

Study demonstrates efficacy of web programming course for incarcerated individuals

April 25 2024, by Rachel Gordon



Credit: Massachusetts Institute of Technology

Several years ago, a team of scientists from MIT and the University of Massachusetts at Lowell designed and deployed a first-of-its-kind web programming course for incarcerated individuals across multiple correctional facilities. The program, [Brave Behind Bars](#), uses virtual classroom technology to deliver web design training to students behind prison walls.

The program brought together men and women from gender-segregated facilities to learn fundamentals in HTML, CSS, and JavaScript, helping them to create websites addressing social issues of their own choosing. The program is accredited through three collaborating universities: Georgetown University, Benjamin Franklin Institute of Technology, and Washington County Community College.

In a new open-access [paper](#) about the project, the team analyzed its impact: They used a multi-pronged approach, gathering insights through comprehensive surveys with participants from dichotomous and open-ended questions.

The results painted a powerful narrative of increased self-efficacy—a crucial marker for successful reentry into the workforce and society—among incarcerated learners.

"Education has long been recognized as a pivotal factor in reducing recidivism and fostering successful reentry," says Martin Nisser, an MIT Ph.D. candidate in [electrical engineering](#) and [computer science](#) (EECS), affiliate of the MIT Computer Science and Artificial Intelligence Laboratory (CSAIL), and lead author of the paper.

"By equipping incarcerated learners with invaluable digital literacy skills and boosting their self-efficacy, our program aims to foster the skills

necessary to thrive in today's technology-driven world."

The strength of Brave Behind Bars is manifested vividly through the impactful websites created by the students. One project, "End Homelessness Statewide," provided vital resources to help unhoused individuals find temporary and permanent shelter.

Another website, "The PinkPrint," addressed the unique challenges incarcerated women face, serving as a "blueprint" with educational resources and gender-responsive support. Equally remarkable was "No Excuse for Domestic Abuse," which raised awareness about the prevalence of domestic violence while offering a lifeline to victims seeking help.

A mixed-methods research study evaluated how the 12-week, college-accredited course was faring. "Our [qualitative study](#) in 2022 involving thematic analyses of post-course surveys from 34 students revealed overwhelmingly positive feedback, with students reporting increased [self-confidence](#), motivation, and a sense of empowerment from learning web programming skills. The themes we uncovered highlighted the powerful effect of the program on students' self-beliefs," says Nisser.

The urgency of such work cannot be understated, as underscored by the alarmingly high rates of recidivism, the rate at which formerly incarcerated individuals are rearrested leading to re-conviction.

A central cause of mass incarceration, data shows that an estimated 68% of people released from U.S. jails or prisons were arrested within three years between 2005 and 2014, rising to 83% within nine years.

However, a [meta-analysis](#) spanning 37 years of research (1980–2017) revealed a promising trend: Incarcerated individuals who participate in post-secondary educational programs are 28% less likely to return to

prison.

Joblessness among the formerly incarcerated can be as high as 60% a year after release. Almost two-thirds of those who secure employment enter jobs typically available to people with little or no education, such as waste management, manufacturing, and construction—jobs increasingly being automated or outsourced.

While both the demand and supply of AI curricula in [higher education](#) have sky-rocketed, these have not typically served disadvantaged people, who must be caught up in foundational digital literacy. The ability to skillfully navigate computers and the internet is becoming essential for post-release employment in the modern workplace, as well as to navigate the economic, social, and health-related resources that are now embedded in our digital technologies.

The other part was a quantitative study in 2023, with 37 participants measuring general computer programming self-efficacy using validated scales before and after the course. The authors saw an increase in mean scores for general self-efficacy and digital literacy after the course, but the pre- and post-course measures of self-efficacy were not statistically significantly different.

This challenge, the team says, is common in carceral environments, where meta-analyses of multiple studies with less significant results are often needed to achieve statistical significance and draw meaningful conclusions. The authors also acknowledge that their quantitative study contributes to this data pool, and they are conducting new courses to gather more data for future comprehensive statistical analyses.

"By providing incarcerated individuals with an opportunity to develop digital literacy, the Brave Behind Bars program facilitates self-efficacy through a novel education model designed not only to expand access to

the internet for individuals but also to teach them the navigation and web design skills needed to connect and engage with the communities to which they will return," says UMass Lowell professor and chair of the School of Criminology and Justice Studies April Pattavina, who was not involved in the research.

"I applaud the team's dedication in implementing the program and look forward to longer-term evaluations on graduates when they leave prison so we can learn about the extent to which the program transforms lives on the outside."

One student, reflecting on the impact of the Brave Behind Bars program, says, "This class has shown me that I am human again, and I deserve to have a better quality of life post-incarceration." In an environment where individuals can too often be made to feel like numbers, a program is underway to demonstrate that these individuals can be seen once more as people.

The research was conducted by a team of experts from MIT and UMass Lowell. Leading the team was Martin Nisser, who wrote the paper alongside Marisa Gaetz, a Ph.D. student in the MIT Department of Mathematics; Andrew Fishberg, a Ph.D. student in the MIT Department of Aeronautics and Astronautics; and Raechel Soicher, assistant director of research and evaluation at the MIT Teaching and Learning Laboratory. Faraz Faruqi, an MIT Ph.D. student in EECS and CSAIL affiliate, contributed significantly to the project. Completing the team, Joshua Long brought his expertise from UMass Lowell, adding a unique perspective to the collaborative effort.

More information: From Prisons to Programming: Fostering Self-Efficacy via Virtual

