TEACHING TODAY'S STUDENTS

INSIDE HIGHER ED

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How to improve the learning curve

By embracing innovation and new technologies we can better engage and inspire every student

"Let's make education better." That's the simple idea that brought my co-founder, Mohsen Shahini, and I together. We're both engineers and, like engineers everywhere, we can't resist fixing things. With student engagement at an all-time low—the graduation rate among university students is less than 50 percent across North America—we decided that if there was something that needed fixing, it was the modern classroom.

The educational experience is totally out of touch with today's students: they're disengaged and they're not succeeding. Plus, they're paying between $200 and $300 per textbook—the price has risen more than 1,000 percent over the last 30 years. Many university students graduate with a useless degree and a massive pile of debt.

So, we built a platform that helps educators take advantage of the very technology students are already bringing into the classroom: smartphones. With Top Hat, we reinvented the lecture experience. It helps educators take attendance, administer polls, games and quizzes, and share lecture notes—all by connecting to students' mobile devices. What's more, Top Hat delivers online homework and interactive educational content, and provides a space where instructors can collaborate to create interactive and engaging course material. With Top Hat, every educator has the tools to make class fun and engaging.

Top Hat is now used at 75 percent of the top 1,000 leading colleges and universities in North America, with millions of students learning on our teaching platform. We're aggressively expanding into academic content, creating and distributing interactive materials that will finally provide a viable alternative to overpriced textbooks.

We treat instructors like heroes, elevating their work inside and outside the classroom with compelling content and activities to engage their students. We believe collaboration with our coworkers and with frontline educators is the key to our success.

As you head into another year in the classroom, I hope this collection of stories inspires you to consider new ways of reaching today's students. The old education system may be broken, but with a little ingenuity and innovative thinking, we can fix it together.

Mike Silagadze
CEO & Founder, Top Hat

Introduction

The teaching landscape today looks very different from that of a generation or two ago. Technology is of course different – both the options available to professors and the ubiquity of devices brought to campus by students. But there are many other issues as well, such as students who arrive with widely varying preparedness for college-level work. And there are ever increasing demands that colleges improve their retention and graduation rates. Combined, these shifts mean that engaging students has never been more important.

The articles in this compilation deal with different approaches by colleges and their professors to engaging students in a variety of ways. *Inside Higher Ed* will continue to cover these issues. We welcome your ideas on these pieces, and your ideas for future coverage.

--The Editors
editor@insidehighered.com

News

A selection of articles by *Inside Higher Ed* reporters

Loud and Clear

By Colleen Flaherty // March 7, 2017

Study details tool to help professors measure how much active learning is happening in their classrooms.

Want to be a more effective teacher? There's an app for that. Or, at least, there soon may be.

"Classroom Sound Can Be Used to Classify Teaching Practices in College Science Courses," published this week in *Proceedings of the National Academy of Sciences*, previews a new tool that measures the extent to which professors use active learning in their classrooms. Scholars involved in the study hope to make the tool into an iPhone application so others can work to increase their use of high-impact teaching practices. For now, it's available online, here.

"It's really hard to change if you don't measure what it is you're starting with," said the study's co-author, Kimberly Tanner, professor of biology education at San Francisco State University. "It's like trying to lose weight without a scale. To make changes you need some really quick feedback."

Active learning happens when students participate in classroom discussions and solve problems, rather than just listening passively. And previous studies suggest that active learning results in greater learning gains and student retention rates than lecture-only courses. So Tanner and dozens of other researchers across natural science, technology, math and engineering fields and institutions worked to create and test a machine-learning algorithm that uses sounds to identify teaching styles in college and university classrooms.

They argue that there's a particular need for their tool in the natural sciences, since hundreds of millions of dollars have gone toward improving STEM teaching nationally in hopes of keeping students -- especially underrepresented minorities and women -- in the so-called pipeline. And while all evidence suggests that significant learning gains can be made by many professors incorporating even a little active learning into their courses, the study says the "extent to which large numbers of faculty are changing their teaching methods to include active learning is unclear."

The new tool is called Decibel Analysis for Research in Teaching, or DART. It reports what types of activities are going on in a class-

room based on sound waveforms, categorized as follows, down to half-second audio samples: single voice, multiple voice and no voice. Lectures and question-and-answer periods count as single voice and are indicative of a nonactive teaching style. Multiple voice samples, including discussions and transitions, are considered active learning, as are no-voice samples, such as when the entire class is engaged in a silent writing activity.

Essentially, DART computes the volume and variance of sounds in a classroom. Average volume and high variance indicates one person speaking at a time, or lecturing or otherwise not engaging students in active learning. High volume and low variance, observed in multiple-voice, pair discussions, for example, means active learning. Low volume and low variance also means active learning is happening, as all students are likely engaged in a task.

The idea behind DART is that professors don't have to guess how much active learning they're asking their students to do, but can actually measure it to a relatively precise degree. Based on an initial study of 1,486 class session recordings from 67 community college and four-year university STEM courses, DART is 90 percent accurate, in classroom settings both big and small. In other words, the algorithm was nearly as good at determining what kind of learning was happening as were human annotators in the large-scale study of 1,720 class hours involving 49 instructors.

Perhaps surprisingly, the amount of time spent on active learning was higher in courses for biology majors than non-biology majors. The authors take this finding as a proof that DART can be used to study teaching styles across more disciplines, institutions and course types going forward. All courses in the study were taught by professors who had completed STEM-teaching professional development.

Over all, the professors fared well in their pursuit of active learning. While single-voice instruction was observed in all courses a majority of the time, 88 percent of analyzed courses used active learning in at least half the class sessions. Female instructors were more likely to engage their students in active learning than were men.

Tanner said that professors sometimes don't mean to dominate class time with lectures, but passion for their subject matter can unwittingly lead them away from active learning. DART is a clear, objective measure of how often that's happening, she said.

The Association of American Colleges and Universities works to promote high-impact teaching practices, among other goals. Lynn Pasquerella, president, said via email that these practices should be "infused throughout a student's

entire curriculum," and DART's value is that it offers a "point of information" for faculty members who are committed to engaged learning.

> "It's really hard to change if you don't measure what it is you're starting with. It's like trying to lose weight without a scale. To make changes you need some really quick feedback."

"If faculty tend to overestimate the amount of time their students are engaged in active learning processes, DART can provide data that will prompt the redesigning of assignments and foster enhanced student engagement," she said. "Learning outcomes can then be assessed comparing courses that rely most heavily on active learning with those that are dominated by lectures. We know that high impact practices have a disparately positive effect on students from underrepresented groups. As a result, there is significant potential for this tool to advance the equity imperative in STEM and beyond."

Again, the paper suggests that DART could aid "systematic analyses" of the use of active learning in classrooms, and says that its relative simplicity, affordability and ability to protect student and professor privacy (capturing sound types, not course content) make it ideal for such a pursuit. Tanner emphasized that it's a tool to improve one's teaching and learn more about the profession, and said it shouldn't be used by external parties for evaluation or punitive purposes.

"I think that DART will allow us to ask questions about how things are and aren't changing in higher ed," she added. ■

https://www.insidehighered.com/news/2017/03/07/study-details-tool-help-professors-measure-amount-active-learning-happening-their

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SOURCES [1] Christopher Kondo, Department of Marketing, California State University Fullerton [2] Results of the 2016 University Information Technology Services report on Top Hat usage at Indiana University [3] Christopher Kondo, Department of Marketing, California State University Fullerton [4] Results of the 2016 University Information Technology Services report on Top Hat usage at Indiana University

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The 'Computerless' Computer Lab

By Carl Straumsheim // December 5, 2016

After realizing virtually all students bring their own laptops to campus, Wisconsin liberal arts college opened an unorthodox computer lab.

Colleges were once the place where many students encountered their first computer -- and back then, the computer took up an entire room. Now, with computing power in every student's book bag and pocket, some colleges are finding the standard computer lab is no longer needed.

St. Norbert College is one such example. The private Roman Catholic liberal arts college, located in De Pere, Wis., last year finished a complete renovation of its Gehl-Mulva Science Center. The last phase of the project included plans for a computer lab, but with the college about to phase in a bring-your-own-device (BYOD) policy -- requiring that all students bring their own laptops to campus -- filling that lab with desktop computers didn't seem to make sense, said Krissy Lukens, the college's director of academic technology.

Students work in St. Norbert College's "computerless" computer lab.

"We had been noticing that students were beginning to use their own computers more," Lukens said in an interview. "Even in their computer science classes, about half of the students would bring in their own computers."

As it turned out, the number of students bringing their own devices to campus was higher than that anecdote would suggest, Lukens said. In fact, a full 98 percent of students were using their own laptops, the college found. Making laptop ownership a requirement meant students could use their financial aid funds to pay for computers (though the college also started a laptop

scholarship program to cover the last few laptopless students).

The growing use of personal computers and, more recently, smart devices is changing how colleges offer IT services. Without having to acquire and maintain desktop computers, college IT offices are free to move those resources around and change their priorities.

That can come as a much-needed windfall. According to the Campus Computing Survey, which tracks IT trends in higher education, nearly two-thirds of the chief information officers and senior IT leaders surveyed this fall said their offices' budgets have yet to recover from the financial crisis and the subsequent recession. About one-third said they began the academic year with less funding than last year.

Not all colleges are able to require students to bring their own devices to campus, however. At colleges that serve mostly low-income students, for example, a laptop requirement adds an additional financial burden. It also poses challenges for colleges themselves, as their networking infrastructure has to handle the crush of extra traffic.

In St. Norbert's case, the college was able to turn one of its many lecture halls into both offices and the new computer lab. As the before-and-after pictures show, the renovation left the new space virtually unrecognizable. The drab concrete cavern, complete with a leaky roof ("It was awful," said David C. Pankratz, associate professor of computer science), was replaced by a more communal space, with tables for small groups of students to work together, plug in their devices and display their work on large monitors, as well as movable lounge chairs, personal dry-erase boards and -- crucially -- a healthy supply of candy

Faculty members in the computer science department said they were able to influence the renovation process, including sharing thoughts on the general layout of the room and more specific wishes, such as the size of the monitors.

Since the idea behind the lab was for students to bring and use their own laptops, the faculty members said they focused specifically on creating a room that would give students space to work with one another and for instructors to view that work without invading students' personal space.

Bonita M. McVey, associate professor of computer science, said in an interview that there are some drawbacks to students bringing their own laptops to the computer lab -- lack of common configuration being one of them (though the college offers a virtual desktop environment that anyone can log in to for a more standardized experience). And while many students carry multiple devices with them -- laptops, tablets and smartphones -- she said computer science needs to be done on larger surfaces than can fit in a student's pocket.

"Students can work from anywhere now," McVey said. "What's cool is that students choose to come to the lab."

Since this is only the second year the computer science faculty members are using the lab, they could not say whether it has had an impact on the way they teach. Unlike the room it replaced, the lab isn't being used for lecturing, though Pankratz said he will occasionally schedule classes to meet in the lab rather than the lecture hall if he feels that students need hands-on time with the subject matter.

Similarly, McVey said she likes using the lab as a space where students can show off their work. In that setting, students use the tables and their monitors to host poster sessions.

But both McVey and Pankratz said the main benefit of the new computer lab isn't the technology it contains, but rather what it means for computer science majors at the college.

"We're really happy that our students have a place to call home," McVey said. "It has mattered greatly to us -- people feeling comfortable and feeling like they belong in the major." ■

https://www.insidehighered.com/news/2016/12/05/st-norbert-colleges-computerless-computer-lab-shows-impact-byod-higher-ed

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More Than Fun

By Sharon O'Malley // July 19, 2017

Educational video games offer active learning that some instructors say is hard to replicate in a traditional classroom.

In a few college classrooms around the country, students in introductory astronomy classes explore the galaxy as part of a crew tasked with finding a habitable planet. Along the way, they have to figure out how to redirect a rogue comet, fly a ship and choose the right scientific tools for each task.

Elsewhere, science students take a simulated tour of the inside of a human body that is being attacked by a virus. And in another course, students learning French become spies who have to speak and understand the language to unlock the clues that will lead them to the enemy's headquarters.

All of these adventures are video-enabled, thanks to a handful of sophisticated educational games designed for college classrooms. Used in conjunction with a textbook and traditional lectures, the games are "like a lab experience," said Kurt Squire, a professor of informatics at the University of California, Irvine, who helped design the astronomy video game *At Play in the Cosmos* when he was with the University of Wisconsin-Madison.

But unlike a lab experience, which Squire called "cookie-cutter," well-done educational video games present students with "authentic psychological experiences. They're getting feedback, looking for evidence, having a hypothesis, tying the mathematical equations to stuff that they see in the games … The game can include forms of scientific thinking. That's hard to do in the classroom."

But an educational video game is not a replacement for the classroom, said Eric Klopfer, a professor and director of the Scheller Teacher Education Program and the Education Arcade at the Massachusetts Institute of Technology. "It's part of a classroom activity where the game itself is an interesting action you're doing, but also is part of dialoguing with peers, reading, lectures. It's a common experience for everybody to build from," he said. "It becomes part of an ecosystem that an instructor or professor is building."

A Step Toward Affordability

In many cases, educational video games are developed by tech-savvy instructors for use in their own courses. Textbook company W. W. Norton & Company is distributing *At Play in the Cosmos*, which Squire said is a first step toward getting games to "work at scale" so they are available -- and affordable -- for professors to assign alongside books, video and class discussions. The challenge for creators of educational games, he said, is: "How do you get everything from the funding to help make it happen, to the publishing to the building the infrastructure, and even simply building the games?"

At Play in the Cosmos video game

Squire, whose team has launched more than a dozen games, has built a network of universities focused on showing educational technology

publishers how a game-based curriculum can succeed commercially.

"We're at a time of profound change in higher education, where we have new kinds of opportunities," he said. "This is an emerging form of instruction and learning that's coming."

Not for Every Course

Still, not every professor who believes well-designed games are valuable in education uses video games in courses. Barry Fishman, a professor in the school of information and the school of education at the University of Michigan, is less a fan of playing video games than of the concepts designers use to create them.

Fishman incorporates the principles of video-game design -- but not actual video games -- into his courses to stir motivation and engage his students in learning. He calls this "gamification" as opposed to gaming or "game-based learning."

The best games, Fishman said, are founded on motivation theory, which recognizes every person's intrinsic needs for learning, a sense of autonomy and a sense of belonging, and a recognition of the person's competence.

They promise a big reward for a win and reinforce good play with smaller prizes along the way. They provide immediate feedback for a right or wrong move. They give the player lots of chances to try again. They engage the player with others -- often as competitors -- who are interested in the same game. They offer a multiple paths -- with varying degrees of difficulty -- to achieve the goal so players don't get bored because the challenges are too easy or frustrated because they're impossible to master.

A kindergarten teacher who engages her class in a competition to see who can earn the most gold stars for correct answers is putting this into practice at its most basic level. An airline subscribes to it when it allows frequent fliers to amass points for ever-greater rewards, like free first-class upgrades or flights.

At the college level, Fishman offers students an array of options for earning points toward their course grade. Instead of assigning a term paper, for example, Fishman might let each students choose among writing a paper, producing a video, taking a test or participating in a group project.

Instead of announcing on the first day of class that everyone has an A -- which means they will lose points with every imperfect assignment they complete -- he starts students with a zero and lets them choose how to accumulate points, based on their interests and their level of competence.

The assignments, he said, "can be low-tech or high-tech. This isn't about playing games in class."

But like a video game, students can work at their own pace to build a mastery of the "game" -- or subject matter -- earning rewards in the form of points along the way to an achievable win that was challenging, but not impossible, to reach.

Fishman said the goal of airline rewards "is not for you to have a good time; the goal is to get you to do what the airline wants you to do," which is to be loyal to the brand. Likewise, he said, the goal of gamification in the classroom is "to get students to comply with what the professor wants you to do," which is learn the material.

It's harder than teaching the traditional way, said Fishman, whose institution designed and sells a tool called GradeCraft, a sort of super grade book that helps students and teachers keep track as they plot their way through all of the opportunities in the class.

Mika LaVaque-Manty, a professor of political science at the University of Michigan, applies "gameful pedagogy" to his courses as well.

"We are trying to think about what is interesting and motivating about playful and game practices for people," he said. One of the most effective game staples he borrows for class: "plenty of opportunities" for students who do poorly on an assignment to do it again -- using a different format.

"It's a safe failure," like in a video game, he said. "It's connected to what kinds of things might motivate a student." ■

https://www.insidehighered.com/digital-learning/article/2017/07/19/educational-games-expand-classroom-learning

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The Body Issue

By Carl Straumsheim // January 17, 2017

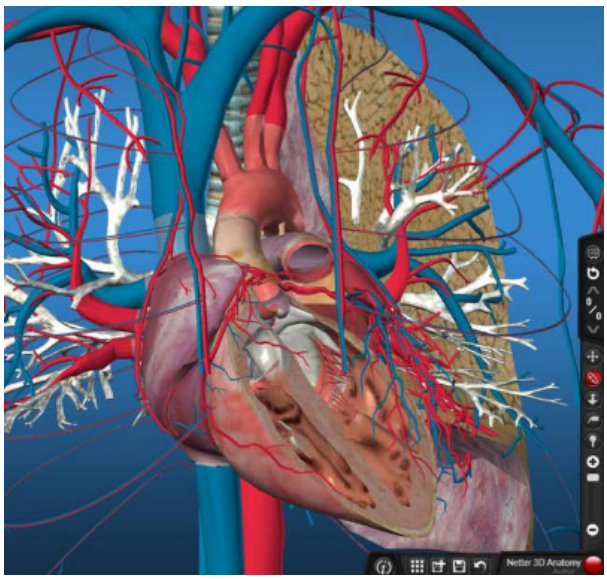
Study suggests digital models can help medical schools, which face a shortage of cadavers, teach students human anatomy.

Cutting into a digital cadaver can be more educational than the real thing for certain medical students, a new study found.

The study, "Use of Computer-Aided Holographic Models Improves Performance in a Cadaver Dissection-Based Course in Gross Anatomy," compared the ability of 265 first-year med students to identify anatomical structures when looking at cadavers, preserved body parts and digital models. It found that especially students who are struggling in med school appear to benefit from being taught anatomy in several different ways.

Across three practical exams, the top one-fifth of students in the study scored around 90 percent no matter the methodology. The bottom one-fifth of students, however, performed significantly better when reviewing digital models. Across the three exams, those students' test scores increased; on one test, average scores jumped from an F to a low C when students were asked to identify anatomical structures on a digital model versus a cadaver.

Over all, the students in the study scored the highest when quizzed on preserved samples. The study was published in *Clinical Anatomy*, a journal of anatomical associations in Britain, New Zealand, South Africa and the U.S.



Michael Miller, a professor of anatomical sciences at the Touro College of Osteopathic Medicine at Middletown, who wrote the report, said the findings highlight the benefits of teaching a topic through repetition and from different perspectives. Miller said he teaches anatomy using the three methods explored in the study. Students in his classes spend four hours a week in laboratory sessions -- two hours dissecting real cadavers, and an hour each reviewing digital models and samples preserved in a process known as plastination.

"One way or another, we can get through to the student to have them appreciate anatomical structures," Miller said in an interview. "We were just tapping into a different modality."

The findings are an early and en-

couraging sign for medical schools, which often struggle to acquire cadavers needed for crucial hands-on anatomy lessons. New York, where several of Touro's campuses are located, last year banned the use of unclaimed bodies as cadavers in medical schools, for example.

Most of the state's medical schools are now running their own body donation programs to ensure their students are able to learn about anatomy by dissecting real human tissue. Students at the Middletown campus dissect 12 cadavers a year; the Harlem campus, 33, said Kenneth J. Steier, dean of Touro Middletown.

"We would certainly like more, but it's limited," Steier said in an interview. "You have to balance the need for scientific and educational research versus the rights of families and the rights of bodies. You have to be sensitive to that."

"You have to balance the need for scientific and educational research versus the rights of families and the rights of bodies. You have to be sensitive to that."

The findings should also come as welcome news to the med schools -- including Touro -- that have over the last few years reformed how they teach medicine with an emphasis on digital education. The study suggests that, by doing so, they aren't hurting their students' chances academically or professionally.

Touro began flipping its classrooms -- delivering lectures in the form of videos students watch on their own time -- in 2010, and switched to an all-flipped model in 2012. Since then, Touro has seen students' first-time pass rate on a national board exam increase by nearly 20 percentage points. It now sits at around 95 percent, higher than the national average.

Steier said he believes Touro's move to a flipped-classroom model is the main reason for the increase in test scores. The generation of students entering med school today grew up communicating with others, entertaining themselves and learning using computers, smartphones and tablets, he said, and they seem to be responding positively when their education includes more than labs and lectures.

"They expect technology," Steier said. "A school that does not embrace new technology is maybe going to be left behind. You've got to change with the times."

Both Miller and Steier said digital models can't completely replace cadavers, however. Miller said each of the three different ways to teach anatomy comes with its own strengths and weaknesses. Digital models, for example, are only as flexible as the developer allows. Cadavers, once dissected, can't be reused. And while plastinated samples may be carefully preserved, they are only useful for observing body parts, not learning how to dissect them.

The technology behind digital models is also at the moment more expensive than real cadavers, which cost a couple of thousand dollars to acquire between administrative costs, freezing and transportation, Steier said. Altogether, the computer system at the Middletown campus cost more than $1 million, he said.

Additionally, dissecting a cadaver teaches students about more than just anatomy, Steier said.

"Students have to learn how to respect a body and the variation between bodies," Steier said. "Handling human tissue properly, maintaining and respecting it -- there's a whole culture that goes with it."

Digital models, in comparison, are idealized versions of what anatomical structures look like, Steier said. "It's like looking at the 3-D projection of a new car. They spin it around, and it looks perfect. Then you go look at it, and there's a dent. The color's not right. It could be dirty." ■

https://www.insidehighered.com/news/2017/01/17/study-explores-efficacy-using-digital-models-teach-anatomy

'Flipped Learning'

By Doug Lederman // May 17, 2017

In an interview, Robert Talbert discusses his book on the instructional approach and how college instructors can use it effectively.

It's easy to be distracted by the bright shiny objects in higher education. This innovation or that technology is often presented as the Next Big Thing that is going to change how (or how much) students learn.

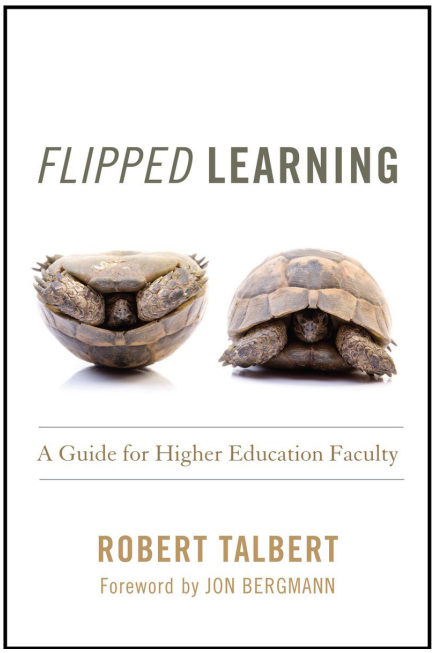
Buzzwords rule: competency-based education, MOOCs, adaptive learning.

It's tempting to put the "flipped classroom" in that category; the concept is frequently discussed by advocates for changing up how learning is delivered, and often linked to the latest technology.

But the reality is that like many so-called innovations, the idea of altering when and how students are exposed to new concepts and material, and focusing the time they spend with their instructors on applying and more creatively working with the ideas, is not a new one. While it is being embraced more widely and enthusiastically than ever before, it is time-tested, and significant research has been done to prove its efficacy. This is no fly-by-night concept.

Robert Talbert makes that clear in his new book, *Flipped Learning: A Guide for Higher Education Faculty* (Stylus). Talbert, an associate professor of mathematics at Grand Valley State University, lays out the history and theory behind the pedagogical approach, but spends much more of the book in practical exploration of how to use it. He describes various case studies in which institutions have experimented with flipped models, and then dives deeply, in great detail, into numerous approaches to designing courses in this way.

In the following exchange, which was conducted via email, Talbert discusses the book and the concept of flipped learning.



Q. Why do you believe flipped learning is so important to the present and future of higher education?

A. We're at a crossroads in higher education today where many of

the practices and beliefs about college that have worked over the last 100 years simply aren't fit for the needs of the world today or the future. Flipped learning on the other hand embodies many of the practices and beliefs that are found in the best of higher education in years past, and frames them in updated and coherent ways that can be used to move forward.

Flipped learning is a paradigm that brings together many of the practices that will make higher education viable for the next 50 to 100 years and situations them in a form that any professor can use. Those practices include intelligent use of technology without demanding any specific type of technology; focusing on active learning, which is something we now know helps all students succeed; and providing students with the opportunity to practice independent learning and self-regulation as they are given a significant portion of the responsibilities for learning.

These are the types of academic experiences that have been the hallmarks of the best teaching and learning of the last few centuries and which have the greatest relevance for our future, and they are the focal points of flipped learning. And all of this is couched in a radically student-centered approach that is predicated on relationships -- especially caring, productive working relationships between students and instructors.

Q. You note that your first experiment with flipped learning occurred out of necessity (when a computer programming course you believed required three hours a week was shrunk to half that). You write that your attempt (making the students watch pre-existing videos) was largely a disaster. Rather than give up, you kept at it. But lots of professors -- lots of humans -- are surprisingly afraid to experiment, and the rewards may not encourage it. How does higher education as an enterprise better encourage instructional experimentation (and tamp down fear of failure)?

A. Some of my colleagues at Grand Valley State University and I looked into this recently (others have done so as well), and we found that there are two common issues among faculty that can inhibit them from thoughtful experimentation: The rewards structure in terms of promotion and tenure and the perception of isolation.

We found that promotion and tenure, even when not primarily based on student course evaluations, often provided few or no incentives for trying new teaching approaches in the classroom. If you tried something new with a course and it succeeds, then you have good evaluations, but you also might have had good evaluations without trying the new thing. And if it fails, which is always a possibility, then you'd have a mark on your record that you might not have had if you'd stuck with the old method. So from a purely pragmatic standpoint, there's little to no upside in experimenting.

> "[A]ll of this is couched in a radically student-centered approach that is predicated on relationships -- especially caring, productive working relationships between students and instructors."

And in some cases this experimentation is actively discouraged. For example we found a department that explicitly states that scholarship in teaching and learning --- for example, if you publish the results of a classroom experiment in a peer-reviewed journal --- would not be counted towards a faculty member's scholarship requirements, period. And we're a teaching-focused university! It's far worse at other places that are focused much more heavily on discipline-specific scholarship of discovery or that put a lot more emphasis on course evaluations. So the criteria for rewards in higher education is not set up to reward sticking one's neck out to try something in teach-

ing that might improve student learning.

Regarding isolation, it means that faculty members often read about things like flipped learning and would like to try them out, but they feel as though they are going it alone without sufficient support. Even if you are in a department or university that does value excellent teaching and even has explicit language that ties the promotion and tenure structure to experimentation in teaching, if you feel like you're doing it by yourself, then you're less likely to do it. We found that the No.1 factor for whether faculty members adopt what's called an "evidence-based" teaching practice wasn't the preponderance of research evidence for that practice, but whether there was a colleague readily accessible to them -- a "person down the hall" -- who had tried it before and could be trusted for support.

What can higher education do to help address these two needs? Promotion and tenure structures can be rearranged so that thoughtful experimentation with new forms of teaching can be rewarded in some way and the failures that often come with experimentation put into context. For example, if a professor tries a flipped learning environment and it fails, don't simply downgrade the professor for it, but rather factor in how the professor responds and makes changes. We want faculty who are reflective and can teach like scholars, not merely faculty who don't run into problems.

Second, universities can create explicit pathways for like-minded professors to connect with each other on teaching and learning, for example, through faculty learning communities within a department or across multiple departments.

Flipped Learning Is...

"a pedagogical approach in which first contact with new concepts moves from the group learning space to the individual learning space in the form of structured activity, and the resulting group space is transformed into a dynamic, interactive learning environment where the educator guides students as they apply concepts and engage creatively in the subject matter."

Q. Lots of innovations are probably worse done badly than not at all, and particular when technology is involved (and companies and sometimes policy makers pushing those technologies), there's a tendency toward faddishness. How do we make use of digital technologies to improve practice without letting them become ends in themselves?

A. The key is simply to keep students and student learning at the center of all decisions about teaching and learning, including technology. "Improving practice" means improving student learning, and you can't have a sense about whether student learning improves without having a sense of, and a relationship with, students themselves.

So you don't simply choose to use a piece of technology because it's nifty or because a company is selling it to you. You should choose particular technologies because they solve problems with student learning, in the simplest way possible. Otherwise, the technology is a solution in search of a problem and the student is just a test subject.

An example from mathematics is the graphing calculator. These devices have been around since the 1980's and are heavily marketed to mathematics teachers. Many times, teachers or departments simply require students to buy the latest model for class, without asking the core questions: What problems does this technology solve, and is this particular technology the best solution?

Today, I think you can point to technologies like smartphone and tablet apps or websites like Desmos.com and make a strong case that graphing calculators just aren't the best choice any more. The same teaching and learning problem --- the visualization of mathematical functions --- has a better solution in terms of all the things that matter to students like price, ease of use, and so on. But you have to see it from the student's perspective to be able to buck the trends and the marketing.

Q. What are the best tools (other than your book, of course, which presents lots of good models) for spreading thoughtful experimentation and good practice? And are there ways to do so at scale, or is it inevitable that it happens one professor at a time?

A. As I mentioned earlier, the best tools are those that foster communication and relationships among like-minded faculty that work at a local level, to alleviate the perception that a faculty member is going it alone. The "tool" here need not be anything more complicated than email and a local coffee shop. Mainly, faculty just need a commitment to communicate, to listen and to help on a regular basis. It does not have to be one professor at a time, and in fact, the perception that it is just one professor makes it far less likely that anything will happen. If you're one of those professors, the best thing you can do is seek out others who are willing to work with you. If your campus has a teaching and learning center for faculty development, let them help you make connections. Otherwise, your dean or department chair can help.

At a larger scale, there are many robust online communities that bring together people from all over the world who are trying different teaching approaches. One example is the Flipped Learning Global Initiative that brings together experts and practitioners worldwide who are dedicated to advancing the cause of flipped learning. There are associated message boards and Slack teams where day-to-day communication can take place. I'd also recommend conferences like the Lilly Conferences that focus on evidence-based teaching practices, which are great places to get face time with like-minded people.

> "A flipped learning environment is one where you as a faculty member can have meaningful contact with every student (or at least every group of students) every day."

Q. Professors are often caricatured as technology haters and, therefore, impediments to innovation and "progress" in higher education. My sense is that faculty members aren't crazy to fear that the use of technology to deliver knowledge/content will lead cost-cutting administrators to perceive less need for instructors, because some of the rhetoric used by said administrators implies that. Do you believe that concepts like flipped learning can be used to pursue the wrong ends?

A. My personal experience is that faculty aren't Luddites. They don't fear technology as much as they fear (or rather, despise) pointless time-wasting, or fear the loss of their autonomy and what they know to be the best environments for teaching and learning.

Not only can some of these evidence-based practices like flipped learning be used for these wrong ends, they have been and will continue to be wrongly used. For example, I've read about flipped learning environments used in secondary schools for the purpose of converting class sessions, which were formerly 25 to 30 student traditional classes, into 100-plus student meetings where students just do exercises on the computer, for the purposes of cutting costs and eliminating teacher positions. Higher education is no better; administrators might surmise that space and expenses can be consolidated in exactly the same way.

What all of the things I just mentioned have in common is that students are on the periphery of those decisions rather than at the center. Flipped learning is radically based on the idea of relationships, especially between instructor and student.

A flipped learning environment is one where you as a faculty member can have meaningful contact

with every student (or at least every group of students) every day. Implementations of flipped learning that avoid or even negate this premise always fail. On the other hand, if you keep a sincere desire for student success at the center of your decisions, then you won't ever go far wrong.

I've already mentioned the dual issues of the rewards system of higher education and the perception of isolation as big impediments to thoughtful experimentation in teaching and learning.

Those are very big indeed. At the same time, they are not hard to fix, and doing so would provide powerful incentives to try flipped learning or any of a number of other innovative yet proven teaching and learning approaches. It will just take some courage on the part of campus leaders, including faculty leaders, to fix it.

Another issue for flipped learning specifically, possibly shared by other pedagogical approaches, is a corollary to the isolation issue -- that's that many of us are working on flipped learning without an understanding of what other people are doing or have done.

For example, in my book I show that since 2012, the number of peer-reviewed articles on flipped learning has been increasing exponentially, more than doubling in quantity each year, and that growth is on pace to continue in 2017.

And yet, many well-intentioned articles on flipped learning don't reference many of the other articles on flipped learning but instead frame it as something that was only invented last year. In my book, too, I talk about how in the early 2000's, flipped learning emerged from three different sources in higher education almost all at the same time (with two of those sources being universities 40 miles apart from each other), and then re-emerged in the 2010's in the K-12 world, all mostly unaware of each others' existence. We just all need to be more aware of what we are all doing, and it makes the importance of communities of practice that much more urgent. ■

https://www.insidehighered.com/digital-learning/article/2017/05/17/author-flipped-learning-discusses-what-it-and-how-professors-can

More Writing Through Automation

By Carl Straumsheim // July 10, 2017

University of Michigan adds an automated text-analysis tool to a growing program intended to give more students a chance to learn through writing.

High-enrollment courses often lead professors to assign multiple-choice quizzes, as more complicated forms of assessment dramatically increase the time they take to grade. This fall, the University of Michigan at Ann Arbor will test whether automated text analysis can help professors integrate more writing into their courses without imposing significant new time constraints.

The automated text-analysis tool is the latest addition to M-Write, a program run by the Gayle Morris Sweetland Center for Writing at Michigan. The program targets students in large introductory science courses, using writing as a strategy to improve student learning. Michigan has funded M-Write with a $1.8 million grant, aiming to bring the program to 10,000 students by 2021.

M-Write combines automation with human oversight to lead students through writing assignments in which they draft, receive peer feedback, revise and resubmit. In addition to the new text-analysis tool, the program already uses automation for tasks such as peer review -- a student's essay is sent to three classmates for anonymous feedback -- but oversees the process with writing fellows, former students who excelled in the class.

In interviews with *Inside Higher Ed*, members of the M-Write team said the addition of an automated text-analysis tool is an effort to create a "feedback loop" within the program, giving students and faculty members the kind of personalized insight they both would gain from a face-to-face conference.

"What you'd like to do is sit down and read a paper with the student in front of you, identify a misconception and have a conversation about it with them," said Ginger Shultz, assistant professor of chemistry, who helped create M-Write. In a class of several hundred students where developing good writers isn't the main objective, however, that sort of arrangement is virtually never feasible, she said.

At this stage of development, the automated text-analysis tool only works with pre-programmed prompts and is not intended to replace instructor grading. Yet Anne R. Gere, the Gertrude Buck Collegiate Professor of Education and professor of English language and literature who serves as director of the writing center, acknowledged that inserting the word "automated" into a conversation about writing instruction is controversial, and that there are "many, many conservative literary people who will indeed be appalled."

Gere, the incoming president of

the Modern Language Association, compared automated text analysis to radioactivity -- large blasts of it can be fatal, but targeted doses can cure disease, she said.

"Perhaps because I'm a humanist, I always think technology needs to have a human element as well," Gere said. "This is the place where the humanities and sciences can come together to create better learning for students across the curriculum."

As covered by *EdSurge*, the automated text-analysis tool will be tested in a statistics course this fall. For three semesters, students in that class have responded to the same writing prompts, producing hundreds of essays on the same topics. The M-Write team has pored over those papers, identifying the features of papers that met the assignment criteria and those that missed the mark. The findings will be used to design an algorithm that makes the text-analysis tool look for those features.

In one of the prompts that will work with the automated text-analysis tool, students are asked to review an advertisement for a pizza company and write one for a rival business, using statistical evidence to build their case.

To analyze the essays, the tool will look for specific words and topics, such as if students make an argument out of statistics showing that their business sells larger pies, Gere said.

The tool is not intended to automate grading decisions, however -- only the process of giving students feedback about their writing. The M-Write team plans to use ECoach, a support platform developed at the university, to send students personalized messages. For example, if the automated text-analysis tool determines (and writing fellows agree) that a group of students haven't grasped how to incorporate peer feedback into a revised paper, the system will send them pointers on how to do so.

"This is not a project about improving student writing per se," Gere said. "It's a project about helping students learn better, and writing is a very powerful form of student engagement and learning. We're trying to harness that power."

The tool is intended to give faculty members valuable feedback as well, Gere said. If the tool finds that many students struggle with an important course concept, faculty members would learn about it early in the semester and perhaps change an upcoming lecture to ensure the topic receives some extra attention.

"The way that we think about the automated text-analysis tool is that it's not from a standpoint of trying to score or grade the writing," Shultz said.

"We really want to use the automated text-analysis tool in order to provide information to the faculty members to help them understand how students are learning." ■

https://www.insidehighered.com/news/2017/07/10/university-michigan-prepares-test-automated-text-analysis-tool

Smarter Approach to Teaching Science

By Colleen Flaherty // June 27, 2017

Carl Wieman makes an evidence-based plea for better science instruction in a new book on what might be his grandest experiment yet.

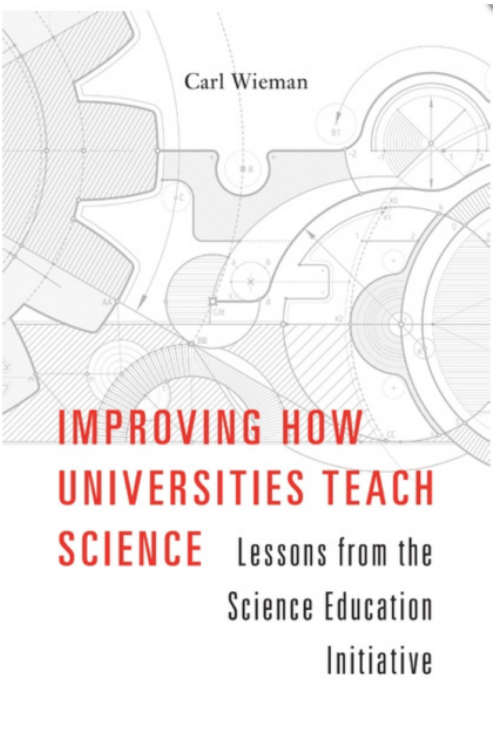
As a Nobel Prize-winning physicist, Carl Wieman could probably get away with being a mediocre teacher. Yet he's devoted much of his career to improving the ways colleges and universities teach science, in his own classrooms and in one of the grandest experiments of his life: the multicampus Science Education Initiative.

Wieman's new book chronicles the latter effort and makes a strong, evidence-based case for pursuing broad changes in science instruction: out with lectures and in with active learning. It's also an easily digested how-to guide for interested parties, including deans, department chairs and other faculty members. The project has major implications for administrators, too. Spoiler alert: if institutions want better science teaching, they have to value it alongside research.

"The Science Education Initiative showed that it is possible for large, research-intensive science departments to make major changes in their teaching," says Wieman, a professor of physics and education at Stanford University. "Most faculty adopted innovative research-based methods, and as a result experienced teaching as a far more rewarding activity than they had found it to be using traditional lectures. Their students attend class more and are far more interested in learning the subjects and benefiting from instructors' expertise."

Moreover, he concludes, "Advancing the craft of teaching has become much more of a shared goal and focus of collaborative intellectual activity in these departments, with faculty sharing methods and results and seeking out ideas from others of novel ways to solve instructional challenges."

Faculty members did find learning to teach anew takes time, he wrote, but "given suitable support, the time investment is not much greater than that required to create a new course. The results are perceived to be worth the effort."



Improving How Universities Teach Science: Lessons From the Science Education Initiative (Harvard University Press) details Wieman's experiences leading the program across 13 science departments at the University of Colorado at Boulder and the University of British Columbia. Wieman used to teach at both campuses, and his goal to was to adopt, at scale, the most promising

research-based approaches to science teaching.

Why?

After many years of doing research on bettering undergraduate science education, Wieman says, "I became convinced that it was time for broad-based change." Despite overwhelming evidence that "new research-based methods were superior to the lecture instruction found in most college science classrooms," he wrote, professors "were mostly unaware of this superiority, even in the situations where active research on improving science education was talking place within their own departments."

Wieman sums up the literature on science education like this: no one develops a true understanding of such a complex field by passively listening to explanations alone. Instead, they must "actively construct their own understanding via a process of mentally building on their prior thinking and knowledge" through what's been called "effortful study." Experts, eventually, have not only factual knowledge but distinctive mental organizational structures and problem-solving skills. They also have the metacognitive wherewithal to evaluate and correct their own thinking processes.

While there's a growing need for technical literacy and skills across the work force and in public policy decisions, Wieman says too many students today are learning that "'science' is a set of facts and procedures that are unrelated to the workings of the world and are simply to be memorized without understanding, and they learn to 'solve' science problems by memorizing recipes that are of little use other than passing classroom exams."

What to do? Wieman devised a six-year plan to get active learning to the masses, via new incentives for good teaching and science education specialists embedded within each participating department at Colorado and British Columbia. Wieman and his collaborators tried to operate within the typical financial and organizational constraints of the contemporary research university, so that their project -- if successful -- could at least inspire change (if not exactly be replicated) on additional campuses. So it wasn't overwhelmingly costly and it didn't supersede the departmental structure that Wieman concludes is necessary because the human brain can only be expert in so many fields.

What (and How) Should Students Learn?

At the heart of the initiative was a course transformation process, guided by three questions: What should students learn, what are students learning and which instructional practices will improve student learning? Education specialists worked with individual faculty members to help them rethink their courses and, at the same time, impart to them new teaching methods, in accordance with the principles of the initiative. Active learning techniques include worksheet-based activities, clickers to answer questions in real time, whole-class discussions and solo and paired work. Specialists working with small groups of faculty members at the same time was found to be a less successful approach.

Each campus had central program oversight, to pursue and make decisions about funding, give feedback on how to improve departmental results and to train education specialists; the specialists learned not only pedagogical skills but also how to work with faculty members.

Data collection on student achievement initially proved more difficult than expected, largely because there was little incentive for faculty members to test students to establish a baseline against which to measure change. But the data eventually gathered are compelling.

A 2011 study using data from the British Columbia program published in Science, for example, found that students in a transformed physics class were nearly twice as engaged as their peers in a traditional lecture course. Students from the experimental course scored almost twice as well on a test of complex physics concepts, 74 percent vs. 41 percent, respectively. Attendance in the more active class was 20 percent higher.

The initiative involved nearly 300 instructors in 235 courses over 200,000 credit hours. Major portions of the faculty in participating departments adopted new methods -- up to 90 percent in the most successful units -- and the level of teaching transformation was "substantial," the book says. The sus-

tainability outlook is strong, though there was wide variation across departments in terms of successful innovation.

Wieman underscores the finding that virtually all faculty members say they want to teach well and can learn new teaching methods effectively. In the most successful departments, however, several things stood out: the success of competitive grant programs for improving undergraduate teaching (by unit, not individual faculty member) and use of the embedded specialists, who were trained in both the relevant discipline and effective teaching. Department culture, organization and management also affected success in innovation. "Persistence and flexibility" also were key, as some initial program assumptions proved flawed.

The largest barrier to faculty change, meanwhile, was the formal incentive system. Faculty members tended to see that system as penalizing time taken away from research, even to improve teaching.

When faculty members did embrace new methods, the book says, "it was usually because they valued the greater personal satisfaction they would experience with students' improved engagement in learning."

Andrew Martin, a professor of ecology and evolutionary biology at Colorado, was the learning initiative lead in his department. He and his colleagues used postdoctoral fellows as teaching specialists and, in the process, "learned a lot about how the teaching mission is central to the departmental culture."

In the long term, he said, it seems that the initiative "kicked off sustained and beneficial changes in our culture such that we place a high value on effective teaching and are looking for ways to make it better." Consequently, students are getting a better education.

Wieman in his book proposed something called the "optimized university," which doesn't look all that different from the typical modern research university -- just better, in his view.

Faculty members are still central to the educational endeavor, but instead of working in "isolation to set their own goals and agendas," for example, professors within a department establish by consensus learning goals related to program goals.

And instead of departments offering courses defined by topics reflective of faculty members' interests, each academic program in the optimized university "has a series of courses that are carefully aligned and sequenced to progress toward the program goals. Each course is defined by explicit and detailed learning goals that identify the full set of student knowledge and competencies provided by the course."

It's also not assumed in the optimized university that faculty members know how to teach a subject well just because they're expert in it.

Wieman told *Inside Higher Ed* that universities today are in a similar position to where hospitals were in the 19th century, "when they had many traditional practices, but research was coming along revealing completely new and better ways to think about disease and treatment." Research findings forced these hospitals to abandon tradition and rethink "how they hired and evaluated doctors, but it was not done easily," he said, citing the hullabaloo surrounding the newfangled practice of washing one's hands between patients.

Even though it was proven to dramatically reduce the rate of infection, Wieman noted, it took 50 years before most hospital required doctors to wash their hands.

"If it is that hard to give up tradition when corpses are piling up in the corridors, it should not be surprising that universities are slow to abandon tradition when their failures are far less conspicuous," he said. Yet as *Improving How Universities Teach Science* demonstrates, it "is possible for a major university to make a large-scale improvement in its teaching methods, and I am confident that the research on the greater effectiveness of these teaching methods, and the demonstration that change is possible, will result in many others eventually doing the same."

Wieman added, "I just hope it doesn't take another 50 years." ■

https://www.insidehighered.com/news/2017/06/27/carl-wieman-makes-evidence-based-plea-better-science-instruction-new-book

Indiana's Active-Learning Mosaic Expands

By Carl Straumsheim // May 12, 2017

The university brings its active-learning initiative to regional campuses, seeking to boost student engagement.

Indiana University's "active-learning" initiative is growing faster than expected, partly because of an approach that embraces different campus types, class sizes and classroom layouts. That approach is reflected in the initiative's name: Mosaic.

Many colleges offer development programs or incentives for faculty members to redesign lecture courses to feature more active learning, for example by having the instructor serve in a facilitating role as students work together on solving problems.

Some institutions are even betting on active learning as the teaching method of the future. The College of Medicine at the University of Vermont, for example, last year said it would do away with lecture courses completely.

IU is experimenting with active learning to boost student engagement in class. So far, the university has exceeded expectations, said Anastasia Morrone, associate vice president of learning technologies.

An active-learning classroom at Indiana University at Bloomington.

"We know that students who are engaged are having a better experience," Morrone said. "They're engaging with the materials in a deeper way. It's just more motivating for the students."

Mosaic launched in January 2016 at IU's Bloomington campus and expanded to the Indianapolis campus that fall. Last week, the university announced it would bring the initiative to five of its six regional campuses. After starting with 15 faculty fellows, the initiative now has more than 50, and the university plans to add about 50 more a year.

Morrone said Mosaic differs from active-learning projects at other universities because it is less strict when it comes to what an active-learning classroom should look like. The most high-tech rooms may include document cameras, microphones and video walls, but others may simply feature whiteboards and wireless internet, she said.

All spaces designated as ac-

tive-learning classrooms at IU still have three elements in common: they feature seating arrangements that allow students to work in smaller groups, encourage collaboration on whiteboards or monitors, and allow faculty members to move around the room.

Those requirements could make it easier for IU's regional campuses to adapt Mosaic to fit their needs, Morrone said. Indiana University East, where many students are enrolled in online degree-completion programs, will likely need fewer active-learning classrooms than the more residential Southeast campus, for example.

"Depending on the mission of the regional campuses, it's going to look a little different," she said, adding that IU chose to bring Mosaic to its regional campuses last fall in order to give the campuses more time to redesign classrooms.

The Bloomington and Indianapolis campuses each have about 30 spaces designated as Mosaic active-learning or "tech-enhanced" classrooms, according to a university database.

In addition to the efforts to redesign classrooms, Mosaic also includes a fellowship program open to all full-time faculty members. Those selected to participate are required to teach a course in one of the classrooms, attend an intensive one-day workshop and work with researchers and other fellows to test the spaces and improve active-learning techniques.

They also receive a small stipend -- about $1,000.

"We can create these amazing new classrooms that don't look like anything the traditional classrooms that you and I may have had when we were undergraduates, but we can't just put faculty into those rooms and expect they know how to use them well," Morrone said.

Jill Robinson, a senior lecturer in the department of chemistry at the Bloomington campus, participated in the inaugural Mosaic cohort last spring. She taught a bioanalytical laboratory course in the campus' collaborative-learning studio (seen above), a high-ceilinged former swimming pool that Morrone described as "one of our most ambitious classroom renovation projects." The classroom now seats 96 people.

In an interview, Robinson said she has taught using active-learning techniques ever since receiving some "not too kind" midterm evaluations during her first semester of teaching 18 years ago. Since then, Robinson said she often splits up class sessions by introducing a concept during the first 10 to 20 minutes before letting groups of students apply that knowledge to a problem.

Robinson said that, while it has taken her four semesters, she now feels that she is using the classroom "in the right way," changing up the class sessions depending on the needs of the students and the technology at her disposal.

"One of my main improvements has been a larger use of collaborative activities and more variety in those activities," Robinson said. "I lecture a lot less. One day I'll use whiteboards. One day might be more focused on computer search. One day … I'll project students' screens to the video wall."

To participate in the program, faculty members also agree to "allow data collection as part of larger research studies," according to the application form. That data collection is fueling several research projects looking at the efficacy of active learning. Robinson, for example, is collaborating with two other faculty members at the Bloomington campus to study the use of teaching assistants in active-learning classrooms.

Since the first fellows began teaching courses in the active-learning classroom last year, those studies are still ongoing, Morrone said.

"We fully expect that those students [taught in active-learning classrooms] will learn more than students who have been taught in a more traditional model," Morrone said.

She stressed that it is important for the university to provide support to faculty members to investigate that hypothesis. "If we invest money and time, and faculty change their teaching practices to teach in these new manners, does it matter?" ■

https://www.insidehighered.com/news/2017/05/12/indiana-universitys-active-learning-initiative-expands-exceeds-expectations

Views

A selection of essays and op-eds

Moving Beyond the Tired Classroom Laptop Debate

By Joshua Kim // January 5, 2017

Joshua Kim writes that we should celebrate the digital competencies of today's students.

Can we get beyond the *tired old discussion* about whether laptops should be banned from the classroom?

I have my own opinions on this debate (see here and here), but I'd be grateful if we could move forward to a more fundamental set of questions.

The discussion that we should be having is about how we can harness the digital competencies - and the digitally inspired behaviors - that our students bring to their own learning.

Are we wise enough to celebrate the skills, capabilities, and competencies that most (I know not all) of a generation raised on the internet and the mobile device?

Can we see that the way that many of today's young people manage information is both adaptive to their environments, and well-suited to promote learning?

Have you ever observed a college student watching an online video? They are not passive video consumers. They actively control the in-video watching experience by speeding up and scrubbing through the video. They keep their cursor on the video controller and skip through the "slow" parts. This tactic allows for videos to be viewed much faster than real time.

Not only do students compress their video consumption by speeding and scrubbing, they also simultaneously interact with other content while watching. A video will share screen real estate with social media sites. They will chat, post, upload, compose, edit, scan, and scroll while also watching the video.

How might we harness these digital video viewing behaviors to improve learning?

My intuition is that digital video is changing how today's learners interact with information. They are training their brains to expect both control of the pace of information flow, and to maximize the density of information exposure. And I suspect that this may be all to the good.

One of the reasons why students want devices in classrooms is that the speed and density of analog in-

formation transfer does not match that of digital.

This is not an argument to give in to the pressure to conform our analog teaching to our students digital expectations. Rather, we should try and take advantage of the digital skills that today's students bring to our classrooms.

If they are good at digesting high densities of digital information, then we should feed them a high density curricular digital diet.

I'm a fan of analog education. I'm a believer that authentic learning is built on relationships. I think that an effective education - or at least a valuable education - probably takes place only at a scale that is small, intimate, and personal.

I think that the educator is the irreplaceable and irreducible variable in any quality education - and that any college or university that tries to save money by commoditizing teaching will quickly make themselves irrelevant in an environment of ubiquitous information.

At the same time, I want to use digital tools - and digital thinking - to improve learning.

The time has come to figure out how we can leverage the digital skills that our students bring to our classrooms.

The time has come to have a more generous - or at least less neurotic - conversation about students, technology, and learning. ■

Bio:
Joshua Kim is director of digital learning initiatives at Dartmouth College.

https://www.insidehighered.com/blogs/technology-and-learning/moving-beyond-tired-classroom-laptop-debate

Active Learning in the Age of Classroom Cellphones

By Aubree Evans // July 11, 2017

Perhaps faculty members' conflicting views reflect that academe is made up of people who hold different paradigms related to authority, writes Aubree Evans.

At a recent academic conference, I attended a plenary session on active learning. While spouting the virtues of student engagement, the presenter seemed to be admonishing cellphone use in class, labeling it as a sign of distracted and bored learners.

I was feeling uncomfortable in the second row from the front because I was using my phone to take pictures, live-tweet the lecture and engage with other conference attendees on social media. I wondered, "Is he talking about me?" However, not only was I paying attention, but I was also completely engaged in and interacting with his content in a self-directed way. If that's not active learning, I don't know what is.

In my own classes, I do not have a cellphone policy, and I generally encourage free use of devices of any kind. However, many of my colleagues do not feel the same way and, in fact, discourage the use of phones in class. They view them as a distraction rather than a supplement. It confuses me that these faculty members want their students to be independent learners who engage with their content, yet they don't want them to use devices (i.e., research tools) during class. When do they expect students to engage with the content and research independently? After class when they don't have valuable access to the instructor?

Although cognitive science shows that we cannot pay attention to two things at once, with practice we can get better at multitasking. It's like when you first start driving a car. The radio is off, and your attention is completely focused on the task of driving. After several months, driving becomes cognitively automatized, and you find it easier to sing along to the radio or hold a conversation with your passenger.

While walking around Manhattan with my mother last spring, I navigated the streets using my phone. She also had a phone that she uses to send emails, text and post on Facebook, so I expected her to navigate the city alongside me, providing twice the data about directions and places to visit. But even after I taught her how to use Google Maps on her phone to search for restaurants, read reviews and find directions, she wasn't able to use it on the street like I do.

In fact, when she attempted to

use it in public, she became frustrated and overwhelmed. In hindsight, I realize that it may be that she hadn't yet had the training to develop the cognitive processing speed necessary to perform the tasks in rapid succession, but neither of us thought of it in those terms at the time. We did, however, realize that we each had different expectations of what was appropriate in terms of our interaction with and use of technology.

We sat down and had a talk about our different expectations. I shared my expectation that everyone who has a smartphone should use it to access available data such as maps, online articles and customer reviews to engage with the environment. When we are all doing this, we have even more data from which to make decisions, which will make our shared experience richer and more efficient.

My mother's expectations were different. She didn't want to undermine my authority by co-researching and navigating. I wondered if this was cultural. In my social group, we all have access to the same information, so why would I think she was undermining me?

But my mother -- who lives in a different part of the country and whose regional culture is different from the one I've chosen in terms of geography, industry, politics and religion -- expects that there will be one primary researcher, navigator and leader.

Perhaps that's what is really going on with faculty members' diverging stances on cellphone use -- academe is made up of cultures of people who hold different paradigms related to authority. I'll be honest, the first time I truly flipped the classroom and used a student-centered approach, it was terrifying. When everyone in the room informed the decisions, the power shifted. But I quickly realized that I was still in control, and in fact more so. I changed from talking to a large group of students to talking to each student individually. To think of it as a network, I increased the number of nodes, and it made me feel more connected and effective than ever before.

As a thought experiment, let's explore the idea that faculty members' personal values may be reflected in the structure of their classes. In his blog post "Understanding Trump," George Lakoff defined a difference in "moral hierarchy" that is held by "conservatives." He says that people who fall into this category view social structure as a hierarchy similar to a family structure, with the head of household being at the top. This structure of order filters down with the next highest-ranking person being in charge. If this is the way that some faculty members view social operations, then it would be impossible for them to establish and enforce a truly student-centered classroom where everyone equally informs the lesson. Similarly, we may create a perfectly student-centered classroom, but our students' values may not allow them to perform as autonomously as we would like them to.

Regardless of which camp we fall into, this idea reminds us to invite tolerance and realize that our colleagues might not view active learning the same way that we do. Rather than prescribing how we think others should learn or engage with a class, let's think instead in descriptive terms and accept how others currently are learning and engaging.

I would love to see a world in which everyone feels comfortable with shared access to information. As an educator, I want to see learners grow by researching, navigating, publishing and engaging with content in every way possible.

We may not all get the luxury of interacting in the way we expect to, but expression and listening are the first steps toward learning, and that is a value that unites everyone in higher education and defines it as a culture unto itself. ■

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https://www.insidehighered.com/advice/2017/07/11/does-cellphone-use-class-encourage-active-learning-essay

What's Wrong With Too Many Required Courses?

By Donal O'Shea // June 27, 2017

They can have unintended consequences, writes Donal O'Shea. And the trick is to find those that actually improve student learning.

Institutions across the country have been considering carefully scripted general-education courses in lieu of traditional distribution requirements (see "No Math Required," "Rethinking Gen Ed" and "Gen Ed Redesigns"). Some months ago, the American Council of Trustees and Alumni issued a report pointing out the efficiencies that would be realized by sequenced general-education courses with prescribed curricula, little student choice and lots of requirements.

The same organization also issued a letter deploring the fact that most college students could not identify James Madison as the father of the U.S. Constitution (most chose Thomas Jefferson) and that 40 percent did not know that Congress has the power to declare war. Their solution: a course on civic literacy required of every college student.

The push to require courses even comes from student groups. Last semester, I talked with a group of student activists concerned about their classmates' use of phrases that had been used historically to demean others and the chilling effect of such discourse. Their solution: a course on cultural competence required of every college student.

Other groups decry college students' lack of mathematical and quantitative literacy, of historical knowledge, of basic financial knowledge, and of writing skills. Common to all is the proposed solution: new required courses.

Administrators also enjoy required courses. They are stable and easy to section and schedule. Pointing to a required course that purports to convey particular content or skills is a highly efficient way of satisfying accreditors.

Unhappily, however, taking a course does not guarantee a student will learn what the course purports to teach. Civics courses are required in most high schools. If they worked, college students would not be lacking civic knowledge.

Worse, requirements have unintended consequences. Colleges are marketplaces: ideas are exchanged,

professors vie for students and students vie for professors. The currency is not dollars, but student enrollments. Make a course required, and you remove the incentive for whoever is teaching that course to make it attractive to students. Professors are busy and they need to allocate their time carefully. Subsidizing a course by guaranteeing enrollment will cause a professor to devote more attention to other, unsubsidized courses.

Moreover, because departments also care about enrollments, they will not place their most gifted faculty members in a course in which enrollments are guaranteed. They will use their best faculty members to attract students to the major or to get students through the hardest courses. It takes a lot of vigilance and energy to ensure that required courses remain exciting and inspiring. Anyone who doubts that should think back on the worst courses they ever took.

The Power of Serendipity

I'm not suggesting that colleges and universities should have no requirements. Just as unregulated free markets concentrate capital, unregulated curricula concentrate enrollments. Think massive, entertaining, undemanding lecture courses. But the opposite -- centrally planned, highly sequenced curricula with lots of top-down requirements -- are precise analogues of Marxist economies. And we all know how those work.

The trick is to find regulations that are unobtrusive and actually improve student learning.

The first step is easy. Markets function best when there is equal and easy access to information. And students must have good information about what they can expect to learn in a class and why it is important.

But the way regulations are structured also matters. Think back to the best educational experiences that you have ever had. Common to most such experiences will be serendipity: the intervention of a gifted professor, reading a spell-binding book at exactly the right time, taking an inspiring course or excitedly talking over an idea with a friend in a residence hall.

> "Taking a course does not guarantee a student will learn what the course purports to teach. Civics courses are required in most high schools. If they worked, college students would not be lacking civic knowledge."

In a college or university, regulations should be designed to maximize serendipity. How one does that depends, of course, on the institution.

Good liberal arts institutions (and many others) go to great trouble to hire faculty members who love their disciplines and truly enjoy teaching. In such institutions, distribution requirements that simply demand that students take courses in different disciplines are effective. Although one can talk about breadth and exploration, the distribution requirements spread students over that faculty. They increase serendipity by increasing the odds that a student will encounter a gifted professor who changes their life.

In addition to maximizing opportunities for serendipity, a good college or university will make it difficult for students to avoid learning material or acquiring skills they will subsequently need. In fact, rather than simply requiring a course, it will make sure that the outcomes desired of students are reflected in many of the courses those students will take.

To guarantee that students write well, for example, students must practice writing in most courses they take. The same goes for civics or intercultural competence. That is the job of a strong faculty working together to align many different courses. To do that, faculty members need an institutional culture where people in different disciplines talk with one another openly about what they are seeking to do in their courses, and what seems to be working and what does not.

In smaller institutions, faculty members must know one another

and interact regularly. In larger institutions, one needs structures that ensure that department members in charge of large multisectioned courses crucial to other departments know and interact openly with their counterparts in those departments.

In both small and large institutions, trust is essential. Administrators and faculty leaders can't order up trust, but they can model it and facilitate interaction across different departments.

For administrators and faculty leaders, it requires thinking about what groups to bring together and how to charge them. It requires being present and gathering and sharing data that departments and faculty can use. It requires the patience and wisdom to realize that time spent allowing different groups to explore not only what their students most need but also how to entice those students into acquiring what it is they need will pay larger dividends than top-down edicts mandating courses to be completed and exams to be passed.

It's not easy, and it requires time, thoughtfulness and a deft touch. Higher education, like the economy, would be simpler if a benign leader could just require things. But it wouldn't be better. ■

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https://www.insidehighered.com/views/2017/06/27/unintended-consequences-too-many-requirements-essay

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