about what Galileo was involved with and try to draw their own conclusions by doing their own thought experiment. I would ask them if they thought Galileo's conclusions were correct?

After the discussion and coming to consensus, the students are broken into groups of four and given a set of "Hot Wheels", cars and tracks. They usually get excited about this because they may have played with them as a young child. I also give them very specific instructions on how to set up the tracks in three different positions, each position for a different part of the activity. They are to observe what happens record data and draw conclusions to what they have done and observed, while I walk around the room to assist with the set ups. I do not help by giving advice or confirming what they concluded is correct. At least not at this point.

When all the groups have finished the activity, returned all the materials and returned to their seats, we discuss each groups conclusion. I solicit from each group their experiences during the activity. In particular, I ask what didn't work and why do they think it didn't work? At first, I listen to their tales of frustration with the setups among other complaints. This is when I turn it around and explain that Galileo had the same type of problems they faced and that is why he did the thought experiment in the first place. I follow that with the question, "Did Galileo come to the right conclusions?"

Galileo knew through his thought experiment that under the right conditions it would prove to be true. From his observations and his thought experiments, Galileo developed the concept of inertia. Isaac Newton later built upon Galileo's ideas and developed his

Laws of Motion. Once the students came to an understanding of what it was all about, they would generally respond in a positive way to the experience. It would become clear to the students, why there is a need at times to use thought experiments. Just as a side note, many have said in the past that they had fun.

### **Unsuccessful Lessons**

The lessons that tended to be the least successful when I first started at FIT were those that had two problems in the planning. One is the length of the classes, which are 3 to 4 hours long. Unfortunately, that is out of our control. The other problem is that I had a preconceived idea that the classes should be all lecture. After all, that was my college experience back in the 70's and 80's. This problem seemed to be magnified especially for evening classes especially when heads would start to bob up and down from weariness.

I came into the college directly from teaching 25 years in the NYC Public School system. Each day we were expected to keep the students engaged the entire time they were in front of us. Teachers always had a fear that someone of authority would walk in on you unexpectedly, so you made sure the students were continually engaged. I was no exception to the rule. Teachers were also expected to complete everything the student needed to know for standardized testing, In my case the NYS regents Exam in Earth Science. This idea had stuck with me for a long time and it affected the way I initially handled my classes at FIT. It took a long time for me to adjust to the differences in what was expected.

Because of my previous training, I would lecture for almost the entire time and would stop to take a break when I needed it. After a short time, I became a "Power Point Whiz Kid". I would spend hours putting them together, looking for appropriate content and checking every link twice. As time went on, I could see that my students weren't engaged in the class. All the time I had put in was wasted.

When I came to this realization, I changed my method of lecturing. Less talk, less Power Point and more interaction between students. I became especially aware of changing up things or giving a break as heads started to bob up and down. Since then, I have transitioned from the “Sage on the Stage” to the “Guide on the Side”.

### **Incorporating Technology**

About 25 years ago, I was heavily involved in educational technology. It happened because of a grant I became involved in while teaching in a middle school in the Bronx. I had only been teaching about 3 years when I was tapped to represent middle school teachers in a group called, “The Collaborative for Excellence in Teacher Preparation”. The “Collaborative” was based NYU but involved a few local colleges, District 8 personnel in the Bronx and me.

At that time, I began to become active with computers and was asked by the Collaborative to put together an internet guidebook having students take part in its creation. This was in the early 1990’s and I had access to one old computer and the new “World Wide Web”. It took time to put it together, but the guidebook was eventually published by NYU and turned over to the National Science Foundation to justify the grant that the Collaborative had. The grant and the Collaborative were to last about 5 years or until funding dried up.

The next year, I had transferred to District 2 and worked at Robert F. Wagner, MS 167. I hadn’t realized the importance of the move at first. Within a few months of being there, I again was asked to represent my school in a grant with NYU. As it turned out, it again was the Collaborative except my role was to the explain the use of technology in the classroom and run a workshop for faculty. For my efforts with the Collaborative, I was offered the opportunity to work on a PHD at NYU which would be paid for by the original grant. The field I chose to specialize in was educational software. I attended NYU part time in the evening since I was working for the NYCDOE during the day. My time at

NYU lasted until the grant abruptly ended which left me with 23 credits to my doctorate. At that time, I couldn't afford to complete the degree, so I withdrew.

I moved up to the High School of Fashion Industries where I was given a rather large classroom. My obsession with technology grew when I taught there. I had lots of space to fill and a supportive administration. I would buy old Mac computers and refurbish and upgrade them myself for my classroom. At one point I had 10 working computers hooked to the internet and attached to 3 printers. I would incorporate the technology into every project that the students worked on. Other teachers would often ask about the computers, they wondered where I got them. I felt technology was extremely important and I knew my students would only have access to it if I supplied it. When I retired from the NYCDOE, I left all the hardware behind.

It is strange that under the current situation with the Corona virus, I'm being asked to return to the heavy use of technology. It seems I can't get away from it. The biggest difference this time is that I don't have to supply a class set of computers.

### **The Technology Experience**

In the past I have seen students become heavily involved in my class because of the technology. To most students, it was a new experience and something they couldn't work with at home. Most of my students came from poor families making computers an impossibility and I understood that then as I do now. Today, most students have some form of technology, such as a cell phone, tablet or computer. If they don't have one, they know someone who does or someplace that would allow access. The campus being closed does make it a bit more difficult, but I still believe my assumption to be true.

The use of technology can be a tool for greater learning depending on the hand wielding it. This summer has been interesting in that I have been exposed to a wide range of topics delivered through the virtual world. Some of the workshops and lectures were

amazing some were not. The least successful ones suffered from lack of variety in the presentation. I am glad to have experience both good and bad presentations, it gave me a sense of how to develop my classes and what not to do.

I am very happy to say that I attended a weeklong virtual workshop given by Dartmouth College. It was called the "School of Ice". It dealt with a variety of topics centered around climate change and the effects on Antarctica. We met daily for 5 days from 11:00am (EST) to 7:30 pm (EST). I thought that was a strange time slot for a workshop to meet, until I found out that it was to accommodate participants from California. Also, they recorded the presentations for future reference. I plan to have my classes at the assigned times as required. However, I will also be recording classes within the Blackboard Collaborate Ultra program.

Each session of School of Ice had a set format which made it easy to stay focused. The format consisted of the following, a short lecture, an easy activity, a related prerecorded video, a longer activity with a discussion followed by a break. This was approximately half of the daily session and then it would repeat, ending with a dinner break and then a guest speaker. Twice I felt I had lost it. On both occasions, we were faced with a talking head and an endless power point. I believe it really showed me how to proceed for the next semester. By the way, the workshop facilitators used Padlet, on which we were to paste answers to questions, post pictures of ourselves doing the activities, write a short reflective piece or critique others work. What I liked about their use of Padlet was that, it showed a good way to see what the participants were doing and assess the activity. It is important to note, you can learn about Padlet or any other software for that matter, but you need to experience it firsthand to evaluate it and then practice with it.

Over the course of those few days we didn't discuss the technology, instead we used it the way our students will. It gave me a student's eye view of learning online. I believe that my experience of that week gave me insights on how to use the technology I have been exposed to through the FIT online learning sessions. I also learned that my students will have a very meaningful experience in my class if I don't make two

mistakes. I have to stay away from too little variety and not become a talking head. I had mentioned that about my initial FIT experience, earlier in the paper. The other mistake is to overwhelm them with too much. With all the toys (apps) that I have seen over the course of the last month, it could be easy to do that.

I have also found that planning is everything. Keeping a set agenda is a necessity. I've have written and thrown out many lessons plans in my past life, but with on-line teaching the students will need an agenda/plan to follow to eliminate confusion and reduce anxiety. It will be nearly impossible to change the presentation midstream. I found it really comforting to know a break was coming up during the workshop because they had it broken down into reasonable timed chunks. I know students will appreciate to know that as well.

### **Looking to the future**

To prepare for future, I have already taken steps to be successful in the coming semesters. For example, I have connected a second monitor to my computer setup to allow for a bigger desktop and to show my lecture notes or have files open waiting to be shared with the class while presenting on the main screen. Though I have a large iMac to work with, extra desktop space is always appreciated, especially when you have several windows open at once.

Also, I have started working with the software and practicing. I was glad to hear Jeffery Riman say during our FIT sessions, that we should practice. Practicing presentations is something I learned about while taking a Dale Carnegie course a long time ago. You've got to practice before you go into a client's office because you don't want to look like a fool. In this case I will be going into a students' domain where some of them might know a lot more about the technology than I may. Practice will help me feel more confident and prepared.

I have used Blackboard in the past for grades, setting up folders and such but never really explored what it offers. For example, I was really surprised when Jose Diaz

demonstrated Blackboard Collaborate Ultra. Prior to Jose's presentation, I had briefly looked at the "tools" pulldown, but never went to the "more tools" link and look at that pulldown. I think we all tend to skip things until they are pointed out us or we are searching for something we really need. I have to do more exploring to do on Blackboard.

### **Using New Technology**

I always am searching for new and better ways to instruct my students. Adding technology tools to my classroom now and in the future, will strengthen my practice by keeping it fresh and relevant to the students' real-world experiences. I believe that, as educators we cannot teach today's students the same way we were taught. "Chalk and Talk" does not work when we are competing against the cell phone, tablet and laptop. As a professional in the field of education, I have to look at the changing technologic world around me. I often ask, how will the students relate to the way I present the subject? Is it meaningful? Is it clear and easy to understand?

The addition of technology forces me to think about becoming a better teacher. For example, how will I incorporate Screencast-O-Matic in a way that is significant? Teaching science makes that a no brainer. I'll be performing demonstrations for chemistry, producing virtual labs for the students to observe and take part in at home, recording lectures outside my one room office.

Watching the short video made with Screencast-O-Matic featuring Jeffery Riman and Jose Diaz in front of FIT made me think about creating virtual field trips. During my "School of Ice" experience it became clear how to do it. The instructors taped a Go-Pro 360 to a golf club. I have been looking into it and found a better way. Selfie sticks have come a long way since they first appeared on the scene. I recently purchased a stick to

use with my cell phone. It is called the “Smooth X” by Zhiyun. The stick has a built-in control panel which allows you to start and stop recording video. It also can rotate the phone 180<sup>0</sup> vertically and horizontally. Using the thumb control, I can have it face me or turn away from me while still recording. Using it, I played Jim Cantori of the Weather Channel while practicing the other day at the waterfront near my house while waiting for Hurricane Isaias to hit our area. There is also a zoom feature which is controlled by your thumb. But most importantly, Smooth X comes with its own software which has a built-in stabilizer as part of its app to remove shakiness as you are filming, a great feature when you are walking or recording in high winds. In Earth Science we always discuss geologic time. My plan is to use the Smooth X and my cell phone when I visit sites that most students will probably never get a chance to visit. With the help of my new selfie stick and my cell phone, I plan to give a tour of Dinosaur Park in Rocky Hill Connecticut and the river side dinosaur tracks in Holyoke, Massachusetts. I believe that, unlike canned videos, the students would have more of a connection with the content because I will be in the video waking along with them down the trail of discovery.

I would encourage my students to make their own recordings and field trips. Instead of standing in front of the class they would have to create a script/research paper along with a video. I would have them place their work on a Padlet and have each student critique 3 other students’ work. This would be done asynchronously.

I believe all classrooms will greatly be affected by technology now. As I am preparing for the coming semester, I feel that more and more creative ideas are coming to me. Such as thinking about the way I could introduce other types of software to my students while sharing my desktop while on Blackboard. For example, I have come across a piece of software called “Doceri”, which could come in handy for science and math teachers. Among other things, it allows you to control your desktop computer with your tablet. Its whiteboard feature has a variety of backgrounds one of which is graph paper. This would allow me to draw graphs on my tablet using a stylus/pen which I could be stream to the students as I am drawing it. The program will allow me to record the work

separate from the recording made by Blackboard. I will have two copies of the graph one of which students can access easily without going through my entire class recording.

### **Assessment of Activities**

To measure the success of the activities I will be doing online, I will use the same criteria I use when I am in the classroom. I will be looking at the students' responses to the activities and adherence to whatever rubric I give them for guidance. Tests though useful are never a true measure of success.

First, I will be looking for how significantly involved they were with each other. For example, whenever I break a class into groups, I circulate among them. To observe and occasionally interact with the students. My MA thesis was on the use of Cooperative Learning in the Science Classroom and I have always employed those techniques in my classes. I look for positive interdependence, individual accountability, specific behaviors, self-monitoring and reflection. The failure of any group activity is the lack of participation and oversight by the instructor. Many students dislike working in groups because lack of participation by a student or students in their group. My being involved with each group it keeps them on task and helps reduce poor student participation. Also, calling on members of a team randomly, holds each one of them individually accountable. The success of a breakout session while using Blackboard Collaborate will depend on my personal participation within the groups. I will be able to judge a bit more clearly how well a team is working. After completion of the task I ask each group to reflect on and after they have come to consensus, submit one page for the group explaining what they did well and where the need to improve.

I would structure asynchronous groups in a similar fashion. Because I would not be able to circulate amongst each group, I would still make each person accountable to the group. Activities would be developed in a way that would require the team manager to assign different roles to its members making everyone individually responsible and

accountable for one piece of the whole exercise. Included in the instructions would be an explanation that two grades will be given. One grade would be for the completed group work and one would be individual. Another thing I stress is that each member of the group is not to cover up for the others or be concerned if someone doesn't hold up their end of the project. A rubric would be supplied to reduce anxiety.

Another way to judge the success of an online activity is by asking for individual student feedback. I have always tried to ask a different student for feedback on my lesson particularly what they liked about it or didn't quite get the first time. This can be done privately as you get to know students or addressed to the group requesting

anonymous written statements. Often students will tell you what they think you want to hear, but anonymously students will tell you exactly what they feel. I have also found that often when students are really enjoying the experience they say "Thank you", on their way out of the classroom. I'll be watching the chat section of Blackboard for that.

The amount of effort students put into an activity is also a good indicator. If someone is going above and beyond on any assignment that is given, it is a good sign of the success of the activity. If the students are really interested, they will show it in their work. If they find it uninteresting the opposite is true.

### **The Big Picture**

The use of technology and education is one of great importance. Education and society have been heading, for some time now, in the direction of the virtual world. Covid-19 has just pushed it ahead faster and further. We were caught off guard last March, when the switch was thrown, and educators were forced into this other reality. We were not ready. We lacked resources and the skills and held deep fears of what was to come. However, we managed to survive it and now plan to do better in the future.

After taking a deep breath over the summer, I am starting to see that large scale virtual education has many benefits, such as it makes education more accessible to more people. For example, if you can't leave NYC and want to study a subject like Broadcast Meteorology, you can do that online. Princeton University offers such a program

consisting of 15 master's credits. If I choose, I could finish my PHD online through Nova Southeastern University in Florida. The same applies to FIT students who may be kept out of the country due to travel restrictions. They can continue their studies at FIT, where they started.

Another benefit, a particularly good one at that, is that lectures can be recorded for viewing at a later time. If you are in another time zone and cannot actively participate directly you can still continue your education. Recording lectures is nothing new. I remember people in my undergraduate classes bringing in their portable cassette recorders and taping the lectures for themselves. The only difference between then and now is that the recording is being maintained in the cloud for anyone in the class that wants to refer to it.

My biggest fear in the big picture is that many people will not be able to cover the expense of acquiring the technology needed. College students may not be able to afford the added expense of purchasing a capable computer and printer to use for class. Will student loans and grants be available to make those purchases? Students in local elementary and high schools may really suffer through no fault of their own. Perhaps they are part of a low-income family. Maybe their parents have become unemployed and their family needs every penny to put a roof over their heads and food on their tables. It leaves one to ask, what other societal inequalities and obstacles must be overcome?

## **Final Thoughts**

I'm not sure where technology in education will lead us, but I believe it is the way to go. We must adapt to the new changes around us at this time and develop new strategies for our students and the future of education in general.

I do want to thank Elaine Moldanodo and all of my colleagues in the Center for Excellence in Teaching at FIT, particularly for all the work they put into making the rest of us confident, hopeful and most importantly successful.