

2007 STATE OF THE UNIVERSITY VIDEO

Graham B. Spanier

President

The Pennsylvania State University

Transcript

GRAHAM SPANIER:

I'm Graham Spanier, president of Penn State, and I'm pleased to present my annual report on the state of our University. This visual account allows you to see for yourselves what is happening at Penn State. So let me succinctly share with you our progress and our continuing promise as the nation's most student-centered research university.

On the surface it might appear that little has changed at Penn State lately. After all, the bells of Old Main still chime, students still walk the mall between classes, and football Saturdays still bring huge crowds to Beaver Stadium. But I can tell you with certainty that this past year has been far from ordinary.

Penn State is on the move. From our groundbreaking work in materials science, our amazing discoveries in space, and our life-saving advances in medicine, to our education of teachers, architects, artists, and lawyers – we are enriching our society, fostering economic development, and improving the quality of life for millions.

Since our founding, Penn State has conferred nearly 610,000 degrees and we are still America's most popular university, having received nearly 99,000 applications for admission this year.

In fact, one out of every 115 Americans with a bachelor's degree graduated from Penn State. One in every six students seeking admission to U.S. medical schools applied to our College of Medicine. We operate out of 24 campuses and a total of 138 separate locations in Pennsylvania, and we are the leading contributor to Pennsylvania's economy. Faculty researchers at Penn State are focused on solutions to growing challenges like terrorism, the environment, and helping our country to develop new energy sources.

Penn State has more than 50 noted scholars already working in critical areas of renewable energy. Over the next several years, we will hire 24 additional faculty in these areas. We are positioned to become one of the leading universities in the world in energy science. Our faculty are studying everything from methane, hydrogen, and bio-electricity production to clean coal, to bio-based jet fuels to solar power and coal liquefaction. Our students also are involved heavily in this ambitious venture. At Penn State, teaching and research strongly complement one another, sparking intellectual curiosity and actively engaging our students in the process of learning.

BIODIESEL RESEARCH GROUP

KIM OSTERREIDER, Chemical Engineering student:

The Penn State Biodiesel Research Group will help Penn State become more sustainable by taking the waste cooking oil from the dining commons and letting us make a fuel to use at the farms out here.

CHRIS PETERS, Chemical Engineering student:

This is something I can get my hands on and do today. It's not, 'In 20 years - what can I do to save the planet?' I can do it now.

JOHN LEWIS, Chemical Engineering student:

Right now bio-diesel is the cheapest and easiest renewable fuel to make. And it produces a really high quality fuel.

CHRIS PETERS:

Whenever I see cars in the future using it, it will be very exciting to know that I was one of the starting blocks to it.

FIELDS TO WHEELS

TOM RICHARD, PH.D., Associate Professor of Agricultural and Biological Engineering:

We have a system here that's been capturing solar energy from the sun for literally thousands and millions of years. So, one of the things that Fields to Wheels allows us to do is look at that system as a whole and try to find the ways to make it efficient all the way along.

We have students working in this all the way from in these fields, looking at harvesting technologies, back in the laboratories looking at how we make the best biodiesel, ethanol, or electricity out of these kind of fuels and on into the vehicles.

GRAHAM SPANIER:

Across Pennsylvania, rich, productive farmlands and 16 million acres of forestland have positioned the Commonwealth to become a major producer of bio-fuels – a promising new industry for the state.

PENNSYLVANIA ENERGY

GREG ROTH, PH.D., Professor of Agronomy:

I think the next big fuel on the horizon is ethanol. Initially our ethanol is going to be developed from corn and grains but soon we'll be transitioning more to cellulosic ethanol. We'll be using the fibrous parts of the plant, the stalks, the grass blades, and the trees.

NICOLE BROWN, PH.D., Assistant Professor of Wood Chemistry:

The research that we're doing is isolating sugars from wood. And the sugars, of course, are important because they can be used to make ethanol. The research that we're doing here at Penn State can directly serve an emerging ethanol industry in Pennsylvania.

GRAHAM SPANIER:

While some Penn State researchers are looking for potential energy buried within plants, others are looking to the sky for their answers.

SOLAR DECATHLON

More than 800 students from disciplines across the University are involved in a national project to raise awareness of solar energy by designing a home powered strictly by the sun. Penn State has been selected to take part in the Solar Decathlon, an international competition sponsored by the U.S. Department of Energy.

Known as Morningstar, Penn State's solar home entry has been built in stages at various sites on the University Park campus and will be assembled on the National Mall in Washington, D.C. At the end of the event, Morningstar will return to Penn State where it will serve as a teaching and learning model.

For our undergraduate students, this hands-on learning is invaluable. Our students are not only learning from some of the world's foremost experts, but they are also training to become experts themselves by seeing the relevance of their work applied to real-world problems.

In Robert Burkholder's literature classes, students do more than read about the great outdoors, they immerse themselves in it and discover new methods for lessening our impact on the earth.

EXPERIENTIAL LEARNING

ROBERT BURKHOLDER, Associate Professor of English:

Well, this class is about learning by reading, like just about any other English class, but then also learning by *doing*.

SCOTT BAKER, Landscape Architecture student:

Having English together with a gym class - a GHA credit (*general education requirement related to physical activity*) is something that I didn't think I'd find at Penn State here but it's amazing that I found it.

JOHN McMANIGLE, Physics student:

Throughout the semester we read American nature writing and then we spend a week out here in Pennsylvania getting used to kayaks and sort of learning the techniques. And then we actually go for a week down to South Carolina to kayak around the shores to experience the things we've been reading about throughout the semester.

ROBERT BURKHOLDER:

One of the things that I advertise is the idea of “leave no trace.” Being kind to the environment sometimes (means) even cleaning up after other people.

If I take 12 students out to hike the Appalachian Trail for a weekend they form their own little society, and in some case they’re best friends for life. And I think that’s one of the things that make these sorts of experiences the kinds of things that students will say, you know, 20 years after they graduate from Penn State, ‘I remember doing that and this was a highlight of my college career.’

GRAHAM SPANIER:

Everyone knows that blue and white are the colors that define Penn State. Now, I'm not announcing a change in our school colors, but Penn State is definitely going *green* by incorporating new concepts into our every day activities. Our hydrogen re-fueling station is the first of its kind on the East Coast, producing enough hydrogen to power 20 vehicles a day. In addition to our other alternative energy vehicles, like electric Segways, we have developed a new fleet of hydrogen-powered vehicles as part of our efforts to find the most cost-effective and environmentally friendly modes of transportation.

We have minimized our solid waste production by 45 percent through composting and recycling, dropped our water consumption by 400,000 gallons a day, and continue to work on more ways to reduce carbon dioxide and other greenhouse gas emissions.

Penn State ranks second among universities nationwide in renewable energy. We have received a number of awards recognizing our environmental leadership in areas such as energy efficiency and renewable energy sources, like wind power. In fact, we have long been a leader in green-roof research, and have planted our own green roofs – the largest sits atop our new Forest Resources Building, an environmentally designed structure. That structure, along with the School of Architecture and Landscape Architecture building, are sustainable buildings that are more energy efficient, water efficient and ecologically sound. In fact, all new University facilities are being constructed to meet stringent national environmental guidelines.

Students are eagerly joining our green efforts. They are planting trees, recycling, and through a program known as “Friday Night Lights Out,” are volunteering their time on Friday evenings to turn out lights left on in public areas. These efforts are aimed at helping Penn State minimize pollution and reduce its \$1 million monthly electric bill.

Because learning involves more than what is found in the classroom, our students must have access to the broadest extracurricular opportunities available. Penn State is in the early stages of a new fundraising campaign. The new campaign will have our students at its core and will allow us to reach our goal of providing more than 20,000 students a privately funded scholarship. Philanthropy also will allow us to enrich the student experience, build our faculty strength and capacity, and engage students in more hands-on learning. The more engaged students are in the learning environment, the better their grades and the higher their levels of achievement.

The impact of student engagement can be felt beyond our campuses. In some cases, it is changing lives forever.

CHILDREN'S ADVOCACY LAW CLINIC

LUCY JOHNSTON-WALSH, M.S.W., J.D., Director of the Children's Advocacy Law Clinic, Penn State Dickinson School of Law:

There are a number of law clinics here at The Dickinson School of Law and I am the director of the Children's Advocacy Clinic where students have an opportunity to take on real cases and represent clients in court.

KATHERINE FITZ-PATRICK, Certified Legal Intern, Children's Advocacy Law Clinic:

I came into the Children's Advocacy Clinic wanting to be a child advocate. I really do believe that we do make a difference and that, you know, down the road the kids will look back and say, 'If we didn't have that guardian ad litem who came and visited us at school every week, we wouldn't have made it through.'

It's really hard because when you're working with children I don't think that you ever have all the answers. We know things from a legal perspective but being able to go to a social worker and talk about a child who needs to be in a placement -- who needs services... Having a social worker has made a great impact on how we can represent the children that we are appointed to represent.¹

LUCY JOHNSTON-WALSH:

He (*Gary Shuey*) is one part of our multi-disciplinary approach to representing children and we also have to contact other faculty members within the University that have experience in other areas like health, medicine, psychology, and education.

GRAHAM SPANIER:

Solving society's most pressing problems requires collaboration across disciplinary boundaries. That's one reason Penn State is planning a new Materials Science-Life Sciences Complex. This new state-of-the-art facility, to be situated near our Chemistry and Life Sciences buildings on the University Park campus, will spur even greater advances in education and research.

Penn State has the top-ranked program in the country for materials science. To give you another glimpse of some pioneering research, let's take a look in the laboratory of Professor Douglas Werner.

¹ (*Gary Shuey, M.S.W., LSW. is a social work supervisor for the Children's Advocacy Law Clinic and plays a major role in how the clinic is able to provide services to the community*)

CEARL LABORATORY

DOUGLAS WERNER, PH.D., Professor of Electrical Engineering:

We do a lot of exciting research in our lab – a wide variety of things from advanced antenna design, to meta-material applications, to applications of nanotechnology to electro-magnetic systems... and it's mainly the students that carry out the research.

A cloaking device has always been in the realm of science fiction but there's been some major theoretical breakthroughs that tell us exactly how electromagnetic cloaking, or making an object invisible, could be realized. There's a lot of research that still needs to go on to get to an actual, practical device and the key to this is metamaterials technology and nanotechnology combined to solve this very challenging problem of electromagnetic cloaking. But we now know how to do it!

GRAHAM SPANIER:

The scientific discoveries you have seen so far are just a small slice of the enormous amount of research that is carried out at Penn State every day. Our faculty conducts more than \$700 million of funded research each year, putting Penn State among the leaders worldwide. We are second in the nation for research funded by industry. Within Pennsylvania we conduct more industry-sponsored research than all other colleges and universities combined.

Penn State's research enterprise is the most comprehensive in the country. In materials science alone, the pioneering innovations of Penn State faculty impact areas as diverse as computers, national defense, manufacturing, telecommunications, and medical technologies.

NANOTECHNOLOGY FOR CANCER TREATMENT

MARK KESTER, PH.D., Distinguished Professor of Pharmacology:

There are great drugs – *chemotherapeutics* – that target cancer cells. The problem is (that) they have very nasty side effects. And what we want to do is come up with a more targeted approach so we only attack the cancer cells and not the normal cells in the body. The whole idea here is we're in the medication delivery business. We've got delivery trucks, we make them really really small. In the back of the delivery trucks you can put cartons. That's where we put our drugs and we can say, 'Only take those cartons to the cancer cells.' That way we can deliver it without upsetting the body. And we're doing research like that right now at Penn State Hershey!

GRAHAM SPANIER:

As you can see, research is a vital part of our three-fold mission, offering unimagined potential for life-saving technologies, economic growth, and learning opportunities. Through research, we are able to tackle some of the most complex health care issues, like diabetes, cardiovascular disease, and cancer – and on every front, our students are helping.

THON 2007

This year, Penn State's Dance Marathon raised a record-breaking \$5.2 million for children with cancer who are treated at Penn State's Children's Hospital, exceeding last year's total by about \$1 million. More than 15,000 Penn State students participated. Students in the College of Communications, as part of their coursework, provided comprehensive coverage of THON 2007, and a live THON web cast with interviews and commentary was viewed by nearly 11,000 people from 25 different countries.

Each year, about 250,000 children are treated at Penn State's Children's Hospital. Because of the growing demand for comprehensive pediatric services, a new Children's Hospital at Hershey is on the drawing board.

Recognized for its excellent care of children, the Pediatric Intensive Care Unit within our Children's Hospital is among the best in the nation, and our Neonatal Intensive Care Unit for newborns has treated more than 11,000 babies since its founding in 1973. Here, we conduct nationally recognized research in the field of neonatology and pediatrics so that we can continue to offer the highest level of care for the most fragile.

CHARLES PALMER, M.B., CH.B., Director of Newborn Medicine:

Tiny babies have a unique problem just because of their mechanical size. Our research involves delivering care in a way that's appropriate to them. We've developed two devices. One device addresses the chest wall, which is really soft, and that device is a splint, which we call the "Hug 'n' Snug™ Neonatal Chest Splint." The other problem that we have is how to stabilize the breathing tube. This tube is adhered to the face with tape. The tape injures the skin. It allows infection. To combat that, we developed a little device called the N.O.R.I. (Naso Oral Respiratory Interface). This is a plastic device that will hold the tube and keep the mouth free of any adhesive tape.

I think having a facility like ours; it's like having an insurance policy. It means having a facility with all the expertise nearby so that babies can have access to the best care possible.

GRAHAM SPANIER:

Another exciting project under way is the Penn State Cancer Institute, a five-story facility that will be dedicated to comprehensive cancer diagnosis and care. It will also be home to world-class research of a disease that accounts for more than one in four deaths in the United States.

The new facility will enable scientific discoveries from the laboratory bench to move more quickly to the patient bedside. By bringing together innovative cancer treatments and ongoing cancer research in one location we are providing the best possible care for Pennsylvania's residents.

Our Medical Center and College of Medicine also have another mission – education. This year, applications to our medical school approached 7,000. To meet the need for more

physicians, we have increased our medical class enrollment by more than 25 percent in recent years.

We are a national leader in integrating medical simulation into our health-care curricula. Since 1992, the Simulation Development and Cognitive Science Laboratory – called SIM Lab for short – has been a model project, offering computerized mannequins for training of medical students and other health-care professionals. The models react in much the same way a living person would react to treatment and testing. The degree of realism these simulators provide is truly incredible.

I am gratified by our students' passion for learning, their excitement for creating new knowledge, and their desire to challenge themselves. This is what it means to be a student at Penn State, where we not only provide a quality education, but seek to inspire our students to higher levels of achievement and a desire to give back to their communities.

Penn State continues to have the largest outreach effort in American higher education, serving more than 5 million people a year. Through their work, our faculty are introducing students to the responsibilities of public service.

LIFELINK PSU

PAT MOORE, Director of Special Education, State College Area School District:
LifeLink PSU is a program that's an offering for a percentage of students with disabilities, and it's typically that percentage of students who would have remained in high school until they were age 21. *LifeLink PSU* provides them an opportunity to go beyond the high school setting and to participate in a university setting with their age-appropriate peers.

TERI LINDNER, Director of LifeLink PSU, State College Area School District:
For our students it is very, very exciting to be on Penn State's campus because it is such a huge part of our community. To actually be a part of the community and be understanding how to navigate that community is very exciting.

PENN STATE EDUCATIONAL PARTNERSHIP PROGRAM

KATHLEEN McCLADDIE, Principal, Overbrook Elementary School:
It's something different than the usual academic day. They get to interact with people other than their teachers so just to have another activity to do at the end of the day for them is really good.

SANDI CALEO, Elementary Education student:
It gives their families the extra support that they may need because some families may have problems, you know, sitting down with their kids for homework. But teachers here at after school programs give their kids that support and are here for them and show them that we are more than just teachers. We're here to help your children grow.

Students who had problems with math at the beginning of the year (now) have no problem with it. They come sit down and they do it and they don't even ask for help. So, I've seen great growth in almost all of the students I've worked with.

GRAHAM SPANIER:

The success of a university can be measured in many ways. At Penn State, we believe that educating the next generation, creating new knowledge, and improving the lives of citizens through our discoveries are some of the most valuable indicators of our success.

As the most comprehensive student-centered research university in the nation, what we do here matters. We have built an enviable record of success and we are committed to even higher aspirations for the future because ... we are.... Penn State.