





Full-size, high-speed autonomous cars with Ford

Safety with and without a driver



Uncertainty in the Curriculum



Smartphone security hole

by Nicole Casal Moore • Michigan Engineering • May 12, 2017

'Open port' backdoors are common. | [Short Read](#)



Open port backdoors could be exploited to steal private information such as contacts, security credentials and photos; to remotely control a device; to perform a denial of service attack or to inject malicious code that could jumpstart widespread, virus-like attacks, the researchers said.



Reports say Fiat Chrysler could face federal suit over excess diesel emissions

[Eric D. Lawrence](#), **Detroit Free Press**

Published 12:12 p.m. ET May 18, 2017

Experiential Learning in the Engineering Design Process
Team-Based, Experiential Engineering Education Opportunities:

Students from 9 Different Schools and Colleges Across Campus

Graduate and Undergraduate Students

Faculty-Sponsored Research Design Teams

Industry Sponsored Design Teams

Hands-on Technical and Professional Skills Workshops





Connected vehicle wireless, roadside equipment

Wide variety of repositionable obstacles

Automated and wireless connected vehicles

Stationary and mechanized pedestrians

Repositionable building facades

Range of roadside signage, lighting and traffic control devices

Wide range of simple and complex roadway geometry

Interdisciplinary Education



GLOBAL MULTIDISCIPLINARY DESIGN PROGRAM

BUILDING GLOBALLY COMPETENT ENGINEERS THROUGH
PROFESSIONAL TEAM EXPERIENCE IN CHINA



Community Engagement





BLUElab 



133 Chrysler



Personalizing Introductory Computer Science: Ecoach in EECS183, 200 and Beyond



Mary Lou Dorf, Ben Hayward, Holly Derry, Amir Kamil, Erin Donahue, Kristen Escher

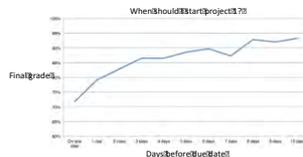
Nudge to Start Projects Early

Project 1: CUPCAKES!

Past students agree that the best tip for scoring highly on the project is **START EARLY**.

There are plenty of reasons to turn in your first submission today.

- Students who start earlier receive higher grades (in the class!)
- Starting project 1 on the due date earned the lowest grades in the class: an average of 72%
- Starting a week or more before earned the highest grades in the class: an average of 85% to 93%



- You don't need to finish the project to receive feedback from the autograder
- Starting early gives you better access to staff
- Extra Credit

Nudge on How CS is Really Magic

Computer Science is changing everything.
<https://www.youtube.com/watch?v=xLqSul1bdHg>

A pregnant blind woman goes in for an exam and the Doctor makes a 3D print of the fetus's face.
<https://www.facebook.com/omeletocom/videos/>

Fighting dyslexia with Computer Science
<https://www.youtube.com/watch?v=2LK9bc3NUKE>

Closest boy finds his mother using Google Earth.
<https://www.youtube.com/watch?v=uEY-ij-tCOWQ>

GOAL Provide students with consistent insights into their progress leading to **higher motivation, engagement, and behavior change**

WHAT Provides expert **electronic coaching** to students with **personalized messaging**

HOW Combines learning analytics with the best of behavioral change theory

BENEFITS Learn best practices, receive personalized assistance, discover opportunities in areas of interest, avoid common pitfalls

Nudge on Don't Give Up

Post Exam 1 – Words of Encouragement!

Congratulations. Great Job!!!

The vast, vast majority (I'd say 98% of students in EECS aren't inherently brilliant – they work hard. It's easy to think that you don't belong in CS that everyone is much smarter etc., but that simply isn't true. When I began CS I came from a liberal arts background with no math – I thought I was going to be destroyed. I thought these CS kids are going to blow me away – I'm going to look dumb. This type of thinking terrified me – and only got worse when I got a D on the first EECS 183 exam.

I decided to persevere and then, things just clicked after awhile – my subsequent exams score was an A. I still have to work VERY hard to maintain a high GPA in CS – but it's the most rewarding journey I've ever had.

Nudge on Exam Prep

Exams: Secret to Success!

Fear not, Sean

Hints and tips to help you prepare for Exam 1

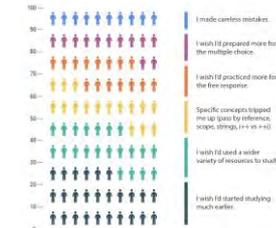
Before the exam

- Practice on paper (not on a computer)
- Practice past exams
- Keep it simple
- Lay out your logic before you code
- Start with what you know – there always is something

"How would you have prepared differently?!"

We analyzed over 300 answers from last term.

Here is what we found:



Exam Playbook: Preparing for exams!

- What grade are you aiming to get on the exam?
- How motivated are you to get this grade?
- How important is it to you to get this grade?
- How excited, anxious, confident, frustrated, prepared, insecure, determined are you?
- To achieve the grade you want, which resources will help you prepare?
- Describe why you think it will be useful
- How, When, and Where will you use each resource?

Purdue's Bold Move

Indiana institution acquires Kaplan University and its 32,000 students in an unprecedented move to enter online market as enrollment continues to slump.

By **Paul Fain** and **Rick Seltzer**
// April 28, 2017

49 COMMENTS 



PURDUE UNIVERSITY
Mitch Daniels, Purdue University's president, announcing deal with Kaplan Thursday

Diversity, Equity and Inclusiveness (DEI)



Combating Implicit Gender Bias in Introductory Computer Programming Courses

Laura K. Alford (NA&ME), Valeria Bertacco (CSE), Mary Lou Dorf (CSE), Sophia Kotov (LSA:CS)



WORK IN PROGRESS

obstacles to gender diversity
in the computer science and computer engineering undergraduate programs

| stereotype | climate | self-efficacy |
|---|---|--|
| traits of a computer scientist are not appealing to women, affecting entry-level enrollment | women experiences in freshmen and sophomore-level courses are often negative (isolation, harassment, etc), with the result that many decide to change majors, hence the poor retention rate | women have lower self-efficacy in STEM fields than their male peers, e.g. women view an A/B+ as an indicator they are not performing at a level sufficient to complete the degree successfully |

GOAL remove obstacles that hinder enrollment and retention of female students in the CSE program

research supported by Transforming Learning for a Third Century Grant: *Computing CARES*



Computing CARES Directive #3: Improve climate and conduct among the student population in the entry-level courses.

THEORY raising awareness of implicit bias will improve the **climate** of the CSE program

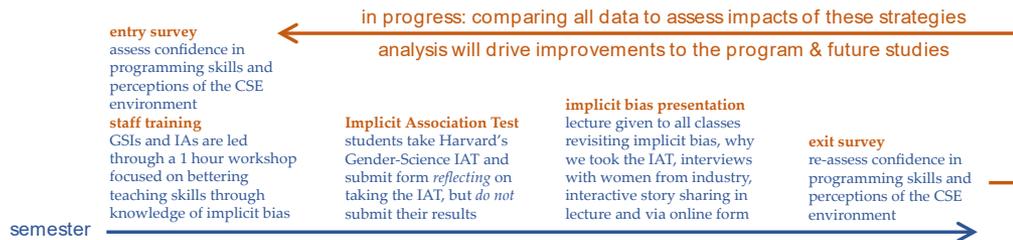
HOW a series of interactive exercises on implicit gender bias in CSE

WHY to encourage a more welcoming atmosphere for women (and everyone!)

COURSES ENGR 101/151
EECS 183/280

DATA Fall 2015 (collected, processing)
Winter 2016 (collecting now)

FUTURE track female student enrollment in CSE; long term study on implicit bias



IMPLICATIONS

improved understanding of student experiences in CSE classes will provide guidance on creating and sustaining a welcoming environment for all students

spin-off group investigating implicit bias of all kinds in first-year engineering courses

spin-off group supported by Inclusive Teaching Grant W16: Addressing the Impact of Implicit Bias on Teams in Introductory Engineering Courses

Diversity, Equity and Inclusiveness (DEI)



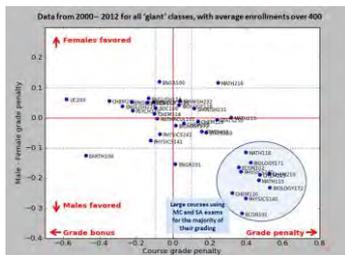
REBUILD-ing STEM Education at Michigan

Tim McKay: Arthur Thurnau Professor of Physics, Astronomy, and Education
<https://rebuild.lsa.umich.edu/>



Stereotype Threat and Gender Differences

Despite generations of gradual progress, women and minorities remain underrepresented in the leadership of all STEM disciplines. The causes of this disparity are various, but one important factor is the existence of group performance differences (GPDs) in introductory STEM courses. These GPDs persist even when accounting for various measures of prior performance, including high school GPA, standardized tests, and prior college performance. We have uncovered a consistent pattern in GPDs: while they are ubiquitous and substantial in lecture courses evaluated by timed examinations, they are absent in lab courses evaluated through more authentic means. The pattern observed at Michigan has now been confirmed in data from other R1 universities. This pattern suggests that evaluative style might be responsible for substantial gendered performance differences, rather than subject matter or intrinsic ability. We hypothesize that stereotype threat (ST) plays a central role. When an individual is placed in an evaluative environment in which they know others might expect them to confirm a negative stereotype, they expend some cognitive resources on this concern, modestly reducing their ability to perform.



Authentic Research Design Labs

Two new HHMI grants are supporting the development of Authentic Research Design labs for undergraduates in introductory biology and chemistry courses at Michigan. These labs expose students to authentic science from their earliest classes. Two models are in use.

1. Faculty Research based labs: Research questions of authentic importance to faculty members are brought into introductory lab sections.
2. Student designed labs: Students spend the first half of the term learning how to pose an authentic research question of their own.

Abstract

The University of Michigan began a campus-wide program to reinvent introductory teaching and learning in the core STEM disciplines in January 2014. The Researching Evidence Based Undergraduate Instructional Learning Developments (REBUILD) project brings together the Departments of Physics, Chemistry, Biology, Math, and Astronomy in a multi-year effort to change the culture around intro STEM teaching. Our goal is to make evidence-based, scholarly teaching the new normal, replacing our longstanding reliance on tradition. Since REBUILD launched, we have engaged in a wide range of reform and analytics efforts. In this poster we will report on a few of our recent efforts.

REBUILD team members: Tim McKay, Aaron Pierce, Trisha Wittkopp, Laura Olsen, Ken Cadigan, John Wolfe, Eric Bell, Karen Smith, Ralf Spatzler, Anne McNeil, Lisa Latucca, Mary Wright, Maybeth Bauer, Ben Koester, Gina Shereda.



University of Minnesota Biology Professor Robin Wright speaks at the fall 2014 Provost's Seminar on Teaching. Her topic: "Start Where You Are: Incorporating Scientific Teaching Approaches in Your Existing Lectures."

Active Learning and Studio Instruction

Many of the large STEM lecture courses at Michigan are making increasing use of active learning methods. Time spent in large group meetings (what used to be lectures) is often dedicated to in class work, while content is presented in advance. Biology 171 has been substantially revamped, leading to significant increases in both student learning and satisfaction. Physics 140 and its accompanying 141 lab are also the subject of a major reform effort to begin in January 2016. Students will use computation to engage with real world problems and conduct experiments using sensors they take out into the world.

Research conducted at other institutions makes it clear that a **studio mode of instruction**, in which students spend all their time in class working collaboratively in small groups, can have a major impact on both student performance and persistence in STEM. REBUILD team members are exploring ways to experiment with studio instruction now, and hoping to collaborate with the University on the creation of studio spaces adequate for teaching at our scale.



Campus-Wide STEM Planning Process

REBUILD is leading a campus-wide planning process incorporating input from diverse voices – administration, faculty, staff, and undergraduate and graduate students. We welcome broad-based participation in the Provost's Seminar on Teaching on October 5th, 2016, where we will unveil and discuss the STEM Community's proposal for transformation.



Writing to Learn in Introductory STEM Courses

Writing to Learning has long been known to be a very effective approach for supporting higher level learning across the disciplines. Despite this, students in introductory STEM courses are very rarely asked to write what they know, mostly because of perceived practical barriers to providing meaningful feedback to this work or assessing it for a grade.

At Michigan, Presidential Postdoctoral Fellow Ginger Shultz has been working with Professor Anne Gere – Director of the Sweetland Center for Writing – to develop MWrite, a toolkit of technologies and practices designed to support the inclusion of serious writing in large introductory STEM courses. This toolkit will rely on two key approaches – technology supported peer evaluation of writing, especially useful for developing student understanding of difficult concepts, and the use of natural language processing and latent semantic analysis for giving instructors a collective understanding of what students are writing. They have piloted this approach in General Chemistry, where students are asked to read Lewis's original 1916 paper in which he proposed the ideas for the 'dot structure'. After reading this, students respond in writing to a series of prompts aimed at eliciting their own understanding, then review one another's work. They show real gains in understanding: results were recently published in the *Journal of Chemistry Education*.

Diversity, Equity and Inclusiveness (DEI)



Diversity, Equity and Inclusiveness (DEI)



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