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Teaching

think

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Harvard Conference Seeks to Jolt University Teaching

By Dan Berrett

Cambridge, Mass.

A growing body of evidence from the classroom, coupled with emerging research in cognitive psychology and neuroscience, is lending insight into how people learn, but teaching on most college campuses has not changed much, several speakers said here at Harvard University at a daylong conference dedicated to teaching and learning.

Too often, faculty members teach according to habits and hunches, said Carl E. Wieman, a Nobel Prize-winning physicist and associate director of the White House Office of Science and Technology Policy, who has extensively studied how to improve science education.

In large part, the problem is that graduate students pursuing their doctorates get little or no training in how students learn. When these graduate students become faculty members, he said, they might think about the content they want students to learn, but not the cognitive capabilities they want them to develop.

"It really requires someone to be doubly expert," Mr. Wieman said. As sometimes happens in some disciplines and departments, a few people develop deeper knowledge of pedagogy. These doubly expert faculty members, he said, can show colleagues how to apply new approaches to teaching the discipline.

Such approaches would demand much more of students and faculty. Students should be made to grapple with the material and receive authentic and explicit practice in thinking like an expert, Mr. Wieman said. Faculty would need to provide timely and specific feedback, and move beyond lectures in which students can sit passively receiving information.

"We assume that telling people things without asking them to actively process them results in learning," Mr. Wieman said.

The conference, which also featured demonstrations of innovative approaches to teaching, was the first event in a new Harvard Initiative for Learning and Teaching, a project supported by a

$40-million grant from two benefactors, Gustave M. and Rita E. Hauser. In addition to the conference, the money will pay for the redesign of classrooms at Harvard and for a grant program that will finance innovative ideas. More than 250 Harvard faculty, staff, and students have submitted letters of interest for projects costing nearly $10-million. Awardees will be selected in April.

Many colleges routinely hold seminars on teaching and learning. But the fact that Harvard is focusing on the subject—and that many speakers referred worryingly to the growth of online and for-profit providers—suggests a growing concern at even the most elite institutions that the classroom experience is not all it could be.

The Hausers wanted their money to have a broad effect across Harvard's departments and disciplines. They also wanted the university to respond to changes in students. "You can see there will be a fundamental break in how students are learning," Mrs. Hauser said in an interview, "and we thought Harvard should be at the forefront of that."

Confronting Misconceptions

Students are indeed changing, some speakers said. Their level of curiosity has declined over the past two decades, said Clayton M. Christensen, a professor of business administration at the Harvard Business School.

Mr. Christensen also drew an analogy between Harvard and the for-profit world, and General Motors and Toyota, describing how new businesses often enter the bottom of a market and claim untapped customers whom they reach through some new technological advance. Eventually, they move up-market and overtake the dominant player.

Higher education once was immune, he said, until the spread of online learning, which will allow lower-cost providers to extend into the higher reaches of the marketplace. "Higher education," he said, "is vulnerable to disruption."

And, while students are changing, several speakers described conventional teaching approaches as being ineffective.

Take, for example, the lecture, which came up for frequent shellacking throughout the day. It is designed to transfer information, said Eric Mazur, professor of physics at Harvard. But it does not fully accomplish even this limited task.

Lectures set up a dynamic in which students passively receive information that they quickly forget after the test. "They're not confronted with their misconceptions," Mr. Mazur said. "They walk

out with a false sense of security."

The traditional lecture also fails at other educational goals: prodding students to make meaning from what they learn, to ask questions, extract knowledge, and apply it in a new context.

And yet, many speakers acknowledged, faculty members harbor their own misconceptions about learning, which still hold sway at Harvard and beyond.

One, said Mahzarin R. Banaji, a professor of psychology at Harvard, is what she called a "myth" about different learning styles, in which it is thought that some students learn best visually, others by hearing, and still others kinesthetically.

"There's no evidence, zero, that teaching methods should be matched up with different learning styles," Ms. Banaji said. "It's intuitively appealing, but not scientifically supported."

Assessing as Learning

Another commonly held notion, that studying is how learning occurs and testing is an afterthought, was upended by Henry L. "Roddy" Roediger III, a professor of psychology at Washington University in St. Louis, who has studied what is known as the "testing effect."

In an experiment, he broke students into three different groups: One studied a list of words eight consecutive times without taking any tests; the second studied the list six times and was tested twice. The last studied the words four times and took four tests. Two days later, they were asked to recall as many words as they could. Those who took four tests recalled words at up to twice the rate of those who only studied.

"Taking a test on something is a very effective way to learn about it," Mr. Roediger said.

But frequent quizzes—which he said should be low-stakes and not "deadly" multiple choice—often hit a wall of disdain among both faculty and students, he noted. "There's a kind of a conspiracy in higher education that professors don't like to give tests," Mr. Roediger said. "We hate grading tests. Students don't like taking them, so we don't give them very much."

But there are other ways to get students to truly learn, other speakers said. Asking students to explain concepts or to teach one another the material they have just learned are also effective.

Writing is often an effective pedagogical tool, too, several speakers said. For his history of psychology course, Mr. Roediger asks his

students to send him short essays before each class meets. They respond to the reading. (Others at the conference who use this method said they sometimes ask their students to identify outstanding questions or relevant areas of their reading that have been left unexplored.) Mr. Roediger reads the one-page essays before class and works their thoughts into his comments.

But writing is also more than a means to convey content. It is a core skill that faculty members often hope their students will carry with them after they graduate, said Steven Pinker, a professor of psychology at Harvard who studies language and cognition. But even here, students and faculty often fail.

Students are trained to write in jargon-heavy language that obscures rather than reveals the underlying ideas. Mr. Pinker drew an analogy to teaching, saying that obtuse writing and poor teaching both reflect what he called the "curse of knowledge."

Having this curse means that a writer or professor often assumes knowledge the reader or student does not have. More important, the writer or teacher usually forgets that the reader or student is struggling to learn the material for the first time, which often was long ago for the teacher.

"It's hard to know what it is like for someone else not to know something that you know," Mr. Pinker said. "It's the chief driver of bad writing and, I would argue, bad teaching."

discussion section leadership could use some attention.

2 people liked this. Like Reply

leah_shopkow 10 hours ago

This sort of work is being done in many places; it's called the Scholarship of Teaching and Learning. Perhaps it isn't news until Harvard does it?

30 people liked this. Like Reply

MarjoryMunson 10 hours ago

Sometimes that is what it takes to get things noticed - it's called politics.

I am adding - and the politics of the media.

3 people liked this. Like Reply

MarjoryMunson 10 hours ago

One can get a PhD with absolutely NO education pertaining to learning or teaching. We then assume that possession of that degree, signifying at least some knowledge of the content of a discipline, somehow magically qualifies the possessor to teach. It is to be hoped that this project will move forward to incorporating knowledge of pedagogy/andragogy into the knowledge base required for the PhD unless we want to establish TWO PhD tracks - one to teach/one not to teach.

14 people liked this. Like Reply

111960 9 hours ago

I completely agree with your statement about the erroneous assumption that having a Ph.D. in a discipline means one is prepared or qualified to teach in that discipline. As a student back in Africa, I was fortunate to attend one of the few universities that was specifically built to train high school teachers in the 1960's. The goal was to infuse STEM and liberal arts education at K-12 level to support economic development (does that sound new to anyone?). The curriculum required every student to double major in a discipline (English, business, biology, etc) and education (learning how to teach). When I moved to the US as graduate student, having that background helped me adjust quickly as a graduate teaching assistant assigned to an introductory biology class. Needless to say, the knowledge that I acquired as a double major in botany and education has served me well as a faculty member. Knowing something does not necessarily mean one can teach it.

10 people liked this. Like Reply

MarjoryMunson 7 hours ago

I hope we can move toward that ideal in this country. Years ago someone complained to me that the requirements to teach high school in the state of Wisconsin would mean that Albert Einstein could not teach high school physics. They were at first puzzled that I said, "Good!" I went on to explain that although he obviously knew physics, there was no evidence whatever that he knew how to teach that subject at that level. As you said, "Knowing something does not necessarily mean one can teach it." In addition, in the case mentioned here, knowing something very well may make it difficult to find the right level to pass this information on to learners with little or no knowledge of the subject as a base.

6 people liked this. Like Reply

anahuacbob 5 hours ago

Similarly, too many people that know how to teach don't know the content well enough to

make their teaching skills matter.

6 people liked this. Like

cwm4c 9 hours ago

Most professors have zero education & training in how to teach, how humans learn, or means to effectively convey information, yet most also believe they are good teachers! Actually, most of us are very bad instructors, but being reinforced by those who are also bad through our PhD process, we never realize it. There is a screaming need for professors to have a baseline knowledge prior to occupying a classroom--we should have a minimum standard. Without it, we're left to those smart individuals who seek it on their own.

There is a path to help. In my department of our R1, we ask all candidates during the search process what background/education they have in these areas--if none, we thank them for their time and move on. The quality of our hires has actually increased with this process. Our faculty senate is also considering making it the norm for the entire university. If more schools looked at this, it could drive a requirement--for now, we are changing where we can.

8 people liked this. Like Reply

profdrsoandso 10 hours ago

How nice of Harvard to spend time talking about teaching. Of course, the very things that good teaching requires—sustained interaction with students, for example—are precisely the things that faculty are discouraged from doing if they want tenure.

35 people liked this. Like Reply

sirach 8 hours ago

Agreed. Teaching and tenure have never walked hand in hand. Professors expect students to be able to write when they show up - it's someone else's responsibility.

9 people liked this. Like Reply

MarjoryMunson 7 hours ago

Actually, it WAS someone else's responsibility - but that isn't happening as it should either. Maybe my suggestion of two PhD tracks should be supplemented with two tenure tracks - one teaching - one researching - and make it official that the two are not intended to meet.

10 people liked this. Like Reply

digiwonk 7 hours ago

sirach said that teaching and TENURE don't walk hand in hand; that's not necessarily the same thing as teaching and RESEARCH not walking hand in hand. There's really no reason why someone with interesting ideas (a researcher) can't be a good teacher.

4 people liked this. Like

profdrsoandso 1 hour ago

With all due respect, Marjory, I think the idea of two tenure tracks is terrible, as it would only reinforce the idea that teaching and research are distinct, which is the fatal flaw in the current university. They should be intended to meet, or neither makes any sense at all.

2 people liked this. Like

vceross 9 hours ago

At the risk of immodesty, I will say that I can run a good lecture/discussion class. However, a couple of years ago, in the midst of a lively discussion, I had an inkling that students didn't really understand what they were talking about, lively as it all was. So I asked them to take out a piece of paper and define the key term we were debating. To my dismay, only one of the entire group was able to come close to defning the term. The next class, I devoted considerable time to a definition of the term. I provided three definitions from different sources, and asked students to form groups and come up with their own definition or choose and justify one of the three. At the end of this class, I asked students to define the term. This time 3 of 29 could do so. I emailed them and told them that the next class there would be a test on the definition. 29 passed. Before this experience, I was anti-test. Now I frequently use little low-stakes mini-quizzes, not so much to keep students on their toes as to help me understand how much, or little, they are learning from all those lively lecture/discussions.

34 people liked this. Like Reply

kether1 9 hours ago

Well, my community college - where we already know how to teach - could certainly make use of the $$. We could have a gym.

8 people liked this. Like Reply

jimrettig 8 hours ago

"'It's hard to know what it is like for someone else not to know something that you know,' Mr. Pinker said." Well said, Mr. Pinker! In their graduate studies faculty learn how to find, evaluate, analyze, synthesize, and cite information. (The last is mechanical compared to the other abilities; but sometime is emphasized without connection to the others.) When they become professors teaching undergraduates, how many faculty recall not knowing how to do these things when they were undergraduates? A good question to ask oneself. And a good reason to collaborate with a reference librarian who can help faculty design experiences that help students learn about the complexity of finding, evaluating, analyzing, and synthesizing information. Such experiences can contribute to improved teaching and learning.

4 people liked this. Like Reply

Frank Lowney 8 hours ago

Well, we've had Bloom's Taxonomy of Objectives in the Cognitive Domain since 1955. Since then many studies have looked at actual teaching practices and concluded that most of us aim pretty low -- the lowest one or two items in this six level hierarchy. Let's hope this effort and the pressures of competition produce a better result.

2 people liked this. Like Reply

digiwonk 8 hours ago

First, there really is absolutely nothing new in this particular article: I've been reading versions of these "insights" and "new ideas" and "pushes for change" since I started grad school. And I'm older than I look. Many of us have taught according to these principles already for a decade or more.

So. "Science" and "knowledge" about teaching isn't the problem. Let's assume (barring the "learning styles" myth) that effective teaching strategies for different disciplines and different--jargon alert!--learning outcomes have been identified. Assume the problem of "what are some really effective ways to teach?" has been solved.

Why haven't most classrooms changed, then?

[pauses to listen to cricket chorus ...]

It's not a knowledge problem. All the neuroscience in the world ain't gonna help here. There are a multitude of (good, bad, structural, cultural, ideological, practical) reasons why most classes still run as lectures with one big essay or one big exam at the end.

Solve THAT problem, and you might get somewhere.

(I suspect the general institutional disdain for undergraduate teaching and the way that early careers are configured and the contained resources for, for example, capping class enrolments or assigning teaching reliably may play something of a role ...)

11 people liked this. Like Reply

waratah104 4 hours ago

Quite right, well said. Perhaps one way to get around this might be to stagger tenure decisions around periods of focus on Research and then Teaching or vice versa. In other words, faculty explicitly drill down across a period of time on one of the areas and then the other during another period of time. Not perfect, but at least explicitly carves out time for each.

Like Reply

billmassy 7 hours ago

All this is spot on. And it's great that Harvard is taking this initiative -- now if only other places, like Stanford and Yale, would do likewise.

Like Reply

MarjoryMunson 7 hours ago

In reply to digiwonk: I agree - but the researcher should also have specific training for teaching before being allowed to do so. Reread the last sentence of the article - teaching is a specific skill, and it needs to begin with understanding what it is like for someone not to know something that you know. That is what education about educating should be.

3 people liked this. Like Reply

ebitnet 7 hours ago

I see NO VALUE in requiring formal teach instruction for a PhD. I also do not see science and engineering departments in any time soon viewing teaching experience as a requirement for a faculty position. A PhD is a research degree indicating that you have achieved a certain level of scholarship your field of study. A person with a PhD who can figure out how to present his or her research to his or her peers can certainly figure out how to give a good lecture and teach a class. All that is required is some willingness to do a good job, and overall pride in your work.On the other hand, while interviewing faculty candidates, I ask myself "can we put this person in front of an undergraduate classroom with 50 to 450 students?" I can usually figure out how good of a teacher the candidate will be based upon the care put into a research presentation.

I'm a bit old-school on this. I see a real value in having a first-rate scholar present a lecture on a subject in his or her area to students. Lecture should augment and enhance what can be also learned from a good text. A good lecture can be inspirational and impart some of the professor's enthusiasm towards a subject. I also see a huge value in having tutorials. Ultimately, a university experience is about active learning. Tutorials, discussion groups, & recitation sessions are were the "prodding to make meaning" should occur.

8 people liked this. Like Reply

3rdtyrant 6 hours ago

Old school is a good place to be on this. Why not leave much of the onus on students? Why not require them to adapt, to learn in some adversity? Why not require them to be able to distill from a boring lecture the discipline to learn what must be learned and figure out how to apply it? There is value in all of this. I know it's not ideal to have a boring lecture, but it is an error to then say students cannot learn from one. They just have to buck up and be students.

7 people liked this. Like Reply

kgodwin 5 hours ago

If the onus is on the student, why are we hiring people to teach classes? The verb itself implies some sort of action on the part of the instructor - not just a "figure it out on your own" attitude as you seem to imply.

2 people liked this. Like Reply

aeromorrison 11 minutes ago

That depends on your philosophy of learning and teaching. That drove the way institutions were designed in the past. Will we continue to mindlessly follow tradition or harness what we know now, and be willing to question what we do? That is a risky proposition, but worthwhile if we care more about learning and teaching than our own comfort and security.

Like

teachergriff 4 hours ago

Wow, I'm glad that doctors don't look at treating patients the way the two of you seem to think you should teach students. "The patient didn't respond to the medication? He must have been a bad patient. All GOOD patients would respond to that medication! The bad patients just have to buck up and be GOOD patients, that's all."

It is the job of people who stand in front of a classroom and communicate information to learn how to do it effectively - in a word, to teach. Professors who have not learned how to teach should not be in front of a classroom. Those professors who blame students for not learning should look at their teaching methods before they blame students for not trying. End of story.

3 people liked this. Like Reply

Caleb50 2 hours ago

Yes. Agreed. But still, teaching and learning is a partnership. If one of the parties involved (faculty or students) don't give it their full attention then the result will be lacking and the experience not particularly joyful, for anyone. So while I agree that many of us (faculty) should learn more about better teaching methods, I think many students could also benefit by being more reflective about their role in this process. After all, not even group work can bring a corpse back to life.

4 people liked this. Like

leah_shopkow 1 hour ago

Absolutely. If the students aren't doing the work (if the patient isn't taking the medication), then the onus is on the students. If the students ARE doing the work, or doing their best to do the work (i.e. they ARE taking their medication), then the doctor ought to do something. The problem is that if you only test twice a semester, you're halfway through before you realize there's a problem and you probably don't know WHY there is a problem. I realize that some people pride themselves on being "able to tell" whether students haven't done the reading or simply haven't understood the reading, but in many cases it looks the same. But if you teach a big class and you never grade a paper yourself (as some of my colleagues do), you'll never know there's a problem.

1 person liked this. Like

beckerw 6 hours ago

In "The Influence of Teaching
on Research in Economics," Southern Economic Journal (January 2006) Peter
Kennedy and I demonstrate the many ways in which teaching and research are
complementary activities. But as Sue Becker and I argue in "Potpourri: Reflections from Husband/Wife
Academic
Editors," American Economist (Fall 2011)
as long as promotion committees and university administrators treat discipline-based
research on teaching as second class scholarship, teaching will be such at the
major universities and elite colleges.
Scholarship of teaching and learning conferences that are not disciplines
specific may do more harm than good in advancing the prestige of teaching
within disciplines.

William E. Becker

Professor Emeritus of Economics, Indiana University

Adjunct Professor of Commerce, University of South Australia

Research Fellow, Institute for the Study of Labor (IZA, Bonn Germany)

Fellow, Center for Economic Studies and Institute for Economic Research
(CESifo, Munich Germany)

4 people liked this. Like Reply

souffleoley 6 hours ago

This certainly makes the case for participatory techniques. I hope Harvard's lead will accelerate the paradigm shift throughout the vertical educational spectrum.

3 people liked this. Like Reply

3rdtyrant 6 hours ago

I think, as usual, that Harvard has missed something: that most of us did all this active synthesis on our own in order to work our way successfully through undergraduate and graduate degrees. This, I would wager, lies at the root of the "problem" (if, indeed, it lies with the teachers and not the students). Expectation is that a student can learn based on the student's acumen and drive. More modern thought is that the student ought to be coddled and cajoled into remembering stuff that he or she ought to remember on his or her own. I know it sounds Darwinian, but I've had too many bright students come and thank me for a lecture and discussion that actually helps them, as opposed to some of these half baked time-wasters like the fishbowl or questions like, "how did you feel about this character." I think, even though Harvard in all its wisdom might disagree, that the lecture/in-class discussion model, when led my a prepared and invested scholar, is still the most fruitful approach. Who doesn't, when the opportunity arises, allow students to apply an theory or an idea? I know a few, and they were at Harvard, interestingly.

I guess what I'm trying to say is that a bad teacher does not mean the model is flawed, but that the teacher might be. Still, I'm happy to defend the idea that my old farmer Dad taught me, "learning in class is as much a measure of your quality as a student as it is the quality of the teacher." I hope Harvard et al. doesn't forget that, though we are all willing to accept that we need improvement, sometimes it is the student and not the teacher that is the cause of the learning obstruction.

How obtuse to assume that an idea is bad just because it is old. It would seem that an old idea that has worked effectively for so many people for so many centuries might not need to be scrapped, but just kept vital and effective. If we buy the assumptions behind this conference, we're complicating this matter well beyond what it necessary, and when I see this, I assume someone is trying to create job security.

7 people liked this. Like Reply

ForestHansen 6 hours ago

One factor is that teaching demands work--before, during, and after class sessions. Before, to figure out what one wants students to learn that hour and how to best make that happen. During, to attend to what is

going on (whether one is lecturing or leading a discussion) and take that into account as the class proceeds. After, to reflect on how it went and whether or not students learned what one wanted them to learn. To say nothing of the time and effort in evaluating their quiz answers or mini-essays (an unappealing but vital task). I taught at the college level for over three decades. My model was to do what most of my professors never did--lead discussions. Although there were a few excellent lecturers in my courses at Harvard, the University of Wisconsin, and The Johns Hopkins University, my best education came from small classes in graduate study. I did not learn much from my undergraduate Harvard professors, who were rewarded primarily for their scholarship. I learned mainly through writing an enormous number of papers.

2 people liked this. Like Reply

parispundit 5 hours ago

Ms. Munson's suggestion of a two-track Ph.D. system, one track for teaching, one for research, would be a catastrophe. Within a few years the research track in the humanities and much of the social sciences would disappear. This would certainly be the case at most public institutions, and perhaps most private ones as well. Even STEM fields would face pressure. Much better to simplt add a required two-semester pedagogy course to the standard Ph.D. program. Is there really any need for more?

1 person liked this. Like Reply

urbanized 5 hours ago

Perhaps Dr. Roediger's research is not explained clearly in the article. I'd hate to jump to conclusions. As represented here, it seems that he is telling us what we already knew: multiple tests will help students to remember certain types of information. I don't see any evidence that they actually help students *learn*. Words are not really *learned* if a person cannot use them; they are *being learned* as students attempt to use them. Words are being memorized when a student is studying for a test that will ask her to recall them.The distinction between remembering and learning (which has to do with understanding) is crucial here. Words and concepts won't make it into a learner's repertoire of active vocabulary/knowledge if they are not attached to a function beyond memorization. For most of us at university, memorization is not the goal.

1 person liked this. Like Reply

rsoder 5 hours ago

The notion of pedagogical content knowledge is hardly new. There's considerable research data in the literature on what happens during and after lectures. Using writing pre and post is ancient. (I'm ancient, too, and have always asked students to write a short paper for each reading, with a summary of the fundamental argument in the reading plus commentary on that argument). We've all known for a long time the dynamics of graduate school production and the use of low-paid grad assistants to teach undergrad classes, with tenure granted on the basis of publications. And if students "write in jargon-heavy language," Mr. Pinker and the rest of us should spend more time teaching how to write better. We don't need $40 million to figure any of this out.

Like Reply

MarjoryMunson 4 hours ago

In reply to anahuacbob: Teaching is not a skill that hangs out in the air somewhere - good teaching requires at least adequate command of the content. A strange thing I have observed over the years (and I am 75, so I have had a lot of years during which to observe) that a good teacher, with adequate command of content, can often communicate more than someone with superior command of the content but no teaching skill.

4 people liked this. Like Reply

waratah104 4 hours ago

That's right, MM, you are getting at the crux of the matter which is --- content is the "WHAT" and teaching is the "HOW" --- you can know the WHAT better than anyone, but if you fail at HOW you communicate it, then it's lost.

2 people liked this. Like Reply

Caleb50 2 hours ago

And I have known more than one professor at my institution who knew HOW better than anyone but had absolutely no idea WHAT he/she was talking about.So I guess there is a middle ground. I suppose we have to be more clear about what we mean by "adequate" content knowledge and "adequate" knowledge of pedagogy.

Like Reply

jaroszhannula 4 hours ago

As an instructional coach at a high school, formative assessment matters! As viceross notes, students can "understand" but when it comes time to apply understanding they can't do it. If the application is new or slightly different, we lose even more of our students. Formative assessment allows us to do what art, and music teachers have practiced-- they demonstrate, students attempt, students make adjustments in their understandings and practices and some go on to become masters while the rest have honest appreciation and basic knowledge of what that curriculum means.

1 person liked this. Like Reply

skattwin 19 minutes ago

Interestingly enough, many faculty will bristle at the suggestion that they might have something to learn about teaching. What we know about how students learn, and indeed the ways that students learn, are continually changing, but faculty who have either had no training in teaching or who took a few pedagogical classes many years ago get highly insulted when offered the opportunity to learn new pedagogical methods or research about student learning patterns.

It should also be noted that First-Year Experience programs nationwide are among the first curricular initiatives to expose faculty to new pedagogies, and these programs are often where you'll find the best and most innovative faculty in an institution.

Like Reply