

KEY POINTS

Productivity and efficiency are moral imperatives. Not only does higher education receive numerous public benefits, we also do something that is extremely important socially, namely, educating the young. We have a moral obligation to that job the best we can.

Lumina Foundation's "big goal" is to move the United States from slightly under 40 percent of its population with a high quality, postsecondary credential or two- or four-year degree to 60 percent by 2025.

If the students already enrolled in our universities aren't succeeding, if we're not moving them to graduation, then those are lost opportunities. We need to figure out how to close racial and economic achievement gaps.

The game changer in re-thinking teaching and learning is the combination of technology and cognitive science, not classroom-avoiding approaches like on-line and distance education. The required enabler is for academic departments to take collective responsibility for climbing the learning curve in these areas.

Improving Productivity Across Public And Private Campuses

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JIMMY CLARKE LOUISIANA BOARD OF REGENTS
MARY SHEEHY MOE MONTANA UNIVERSITY SYSTEM
RICHARD PETRICK OHIO BOARD OF REGENTS
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The Lumina Foundation's "big goal" is to increase the proportion of American adults with high-quality degrees or credentials from roughly 40 percent—where the rate has been plateaued for more than four decades—to 60 percent by 2025. Lumina has taken a multi-faceted approach to achieving this goal, including working with several states on state-wide initiatives designed to increase productivity. The Master Class at the Forum's 2010 Aspen Symposium was devoted to highlighting and discussing work funded by Lumina in Louisiana, Maryland, Mississippi, Montana and Ohio. The aim was to glean important lessons and ideas to apply more broadly, including to private research universities and other selective colleges and universities. Panelists included Jimmy Clarke, Interim Director of Policy and Planning at the Louisiana Board of Regents; Mary Sheehy Moe, Deputy Commissioner for Two-Year Education in the state of Montana; Richard Petrick, Vice Chancellor for Finance and Data Management for the Ohio Board of Regents; and Nancy Shapiro, Associate Vice Chancellor for Academic Affairs at the University System of Maryland. William Massy, Professor Emeritus of Higher Education and former Vice President for Business and Finance at Stanford University, moderated the panel, excerpts of which are reprinted here.

Mr. Massy: Productivity and efficiency are moral imperatives. Not only does higher education receive numerous public benefits, but we do something that is extremely important socially: namely, educating the young. We have a moral obligation to do that job the best we can, which is just another way of saying with maximum productivity and efficiency.

The problem, of course, is how to do that. We've all made great progress on the business

and support services side of our operations, although there's still plenty more to do there. But the academic side is not nearly so far along. This panel will cover both, but primarily focus on the academic side. This is not simply a matter of importance for what some of our panelists call the "workhorse" universities, the comprehensives and so forth, nor just for the community colleges. It is important for the research universities, too, including the private research universities, because we have the capacity to develop needed models of change, legitimize them for faculty,

and include them in training the next generation of Ph.D.s. It's not too much to say that the private research universities should provide leadership on productivity improvement in order to provide needed lessons for others, even if the financial benefits of these improvements are less important than for the "workhorse" institutions.

Without further delay, I'm going to ask Jim Applegate of the Lumina Foundation for a quick word about Lumina's productivity initiatives. Then we'll turn to Nancy Shapiro.

Mr. Applegate: Thanks very much. I just want to offer a context for the kind of work you're going to hear about, and why the Lumina Foundation is so concerned with the issue of higher education productivity. At the Lumina Foundation, everything we do is tied to what we call our "big goal." We're not very creative at the Lumina Foundation, so we created a big goal and we called it a "big goal."

The goal is to move the United States from slightly under 40 percent of its population with a *high quality* postsecondary college credentialed degree—two- or four-year—to 60 percent by 2025. Now, that's an audacious goal, but if you want to know why we think 60 percent is necessary, I'd just refer you to Tony Carnevale's recent report about the projected shortages of educated workers to fuel the growth of the U.S. economy.¹

We also heard from Rebecca Blank, from the U.S. Department of Commerce, about what's going to happen in the U.S. economy. She said when productivity increases, all good things happen, and when productivity goes down, bad things happen. We think that's just as true in higher education as it is in the economy at large. Once the foundation set that goal, we wrote a strategic plan about how we thought the country could get there. The plan is on our website. It's very transparent.

In that plan we lay out three critical outcomes. One is improving the preparation of students going into college. Two is increasing the numbers of students going to college and improving their success in college, and the third critical outcome, which we're going to focus on today, is increasing the productivity of higher education—by which we mean efficiency and effectiveness.

We're talking about reducing costs, but we're also talking about maintaining and increasing quality. We're doing a lot of work within the current system that you're going to hear examples of today to try to get at the best and most effective practices, and to consider the will that needs to be generated in order to increase productivity within our current system.

I would also mention that we're working on what we call our innovation portfolio, where we're investing in conversations with folks in Silicon Valley and around the country,

looking at what an alternative delivery mechanism for high-quality higher education with students at the center would look like. We're talking about using multisided platforms, students pulling down courses from MIT and other places, and being credentialed for their work. That is, alternative delivery mechanisms that address the needs of a huge part of our population that may not be able to access the current system. If we're going to achieve our big goal, we need to increase degree production of higher education in this country by 150,000 each year, every year between now and 2025 to get there.

We're very excited about the work going on that you're going to hear about today. It's part of a larger portfolio and we hope it pays off. Otherwise we're not going to have the capacity to reach our big goal and I'll have to retire early.

Mr. Massy: Thank you, Jim. Nancy Shapiro will speak next.

Nancy Shapiro: Thank you. I am at the University System of Maryland. I'm Associate Vice Chancellor for Academic Affairs and the senior advisor to the chancellor on P-20 education issues such as the pipeline and academic innovation.

Our work with the Lumina Foundation began slightly differently than some of the others because the chancellor of the University System of Maryland, Brit Kirwan, had already started an Effectiveness & Efficiency initiative about six years ago that paid close attention to productivity—without calling it productivity—to the tune of saving close to \$100 million in direct costs after we implemented some of the E&E initiatives. In that E&E process, we divided the responsibilities between the academic and nonacademic sides of the University System, and initially went after some of the low hanging fruit—for example, consolidating contracts, the back office processes that really can save money right away—and then we turned our attention to the academic side of E&E, asking ourselves how we can make teaching and learning more efficient.

We came up with three objectives. This effort is a three-legged stool for Maryland. The first leg is to pay attention to how students are prepared when they come into our universities. Recent data show that students pay close to \$2.4 billion in remedial educational costs, and many students who have to enroll in a remedial course won't graduate. So the first thing on our agenda was to focus on improving the quality of the education of the students coming to us, and that means engaging in school-university partnerships. I do a lot of work related to these types of partnerships.

The second leg of the stool is closing the achievement gap within our universities. If the students already enrolled in our universities aren't succeeding, if we're not getting them to graduation, then these students are lost opportunities. We need to figure out how to close that achievement gap. We challenged all the provosts and all the presidents to first of

all identify their achievement gap. We have three historically black institutions in our system, four comprehensive universities, and three research universities, and UMUC which caters to adult learners. The achievement gaps aren't the same. We're not just talking about closing a gap between African-American and Hispanic and white students. In some cases we're talking about economic disparity, or we're talking about English-as-a-Second Language learners.

The third leg is time-to-degree, that is, how we can accelerate time-to-degree. We are working on that in two ways. We're working externally with our community colleges to create fully articulated programs and we're working internally with Carol Twigg, of the National Center for Academic Transformation (NCAT), who came as a consultant to the University System of Maryland to work on course transformation and course redesign.

Our Board of Regents invested about \$300,000 over a three year period to pay for NCAT consulting and to support faculty course redesign teams at every institution. We are now redesigning large-enrollment undergraduate courses to make sure that they are incorporate what we know from the new learning sciences and what we know about increasing access through technology.

So what we're doing with our Lumina project is disseminating some of the work that we've already done within the University System to the community colleges and to the independent colleges in Maryland. We are grateful to the Lumina Foundation for making this dissemination and transmission of knowledge to the broader higher education community in Maryland possible. This work is also changing the dynamic of the conversation because while the questions are similar, they're not the same at the independent colleges or at the community colleges. So the other thing that I spend time on is convening "communities of practice." I work with faculty from two-year, four-year, and independent colleges to address the very significant challenges that we face related to all of these issues.

Before I finish, I just want to read one quote. This is President Obama in April 2009: "I challenge state college and university leaders to put affordability front and center as they chart a path forward. I challenge them to follow the example of the University System of Maryland, where they are streamlining administrative costs, cutting energy costs, using faculty more effectively, making it possible for them to freeze tuition for students and for families." That sets the bar pretty high, so we're in this for the long haul!

Mr. Massy: Those are excellent examples. And there are others...Jimmy, please?

Jimmy Clarke: Thank you very much. I'm here today to represent a couple of different points of view. First of all, I

was very pleased to serve as a Lumina state advisor to the State of Mississippi in its learning year of the Making Opportunity Affordable grant. That effort was focused primarily on trying to develop a system-wide course redesign of developmental math in Mississippi's community colleges. The process was extraordinarily interesting. The two systems—the community colleges and the four-year colleges—had not really ever worked well together. They operated separately.

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This effort was an opportunity to link the two. But actually the outcome that we were most pleased about was something that wasn't anticipated.

As we went through the course of the year, the conversation about productivity expanded and included a number of legislators and the governors' education policy adviser. As a result, during the legislative session a year ago, a bill was passed to create what was called the Graduation Rate Task Force. That brought together a number of individuals from all different policy levels in Mississippi to look at how best to achieve greater educational attainment of its citizenry, and the impacts that would have on economic development opportunities.

That Graduation Rate Task Force has since been codified in law, and is now known as the Mississippi Educational Achievement Council, which is made up of legislators and presidents of two-year and four-year colleges, as well as a number of others, and we are really excited about it. Two things of particular interest are included in that legislation. First, it stipulates that the education attainment target for the State of Mississippi would be tied directly to Lumina's big goal. The actual target that the Council set was to reach the national average of educational attainment by 2025. So that's in law.² The second thing stipulated was to utilize not just IPEDS graduation rates in terms of identifying a productivity measure, but also to use completers per FTE as a metric to look a little bit differently at how we recognize and measure productivity. So that I think was an important step.

I'm here also to represent Louisiana, which is where I'm currently employed on a temporary assignment with the Louisiana Board of Regents. I've actually spent 33 years in

Louisiana, working at a four-year institution, as well as in the governor's office as the chief of staff, and at the Board of Regents in a variety of positions.

Louisiana is one of 18 states that Lumina has identified to participate in a series of productivity strategy labs and other productivity efforts, trying to bring stakeholders from all different sectors together to understand the importance of productivity and to be creative in terms of what we can do to improve productivity.

Louisiana has embraced and embarked upon a number of different activities over the last couple of years, including developing a performance funding model, and we're anxious to see how that will fare in the current legislative session. Louisiana has also developed a rather unique center for adult learning, utilizing technology to deliver programs to individuals identified as having a significant number of course completions already, but who have not attained an educational certificate or degree. There's also a recently devised guaranteed transfer associate degree. That took a lot of work, given the policy dynamics of dealing with the flagship institution, and it recognizes and guarantees 60 credit hours of automatic transfer.

Finally, I'm here also to inform and to help guide conversations relative to a new initiative that Lumina has embarked upon, which is the concept of productivity strategy labs. It's predicated on the concept that there are four essential strategies that states can utilize to boost productivity. Those are, one, to reward institutions that focus on students' completion of quality programs; two, to reward students themselves for successfully competing courses and programs; three, to expand and strengthen lower-cost and innovative, nontraditional educational options; and four, to invest in institutions that model good business practices. I'll be glad to talk about those as we go forward.

Mr. Massy: Okay, wonderful. Let's move right ahead. Mary Moe?

Mary Moe: Thank you. One of the things that I think is very interesting about this Lumina project is that it's state-focused. If institutional change is challenging, trying to change the many institutions that you have in your state is even more so.

Montana's strategy for advancing the productivity agenda is to focus on our two-year colleges as the key for increasing educational attainment rates in an efficient way. We have 15 two-year colleges in Montana, but despite that we have only 24 percent of our college-going population going to two-year colleges. The learning year that we spent with Lumina helped us to understand why that is.

The first challenge we face is about reputation. I don't think

the reputation of the two-year colleges in Montana is negative, but it is confusing. That's partly because we have seven tribal colleges whose academic mission is varied. We also have three community colleges that primarily emphasize a transfer mission, and five former Vo-Techs, now Colleges of Technology, that are at least perceived to offer workforce degrees but not transfer. So one of our main strategies is getting out a clear and consistent message about what two-year education is.

The next kind of challenge that we have is a complacency within the two-year colleges about the kinds of indicators that we're pushing; in other words, successful transfer and completion of degrees. Particularly as we enter into performance-based funding discussions, we're finding that the two-year college presidents are saying, "Wait a minute. We can't do that based on completion because students come to us for different reasons than they go to four-year colleges, and completion isn't an important goal." We're pushing back, saying that at least your completion rates should be comparable to what they are in other states that also have two-year college students and that are probably not that different.

The final challenge that we're dealing with is the historic autonomy of all institutions. They are accredited that way, and they think of themselves in that sort of independent fashion. That's particularly true of community colleges, which see themselves as very responsive to their communities and loath to enter into statewide, coordinated efforts that might affect that responsiveness.

So our strategies for improving not just enrollments but also transfers, completions and four-year completions are first of all to bring the same community college mission to all of the two-year colleges in Montana, and to communicate that consistently so that when people are considering going there, they're assured that they're going to have the same opportunities at two-year college A that they would have at two-year college B.

The second is to deploy those community colleges as regional hubs for the K-12 pipeline, for workforce development, and particularly for adult access. The third strategy, curricular alignment, is the most challenging. One of the things we concluded from our policy audit was that if you're actually trying to make transfer difficult, this is how it would look. So we're trying to coordinate offerings, particularly general education courses, so that students can prepare for them and transfer efficiently. We're also trying to create the technology infrastructure that will allow us to share resources, which is very challenging in Montana, where broadband is spotty and cell phone coverage simply is not there in some of the neediest places of the state.



One of the things we concluded from our policy audit [of curricular alignment] was that if you're actually trying to make transfer difficult, this is how it would look.



Finally, we're working through a number of issues related to performance-based funding. I find the sense of urgency and the motivation for change far greater, with more buy-in for it in the public sector with policymakers, legislators and the governor, than there is within higher education. In fact, I am reminded of what a health-care reform person said to me at a recent conference when I told him what I'm doing, and that I work in academia: He said, "Ah, academia, where the rubber meets the sky."

Mr. Massy: Very good, thank you. Rich?

Rich Petrick: I'm Vice Chancellor for Finance and Data Management for the Ohio Board of Regents. I also manage and coordinate some grants and some foundation relations.

In Ohio, the words efficiency and productivity are not dirty words. They've penetrated through the presidents, CFOs, CTOs, CIOs, and many faculty are now being engaged too. I want to give you just the highlights of where we are now and how we got here.

We've got very strong leadership from Governor Strickland and from Chancellor Fingerhut. We have shifted from a coordinating board to having the chancellor appointed by the governor and sitting in the governor's cabinet, raising the visibility of higher education. As part of that process, the chancellor was required by the legislature to produce a 10-year strategic plan. That plan outlined specific metrics; we have annual updates of the metrics, and the whole office is organized to achieve those metrics.

In terms of efficiency and productivity, there were three major goals that Lumina promoted. One was to reward success and not enrollment. We do that. Our funding formulas reward course completions and degree completions, and at the community colleges we've mirrored the state of Washington's success in using "Momentum Points" in that regard to a large extent. So we didn't ask for money for that.

The second leg of their stool was to generate savings through either academic or nonacademic processes and reinvest those savings. We put the bulk of our Lumina funds into two projects, one of which is a statewide e-procurement system, where over time we expect to have all campuses participate, and not only coordinate but consolidate \$2 to \$3 billion a year in spending. We expect to have a 5-to-10 percent savings on that overall amount in a relatively short period of time once all campuses are on board. Another project we're funding is a shared services proof of concept. We hope to create a shared services model that will be a spinoff, a stand-alone, and that over time campuses can join and can eliminate a large part of their separate back office operations.

The third leg is to develop and promote low-cost options to a baccalaureate degree. We have a lot of those. We have dual enrollment programs, concurrent enrollments, two-plus-twos,

three-plus-ones. We have a very powerful articulation and transfer program that guarantees transfer from every public two-year to four-year and among and between the institutions. What we don't understand is why more students aren't taking advantage of these opportunities. So one piece of our Lumina grant is going into strategic communications and focus groups to identify why students aren't taking the opportunities available to them. For example, at some of our regional campuses that are adjacent to a community college, students can complete a baccalaureate degree for \$16,000—two years in the community college and two years in the regional campus—and not enough students are taking that opportunity.

So those are the three things that we're funding through Lumina and we're thrilled to have the funds to do it. Writ large, though, we're doing a whole lot more. We have an efficiency council that is staffed by the members of the board of regents and regents' staff, and we have a website where you can look at the sorts of things we're doing.

We have efficiency initiatives in IT, energy, administration, and textbooks. I already mentioned e-procurement; we also have p-card procurement, and also have a prescription drug program, for which we're looking at saving about \$150 million over about a five-year period for the consolidated purchase of prescription drugs.

Let me give you an example of one of the initiatives that we're very proud of, that started a bit earlier and that we are able to point to as a great example of reducing costs. The state has charged all public colleges and universities to reduce their energy consumption—BTU consumption—by 20 percent. Lakeland Community College, a college on Lake Erie, hired a consultant that had extensive experience in Europe, who benchmarked their operations against eight German and Austrian institutions that had a similar climate. They discovered that Lakeland was burning 50 percent more BTUs than these comparable campuses. Over time, Lakeland adopted all the practices and facility controls, equipment controls, heating controls, cooling controls, et cetera, and as a result, by 2014, they are scheduled to reduce their BTU consumption by 50 percent.

So we have strong leadership, good rhetoric, good data, and specific goals. We have a strong history of consultation among all the institutions. We've established trust with them, and we've adopted the C.A.S.E. method for everything we do—and by that I mean we "Copy And Steal Everything." That is, we look for every best practice out there, whether it's in Ohio or wherever. We send people there, we see what they're doing, and we try to mimic it if it can contribute to our goals. Thank you.

Mr. Massy: Thank you very much, Rich. Now I'd like to briefly describe the work of the National Research Council's

panel on the measurement of higher education productivity, also funded by Lumina. This is an important initiative that's going to have implications for all of us.

The motivation for creating the panel, of course, is the growing understanding that, while the people who provide the resources for higher education through taxes and direct payments have a right to understand productivity trends, the data now are terrible. Terry Sullivan, former provost at the University of Michigan, and new president at Virginia, chairs the panel. The group includes economists, some of whom (like me) are in the higher education milieu and some who are not, as well as a range of other academics and non-academics. Our goal is to produce a report that will make a difference, that really gets to the issues but is also properly nuanced to recognize the difficulty of productivity measurement. We are at that stage now, which the NRC describes as the end of the "unfolding stage." The next step is to make sense of what we learned and then put together a report.

We're looking at all kinds of approaches—for example, how productivity is measured in other industries and how those lessons apply, or don't apply, to higher education. One key question is, cost per what? Is it enrollment? Is it degrees? Is it some combination of the two? We are well aware of the differences across fields, and the need to control for field of study, level of study, mode of study, and so forth. The aim is to look at the productivity of instruction, which means we need to tease out organized research and public service and also address the question of departmental research. We know that we're not going to be able to get a definitive result given the complexity of universities and the current state of our data, but we hope we can accomplish three things:

First, we want to provide an authoritative framework for defining higher education productivity—one that will cut through today's confusing rhetoric and provide the basis for an ongoing set of development efforts that have a chance of building cumulatively over time.

Second, we want to make some specific recommendations to government, a kind of down payment on measures that can reasonably approximate what's needed and be implemented sooner rather than later—not twenty years from now. The models will be far from complete, but at least they won't be taking things in the wrong direction. We recognize that whatever can be done in the short run will have to be replete with "health warnings" because the available data systems do not support doing the kind of job that really needs to be done.

That leads to the third objective, which is to provide a comprehensive, actionable set of recommendations to serve as a roadmap for how to improve the data. The follow-on steps will need to involve university administrators as well as people

from government, NGOs, and general academics, but they shouldn't be limited by current thinking and special interests.

Hopefully, given the stature of the NRC, we will be able to get the attention of the statistical agencies and the Department of Education. We're very conscious of the need to do that. Most of all, what we want this report to do is to change the dialogue about productivity in higher education, and put it on a track that over time will produce more transparency and, therefore, better policy both inside and outside of institutions. That's a big order, but it is a very interesting and important exercise. Lumina should be commended for its leadership in trying to get the productivity dialogue headed in the right direction.

Now, without further delay, let's move on to your questions and discussion.

Discussion

Q: I have a self-interested question. I have been working on a book with three co-authors, trying to look at the future of higher education finance. We are on board with the Lumina vision and goal, and with Carnevale's research about the need to increase the numbers for the workforce.

I've got the task of writing a chapter on the capacity to do that. How can we in fact turn out 150,000 more degrees per year? After a sort of superficial first cut, my sense about the capacity of our traditional institutions to mount that kind of increase is that it is highly limited by the financial states that we find ourselves in, and by default (but not entirely unhappily by default) I've concluded that the for-profits are about the only game in town that have the capacity to get the capital to expand to produce more degrees.

I'm curious whether you all think I'm being way too pessimistic and that in fact your traditional institutions can all increase capacity enough by doing the things you're trying to do, or whether you're going to have to ultimately rely on new providers.

Mr. Clarke: Well, my experience has been that it's certainly a state-specific phenomenon. In Louisiana, capacity is not an issue. We actually have an overabundance of classroom capacity at the four-year campuses. The problem is in the two-year sector, which is rapidly growing, and they are now figuring out ways to partner with the four-year campuses and use that space.

That said, I don't think there's any question that any state I've worked in or been around is looking to online learning, looking to technology, and looking to the best practices proffered by the for-profits. I think we can learn a lot from them, and there are discussions about actually contracting directly with them in order to produce better circumstances.

Ms. Shapiro: We have made a prediction of exactly how many degrees we will need over the next five years and beyond—we're projecting to 2025 and 55% because that was

what the governor set as our Maryland State goal.

We'll work toward that goal through a combination of things, including getting the most productivity out of our current situation: We are losing too many potential graduates in the usual process; if we can graduate every single person who is enrolled, that's big. Also, if we can bring more students in from the community colleges, if we can double that number of transfers across the system, then we'd gain that efficiency in the higher education system in Maryland.

Mr. Petrick: I think our capacity is extensive and can handle our ultimate goal of increasing enrollments by 210,000 by the year 2014 and increasing the graduation rate by 20 percent. For example, we are aligned with and have incorporated the adult career centers into our goals, and we discovered there are 20,000 to 25,000 adults enrolled in courses who are college ready and college eligible. We've blessed those courses that are "credible" and we're moving toward a program of concurrent enrollment of the career technical students with community colleges.

We underuse facilities on Fridays, and on weekends. We underutilize online education. We're just pushing in all directions. But I fully expect we'll come close to the goal and that we'll do it within the public system.

Ms. Moe: To me the question isn't so much one of capacity as it is of balancing capacity, in that we have some institutions that have plenty of capacity and others that don't. But at this point we don't have the infrastructure in place, either curricular or technological, to create that kind of balance as a state.

Q: Let me just be clear. When I was talking about capacity, I wasn't just talking about physical availability of classrooms. I was talking about the money. You can have all the unused capacity you need, but you have to get the kids in. You can't keep raising tuition so that they can't afford to come.

Q: You set extraordinarily ambitious goals and you have set up metrics to try and measure whether or not you're getting there, like graduation rates, time-to-degrees, number of graduates. I'm just wondering how you're also dealing with the problem of the potential displacement of goals, that is to say the extent to which you are going to be graduating more people maybe more rapidly than they ought to be.

My question is about the *content* of their knowledge—when they graduate are they prepared for the types of jobs being projected? It may be that there's so much pressure on the system to get people out that it's a legitimate question whether they are finishing with what's needed to meet the needs of society, with more highly technical skills for a knowledge-based society.

Mr. Petrick: We had many conversations when we created our formulas about the possible negative side effects of a



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formula that awards course completion and degree completion. One question involved the possibility that standards might be lowered as a result. The ultimate decision rested on the word of the provosts and the chief academic officers of our community colleges who simply said, we will defend and protect and enhance the academic integrity of our campuses regardless of what formula the state uses, and we accepted that.

Ohio has a longitudinal data system that can look at who gets degrees, where they get employed, how much money they make. And we have something called a "skills bank" where we can empirically match degree production with business needs. So we can test a lot of those hypotheses down the road to see if goal displacement does occur. We're aware of the potential problem, but right now we're comfortable with the commitment that the provosts have made to the academic process.

Ms. Shapiro: That actually is the big academic question on the campuses, one that we address all the time. It's the question, "Is this the No Child Left Behind for higher education?" And we all know what happened with No Child Left Behind. All the standards were set lower so that people could meet their targets. So like Ohio, what we're doing in Maryland with respect to the academic, teaching and learning aspects of this productivity agenda is to try to incentivize faculty to think about whether what exists is the perfect model or if there's a better way.

For example, can we learn from the learning sciences work that's going on at NSF, or from the cognitive sciences? Can we learn more about how students learn and make our courses more engaging? Can we do inquiry science? Can we do the things that we need to do in order to make sure that students actually acquire the knowledge and get to the outcomes we hope for? The first part of this work is for faculty to decide what those learning outcomes need to look like, and that's not an easy conversation. Faculty members don't often talk about how students learn or how we know that they learn.

I mentioned earlier that we were engaged in a course redesign experiment. It's a very interesting experiment. We have chemistry, math, and English faculty, who were all given some grant funds to redesign their courses. Sure enough, they

discovered that by redesigning courses to get more engaged learners, they not only were able to be more efficient with their time, but they were also getting better learning from the students. Now we're tracking to see whether that learning is sustained, by checking how those students are doing in the next course that they take.

For example, if they took chemistry 101, what happens when they take the second course? Did they learn as much as the students that were in the traditional sections? So we're doing the research to try to ensure that we're not undercutting quality.

Q: Well, my question is much the same. In Denmark, when they adopted performance funding by graduation rates, graduation rates went up. I think quality standards have got to be watched very carefully. It's encouraging that you discussed it with your provosts but it's actually in the hands of every faculty member. If they see that when they fail a student their funding goes down, that's very real and it pervades the whole effort.

Mr. Massy: There's real issue here, an irony almost. It's only faculty, really, that can decide what the outcomes need to be and assess whether or not they're being achieved. Every faculty group that I've ever worked with, and there have been a good many, has been able to do that once they put their mind to it. Once they get the conversations to a sustaining level within the department, and once the department as an organizational unit takes collective responsibility for the measurement of learning, assessment happens. The trouble is these preconditions don't happen very often. So how can we do something about that?

Q: But the point also is that when incentives are put in place based on those standards, they can bypass or lower them.

Mr. Massy: Well, it's very easy to bypass and lower them if we're dealing with simplistic measurements. That's a terrible danger, but it's up to us in higher education to see that it doesn't happen. It can be avoided if a department takes collective responsibility for the quality of learning and the institution audits their processes on a regular basis. Expressing concern that such processes may go awry is not a good reason for failing to have them.

Q: A lot of the background motivation for all this is preparing students for a life in a science-based economy. And it worries me when the conversations are in turmoil because a lot of our faculty haven't been in the science-based outside economy for 30 or 40 years. And so I think it would be an interesting dialogue between the people who are full time out in that economy and the faculty who are maybe at best part-time in that economy. It would help make sure that we are preparing students in the right way, figuring out what skills they need. If you only talk to faculty, you get one answer. Perhaps if you talk

to people out at, say, Medtronic, you will get a different answer.

Mr. Massy: That is a terrific point—once you focus the conversation on learning outcomes, it is only a small step to conclude that inputs are needed from outside the academy. There are many institutions now, including some very good research universities, that maintain organized conversations with people from industry to inform decisions about desired learning outcomes. This is not a matter of “abdicating to the customer,” but getting a full range of facts and interpretations. And that really does work.

Ms. Shapiro: In Maryland we had a voluntary P-20 council, involving business, higher education, K-12. It recently became a Governor's Council for P-20, with the understanding that public higher education has a very specific responsibility to address the workforce issues in Maryland. One of the ways we do that is to bring workforce representatives to the table to talk about what it is that we need to do and in what timeframe. Those kinds of P-20 conversations have been a good place for us to figure out how to be responsive to workforce needs.

Q: Sometimes I think the highly selective schools are seen as not paying enough attention to the issues that are being discussed. And yet, a number of the COFHE schools were quite intrigued by the Carnegie Mellon Open Learning Initiative (OLI) that Joel Smith and Candace Thille described to us at last year's Forum, and with the concept of developing open learning modules in collaboration with the learning specialists and technology specialists that Carnegie Mellon works with. We are at the beginning of this collaborative effort. Eight of the 31 COFHE schools are involved in the project, and will be using and evaluating the OLI modules in small courses.

The idea is to try to corral those many-legged creatures, institutions that are so used to being in high visibility positions, so that they are contributing to the discussion. I think we do have something to contribute. These schools do know how to graduate students. You might say yes, but you have a very high-quality student coming in. In any case, though, the COFHE schools and schools like them could help in an important way by showing leadership in adopting the use of technology that improves learning. And they are helping to develop those course modules too. I think there is a lot of opportunity for their results and findings to be disseminated more broadly without changing the distinctive education that happens in every one of these schools, which is very important to the COFHE schools.

So, they are willing to collaborate and say there are some best practices and there are some outcomes that could be shared and that would benefit not only highly selective schools, but all schools.

Mr. Massy: I think that the initiative just described is one

of the most important that has come out of the Forum discussions. Carnegie Mellon has done wonderful work, and there is other very good work around as well. The question is how to get it adopted and embedded. The kinds of conversations I mentioned earlier should include the search for best practices, which accelerates cross-fertilization. So I hope we will continue to hear more about that collaboration.

Q: We have been talking at a high level about how policy, structure and engagement across the state can make a difference. And yet in the end, isn't a course the unit of analysis with respect to academic productivity? I happen to be a fan of pilot projects. I know that the physics department at MIT is participating in COFHE's study. If the physics department at MIT has something to say about productivity gains with respect to better education per dollar, better retention per dollar, any kinds of measures you would want, believe me, many people will take a look.

And so those are the kinds of important things I think need to happen because in the academic world, we are imitated. We all just want to imitate the best. And so I think many pilots, small examples, proofs of concept, can be very, very powerful. And in my own mind, I am going right back to thinking about the classroom.

Mr. Massy: The classroom is it. The game changer in rethinking teaching and learning is the combination of technology and cognitive science, not classroom-avoiding approaches like on-line and distance education. And the required enabler, I still believe, is for the department to take collective responsibility for climbing the learning curve on applying technology and cognitive science in the classroom. And it is happening. I don't want to suggest it is not. It is, it's just that it would happen a great deal more if institutions put more powerful quality- and productivity-improvement processes in place.

Q: We just heard a little optimism from the both of you. I guess I would like to hear the panel's thoughts on how to introduce these things to the faculty, because I think what we've been talking about is commoditizing a part of the academy, which often doesn't believe that there is any commodity aspect to what they do.

Mr. Massy: Like all politics, all academic productivity improvement is local. What we have been saying is that progress can be made if we can engage the faculty in serious conversation about these issues. The faculty like these conversations. They do not find them to be about commoditizing their work. What they do find is that productivity improvement is intellectually challenging and academically worthwhile.

Ms. Shapiro: That is actually exactly the challenge that we faced in Maryland. And the way we posed the question to faculty was, let's find the courses that have problems, and then

let's analyze what those problems are. We drew up a list of courses that showed up as our institutions were going through accreditation that had a large drop/withdraw/fail rate. Nobody wants failure in those courses on the books. So we brought the faculty together to problem-solve, and offered possible solutions. We offered money to anyone who wanted to experiment with the problem courses. We at the system level pulled together everybody who wanted to do those course redesign experiments, and supported them in a community of practice, a learning community, so they could learn from each other. And sure enough, after this experiment we got a new set of courses.

I will mention one course in particular, a chemistry course at UM-Eastern Shore, where the faculty member tracked before and after, did a randomized control experiment, really a wonderful study, and determined that not only did she raise the success rate in that course from C's and D's to B's and A's, she raised it from 50 percent B's and A's to 70 percent B's and A's in that course because of this model.

She also reduced the cost of that course to the student and to the university significantly because she used some of these new modular learning units. And now she is the one that all the chemists go to and ask, "How did you do that?" So, this is just one example of a way to scale success, by drawing on best practice and disseminating that practice.

Mr. Massy: The two key questions that one asks faculty are, "What are you trying to do?" and then, just as important is, "How do you know that you are doing it?" If you can get those two questions asked and discussed seriously, you will find that the rest follows. It is not seen as an exercise in commoditizing the academy. It is problem solving in an intellectually challenging way.

Q: I am just thinking about faculty resistance to commoditization. And it just occurred to me that one of the greatest commoditizations was Samuelson's *Economics*. That textbook commoditized the standard curriculum for economics for years to come. And people bought it. They bought the text and they used the text.

It is hugely utilized because it, in fact, is good and it, in fact, keeps faculty from having to create unique material to teach basic economics. It seems to me that there are commoditizations already. Many big science departments get together and design the freshman physics course, for example. And each of the faculty members who teach it teaches it does so pretty much the same way, except for their personalities and their interaction with the students on a personal basis. So I think there are lots of good examples with commoditization.

And now we are starting to look at the commoditization of what cognitive science can help us think about in pedagogy and in outcomes. And that is sort of the next step. If the textbook was the content, this is the process.

Mr. Petrick: I want to take a minute to go back to the earlier question about encountering faculty resistance. And certainly, we have done that. But one of the things we are finding in Ohio—and I think every other state is finding this too—is that there are faculty members who agree with us. And they are not energized and activated simply because they hear the chancellor and the governor say we are changing the formula system to help promote student success. These people are intrinsically motivated to help their students succeed, and are percolating up through the system, and we are hearing from them more and more. It is not resistance, and we would like to empower those people even more and to have them serve as models.

Endnotes

- 1 Anthony Carnevale, Nicole Smith, and Jeff Strohl, *Help Wanted: Projections for Jobs and Education Requirements through 2018* (Georgetown University Center on Education and the Workforce, 2010). E-book available at <http://cew.georgetown.edu/jobs2018/>.
- 2 Since this presentation, the Mississippi Educational Achievement Council has changed its goal to mirror the Lumina Foundation's goal of increasing the proportion of American adults with high-quality degrees or credentials to 60 percent by 2025.

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