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Creating a Culture of Interdisciplinary Excellence

The Successful Development of a Faculty
Cluster-Hiring Program at NC State University



NC State. Think and do.

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We all know that innovation is key to success in higher education. But innovation implies change, and organizations have a tendency to resist change. It didn't help matters when the bottom dropped out of the economy in 2008, fundamentally altering the higher-ed funding landscape.

All the while, the world continues to face issues that refuse to stay confined within funding limitations or disciplinary boundaries, such as emerging diseases, increasing global food demand, the need for sustainable energy and the impact of technology on society. For universities to fulfill their missions, we must find new ways to conceptualize the problems we face—and new ways to solve them.

In 2011, NC State University responded to these challenges, in part, by launching the Chancellor's Faculty Excellence Program, an initiative to create interdisciplinary clusters of faculty focused on addressing the world's most pressing challenges.

NC State wasn't the first to come up with the idea of hiring faculty in interdisciplinary clusters; the University of Wisconsin, Georgia State University and the University of California at Berkeley are among the institutions that already had cluster initiatives of their own. But while some cluster-hiring programs struggle to gain traction, NC State's

Executive Summary

In challenging economic times for higher education, the problems facing society continue to grow ever more complex. NC State University responded to these challenges by launching the Chancellor's Faculty Excellence Program, a faculty cluster-hiring initiative that has hired dozens of outstanding faculty in 20 interdisciplinary clusters, created new academic programs and expanded interdisciplinary research and scholarship. Here are the highlights of NC State's approach:

- › **The initiative began as an outgrowth of the university's strategic plan.**
- › **The university solicited cluster proposals from faculty.**
- › **Clusters recruited their faculty, and departments hired them.**
- › **Cluster hires were chosen with an eye toward diversifying the faculty.**
- › **The provost's office covered a significant portion of the program's costs.**
- › **The university strove to upfit facilities and equipment ahead of time.**
- › **Interdisciplinary work counts toward cluster faculty tenure progress.**
- › **The provost's office provides crucial administrative support.**

CFEP has succeeded across any number of measures, whether it's hiring outstanding faculty, expanding interdisciplinary research and scholarship, or creating new interdisciplinary academic programs. Below we explore NC State's approach to creating and implementing a successful cluster-hiring initiative.

The initiative began as an outgrowth of the university's strategic plan.

In the summer of 2010, NC State undertook a 10-month strategic-planning process that culminated in "The Pathway to the Future: NC State's 2011-2020 Strategic Plan." (See a summary of the plan, below left.) Although CFEP supports all five of the plan's goals in one way or another, NC State's chancellor, Randy Woodson, and executive vice chancellor and provost, Warwick Arden, intended the initiative to most directly contribute to achieving goals two (investing in faculty) and three (enhancing interdisciplinary scholarship).

Top administrators say CFEP's link to the strategic plan is one of the reasons why it's been a success.

"I'd say the most important thing about CFEP is that it was created to achieve the goals of the university's strategic plan," says Duane Larick, senior vice provost for academic strategy and resource management. Larick was one of those charged with overseeing the development and launch of CFEP, and he continues to be involved with the program's implementation.

"We created a strategic plan, and we've stuck to it. CFEP is an important part of achieving that plan, so we've remained dedicated to that too," he says.

"If CFEP had just been a good idea that someone had one day, it might have been allowed to fitter away into nothing when we ran into a roadblock," says Margery Overton, vice provost for academic strategy.

The Pathway to the Future: NC State's 2011-2020 Strategic Plan

- > Enhance the success of students through educational innovation
- > Enhance scholarship and research by investing in faculty and infrastructure
- > Enhance interdisciplinary scholarship to address the grand challenges of society
- > Enhance organizational excellence by creating a culture of constant improvement
- > Enhance local and global engagement through focused strategic partnerships

strategicplan.ncsu.edu

Overton joined the CFEP implementation effort in 2015. “But the program has always been much more than somebody’s good idea.”

“CFEP accomplishes the goals of the strategic plan,” Larick says, “so come hell or high water, we’re going to make sure it’s successful.”

The university solicited cluster proposals from faculty.

The chancellor and provost asked faculty to submit proposals for interdisciplinary clusters, rather than empaneling a small group of administrators to determine what the clusters’ research priorities would be. Larick says this faculty-first approach is essential to any cluster program’s effectiveness.

“Starting with the faculty is key,” he says. “You want to start with those faculty members’ entrepreneurial excitement about the work they’re doing. That excitement fuels everything else they do: creating the proposals, hiring new faculty, doing the research, all of it.”

NC State’s faculty displayed entrepreneurial excitement in abundance when the new cluster-hiring program was announced. All faculty already working in a group that spanned two or more colleges were encouraged to submit pre-proposals for advancing the national prominence of their group through the hiring of three to four eminent or highly promising faculty, at any rank.

“We received 72 proposals in response to that first solicitation,” Larick says. “Just dozens and dozens of examples of people already engaging across disciplinary lines, whether in specialized labs or centers and institutes. And they just wanted us to help them be more successful.”

From those 72 proposals, a committee selected what they felt were the 17 best proposals for implementation. The committee comprised

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representatives from the provost's office; NC State's Office of Research, Innovation and Economic Development; and each of the university's 10 colleges. The committee combined some of the 17 finalist clusters to prevent unnecessary overlap or repetition of effort, resulting in an initial round of 12 clusters selected for funding. Since then, a second group of eight clusters has been launched. (For a list and description of NC State's clusters, see p. 11.)

Clusters recruited their faculty, and departments hired them.

Academic departments normally handle both recruiting and hiring of new faculty members, but the advent of CFEP required changes to that model when hiring cluster faculty. It was important to give the clusters freedom to

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select the faculty they wanted while also keeping departments substantively involved in the process. NC State decided to allow clusters to identify, recruit and select their hires, but all cluster faculty are hired into a department, and only with departmental approval.

"It's a different hiring process," says Overton, "so it's good to have someone in the provost's office that department heads can talk to if they want to share any concerns or get more information about how it's supposed to work. That helps alleviate any departmental anxiety." At NC State, Overton fulfills that role.

After hiring, the department remains the tenure home for all cluster faculty.

"That model fits our culture here at NC State," Larick says. "I could imagine other institutions doing it differently — having the clusters sort of act as mini-departments, for example, where the cluster can be the tenure home. The point is to do it in a way that fits with and advances your culture."

Cluster hires are chosen with an eye toward diversifying the faculty.

Cluster hiring brings with it the opportunity to build a more diverse faculty, both demographically and academically — but it also presents some unique

challenges. At large research universities, cluster hires tend to focus on STEM fields and overlook other disciplines, counteracting the effort to create a more interdisciplinary faculty and campus. In addition, cluster positions tend to have very specific requirements, which too often results in shallow applicant pools that make it difficult to select a diverse slate of hires.

To address these challenges, NC State explicitly stated that one of the goals of CFEP was to increase faculty diversity, rather than merely hoping the hired faculty would be a diverse group. (For a list of CFEP's goals, see below.)

"When we formed the cluster search committees, we made sure they underwent a thorough course of diversity training, focusing especially on unintentional bias," Larick says. "We also worked hard to carefully choose where we advertised the positions, to help us yield a diverse pool of candidates."

Goals of the Chancellor's Faculty Excellence Program

- > Hire outstanding faculty
- > Expand interdisciplinary research opportunities
- > Increase federal funding
- > Create new academic programs to meet student demand
- > Meet the needs of constituents as a land-grant institution
- > Diversify the faculty

Those efforts are already having an effect on the university beyond the scope of CFEP. As a result of working with CFEP's hiring committees, NC State's Office for Institutional Equity and Diversity has made education in unintentional bias a standard part of its search-committee training procedures.

The faculty is becoming more interdisciplinary, as well. "When you have a cluster but you're still hiring in departments, that changes the slate of candidates that a given department will consider," says Overton. "For instance, the most recent hire in the physics department, who applied to be part of the public science cluster, has a more unusual résumé and is someone they might not have otherwise considered. Because it was for a cluster

position, the search yielded a more diverse group of candidates and ultimately a more diverse hire."

The provost’s office covered a significant portion of the program’s costs.

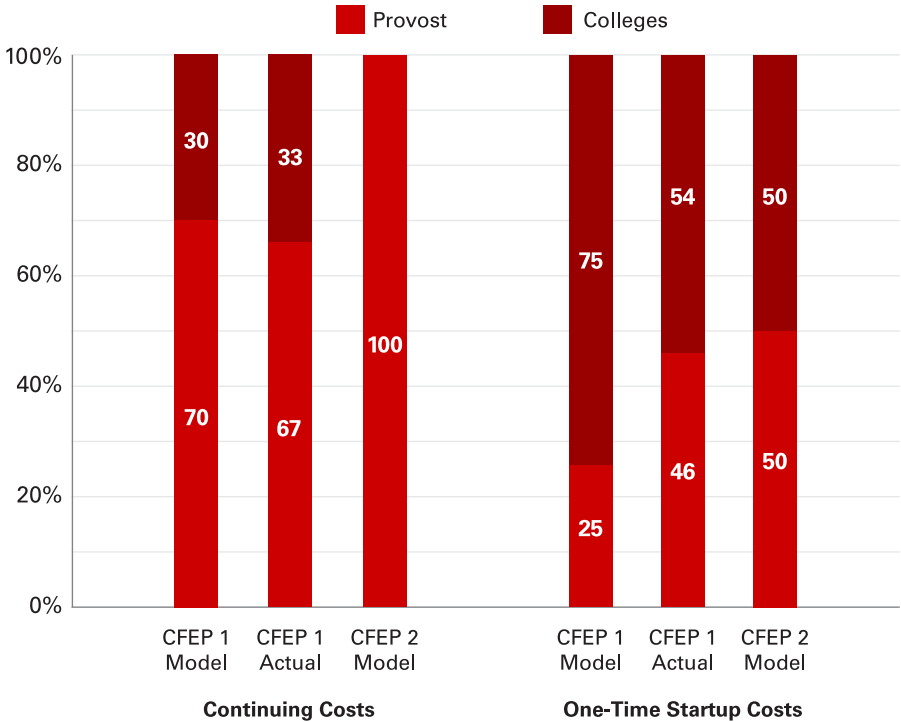
“Having a very clear financial model ahead of time is crucial,” Overton says. At NC State, that model calls for the provost’s office to share costs with the colleges, both the one-time startup costs and the continuing costs.

“We had a pretty good idea of who was going to pay for what,” Larick says, “but it’s morphed over time because we didn’t fully anticipate how large the the startup and facilities costs would be. We also wound up having to step up our commitment to the colleges when a round of budget cuts reduced their ability to meet the match we asked for.” (See an illustration of CFEP’s funding models below.)

Larick stresses the importance of the strategic plan in driving the financial decisions that shaped CFEP.

“No university has unlimited resources, so you have to choose where you’ll make investments to move the institution forward,” he says. “When it came to CFEP, we made those decisions based on our strategic plan.”

CFEP Funding Models



CFEP 1: first 12 CFEP clusters, launched 2012
CFEP 2: second eight CFEP clusters, launched 2015

The university strove to upfit facilities and equipment ahead of time.

“We’ve attracted some very successful faculty,” Larick says, “and you do that by offering a very high level of support for the work they do.” Facilities and equipment are an important part of that recruiting effort — but you can’t recruit people with physical assets you don’t yet possess. That’s one reason why CFEP has made upfitting a high priority.

Faculty productivity is another reason. If you’re hiring a group of new faculty to undertake new lines of interdisciplinary work, each one of them will need office space, lab space, specialized equipment, room for grad students and so forth — and they’ll need it all on day one. That’s particularly important for midcareer faculty, says Overton.

“Successful, midcareer, tenured faculty tend to have ongoing projects, and they don’t want to have a gap in their work,” she says. “They want to keep working. We did our best to make that possible for them.”

Cluster hires can choose to have an interdisciplinary tenure committee.

“From the very beginning, we discussed how to manage RPT [reappointment, promotion and tenure] processes for interdisciplinary hires,” Overton says. If RPT decisions are usually made by a single-discipline committee within the faculty member’s tenure home department, how would that procedure accommodate the necessarily interdisciplinary nature of a cluster member’s work? Cluster hires needed to know that they weren’t dooming their careers to stagnation by entering an interdisciplinary cluster.

“When we looked into it, we discovered that NC State had an obscure policy allowing tenure committees to include members from different departments,” Larick says. “Hardly anybody knew about it, and the norm was not to do it. Before the cluster hires, I think the policy had been invoked just one time in the whole history of the university. But it was possible.”

The university updated the policy to include more specific appointment and RPT procedures for faculty hired in interdisciplinary positions. Now the cluster hires have interdisciplinary tenure committees who can fairly judge the work they do.

“In this case, we didn’t have to drastically change any of the rules,” Larick says. “But we did have to change the culture and the norms.”

The provost’s office provides crucial administrative support.

CFEP’s clusters started with the faculty proposing a wide array of excellent ideas for interdisciplinary research and scholarship, but those ideas won’t get far without high-level administrative engagement, oversight and support. At NC State, that support comes from Larick and Overton in the provost’s office.

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“The cluster program needs someone involved who can make funding happen, make space happen, make engagement happen,” Larick says. “You need someone who can bring two or three deans into the room to meet and work through and collaborate on issues. You need someone who can bring the vice chancellor for facilities to the table to help solve space-related issues. In the regular hiring process, the department heads can’t do that. There has to be somebody at the university level who can manage all those different types of challenges, a high-level administrative position inside the provost’s office. In our case, that’s a vice provost. It has to be someone who can bring people together in new ways so they can break down silos and move the university forward.”

That high-level support has proved crucial at every step of the process, going right back to the initial request for cluster proposals, Overton says. “For instance, one of the requirements for the clusters is that they span two or more colleges,” she says. “Well, the faculty might not have made a multicollge proposal before; but knowing they would have support from the provost’s office encouraged them to do it this time.”

Successes

Since its 2011 launch, CFEP has been an across-the-board success. The program has hired 67 faculty across all 10 of its colleges, with more yet to come. The first 12 clusters were so successful that a second group of eight clusters was launched in 2015. New graduate-level degrees have been created or are being proposed in four of the clusters. New interdisciplinary centers have been created to extend the work of the clusters. The culture of interdisciplinarity has begun to permeate NC State's colleges, too, which are beginning to make more interdisciplinary hires outside the clusters.

"When you successfully launch and sustain an interdisciplinary cluster-hiring program, the effects ripple out beyond the program," Larick says.

Overton agrees. "You're creating labs that didn't exist before, initiatives where people can work together that weren't opportunities before, working on projects that didn't exist before," she says. "You're bringing people together from different disciplines, and they're learning from each other and growing and becoming even better at what they do. You're really changing campus."

Chancellor's Faculty Excellence Program: 20 Interdisciplinary Faculty Clusters

facultyclusters.ncsu.edu

The 20 CFEP clusters are listed below, along with a description of each cluster's mission and a list of the colleges participating in that cluster.

Bioinformatics

Developing and applying tools to make sense of the complex data sets coming from biological and medical science studies

- > Agriculture and Life Sciences
- > Sciences

Carbon Electronics

Revolutionizing the use of carbon-based technology involving computers, renewable power sources and energy storage

- > Engineering
- > Sciences

Data-Driven Science

Using modeling, data management and analytics to help researchers and industry experts manage and extract information from massive data sets

- > Engineering
- > Sciences

Digital Transformation of Education

Preparing K-12 teachers and students for success in the 21st-century classroom through digital education research, development and outreach

- > Education
- > Engineering
- > Humanities and Social Sciences

Emerging Plant Diseases and Global Food Security

Using agricultural research and outreach to combat the emerging pathogens and pests endangering our global food supply

- › Agriculture and Life Sciences
- › Engineering
- › Natural Resources
- › Sciences

Environmental Health Science

Doing research to address the population-level effects of environmental factors and the link between environmental exposure and health

- › Agriculture and Life Sciences
- › Engineering
- › Sciences
- › Veterinary Medicine

Forensic Sciences

Researching human DNA, evidence standards, disaster preparedness, textile analytical chemistry and statistics to ensure the safety and security of society, facilitate civil and criminal justice, and support military activities

- › Agriculture and Life Sciences
- › Engineering
- › Humanities and Social Sciences
- › Sciences
- › Textiles

Genetic Engineering and Society

Examining cultural, policy and economic aspects of genetically modified organisms, including the development and use of transgenic pests to suppress diseases, protect crops and conserve biodiversity

- › Agriculture and Life Sciences
- › Humanities and Social Sciences
- › Natural Resources

Geospatial Analytics

Putting geospatial knowledge to work solving some of the world's most pressing environmental, social and economic issues

- › Agriculture and Life Sciences
- › Engineering
- › Natural Resources
- › Sciences

Global Environmental Change and Human Well-Being

Deepening scientific understanding of complex global challenges — climate, urbanization, water availability and loss of biological diversity — to help society move toward a more sustainable future

- › Agriculture and Life Sciences
- › Natural Resources

Global Water, Sanitation and Hygiene

Putting scientific, social and policy research to work combating global sanitation issues and spreading access to safe drinking water

- › Agriculture and Life Sciences
- › Engineering
- › Humanities and Social Sciences
- › Natural Resources

Innovation and Design

Teaching students innovative techniques to introduce products and services in an increasingly competitive global marketplace

- › Design
- › Management

Leadership in Public Science

Engaging the public in scientific discourse to shape the way we view and interact with the world

- › Education
- › Humanities and Social Sciences
- › Natural Resources
- › Sciences

Microbiomes and Complex Microbial Communities

Analyzing and engineering microbial communities to enhance crop plants and farm animals, combat insect pests and protect the environment

- › Agriculture and Life Sciences
- › Engineering
- › Sciences
- › Veterinary Medicine

Modeling the Living Embryo

Applying precision measurements of molecular, cellular and tissue dynamics in living embryos, along with computer simulation and modeling, to understand the development, growth and diversification of plants and animals

- › Agriculture and Life Sciences
- › Engineering
- › Sciences
- › Veterinary Medicine

Precision Medicine

Researching genetic and genomic information, along with demographic, physiological and other clinical factors, to enable physicians to make optimal treatment decisions for individual patients

- › Engineering
- › Sciences

Sustainable Energy Systems and Policy

Moving society toward greater energy sustainability through research that informs key energy decisions at state, federal and international levels

- › Agriculture and Life Sciences
- › Humanities and Social Sciences
- › Engineering
- › Management

Synthetic and Systems Biology

Integrating synthetic and systems biology to help solve important problems, such as eradicating disease and finding sustainable ways to address globally increasing demands for food and energy

- › Agriculture and Life Sciences
- › Engineering
- › Natural Resources
- › Sciences
- › Veterinary Medicine

Translational Regenerative Medicine

Linking basic and applied research to advance the health and well-being of animals and humans

- › Engineering
- › Sciences
- › Veterinary Medicine

Visual Narrative

Enabling scholarship and communication to connect the expertise of engineers, humanists and designers, and to establish next-generation applications in visual media

- › Design
- › Engineering
- › Humanities and Social Sciences

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