

HYBRID MATHEMATICS COURSES FOR INCARCERATED YOUTH

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INTRODUCTION

“Research shows that education is the most significant of the eight factors that influence recidivism rates for incarcerated youth. We value the impact that a good quality education can have on helping our graduates lead productive and fulfilling lives when they return to society.”

--Willamette Educational District website

With the preponderance in the United States of children tried as adults and mandatory sentencing, the population of incarcerated people includes many talented and motivated young people. Many of these young people take online college courses, often completing more than half of a BS or BA degree while incarcerated. However, learning mathematics online is a continuing challenge for these youth—there are no math tutoring centers in correctional facilities!

When Portland State University began an initiative to develop hybrid courses, I realized that this would be a perfect solution to the mathematics obstacles facing incarcerated youth. In order to test the viability of this idea, M. Paul Latiolais and I designed and conducted a pilot project, offering a 2-quarter precalculus sequence in which the face-to-face sessions occurred within a maximum security youth correctional facility.

The school administrators at MacLaren Youth Correctional Facility in Woodburn, Oregon, planned logistics, identified students, and obtained financial aid for the students. We conducted a 2-quarter hybrid precalculus sequence with six students starting fall quarter 2010. Our online platforms are not mathematics-friendly, so most online activity was discussion among the students and myself. Dr. O'Halloran met face-to-face with the students once a week. Despite a range of abilities, all six students passed both courses, with three A's the first quarter and two A's the second quarter.

With a successful conclusion to the pilot phase of this project, we plan to move forward by offering a fully-populated PSU hybrid course with two face-to-face sessions, one at PSU and one at MacLaren Youth Correctional Facility.

In the following, we will outline the process of initiating and conducting hybrid mathematics courses at a secure facility, the challenges and successes of conducting such hybrid courses, and the outcomes of this pilot project.

CLASS PREPARATION AND STRUCTURE

We developed this pilot project with training in hybrid course development provided by PSU's Center for Academic Excellence. The goal of the project was to test the viability of hybrid mathematics courses for incarcerated youth.

In January of 2010, I contacted the principal of the school at MacLaren Youth Correctional Facility with a proposal to offer a hybrid calculus course. After determining that there would be too few students for a calculus course, we decided to offer precalculus, which is a 2-quarter sequence in the Oregon university system. In September 2010, six MacLaren students enrolled, with financial aid from PSU's LINK program and from MacLaren's school budget.

The department-mandated text (Precalculus by Gary Rockswold) became the foundation of the courses; reading the text successfully replaced lectures (not that we lecture much anyway). Each student was provided with a textbook, a graphing calculator, a protractor, and plenty of graph paper. Online activities included online discussion of the assigned reading and homework, as well as use of computational and tutorial websites (wolframalpha.com, purplemath.com, mathpower.com, coolmath.com, algebasics.com). The IA College Lab Supervisor at MacLaren was a key support person, checking in regularly with the students and proctoring exams.

Each face-to-face session was devoted to addressing questions about homework exercises and working on the more difficult topics in material that they have been assigned to read and discuss online. Each exam had an online portion and an on-paper portion; the on-paper portion consisted of sketches of graphs and diagrams to support exam answers.

A TYPICAL FACE-TO-FACE CLASS SESSION AT MACLAREN

"Quadratic functions really don't come up a lot in jail."

MacLaren Youth Correctional Facility is home to 295 males between the ages of 12 and 25. Many of these young men complete their high school education at the facility's fully accredited high school, William P. Lord High School, and continue their education, enrolling in online courses offered by Oregon community colleges and universities. According to one of my students *"It's a place for the right kind of people to better themselves. It has this one size fits all policy that doesn't work for a lot of people but it makes progress."*

With my home conveniently located halfway between Portland State University and MacLaren, the commute to MacLaren takes the same amount of time as the commute to PSU—and there's free parking! Being sure to leave everything in my car other than class materials and car keys, I proceed through the gatehouse and onto the campus. A 20-foot high chain link fence surrounds living units ("cottages"), an administration building, school, and gym. As I walk to the school, I see young men training dogs in the Project

Pooch program, others headed to work sites, and many going to the school, each group accompanied by a watchful staff member.

Each classroom is required to have at least two adults present, so I wait at the door to my classroom until a staff member arrives. My six students are a diverse group: 3 African-Americans, 1 Latino, 1 Asian, and 1 Caucasian. The face-to-face session begins with the students helping each other to write solutions to the homework exercises on the white board. In helping each other, they insist that the “mentee” think the problem through; I keep hearing “otherwise you won’t learn it.” After everyone has reached an understanding of the homework exercises, we proceed to new material. Both the homework and the new material have been the subject of online discussions, so the foundations for the face-to-face session have been laid.

During the planning phase, one of my major concerns was that my usual cooperative learning format might not be viable in a once-per-week face-to-face class meeting. In fact, I found my usual format to be even more effective in this setting with such motivated students. I carefully chose the topics presented in the face-to-face session to be ones which students find challenging. I (correctly) assumed that the online instruction and homework would be sufficient for them to learn the basic ideas.

At the end of our 2-hour class session, pencils (potential weapons) were turned in and staff accompanied students to their living quarters or work sites.

CHALLENGES

These guys are just sitting around with time on their hands, right? Don’t they have plenty of time to study and to engage in online activities? No! The motivated youth have paying jobs within the facility (often more than 30 hours per week); the money they earn is likely to be their total financial resource upon release. More than once, students missed face-to-face class sessions because their work crew was short-handed. Most of them are also taking several other online courses (as much as 14 college credits). Besides work and study, there are required counseling sessions (4-6 hours per week) and diversity activities. *“My work load is crazy; I participate in cultural groups, treatment groups, along with taking 4 college courses and dealing with other people’s attitudes all day. Jail isn’t a vacation at all; I’m actually doing more here than I was when I was out. I can’t wait for a vacation.”*

Many incarcerated youth have led chaotic lives, including interrupted schooling. The resulting gaps in their mathematical knowledge and low self-esteem in educational settings are major roadblocks to their continuing education.

Besides our online discussions, the only help available outside of class is help from each other and the handful of other youth who have previously completed online precalculus courses. The full-time mathematics teacher’s knowledge doesn’t extend much beyond high school Algebra I. Computer access is limited to school hours Monday through

Friday (4-5 hours per day), so students must plan their time carefully. Given this limitation, we based the courses on the text, not on online activities. Each website that we did ask them to use had to be cleared by the (overworked) computer technology security staff member. Sometimes pencils were not available in students' living quarters (no student owns a pencil or pen), limiting homework preparation. Once the clock hits 9:00 p.m., youth are not allowed to have hardback books, pens, pencils, or paper in their possession.

ADVANTAGES

These students understand the value of education and appreciate educational opportunities. The opportunities available to them at MacLaren are often opportunities that would not be available to them on the "outs". They are very motivated to succeed, fully aware of the challenges that will face them upon release. I'm very grateful that the MacLaren math teacher had provided the students with a solid foundation in use of graphing calculators and a solid understanding of the coordinate plane and graphing.

Most of the students shared living quarters with at least one other student in the class, providing opportunities to help each other with homework. We made it clear that grades are performance-based, so working together increases the possibility of a better grade. We emphasized that people learn best by teaching; every time you explain a concept to someone else you learn it better yourself. All of the students contributed to each others' learning.

"For the most part we are like normal students....teach us and we will learn."

OUTCOMES, ASSESSMENT, AND FUTURE PLANS

Outcomes included student success, as measured by success on exams. Because we conducted some informal preparatory sessions during the summer before classes started, we were aware of each student's mathematical abilities prior to enrollment in the course. In all cases, there was improvement in computational skills and understanding of mathematics concepts. Several students reported an improvement in time-management skills and increased confidence in their mathematical abilities. Students also reported the benefits of experiencing a college-level classroom environment, interacting with people instead of computers.

One message we emphasized was "Pass it forward." We continually expressed the expectation that they help their peers with mathematics homework, both in these courses and in other courses. Beyond helping each other with these courses, not much has occurred in this direction.

An unanticipated by-product of our pilot project was an upgrade of the 2-quarter precalculus sequence. Usually we have only adjuncts and teaching assistants conducting precalculus courses and many of them are not equipped with sufficient guidance and/or

experience. We developed carefully thought-out content goals, assessments of these goals, and innovative course materials that will be available for use by the other precalculus instructors.

Through our experience in this pilot project, we have identified student needs that have not been addressed well in the past. In particular, we have become aware of the value of online tutorial software, which has not been used widely at PSU. One of the upgrades to PSU's precalculus instruction will be the integration of online tutorials into these courses.

With only 6 students in the two pilot courses, we taught this experimental class as an overload. Starting next fall, we plan to offer the 2-quarter hybrid sequence in-load and conduct two face-to-face sessions, one at PSU and one at MacLaren, so that the overload will be only one extra face-to-face session.

FURTHER COMMENTS FROM THE STUDENTS:

Aside from giving me college credits, I was allowed mental exercise, I was put in a math class that gives me a challenge again. Before I was put in this class I was in "lower" levels of math, and this got my brain going again. This opportunity also allows me to have the chance to see what it is like to be in a "real" class setting, with the interactions with each other, and with the teacher, it helps me to realize what a real class will be like, so when I get out I will be better prepared for the "real" class setting.

This class has inspired me to take on harder things in life. I was a little nervous at taking more than 2 classes at a time, but if you can make it past this class, then it's possible to do 3 classes. This definitely made my schedule a little crazy; I'm more of a day by day, one foot in front of the other, not really a plan things out kind of guy, so it helped me there. I feel that I can take any math class right now, statistics, probability, it really can't get more complicated than this.

I've acquired about 40 something credits towards my 90-credit associates degree. See you all at PSU next year!

Right now this is my only class that I take but I will be taking more classes next term.

That is yet another great thing about this class, it helps develop a sense of time management. Especially since it is not all on line, so we have to manage the schedule around the "in class" part. So this has definitely helped me to learn a lot, and not just out of the book.

This was a very important offering for many of us who hadn't done any real math in quite some time. I would otherwise not have been able to advance in the rest of my college studies without having these skills. Mention that we're capable of great things as long as we have direction and the will to succeed. People like you and the people at Lord High

School and PSU who are willing to help us out are great; a small effort on your side can be transformed into wonderful things on our part.

Thank you Dr. Joyce.