# **Teaching Website Development "Behind the Wall"**

Jesse M. Heines, Ed.D., Professor Emeritus Richard A. Miner School of Computer and Information Sciences University of Massachusetts Lowell Lowell, MA USA Jesse\_Heines@uml.edu

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#### ABSTRACT

Teaching inside a prison presents challenges that are unimaginable in a typical college environment. Despite these, teaching incarcerated individuals can provide some of the most satisfying moments of one's career.

This paper reports on the author's experience teaching basic web development—HTML, CSS, and JavaScript—inside the New Hampshire State Prison for Men. It describes obstacles he faced and work-arounds he found to be effective.

For educators thinking of teaching "behind the wall," this paper attempts to provide practical advice learned not only from the author's experience, but also gleaned from that of others. The literature on this topic is sparse, but the author has learned from books, articles, and presentations by other prison instructors as well as conversations with both currently and formerly incarcerated individuals.

For those who have never even thought of teaching in a prison, this paper attempts to introduce an environment that presents significant challenges but also significant rewards. The author has found the experience of teaching incarcerated individuals as enriching to himself as he hopes it has been to his students.

#### **CCS Concepts**

 Social and professional topics ➤ Professional topics ➤ Computing education ➤ Adult education

#### Keywords

Prison Education, Incarceration, Teaching with Restrictions

#### **ACM Reference Format**

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#### **Disclaimers**

(1) The author is a volunteer at the New Hampshire State Prison for Men. His experiences are his and his alone unless otherwise referenced. He recognizes and respects the fact that other volunteers and paid staff involved in prison education may have very different experiences.

- (2) It is important to keep in mind that the author has only taught in a single prison. As Keller [12] notes, "It's a truism of corrections: if you've seen one prison, you've seen one prison."
- (3) Although this paper has been vetted by prison officials, nothing herein should be interpreted as an official or unofficial policy or position of the New Hampshire Dept. of Corrections.

#### 1. THE SCOPE OF INCARCERATION

We live in an era of mass incarceration. Bryan Stevenson of the Equal Justice Initiative reminds us that "the United States has the highest rate of incarceration in the world" [14]. The American Civil Liberties Union reports that "although the United States has only 5% of the world's population, it has 25% of the world's prison population." [1]. At its peak in 2018, the U.S. imprisoned 2.3 million people [7].

The COVID pandemic, among other factors, initiated significant declines in U.S. incarceration. The Vera Institute of Justice reported that by mid-2020, the prison population had dropped to about 1.8 million [11], and the Pew Research Center reported in 2021 that incarceration had fallen to its lowest level since 1995 [7]. As shown in Figure 1, the New Hampshire Dept. of Corrections has seen a similar trend, with their prison population dropping 26% between 1995 and 2021. Despite these drops, the Prison Policy Initiative states that the U.S. still "locks up more people per capita than any other nation, at the staggering rate of 565 per 100,000 residents" [17].

Perhaps the most important statistic, however, is that more than 95% of U.S. prisoners will one day be released [10]. Recidivism rates vary widely from state to state (averaging about 36%) [24], but numerous studies have found that prison education programs significantly reduce recidivism [5][8][23]. Prison education also provides positive outcomes beyond just reducing the probability of reoffending [6]. These include intellectual stimulation, productive use of one's time, and increased self-esteem, even for incarcerated individuals serving long sentences.



Fig. 1. New Hampshire Physical Facility Population. [13]

# 2. GETTING STARTED

A year after I retired I read Bryan Stevenson's *Just Mercy* [19], watched his 2011 TED talk (now with 1.7 million views) [18], and attended an event where I heard him speak and met him in person. Stevenson's work inspired me to explore how I might be of service to those who are imprisoned. A few months later I found myself volunteering at the New Hampshire State Prison for Men, writing apprenticeship programs for the shops in which the men work. When men complete these programs, they earn Journeyman Certificates from the U.S. Dept. of Labor that help them get jobs when they are released. I did that for two years before the pandemic hit and the prison was closed to volunteers.

When the pandemic eased I contacted prison authorities again and spoke to the Director of Rehabilitative Services. He asked if I would be willing to teach in the prison and I jumped at the opportunity.

As it turns out, the Education Dept. had recently received an influx of new computers. They were already teaching computer literacy using the Microsoft Office suite, and the Director of Education said that they wanted to offer a computer programming course. They didn't have anyone on their staff who could teach that, so together we decided that I would teach a basic web development course focusing on HTML, CSS, and JavaScript.

# 3. ASSESSING FACILITIES

As I prepared to teach the course I learned:

- The computers themselves were fine even though they were running a somewhat old version of Windows 10.
- The installed version of Microsoft Edge was very old.
- The only installed editor was Microsoft Notepad.
- The prison had a good computer network for student use, but students could only access it when they were in class or another room on the Education floor.
- There was no web server on the network.

- Neither the students nor I could access the Internet from inside the prison.
- I could not access the network from outside the prison.
- There were no computer science books available to teach from.
- Students were not allowed to contact me when I am outside the prison, and likewise I was not allowed to contact them from the outside.
- I was not allowed to bring my computer into the prison.
- I was initially allowed to bring flash drives in, but that privilege was subsequently revoked (for everyone, not just for me).

The only way to address issues like these was one by one. Luckily, the network administrator—an incarcerated person himself—was available, knowledgeable, and excited about working with me. Together we were able to do all that was needed to teach the class. In addition, and crucially, my supervisors were 100% supportive of our efforts.

### 3.1. Software and Configuration

Our first task was to set up a web server. As most readers know, the Apache web server is free and easy to install via XAMPP from apachefriends.org. We installed Apache, configured a virtual server cssdweb.edu (only accessible from within the prison), and I taught the network administrator how to edit Apache's httpd.conf file to create aliases and redirects to students' personal dropboxes.

Next, we needed a code editor. Philosophically, I believe that a first course in website development should involve coding, that is, writing actual HTML, CSS, and JavaScript. Tools such as Adobe Dreamweaver are truly wonderful, but if one doesn't understand the basics behind them one has no chance of resolving problems when things go wrong. In addition, given that some of the students will be imprisoned for another 10, 20, or even 30 years, I believe that any programming course has to focus on the big concepts that were true 50+ years ago at the start of my career and will still be true 50+ years from now when I am long gone.

A code editor must provide features such as syntax highlighting, code completion, and multiple file support. Notepad doesn't "cut the mustard," but to be fair, it was never intended to be a code editor. I wanted to use UltraEdit (ultraedit.com), but this editor is not free. I wrote to the company, explained who I am and who I am teaching, and asked for a donation. I received a very warm response from the UltraEdit Product Manager and he generously donated licenses for use in the prison.

### 3.2. Books

As I did in my college teaching days, I developed a course website for the students.<sup>1</sup> However, students can only get to the website when they are in class or in one of the other

rooms on the Education floor. In addition, I don't believe that a course website can substitute for a good textbook.

I emailed my former CS Dept. colleagues to ask them to donate any HTML, CSS, and JavaScript books they could spare. This allowed me to assemble a small reference library for my students, but with only one or two copies of each book I couldn't use them as course texts.

The prison has a textbook budget, but I initially wasn't ready to commit to a specific book. I therefore wrote to publishers to ask for donations. Again I received warm responses. One publisher offered 30% off the online book. When I explained that that wouldn't work because the students don't have Internet access, they offered 30% off the textbook itself. But with a \$140 price tag, 10 books would have cost nearly \$1,000. A second publisher generously donated books, but not enough for all of the students in my class.

Persistence paid off. Jones & Bartlett Learning donated 10 copies of John Dean's *Web Programming with HTML5*, *CSS*, *and JavaScript* [3]. That text has worked quite well for the class. J&B was so interested in and so supportive of my teaching "behind the wall" that they even interviewed me and created a blog post on their website about the course.<sup>2</sup>

# 4. GETTING MATERIALS INTO THE PRISON

As expected, the prison environment is highly controlled. To get to my classroom I go through multiple locked gates and doors. As a volunteer I am not allowed to walk from the area where I sign in to the Education floor by myself. I must always be escorted by a staff member or corrections officer.

I am only allowed to be in the prison on days and times that have been preapproved (Tuesday and Thursday mornings). Everything I bring in has to be preapproved and everything is subject to search, as is my car in the parking lot (Figure 2). Security is king, for obvious reasons.

Tenenbaum [21] sums up the experience and the lessons learned very well. "Status that I might have as a scholar, full professor, department chair, and director of an interdisciplinary concentration is rendered invisible as we enter prison. ... The entry process taught me a great deal by heightening my awareness of the 'invisible knapsack' of privileges I expect to receive as a result of my professional status."



Fig. 2. Parking lot welcoming sign.

So how did I manage to bring in the materials I needed to teach my class? The answer lies in the cooperation, understanding, and dedication of my supervisors. They filled out the necessary paperwork and notified security each time I brought in boxes of books.

I initially brought in software on flash drives, but as noted earlier, that privilege was later rescinded. It turns out that only password-protected flash drives issued by the state's information technology department are allowed, and as a volunteer I am not eligible to be issued one. At that point my technical supervisor set up a Google Drive account that he and I could both access. I upload files (including daily website updates) to that drive from home and he downloads them to his computer with Internet access inside the prison. He then transfers them to my dropbox on the student network.

I get to the prison an hour before my class to move website updates from my dropbox to the web server and sample programs I've developed in response to questions from specific students to their dropboxes. This routine works well, but it doesn't work when my technical supervisor is out for either personal or professional reasons. (He sometimes has to go to other prisons.) I therefore always bring printed copies of the day's notes and any sample programs I've developed in case I don't find the files I've uploaded in my dropbox.

# 5. MANAGING THE CHALLENGES

### 5.1. Class Time

It is a common misconception that incarcerated people have nothing to do and tons of time on their hands. This is simply not true. Most of the men in my classes work at multiple jobs within the prison and take advantage of as many program offerings as they can. One man gets up at 4:30 AM each day to work in the kitchen. Another works afternoons in the Print Shop. Others are heavily involved with the Chaplaincy, and many are taking multiple classes simultaneously.

In a typical college computer science class the professor can lecture or lead a discussion for an entire class period. Students do their assignments on their own computers, wherever and whenever they like. Course websites and resource material are available 24/7 via the Internet.

The situation is strikingly different in a prison. Most significantly, the men I teach are not allowed to have their own computers. (This situation is different at prisons in some other states,) Even when students have time outside of class to work on the Education Dept. computers, (a) the department must be open, (b) the computers must be available, and (c) they must be authorized to be on the Education floor. That's a lot of hoops to jump through.

I try to structure the 100 minutes of my class to give the men as much time as possible on the computers. Now that they all have a common textbook, I tell them what I'm going to cover in the next class and assign the appropriate pages to read. They are conscientious about those readings, so I try to move through material briskly and limit my presentations and full class discussion to about 30 minutes. Class then moves into lab mode, and I circulate to work with each man individually until they are required to leave.

#### 5.2. Students' Restrictions

The 100 minutes allocated to my class assume that the men get there on time. They can be late through no fault of their own. There are limited time windows in which the men are allowed to move about the prison grounds, and movement gets further restricted for any number of reasons.

The bottom line is that you can never completely forget that you're in a prison. Flexibility and understanding of the students' restrictions and environment is critical to success.

#### 5.3. Students' Diverse Backgrounds

Men who apply to take my class are screened by the Guidance Counselor for at least basic computer literacy, but their levels of education are extremely diverse. Some have college or even advanced degrees, while others have little more than a middle school education. Some touch type while others hunt-and-peck. Some know their way around the ancillary tasks of programming—opening, closing, and naming files; copying and pasting text; arranging one's desktop for work efficiently—while others need to be reminded repeatedly that Ctrl [C] copies and Ctrl [V] pastes.

I never teach my pupils; I only attempt to provide the conditions in which they can learn. — usually attributed to Albert Einstein

To address these issues I make extensive use of *scaffolding* [2] and *differentiation* [22]. The former "delivers lessons in distinct segments, providing less and less support as students master new concepts or material," while the latter "presents students with different types of lessons based on their abilities and preferences" [22].

I implement scaffolding by writing detailed, step-by-step instructions for the first few exercises (see Figure 3). Some students really need this level of handholding, while others breeze through these steps without even reading them. The detailed instructions make it possible for even the most inexperienced students to complete the exercise without hampering the experienced students.

Differentiation comes into play when the more advanced students push ahead. Some exercises include suggestions for enhancement once the basic goal has been accomplished. Sometimes advanced students work on sections of the textbook that I don't have time to cover with the entire class. Other times they work on implementing web pages of their own design.





*Fig. 3.* Excerpt from detailed exercise instructions.

Students often ask me questions that I can't answer off the top of my head. The lack of Internet access and their need to leave immediately after class often make it impossible for me to help them in real time. Instead, I take careful notes on their issue, address it at home, and come to the next class with an individualized answer.

I also find that I often need to encourage and support less experienced students with more than just individual help. If they get down on themselves I try to explain that in some ways they were making more progress than the men forging ahead. I point out that considering what they knew at the beginning of the course and what they know now, they have actually learned more than their advanced peers.

One major issue impacting class time is how slowly some students type. To address this problem I provide "starter code," that is, skeleton web pages to which students only need add or modify a small amount of code to complete the exercise. This saves a great deal of their class time so that they can focus on the concepts.

For complex concepts, such as sorting two-dimensional JavaScript arrays, another approach is to provide a complete web page that implements the solution. I instruct students to study my code to understand how it works and then change it in a number of suggested ways to see what happens. For example, changing return a-b; in a comparison function to return b-a; causes an alphabetical sort to be descending rather than ascending.

My guiding principle is to give students as much freedom as possible within the scope of the course. Their lives are very regimented and controlled, so class time is a welcome respite from that control. One man said to me, "When I'm in your class I feel the most normal of my entire day." Another said, "Being in your class has given me the first connection to my former life since I came here."

#### 6. INTERACTING WITH STUDENTS

Each of us is more than the worst thing we've ever done. — Bryan Stevenson, *Just Mercy* [19]

I don't think of the men in my classes as bad men, but as men who have done something bad.<sup>3,4</sup> No man has ever said to me that he is innocent of the crime for which he was sentenced. On the contrary, one told me that he "put himself here" and has "no one to blame but himself." I could Google the men to find news articles that report their crimes, but I do not do so because I really don't want to know. To me they are simply adult students trying to rebuild their lives through education within a very difficult set of circumstances.

### 6.1. Getting and Giving Respect



It might seem obvious to say that respect between student and teacher is critical to effective teaching. To the incarcerated, however, respect has an even deeper meaning and greater influence. I have experienced nothing but the utmost respect from the men in my classes. However, I have found that for some, their lack of respect *for themselves* holds them back from achieving their potential.

A major lesson in prison volunteer training is that you're not there to make friends. You are to keep your distance—both physically and personally—from the incarcerated men with whom you work. Again, the men are not allowed to contact me when I am outside the prison, nor am I allowed to contact them. There is even prohibition against contact after they've been released.

When I taught in the university I typically addressed students by their first name, and many—especially older graduate students—addressed me in the same way. In the prison, I've been told to stick to last names and advised to precede those with "Mr." That puts everyone on an even keel with a bit of "distance" between us.

### 6.2. Showing Respect

As the saying goes, "Actions speak louder than words." It is impossible to really imagine what it's like to be incarcerated. Suffice it to say that very small actions that show respect can have a huge effect on the men's engagement with the class. There is one critically important caveat, however: whatever you do for one student you must do for all students. A case in point is an opportunity that arose when I distributed printed class notes and other handouts. I noticed that some men had folders for their papers and some did not. I asked the men about this and they told me that they have to buy those folders with the limited funds they have in their canteen accounts.

I therefore went to Walmart and bought expandable folders for the entire class. I labelled these with the course name, "Class Notes & Handouts," the term date, and personalized them with each student's name (see Figure 4). Total cost for 10 folders: \$6. From the men's reactions when I handed these out you would have thought I had spent \$600. Small gestures like this are allowed, but once again only if what you do for one student you do for all students.



Fig. 4. Labelled folders distributed to students.

Another idea for showing respect came from my administrative supervisor. Given my status as a professor emeritus, she asked if my university might be willing to issue certificates to the men who completed my course. I spoke to one of the Vice Provosts and he loved the idea. He referred me to the Dean of Graduate, Online and Professional Studies. She was also supportive and even approved the awarding of 2.9 Continuing Education Units along with the certificate shown in Figure 5.<sup>5</sup>

### 6.3. Soliciting Students' Opinions

It has always baffled me that student evaluations of teaching (SETs) are done on the last day of class. I understand that these instruments are meant to provide administrators with data of an instructor's effectiveness, but student comments on these forms often contain real insights into how a course can be improved. What good is it to know after a course is over that there is something you could have done to significantly improve it?



Fig. 5. Course completion certificate.

Doing SETs in the middle of a course allows you to gather formative information that is actually actionable. That is, with half the course remaining you have time to address problems identified by current students in the current class. Doing SETs at the end of a course may guide you to improving the course the next time you teach it, but that's of no value to your current students.

This timing has additional benefits in a prison environment. First, given the uniqueness of the environment, I found that I had much to learn about teaching "behind the wall." The students themselves educated me about many of the challenges discussed in this paper, and I adjusted my teaching to incorporate many of their suggestions. Second, there is no better way to show respect for someone than by asking his or her opinion.

The SETs include both discrete agree-disagree questions and open-ended responses as shown in Figure 6.

The course is going well so far				
The course pace is too fast SA A				
I am comfortable asking questions SA A				
The handouts are useful SA A	Ν	D SD		
The exercises are too complex SA A	Ν	D SD		
This course would be better if				
I would learn more from this course if				
Mr. Heines would be a more effective teacher if				

Fig. 6. Representative mid-course SET questions.

# 7. THE RETURN

I have certainly received my share of thanks from former students over the years. I have never, however, been thanked

by each and every student after every class I taught, which is what typically happens each time I go inside the prison.

I often tell the men that I learn just as much from them as they do from me. Many say they don't believe that, but in my career I have learned that the opening verse of *Getting to Know You* from *The King and I* couldn't be more true [16]:

It's a very ancient saying But a true and honest thought, That if you become a teacher, By your pupils you'll be taught.

My learning has been both professional and highly personal. For the former, I learned to adapt the teaching style I used for many decades to a classroom setting that is far different from any I have ever known. For the latter, I learned to appreciate more deeply the myriad advantages I have had throughout my life, from growing up in a loving family to being able to pursue higher education to having a rewarding career. Many of the incarcerated men I encounter never had the advantages that most of us take for granted.

The true measure of our character is how we treat the poor, the disfavored, the accused, the incarcerated, and the condemned. — Bryan Stevenson, Just Mercy [20]

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TEK Collaborative	Apache Software Foundation
Packt Publishing	OpenJS Foundation

### **ENDNOTES**

- <sup>1</sup> See jesseheines.com/cssdweb.edu for a publicly-viewable clone of the course website.
- <sup>2</sup> The blog post is publicly viewable at: jblearning.com/ blog/jbl/2023/04/11/a-lesson-on-student-engage ment-retired-professor-teaches-incarcerated-peoplehtml-css-and-javascript-giving-them-purpose-in-theprocess.
- <sup>3</sup> I teach in a men's prison; there are no women in my classes.
- <sup>4</sup> All of my students are classified as medium security. Minimum security men are housed outside the prison walls and are not allowed to come in for classes. There are classes for those in maximum security, but I do not teach them.
- <sup>5</sup> The number of CEUs is based on the number of class contact hours.

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