



Reflective Teaching Portfolio

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January 2017

"A teaching portfolio is a coherent set of materials, including work samples and reflective commentary on them, compiled by a faculty member to inquire into and represent his or her teaching practice as related to student learning and development." - Pat Hutchings, The 1993 American Association of Higher Education, *Campus Use of the Teaching Portfolio*.

This reflective teaching portfolio focuses on the role of technology, as it was created for the Teaching with Technology Certificate Program at the Fashion Institute of Technology.

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¹ The Center for Excellence in Teaching encouraged participants in the Teaching with Technology certificate program to use these objectives

Teaching Background and Experience

★ Teaching Background

I have always wanted to be a teacher. In my elementary school, the teacher had the top students teach the rest of the class in groups. When the students in the group did well, we got bonus points on our tests. (I believe that my parents finally trashed the exam in which I received a 128.) In high school, I tutored. I also sat in on a college level mathematics course, taught by my father, *for fun*. That is when I realized that teaching at the college level was my goal. In college, I took an art of teaching class and volunteered at a prep school for high school students. This confirmed that my career goal was college teaching. Just to be sure, I took a seminar in college teaching while at graduate school. During the seminar, we visited many colleges, including the Fashion Institute of Technology (FIT). After the visit, I knew I wanted to teach college students at FIT. At FIT, students need to see how mathematics affect their lives outside the classroom and be taught in a unique way.

My goal whenever teaching is to provide facts while holding the attention of my audience in an enjoyable way (whether it is tutoring, teaching students, teaching colleagues, teaching attendees at a conference). I use different aids to help me achieve this; namely, knowledge of the material, pleasing aesthetics, and relatable examples in pop culture and everyday life. When applicable, I use technology. **As someone who teaches courses online, as well as in-person, technology plays a major role in my teaching.**

★ Teaching Experience

Science and Mathematics Department
Fashion Institute of Technology (FIT), SUNY

2006 – present
New York, NY

Courses taught:

MA001, MA002	Developmental Mathematics
MA003	Algebra Review
MA005	Developmental Mathematics for Fashion Merchandising Management
MA142	Geometry and the Art of Design
MA161	Mathematical Ideas
MA161 OL	Mathematical Ideas (Online Version)
MA222	Statistical Analysis
MA222 OL	Statistical Analysis (Online Version)
MA331	Calculus

Course co-created (with Calvin Williamson, Ph.D.):
MA153 Programming and Mobile Apps

Mathematics Department
Brooklyn College, CUNY

Summer 2006
Brooklyn, NY

Course taught:
Precalculus

Volunteer Student Teacher in Calculus
Cascadilla Prep School

Spring 2004
Ithaca, NY

Volunteer Teaching Assistant in Pre-Calculus
Cascadilla Prep School

Spring 2004
Ithaca, NY

Volunteer Blue Coat (docent)
ScienceCenter

Fall 2003
Ithaca, NY

Teaching Portfolio Objectives

- Teaching Philosophy

"Never trust anything that can think for itself if you can't see where it keeps its brain."

— J.K. Rowling,

Technology is amazing! While I love technology, there are some instances where it is a hindrance in classes about mathematics. Students become so reliant on technology (calculators and google, in particular) that they rather let these inanimate objects do the work for them. I want my students to rely on their own minds and check their work to see that an answer makes sense. Taking that extra time to look over their work with a critical eye and a mathematical mind is as important as getting the correct answer. When possible, I use real life problems to help students relate to the problem and humanize mathematics. This helps students not just copy the answer they see on a screen, but rather reflect if the computation makes sense for the specific context of the problem. While I do not want students using cell phones or tablets in my in-person classes, I do understand that using these vehicles is an important way to connect with students. In all of my courses, I post videos of myself working out problems, provide extra practice problems and worked out solutions using Google Documents, find relevant online applications to help further understand topics created by other educators, and much more. This way a student can reach out and use the technology readily available and in a comfortable setting. I believe it is important to always reflect at the end and before a semester on ways to improve instruction with technology. This upcoming semester I am going to pilot using a handful of mathematical apps in the classroom for students in my Mathematical Ideas course, who finish in-class assignments before the rest of the class.

I strive for students to recognize my genuine passion for mathematics, teaching, and helping them learn mathematics in different (and sometimes unorthodox) methods. The first two hopefully exude naturally - even in my online courses. Preparing various strategies to evaluate problems is up to me. "Do what works best for you!" is a phrase one will hear in any of my classes. It is important to recognize that students are unique individuals and teaching in one way may not be successful for an entire class. I try to come up with more than one way to address problems when applicable and often seek

technological options for assistance. Sometimes the entire class will feel confident in the first way I teach a topic and there is no need to add more. With the introduction of new technologies, it can be instinctive to show many ways to look at one problem but may actually be detrimental and confusing for students! I keep looking for appropriate applications that can benefit students without overwhelming them. Finding the perfect balance is a goal I set for myself each semester. For example, I have been teaching an algebra course at FIT at least once a semester for the past ten years at FIT and each semester I make a few changes. I give myself time to reflect while teaching and make notes whether I should add or change anything in a lesson. I aim to give my students the best possible version of the class each semester. During a few semesters of Geometry and the Art of Design, I taught students about Frieze Patterns with a few volunteers and myself demonstrating the different groups with our feet. This included hopping, stepping, jumping, and more! After teaching this topic for many years, I can recognize which classes will benefit and appreciate this technique to reinforce the frieze patterns and when to skip it! Relating back to technology: while I am eager to use it sometimes the class may not feel the same way and prefer traditional methods like just using a chalkboard. I hope to always provide a learning environment that feels accessible, clear-cut, and respectful.

In my courses, especially online, I write over and over that there should be no surprises with grades or how the class runs. I provide details in the syllabus and course information folders, which I mention and reinforce throughout the semester. In my in-person classes, I set aside as much time as needed to go over all the details of the syllabus, including our course website, and answer questions. I believe instructors need to hold students to the standards set in the syllabus. Every aspect of the course should be clear and while instructors explain the policies and have them in writing, it is up to our students to follow them. I try to help out students with reminders about certain policies and deadlines (since I understand that a mathematics course at FIT may not be their favorite class). I also provide every class I teach with a Blackboard website. These websites contain a Course FAQ (frequently asked questions). I have an FIT blog for my online courses with help, extra practice, reminders about policies, and much more. For the in-person courses, I keep the FAQ, videos, extra practice, and other helpful features directly on Blackboard.

The way I evaluate students and interact with students has changed dramatically with new technology. One of my favorite improvements in the past five years or so, as previously mentioned, is creating Course FAQs or Course Blogs in all my classes. This saves

time for both myself and my students. For the FIT Blog, students can simply enter a key term in the search bar to see if I have a post on the topic. For Blackboard Course FAQs I list all the questions on a single page so it is fast for students to scroll and find what they are looking for (and then click on the question to be brought to a page with the answer). The Course FAQs are the first step for students outside of the classroom. Then comes Email and online or in-person office hours. I feel technology plays an essential role at having successful communication between me and my students.

I also look at technology for diverse formats to assess aptitude and present topics. I use online learning management systems for homework and quizzes in most of my courses. This way students receive automatic feedback. For my online courses I also include Google Documents for each homework assignment. This way students can show me where they are having issues. I also hold online office hours on these Google Documents when students are still confused after seeing my comments or just want further help. I believe showing students that I am available for help online using different platforms but also in-person for face to face office hours is a perfect arrangement. As previously mentioned, this allows students to “Do what works best for you!”

I feel it is important to conclude this section by including my original teaching philosophy here. I have a love of mathematics and an enthusiasm for teaching. Presenting rich applications of mathematics that appeal to a diverse student population will develop students’ abilities to reason logically, apply problem solving strategies, and foster an appreciation of the subject and promote a positive attitude towards learning. I firmly believe that with an appropriate choice of illustrative examples and problem solving techniques, the basic ideas and methods of mathematics can be successfully explained to students at all levels and backgrounds. My ideal is to build within the classroom a mathematical community which will excite the students to be enthusiastic about mathematics.

- **Most Successful Lesson**

There are a variety of lessons that have been successful in different ways. It is hard to choose the most successful or even define what makes a lesson successful. For me, having a student excitedly exclaim in the middle of class how they *now* understand a topic that used to give them trouble (happens in Algebra and Statistics) or come up after class or during an office hour and thank me for explaining something in a clear way is such a wonderful feeling. I feel successful as a teacher when this happens.

There is one topic that is one of my favorites in Mathematical Ideas and Geometry and the Art of Design. The mini-lesson involves FIBS, which are poems that follow the Fibonacci sequence. I love showing that mathematics is everywhere: fashion, architecture, art, music, and even poetry! Since it is a math class, the focus is creating a poem that follows the mathematical structure but many students run with this topic and spend a lot of time in creating a poem or poems that are meaningful and powerful. Some students create a funny FIB, while others submit an extremely personal and moving poem. Others focus on the mathematics and have constructed ones that go on to lines with 144 and even 233 syllables!

I also feel successful or proud when my students succeed! I believe all instructors should feel this way. I am happy when I have the chance to write a letter or an essay about a hard-working student. One of my students is a 2016 Women's Forum Education Fund Fellow and received \$10,000!

- **Least Successful Lesson**

Do you have an example of an unsuccessful lesson? How did you address the challenges?

I always expect that something may go wrong. I like to prepare. I am someone who likes to over prepare and in advance. This way I am ready for anything.

Since I have been teaching at the Fashion Institute of Technology (FIT) for ten years I have more than enough material for the courses I teach. Still, I enjoy to always change things to make lectures more enjoyable, relatable, effective, and be up-to-date with technology. In one of my classes I spent hours the night before a class because I had a wonderful idea for my Geometry and the Art of Design Class. I use Google Docs multiple times a day (since I teach online classes) and made new lecture notes for the following day. I still to this day have no idea what happened to all I did. I was so excited during class and then nothing. I spent about five minutes searching through my Drive during the class before I gave up. I appreciate and take pleasure in silences in the classroom when they are a result of students thinking about a problem or performing calculations but this was quite the opposite that I hope to never experience a second time! Although those students may not have thought twice about the incident I still do. I used it as a teaching moment for myself to create a secondary location for any of my online documents. This way I can search my Google Drive but if I have any issues locating the file, I can easily look on the course website too. Always backup your work!

- **Reasons for introducing and/or expanding the use of technology into teaching**

I have many reasons to include technology into teaching as (a) a teacher, (b) a lifelong learner, and (c) an individual in today's society.

It is innate for people to collect things; as a teacher, I amass various tools for my teaching toolbox. I use technology in both my online and in-person courses. For the online courses there is not much of a choice. I want to help my students and if we are in an online setting then using the most effective forms of technology are essential. For my in-person classes I do not use much technology during lectures but rely heavily outside the classroom with posting supplementary material on course websites. These include my own videos, worked out extra practice problems (I post the questions and step-by-step answers separately to encourage students to try all the problems on their own before looking at the solutions), visual aids I accumulate, applets, and more. Since beginning the teaching with technology certificate program, I added voicethreads to my online courses!

I love to learn and share applicable knowledge with students, which many times leads to a natural expansion of technology in my teaching. At FIT and attending conferences, I have the opportunity and privilege to learn about new technology. I do not automatically include every new technique or platform into my teaching. I spend time thinking and reflecting on what will be best for me and my students.

Also, it is important to recognize the type of students we teach. At this point in time technology is king. Every time I walk down the street, I feel like I am wading through a sea of cell phones. (It is tricky walking quickly while pushing a stroller without running over pedestrians that are texting or tourists taking pictures.) Whether teachers like it or not,

students own mobile phones and treat them as an extra limb. Most of these cell phones have tons of apps and can quickly get online with the WiFi at FIT or most places in New York City (subway stations, streets, coffee shops,...). Since there is no escaping this reality, educators should think of ways to have students use their cell phones and internet to learn, receive help, and enhance their education. Students definitely appreciate the effort!

I have used Pinterest for a few years in my Mathematical Ideas and Geometry and the Art of Design Course. Even Pinterest is a bit “old” for the students. I think it would be interesting to take this to a new level and create a Snapchat for my classes. I do not know how long the snapchat phase will last but that might be a way to engage students more readily and help them recognize mathematics in their environment in a fun way. Technology is ubiquitous and an essential component of daily life.

- **Technology innovations and how they affect**
 - **the student experience**

In the classroom, there is a fine line between technology used as a distraction or as an aid. My online courses are designed for self-motivated individuals. Since it is up to each student to do the tasks and learn the material from my lectures, they are in complete control of how they interact while in the course. I cannot check what other tabs are open and if they are texting at the same time although I do get an idea by using the time spent on a task. Most assignments (tests, homework, quizzes) have features where I am given how long a student works on a problem set; then I can decide what to do with this information.

The temptation to click or text is too strong for some students. I no longer enjoy teaching my in-person classes in computer rooms. This is a shame for both myself and students. There are cases with mathematical topics, like isomorphism with graphs, where having a student interact with an applet and physically change the shape of a graph is an amazing and useful tool to teach the topic. In the past few years I instead assign playing around with an applet as part of the homework. This way the students still get the same experience but I miss out on seeing the AH HA look when the topic clicks.

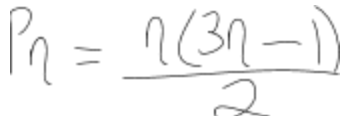
Aside from assignments, many students independently go on the course site and interact with resources I post throughout the semester. I get positive feedback and requests in a lot of my courses. Videos I create using a combination of a bamboo tablet and Google Docs drawing feature seem to be the most beneficial!

■ The teaching experience

I thoroughly enjoy using technological innovations when they benefit my students. So much so that I spend free time on helping create tools for myself and other educators! (I have worked with the chairperson of the Science and Math department here at FIT for years on free online tools called Mathplosion and Graphplosion.) In mathematics, there is an inherent need for more technological advances. Granted, there have been new and fantastic advances in the last fifteen years or so! I remember taking an online mathematics course and spending so much time typing these long, complicated answers horizontally using a combination of abbreviated words and brackets that it was ridiculous. I still get upset over the time wasted on typing what looked like non-sense and what was not identical to the actual mathematical answer on paper. If only the technology available now

was around back then! This adverse experience with doing mathematics in an online course is one of my driving forces to find and use the least arduous methods in my own classes (especially online).

It should not come as a surprise that at the start of my online courses, I spend time showing students various ways to type their mathematical answers and work. Then it is up to them to take my advice and “Do what works best for you!” Since Google Docs is the main source of my lecture notes, I show students how to Insert Equations and write freehand. I will gladly accept them writing horizontally if that is what they prefer! Below I have a simple example of three different ways to write the formula for finding the n^{th} Pentagonal Number using a Google Document without any special features. (I often like to freehand using a tablet but will use a mouse below.)

Typing Horizontally	$P_n = [n(3n-1)]/2$
Inserting a Google Equation	$P_n = \frac{n(3n-1)}{2}$
Inserting a Google Drawing (Scribble)	

Using clear ways to write mathematics is undeniably beneficial to students. It is difficult enough for some students to understand the material when it is written directly; why should we complicate things? I am happy to use and update my lecture notes whenever there is an opportunity to better illustrate the same idea!

Illustrating an idea can involve many forms and uses of technology. Each semester, I am constantly teaching and using technology. Even though I have been teaching for over a

decade, I still seek new innovations I can use. I just found another applet last week for the current online course I'm teaching and posted it for my students! With the use of this applet I am able to explain the concept of convex polygons in an additional way. I am excited to use this again next semester. (In this applet, you can adjust the given polygon by dragging any of the vertices and change the interior angles to see when you have a convex polygon and when you have a concave polygon.) At FIT I find using visual aids, especially interactive applets, constructive tools. I wish these tools were available when I was a student! Anything that I would want to have had, I make sure to include for my own students. This enhances the student and teaching experience simultaneously!

- **New teaching ideas to implement as a result of the technology certificate program**

During the teaching with technology certificate program I had in-person sessions and an online tutorial. The in-person sessions were on what is a reflective teaching portfolio; creating, managing, and sharing materials on the computer; and Google Docs. There was a self-directed session on VoiceThread. Since I have been teaching online for many years and am a child of the 80s, I think it is natural that I already have been using innovative teaching ideas and practices in my courses.

Some of the technology I use in my classes are listed below. The ones that are new in the last few semesters are in bold. I must note that the Learning Management System and FIT Google Drive are used daily. I cannot imagine teaching online courses without them.

- *Google: Spreadsheets*
- *Google: Documents*
- *Google: Forms and **Google Forms as Quizzes that get graded automatically***
- *Google: Presentations*
- *Google: Drawings*
- *More Google Drive*
- ***Digital Syllabi with Concourse***
- *Echo Pen*

- *Bamboo Tablet*
- *Variety of Screen/Video Capturing Software*
- *Learning Management Systems (ANGEL , Blackboard)*
- *Mathplosion*
- *Graphlosion*
- *Online office hours*
- ***Apps (Tangram Master, Combination, and more)***
- *Applets*
- *Youtube Videos I created*
- ***Online Proctoring Software***
- ***Voicethread***

I did begin to use VoiceThread after the self-direction session for the certificate. I still have more to explore in this area. I also plan on using Apps in my mathematical ideas course this semester as a pilot.

■ **How these new technology tools/approaches will contribute to the classroom**

New technology tools/ approaches should help students. There are a variety of benefits such as a better mastery of a subject (using online videos, interactive practice,...); learning a new skill that is not specific to the course (understanding how to use VoiceThread, creating graphs in Google Spreadsheets,...); fun (cell phone apps, online applets,...) and saving time (using Blackboard to automatically grade assignments and provide detailed feedback, new technology demonstrating a difficult concept in a different way that is easier to visualize than using a chalkboard,...).

■ **How to evaluate the success of these activities**

Right now I do not feel the need to have formal evaluations where students type up answers about specific, new technology that has been implemented since starting this

program a few years ago. I evaluate the success of the activities based on Informal conversations with students and my own analysis. (There are tools to see interaction between students and what is implemented; the scores on a specific topic where a new applet or voicethread has been introduced, for example; a student coming to office hours saying video x really helped and he or she would like more; a student writing an Email ...)

- **The bigger picture items with regard to technology and learning**

While I am excited to learn more about available technology that I can use in my courses, it is critical to reflect on why it should be added to the teaching or replace current practices. Before I decide to test out or pilot something in a course, I think about a couple of things. *Will this new technology benefit my students? Do students need a tutorial or training to use the new technology? If so, will the time spent be worth it? Will all my students have access to this new technology? (Some students may have financial or personal issues where they need to use school computers or library computers. Are they allowed to download or install this?)* It would be interesting if there were student workshops at FIT, whether online tutorials or in-person training, to help with the technology that many of the faculty use in our classes. Using Google Drive, Voicethread, Blackboard (for starters) are valuable skills that students should have and not necessarily be taught by someone like me, who teaches mathematics! I don't mind and have Course FAQs for all my classes to help with any questions but that is one idea that I would love to see implemented. I would be willing to create online videos for students to watch!

Also, when it comes to using new technology for student learning, I believe in quality over quantity!

- **Methods to Discovering Technology in Teaching**

There are a few, fundamental ways I discover new methods in teaching with technology. I actively look for formal opportunities where I work and when I go to conferences. I also find myself learning about new technology naturally when talking informally with colleagues.

I believe it is important for other people to recognize that I have an interest in learning about new technological methods. This has led colleagues to approach me with regard to discussing new technologies. Once, I found out about a new technique at the end of a faculty to faculty talk I gave! Other times colleagues will come into my office or Email me about something I might be interested in or think is cool. When there is a new product being piloted at FIT I try to be involved; or, workshops on a technology product. I was in one of the first cohorts to use Blackboard (after ANGEL).

I have tried different online proctoring and different products.

Going to conferences and seeing what other educators are doing in their classes is such a fantastic way to learn about new technologies! Below are my invited conference talks. I always spend time going to other presentations at these conferences to learn from other educators.

Invited Speaker at the Fashion Institute of Technology

- Speaker at Faculty-to-Faculty session on ***Online Office Hours and Collaborating with FIT Google***, (December 10, 2015)
- Co-Speaker with Calvin Williamson at Faculty-to-Faculty workshop on ***Building Apps for Beginners with App Inventor***, (February 26, 2015)

Invited Conference Talks

Graphplosion - Simple Graphs for Algebra (invited to present with Calvin Williamson)- will be at the International Conference on Technology in Collegiate Mathematics (ICTCM), Chicago, IL, **March 2017**

Rapid Creation of Graphs for Algebra - Jazz Up Your Course (invited to present with Calvin Williamson) - at the Conference of the American Mathematical Association of Two Year Colleges (AMATYC), New Orleans, LA, **November 2015**

Mobile First Math Content using Mathplosion (co-presented with Calvin Williamson)- given at the International Conference on Technology in Collegiate Mathematics (ICTCM), Las Vegas, NV, **March 2015**

Driving Your Online Mathematics Course Using Google and Videos- given at the Conference on Instruction and Technology (CIT), Cornell University, NY, **May 2014**

Course Content with a Bang using Mathplosion (co-presented with Calvin Williamson)- given at the International Conference on Technology in Collegiate Mathematics (ICTCM), Boston, MA, **March 2013**

Building a Better Course: Google Drive and ANGEL (co-presented with Calvin Williamson)- at EduTech Day, New York, NY, **November 2013**

Course Content with a Bang using Mathplosion (co-presented with Calvin Williamson)- given at the International Conference on Technology in Collegiate Mathematics (ICTCM), Boston, MA, **March 2013**

Rapid Content Generation for Algebra and Statistics (co-presented with Calvin Williamson)- given at the Conference of the American Mathematical Association of Two Year Colleges (AMATYC), Jacksonville, FL, **November 2012**

Utilizing Online Technology to Rapidly Generate Mathematics - given at the Teaching Mathematics to a Digital Generation Conference (T3), Jamaica, NY, **June 2012**

Mathplosion: Rapid Content Generation for Mathematics (co-presented with Calvin Williamson)- given at the Conference on Instruction and Technology (CIT), Stony Brook, NY, **June 2012**

Creating Mathematics Content in the Cloud - given at EduTech Day, New York, NY, **March 2012**

Rapid Content Generation for Mathematics (co-presented with Calvin Williamson) - given at the Conference of the American Mathematical Association of Two Year Colleges (AMATYC), Austin, TX, **November 2011**

Links to my Websites, Related to Teaching

Blog for My Online Courses

<http://blog.fitnyc.edu/professorshloming/>

This site provides help to students in my online Statistical Analysis and online Mathematical Ideas courses. I create videos, provide step-by-step guides, post answers to questions, and provide other information that is relevant to students in my courses.

Mathplosion tumblr

<http://mathplosion.tumblr.com/>

This blog gives updates on conference talks about Mathplosion and new features and changes to the site. Mathplosion.com is a web application that allows rapid content creation.

Pinterest Board for My Courses

<http://www.pinterest.com/mathd0rk/for-my-courses/>

This online board is updated for students to see how mathematics can be seen in everyday life with a focus on fashion and architecture. I originally created this board for my Geometry and the Art of Design and Mathematical Ideas classes.