CCPI ATE STEM

Achieving Excellence in Workforce Education

Thought Leaders' Dialogue III Report

Community College and Industry Workforce Collaborations

from

The Community College Presidents Initiative in STEM

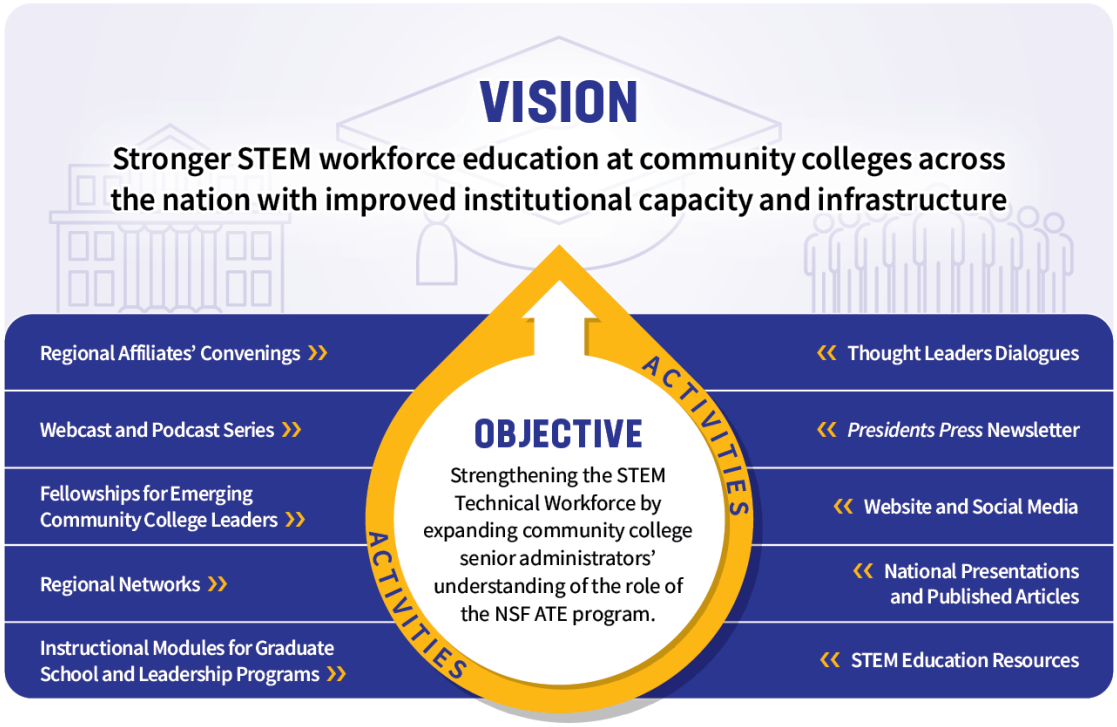
&

The League for Innovation in the Community College

NSF

League.org FOR INNOVATION IN THE COMMUNITY COLLEGE

PRINCE GEORGE'S COMMUNITY COLLEGE



CCPI-STEM's multi-faceted approach promotes STEM technician education, raises awareness of the ATE program, and builds institutional capacity for STEM initiatives.

For more information see https://www.ccpi-stem.org

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Thought Leaders Dialogue III

3 Presidents & Industry Partners Discuss Outcomes from ATE-Initiated Collaborations

Three successful community college and industry workforce collaborations were the focus of the Third Thought Leaders' Dialogue convened by the Community College Presidents Initiative in STEM (CCPI-STEM) in partnership with The League for Innovation in the Community College.

The National Science Foundation's Advanced Technological Education (ATE) program requires "strong, committed industry partnerships." The three college presidents and their industry partners explained during the 90-minute virtual meeting how partnerships with industry instigated by ATE grants have blossomed into larger initiatives that have benefitted students, employers, and communities.

They talked about how reaching out to employers to create programs aligned with industry needs in data center operations and construction, mechatronics, and information technology had resulted in new curriculum and enhanced students' career paths. The presidents also shared strategies for engaging faculty and staff in ATE grants and building a grant-seeking culture.

Dr. Anne M. Kress, president of Northern Virginia Community College (NOVA), reported that Google has been "an incredible partner" on multiple college programs that prepare students for a wide range of technical roles to build and operate data centers. Jessica Forman, a member of the Community Development & Social Impact team for Google Data Centers, said the company's "really wonderful symbiotic relationship" with NOVA on the Skilled Trades and Readiness (STAR) program is "upskilling" people who might not otherwise have embarked on construction trade careers.

Dr. Annette Parker, president of South Central College in Minnesota, explained that Daikin Applied Americas has been a partner on ATE grants that the college began receiving in 2013 for its Independent Mechatronics Education Curriculum (iMEC) program. These National Science Foundation (NSF)-awarded funds have helped the college's faculty embed innovative mechatronics courses at rural high schools. George Chapple, senior manager of professional development and training at Daikin Applied Americas, explained that the manufacturer of advanced heating and cooling systems and the college also partnered on a credit-based apprenticeship program and a training program for career switchers.

Dr. David T. Harrison, president of Columbus State Community College in Ohio, shared how Rocky Parker, senior external affairs officer at Nationwide, helped him assemble a "kitchen cabinet" of human resource officers from a variety of industries to advise him about workforce development. Parker said forming that group created a muscle "that allowed us to come together to be able to get additional dollars to put into the workforce." Harrison cited the "cumulative impact" of Columbus State's 17 ATE grants since 2014 with helping the college achieve "significant growth in engineering technology" and momentum for other workforce development programs.

Dr. Sylvia Jenkins, business-industry liaison for CCPI-STEM moderated the online meeting that can be viewed here.

Introduction

Three successful community college and industry workforce collaborations were the focus of the Third Thought Leaders' Dialogue convened by the Community College Presidents Initiative in STEM (CCPI-STEM) and The League for Innovation in the Community College on January 23, 2025.

The National Science Foundation's Advanced Technological Education (ATE) program requires "strong, committed industry partnerships," and the three college presidents and their industry partners who spoke during the 90-minute dialogue explained the origin of their ATE grant partnerships and how collaborations instigated by ATE grants blossomed into larger initiatives that have benefitted students, employers, and communities.

Dr. Sylvia Jenkins, business-industry liaison for CCPI-STEM moderated the virtual meeting that can be viewed here.

Opening Remarks

"STEM is more than just a collection of disciplines"

In his welcome address, Dr. Rufus Glasper, president and CEO of the League for Innovation in the Community College, pointed out that science, technology, engineering and math (STEM) courses are higher education entry points for many first-generation community college students.

"STEM is more than just a collection of disciplines. It is that open-entry door for coming into our systems," Glasper said. He urged community college leaders to build "a pipeline for those who are unaware of what STEM really means, how they can enter the profession, how they can grow, and go in many directions."

Glasper encouraged the meeting participants to engage in the dialogue and do more. "We encourage your sharing of information in terms of relationships that you have within your own local community, your ecosystem, your business partnerships." He also asked them to address the needs of the millions of people who are not involved in STEM fields, but who – with education – could pursue careers in these high-demand fields that pay family-sustaining wages.

Dr. Charlene M. Dukes, co-principal investigator of CCPI-STEM and president emeritus of Prince George's Community College, welcomed the speakers and participants, who she encouraged to join the ATE community's efforts to support community colleges' development of the skilled technical workforce.

> *"All of you made very good points. And this goes to show that the necessity of doing all of this work in a collaborative way. We know that there are issues and concerns that our students bring to us. We know the workforce has needs. So, the partnerships you have described are excellent ways to address the needs of students and the colleges' business and industry partners."*
>
> Dr. Sylvia M. Jenkins, President Emerita
> Moraine Valley Community College
> CCPI-STEM Business Liaison

ATE Program Helps Colleges Prepare Students for Emerging Technologies

Dr. V. Celeste Carter, NSF ATE lead program director, pointed out that during the past 31 years the ATE program has awarded $1.5 billion in taxpayer funds to support innovative technician education programs.

ATE is the independent federal science agency's largest investment in two-year colleges.

Carter encouraged community college educators who are unfamiliar with the ATE program to look at it as a funding opportunity for testing new ways to prepare students to work with emerging technologies, such as artificial intelligence. She said she hoped that faculty who received ATE grants in the past will submit proposals again.

"The funds that are appropriated to support all of the projects and centers are in part dependent on the proposal pressure," Carter said, noting the ATE program prioritizes two-year college faculty developing innovative ideas for educating technicians for the high-technology fields the drive the nation's economy.

"The program involves partnerships between academic institutions (grades 7-12, Institutions of Higher Education), industry, and economic development agencies to promote improvement in the education of science and engineering technicians. It is strongly recommended that projects be faculty-led and required that courses and programs are credit-bearing, although materials developed may also be used for incumbent worker education."

Program Synopsis
ATE Program Solicitation

Northern Virginia Community College & Google

Dr. Anne M. Kress, president of Northern Virginia Community College (NOVA), reported that Google has been "an incredible partner" on multiple college programs that prepare students for a wide range of technical roles to build and operate data centers. Kress described Northern Virginia as a major data center hub because of its proximity to federal government agencies in nearby Washington, D.C.

She reported that the college had leveraged two ATE grants plus industry support to start to build the workforce for data center operations. The successful work on the ATE grants led to the college receiving a $5 million grant through congressionally-directed spending to expand the data center operations program to a second location, and to build a heating, ventilation, and air conditioning program along with it.

"So, NOVA began a program in data center operations based on industry requests, stood that program up very, very quickly and worked really closely with folks in the data center industry around faculty, around curriculum....All of these industries we're talking about move very, very quickly. And we are not always, as community colleges, resourced to respond to those needs.

"That's what ATE has done at NOVA. It's enabled us to take a program, we stood up quickly and expand it, deepen it to the extent that now we are sharing this curriculum. There are 23 community colleges across the Commonwealth of Virginia. As data centers expand across Virginia, we're sharing our curriculum with the other 22," Kress said.

While college personnel were working on those ATE projects, Kress said, they discovered that "there may not always be the talent not only to work inside data centers, but to build the data centers. And this is an issue not just in Virginia and Northern Virginia, but across the country. And it doesn't just impact the data centers, it impacts chip fabs [i.e. semiconductor chip fabrication facilities] and everything else that we're talking about building as we continue to sort of in-source and re-shore some of these operations."

So, NOVA and Google worked together to develop the Skilled Trades and Readiness (STAR) program, which provides students with five weeks of paid, pre-employment program training and awards them with industry-recognized certificates upon completion.

Jessica Forman, a member of the community development & social impact team for Google Data Centers, said the company's "really wonderful symbiotic relationship" with NOVA on the STAR program is "upskilling" people who might not otherwise have embarked on construction trade careers.

"So, for Google, it's really a double bonus that we not only get a skilled workforce to help build the data centers that we need, but provide opportunities for those that otherwise might not have it [them] to enter the industry," Forman said.

Forman also said, "For us, it's incredibly important to partner with folks like Anne so that we've got a very clear understanding of what the community and the community college expertise is and what the community needs for that specific region [are]. Without folks like NOVA, we wouldn't be able to leverage what we know your expertise is in.

"And, so, it's really been one of the pivotal reasons for success with the STAR program at Google. Without the community partner – the community college partnership – we would have a lot of fumbling around and figuring out what actual curriculum does get our folks to readiness for employment and

apprenticeship and meets the needs of what we're hearing from our trade partners. So, it's really a wonderful, symbiotic relationship and wouldn't be the program [it is] without it."

Forman said Google endeavors to partner with community colleges at its locations across the nation. "We rely on the programs that already exist and build out together what we know are the components of the successful curriculum," she said.

"100% of the students who have gone through Google STAR have been able to find employment."
Dr. Anne M. Kress, President
Northern Virginia Community College (NOVA)

Data Center Operations Program Lifts Working Mom to Higher Wage Career Path

Dr. Anne M. Kress, president of Northern Virginia Community College (NOVA), shared the story of a woman she described as "a working mom" to explain how the data center operations program, which was developed with an ATE grant, fit with the college's strategic goal to connect more students to pathways that pay well. She defines those as high-wage, high-demand career pathways that do not require people to earn baccalaureate degrees.

The woman was employed as a bank teller when a recruiter told her that earning credentials through the data center operations program at NOVA would soon lead to her doubling her hourly wage.

"She started the data center operations program. She got a paid internship. She was hired by an employer in the region – actually [she] was able to counter her hiring offer from another employer. This is all before she even finished her two-year degree....Now she's on a pathway where – without ever getting her bachelor's degree – she will make more than a hundred thousand dollars in just a few years," Kress said.

Kress reported the woman is so pleased with the program that she is "one of our best recruiters." The woman's husband and brother-in-law have enrolled in the program as well.

"They are real economic gains for individuals who all too often are on the outside looking in, and ATE grants provide that first open door. So, this really supports our strategic plan and we're grateful for this investment," Kress said.

South Central College & Daikin Applied Americas

Dr. Annette Parker, president of South Central College (SCC), explained that Daikin Applied Americas has been a partner on ATE grants that the Minnesota college began receiving in 2013 for its Independent Mechatronics Education Curriculum (iMEC) program. These NSF-awarded funds have helped the college's faculty offer professional development to teachers throughout a 12-county region and offer mechatronics courses to rural high school students.

"We've worked with Nebraska and other states as well, so that these high school kids can get a head start, which leads to building that pipeline of employees for employers like Daikin," Parker said.

"Daikin is at the table as one of our strong partners to make sure that the curriculum's right. They serve on the advisory committee, which guides what curriculum will be in the iMEC program, and then what they give us feeds the K-12 system that feeds a pipeline to us and into our region. And, so, I think that that has been the real key to the partnership and how ATE has been brought forward," she said.

Whenever the local newspaper writes about the college, Parker said it mentions the mechatronics program because "they know that it's strong and that it supports the community in amazing ways. And we could not have done that without the NSF ATE grant."

The college and Daikin, which manufactures advanced heating and cooling systems, also partnered on a credit-based apprenticeship program and a training program for career switchers.

George Chapple, senior manager of professional development and training at Daikin Applied Americas, said that before the COVID-19 pandemic the company noticed many Minnesotans were transitioning from non-manufacturing to manufacturing jobs. And he said Daikin has an aging workforce and expects 36 percent of its maintenance technicians to retire in the next five years. His job involves recruiting.

By working together, South Central College and the company developed a free program that teaches people basic skills that are common across manufacturing. Daikin uses it for onboarding new employees. "We provide advanced skills to folks that have never stepped foot in a factory before. And we did this in partnership with SCC and the community of Faribault to give free training to folks wanting to transition from a non-traditional [career] like fast food or retail into advanced manufacturing," Chapple said.

Program Transforms Young Man into Key Team Member

George Chapple, senior manager of professional development and training at Daikin Applied Americas, explained the impact of South Central College working with industry to align its mechatronics program and other offerings to workforce needs by citing the experience of a Daikin employee he referred to as A.J.

"Here's a young man who had zero experience in maintenance. I mean zero. He saw the ad for our apprenticeship program, and he applied for the job. He got the job. And through the apprenticeship program – the mechatronics program – A.J. went and completed his degree.

"And he's become key on our off-shift, maintenance group because he was able to combine our basic skills of hydraulic air power mechanical system, electrical systems. But more importantly now, the mechatronics program is meeting the needs of robotics and automation.

"And because of that, now we're skilling up people like A.J. to meet the new technology that's coming into our facilities as we grow and progress," Chapple said.

Successful Collaborations Start with a Shared Vision

Dr. Annette Parker, president of South Central College, did her doctoral dissertation on the key factors and stages of collaboration among business, industry, and the Automotive Manufacturing Technical Education Collaborative, known as AMTEC. Parker was the principal investigator of that ATE-funded center at the Kentucky Community and Technical College System prior to being hired as South Central's president.

"What I learned is you really have to create a shared vision and you have to look at the factors and the stages of collaboration to move from an industry partnership just being something that's philanthropic to something that's more integrated," she said.

This sort of integration happens, she said, when the business and industry partners "start saying, 'We are doing this together.'"

With the basic skills program in Faribault, Minnesota, Parker applied this foremost lesson from her research by talking with the chamber of commerce president about how the initiative will be continued when she retires from South Central College in mid-2025.

Those conversations led to him, not Parker, leading the meetings, which are convened every two weeks with all the business, industry, and K-12 school district partners and South Central personnel.

Their collective focus is on "next steps and what we're doing together. And there's a lot of excitement about that now because they know that that's what's going to make it sustainable after I'm gone," Parker said.

She pointed out that true collaborations yield understanding about each others' processes such as why it takes so long for a new factory to be built or a new curriculum to receive approval.

"So, once we all understand that we're moving in the same direction and the challenges that each one of us have, it builds sustainability and how you overcome [them]....That needs to be at every level. It needs to be the teachers talking. It needs to be the dean and the principals talking, and it needs to be the presidents and the CEOs talking," Parker said.

Columbus State Community College & Nationwide

Dr. David T. Harrison, president of Columbus State Community College, shared how Rocky Parker, senior external affairs officer at Nationwide and former head of its human resources department at the insurance and financial services company, helped him assemble a "kitchen cabinet" of human resource officers from various industries to advise him about workforce development in Central Ohio.

Parker said the advantage of the informal group creating a Workforce Advisory Council early in Harrison's tenure as president was that "it created a muscle within the industry or within our region so that when it was time for us to go for grants, NSF grants specifically, we had already built that collaboration, that muscle that allowed us to come together to be able to get additional dollars to put into the workforce."

Advanced manufacturers, health science companies, and the information technology field have employees participating in the council, including Intel, Amgen, Nationwide, Cardinal Health, Ohio State Medical, Honda, JP Morgan Chase, American Electric Power, Ohio Health, and IGS Energy.

Harrison cited the "cumulative impact" of Columbus State's partnerships with industry on 17 ATE grants since 2014 with helping the college achieve "significant growth in engineering technology." Those ATE projects also provided momentum for other college-industry collaborations and led to the federal government designating Columbus State to lead one of five workforce hubs in the nation, he said.

The human resource leaders on the council also joined forces with the college to help people affected by companies downsizing "so that talent stays within the region."

Parker cited council members' decisions to provide earn-and-learn experiences for Columbus Promise participants as "one of the biggest roles that business plays in helping Columbus State."

The Columbus Promise program was launched as a three-year pilot program after the COVID-19 pandemic to assist Columbus City School students who graduated between 2022 and 2024. Promise scholarships cover students' tuition and fees (after Pell grants) to attend Columbus State.

"When you think about bringing the recent Columbus City School graduates out of the inner city school that they graduated from, giving them free college opportunities, and driving them towards those STEM career areas of advanced manufacturing, health sciences, and industry information technology, the Workforce Advisory Council that we've put together really plays a role in driving those students into those career paths that we know are going to have the jobs of the future, the good jobs," Parker said.

He emphasized that "hundreds of students, who are getting to go to college for free, will be able to graduate with work experience under their belt and no debt in their checking account."

Harrison said, "I just have a lot of gratitude for our employer partners who have rolled their sleeves up and embraced these students. And we've got incredible success stories that then make it replicable. And none of that is possible without the foundation that the ATE grants had laid for us."

Later in the dialogue, Harrison said, "One of my favorite things I hear Rocky say is 'Columbus State operates at the speed of business.' That wasn't the way it was a dozen years ago. But a lot of this work has built repeatable processes that our faculty have driven, that do allow us to respond to employer needs, to K-12 needs, to our university partner needs, to the community's needs."

"Our students lead complicated lives. So the ability for us to be as flexible as we can and employers to be as flexible as they can to help meet students where they are, to get them to the next step, there are always challenges there. From a placement standpoint, we're lucky in our region right now. We've got more jobs than we've got qualified people. So, the students who get through our programs typically have choices with regard to which employer they want to go with."

David T. Harrison, President
Columbus State Community College

ATE Advanced Manufacturing Project Leads to Another Grant

During a Workforce Advisory Council meeting at Columbus State Community College, a leader from Honda discussed the Modern Manufacturing Work-Study (MMWS) program the automaker and the college developed with an ATE grant. It has students attend classes two days a week at Columbus State and do paid work at Honda three days a week. Most of the students graduate with associate degrees and job offers for good wages from Honda.

Rocky Parker, who was then a human resources leader at Nationwide, spoke up and said, "Hey, we want to do that in IT."

Columbus State President David T. Harrison said this "started the ball rolling" and the college faculty prepared an ATE grant proposal, which was funded and enabled the college to start the Information Technology Flexible Apprenticeship Program.

He reported that one of the best outcomes of this program is that numerous large employers in Central Ohio that previously hired only people with bachelor's degrees for information technology roles have provided earn-and-learn opportunities for Columbus State students and hired the college's associate degree graduates.

"When you think about the move now to skills-based hiring, data analytics, cybersecurity, software development, our students are really opening doors or those doors are open to our students that weren't open before. And it's those kinds of informal connections, employer-to-employer, that really set that foundation," Harrison said.

Q & A

During the question and answer portion of the dialogue, panelists responded to questions about how they dealt with grant-related challenges.

Recruiting Faculty to Lead Grants

How can college presidents encourage faculty to prepare ATE grant proposals?

When David T. Harrison became president of Columbus State Community College in 2010, the faculty and staff had no experience with NSF grants. "There wasn't any muscle memory around grants from our bureaucracy, much less individual faculty," Harrison said.

He recruited individual faculty members "to take a leap of faith and be part of one of these grants ... And we had some early adopters and early successes…but it took years where the faculty-to-faculty interaction and learning from each other made my involvement unnecessary."

As Columbus State obtained more grants, it created the infrastructure to manage them, which made it even easier for faculty to apply for and execute grants. As more faculty have become involved in grants, they grew frustrated with the slow pace of the curriculum approval process and, Harrison said, they are now leading efforts to shorten the time needed to create courses and programs that respond to workforce needs.

The Slow Pace of Academic Curriculum Approval

How do colleges develop curriculum quickly enough to respond to industry needs, but that is affordable and accessible for the students, and results in a quality workforce?

Northern Virginia Community College (NOVA) President Anne Kress suggested using noncredit workforce programs to test what the college can develop in response to an emerging technology.

Expensive Equipment Costs

How do you handle the expensive equipment costs that come with building or updating advanced technology programs?

South Central College President Annette Parker said her college's ATE grants have helped reduce these costs in an unusual way.

A portion of the ATE grant for the Independent Mechatronics Education Curriculum (iMEC) program was used by Doug Laven, the mechatronics faculty member who served as principal investigator of the grants, to develop independent remote experiment automation lab trainers with low-cost, readily available materials and components made on the college's 3D printers.

"We really don't need to buy as much academic equipment or industrial equipment for our iMEC program. That makes it more affordable for our K-12 partners, but it also makes it more affordable for our college students.... None of this would've been possible without NSF ATE," Parker said.

Faculty Turnover

What if industry tries to recruit project principal investigators by offering them higher salaries to leave college teaching?

NOVA President Anne Kress said to make sure that you've got "a really strong relationship and understanding that it's to everyone's mutual benefit if this program continues [to be] really strong, so that even if someone might leave the institution, maybe there's someone that the industry can help backfill into that position."

Incentives for Faculty to Lead Grants

Do colleges provide financial incentives to faculty who lead grants?

None of the three colleges financially incentivize faculty to be principal investigators of ATE grants, but they do give release time for faculty to work on grant-funded projects.

"We understand their workload and, if they're going to do this project, that we're not going to load them up with a full teaching load and do this work. We understand the work involved with that," South Central College President Annette Parker said.

When she arrived at South Central College in 2012, the college had obtained its first ATE grant. Since then, faculty have become very successful at obtaining grants and the college has built out its grants office to manage external funding awards.

"You really have to build the support system around them [faculty] in the business office, in the grants office, in the research office, so that we're not strapping them down with the details, making sure they're being responsive to the agency that's given the grant, and let them be the creative mind that they want to be," Parker said.

NOVA President Anne Kress said her college encourages faculty participation in grants by letting them know the college will find external funds to support innovative programs that respond to industry's needs.

NOVA also highlights the amazing work that the principal investigators of grants do. "What they're doing is above and beyond and it's making a huge difference for their students. So that recognition, I think encourages them to participate as well," Kress said.

She noted that the opportunity to attend the ATE Principal Investigators' Conference is another incentive for faculty to develop ATE grant proposals.

She described the annual professional development meeting of ATE principal investigators as an opportunity for the educators whose ideas have been awarded NSF funding "to network with colleagues who are as creative, as energized, as deep into their disciplines as they are. That is an incredible incentive for them because they're really meeting with folks who think just like they do about their disciplines and about STEM period across the country, and they come back so jazzed from those events."

Columbus State Community College President David T. Harrison noted that for several Columbus State faculty members who have served as ATE principal investigators "it has been a good career launch point for them ... [it] absolutely helps our younger faculty through the promotion and tenure process too." He

said having individuals who have successfully executed ATE grants become faculty leaders also helps the college with succession planning.

Building Stakeholder Support

How should colleges build support among government stakeholders?

South Central College President Annette Parker recommended college presidents regularly inform local, state, and national elected officials about the outcomes of grant-funded work.

“Our legislators at the state level and at the federal level know how important this program is,” Parker said about the Independent Mechatronics Education Curriculum (iMEC) program. It has received ATE grants to embed mechatronics at rural high schools. “It has put us on the map with them so that when we're having conversations around funding in St. Paul, they know our reputation. They know we do good work, and they know about our iMEC program.”

Mission

The League for Innovation in the Community College is an international nonprofit organization with a mission to cultivate innovation in the community college environment.

Vision

The League serves as a catalyst for introducing and sustaining deep, transformational innovation within and across colleges and international borders to increase student success and institutional excellence.

Values

Innovation	Service	Quality	Community	Sustainability
Celebration				
Learning	Diversity	Stewardship	Globalism	Integrity

Strategic Pillars

The League's Legacy: Excellence in Action. Our commitment centers on elevating every facet of community college functions, from academic offerings to administrative efficiencies. We are dedicated to ensuring quality and enhancing performance while sharing pioneering best practices to forge exceptional educational landscapes.

Building on Our Legacy: Strategic Pillars. To build on this legacy, and with input from our members and other stakeholders, the League is focusing on three strategic pillars to address the changing needs in community college education:

- Resource Development
- Innovation and Transformation
- Workforce Solutions

For more information see https://www.league.org

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