Answering the Question of How: Out-Of-Region University Engagement with an Economically Distressed, Rural Region

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Abstract

How can universities engage their critical capabilities in out-of-region efforts that enhance the viability of rural regions in an innovation-based, global economy while simultaneously benefiting the university's discovery, learning, and outreach missions? This article describes Virginia Tech's program activities and how they were implemented as the university embraced a broad-scale engagement partnership with Southside [central southern] Virginia, bringing together good science and good politics to partner in transforming this economically distressed region.

Introduction

*I*n the early years of the twenty-first century, the competitive requirements of the global, innovation-based economy have become increasingly defined and articulated by an array of observers. The economic success of the United States depends on its collective ability to innovate *(Council on Competitiveness 2002)*. Attracting and producing talent in science, technology, engineering, and math (STEM) disciplines increasingly has become a regional prerequisite to growing jobs, companies, and prosperity *(Florida 2004)*. Talent and innovation from research and development activity spill over into regions within commuting distance, spawning new companies and economic growth *(Kirchhoff et al. 2002)*. In order to participate in this economy, Americans need increased levels of postsecondary education, including access to career pathways leading to baccalaureate and advanced degrees *(COSEPUP 2007; National Science Board 1996)*. Cities, towns, and counties must think and act regionally to position collective efforts in economic sectors of opportunity *(Drabenstott 2005)*. In this crucible, rural communities must face the challenge of not only aligning existing competitive assets but also developing new talent and innovation capacity necessary to attain regional competence (to drive down a region's negative attributes to avoid site selection elimination) and competitiveness (to develop differentiating regional competitive assets) in a rigorous, global economic competition.

In parallel with the emergence of this economic competitiveness agenda and in response to flat or declining public funding, universities have embarked upon a fundamental reassessment and redefinition of their outreach mission. This coalesced into a call for public institutions to return to their roots and increase the public value of institutional programs *(AASCU 2002; Kellogg Commission 1999)*. Engagement and stewardship of place entered the campus lexicon with expectations for the public good to be served through university-community partnerships characterized by greater emphasis on reciprocal, sympathetic relationships, redesigned programs, collaborative priority-setting, joint investments, and mutual learning and change. The academy would shift from one-way, ivory tower, discipline-based, episodic relationships with its broader communities to engage with messy, complex societal problems. Informing its learning and scholarship with challenges relevant to society at large would yield holistic, interdisciplinary approaches and solutions. The result would increase universities' public relevance and enhance their role as partners in building stronger regions and communities *(Kellogg Commission 1999)*.

Not surprisingly, as these two emerging twenty-first-century agenda elements—economic competitiveness and community engagement—became more clearly defined and more widely accepted, their relationships and interactions have become increasingly relevant to public dialogue. The unique leadership capabilities, intellectual resources, and knowledge products centered within higher education institutions are of escalating importance to communities striving to compete in the innovation economy. Moreover, the core capabilities and essence of research universities align well with the gaps most rural communities must fill to seed an innovation economy. Talented people, new ideas and intellectual products, expertise in information technology infrastructure and new firm creation, and a critical mass of creative people to support attractive quality of life amenities constitute a prescription for regional competitiveness. These critical assets abound as outputs of a research university.

Indeed, university towns in rural areas have prospered and grown innovation-based economies as a result of the creative climate anchored by the university. However, building a research university in every economic region is not feasible public policy. Consequently, the relevant question for universities and the communities they serve has moved from one of what to do or why it should be done. Rather, as the promise of engagement beckons,

Table 1. Demographics: Dan River Region of Virginia Compared to the Commonwealth of Virginia

Characteristic	Dan River region	Statewide, Virginia
Population change, 2000–2005	-2.7%	+4.3%
Percent under poverty level, 1999	16.2%	9.6%
Adults 25 and over with high school diplomas, 2000	67.9%	81.5%
Adults 25 and over with bachelor's degrees, 2000	11.6%	29.5%
2003 median household income	$31,430	$50,028

the relevant questions shift toward *how* to engage the critical capabilities of a university in out-of-region engagement efforts that enhance the viability of rural regions in an innovation-based, global economy while simultaneously benefiting the university's discovery, learning, and engagement missions. This article describes Virginia Tech's program activities and how they were implemented as the university acknowledged its larger role as a steward of public well-being by embracing a broad-scale engagement partnership with Southside [central southern] Virginia to help this economically distressed region—120 miles distant from campus—reinvent itself. This involvement led to a deeper understanding of outreach, significantly redefining and elevating university engagement.

Virginia Tech's Engagement in Southside Virginia

The context of the initiative

Southside Virginia, a region that stretches from the Blue Ridge Mountains east across the Piedmont along Virginia's southern border, was once home to a booming economy based on tobacco, textiles, and furniture manufacturing. Times changed, however, and the economic tide turned. Tobacco, textiles, and furniture could be produced less expensively in other parts of the world. By 2000, Southside's economy (with the Dan River subregion containing IALR, the Institute for Advanced Learning and Research) was in an accelerating downward spiral. Statistics from the U.S. Census demonstrate the region's vulnerabilities, as shown in table 1.

As increasing numbers of fields lay fallow and factory doors closed one after another, local leaders recognized that the region must transform itself to remain viable. They invited Virginia Tech to collaborate in molding the future economy, preparing the region's citizens with new job skills, and providing opportunities and

encouragement to pursue these skills. Virginia Tech has responded with a model worthy of replication in rural regions facing similar conditions.

The scope of the initiative

Central to this engagement is a comprehensive vision of the region that involves partnerships with many sectors of society to build the capacity and infrastructure that create regional competence and competitiveness in the new economy. The initiative's centerpiece, the new building that houses the Institute for Advanced Learning and Research (IALR) in Danville, the heart of Southside Virginia, opened in June 2004. Virginia Tech's unique involvement with IALR has four key imperatives:

- Employ a governance model for the IALR Board of Trustees involving shared university-community responsibility for setting mutual priorities.

- Raise the level of regional competence and competitiveness in the innovation economy through education and information technology.

- Diversify the economy through university-led distributed research and innovation programs that capitalize on existing local assets and target local needs.

- Engage all sectors of the community in multidimensional regional partnerships and programs.

As a regional research, technology, education, and commercialization center, IALR is (1) fostering a new economic base for the region, (2) attracting and developing a twenty-first-century workforce, (3) leveraging the region's advanced networking infrastructure, and (4) making Southside a destination location. To accomplish the mission defined by these four strategic goals, IALR is organized as an independent state institution managed by Virginia Tech that brokers and coordinates programs with multiple colleges, universities, and K-12 partners. Virginia Tech's central program role is the implementation of off-campus "distributed research" involving regional, federal, and state investments of more than $35 million to create research facilities and equipment infrastructure in Southside that will support twenty-five faculty and engage more than sixty Virginia Tech graduate students at IALR by 2012–13.

IALR comprises world-class research and innovation centers in robotics, motorsports, horticulture and forestry, and polymers.

These four centers strengthen economic sectors through a focus strategically linked to existing industry, agribusiness, and other regional assets. Each center combines applied research with commercial testing and engineering services and with technology commercialization support services. Together they create a comprehensive program set that generates new ideas and moves them into private companies. Although still under development, these centers are attracting academic, commercial, and industrial partners who bring outside resources into the region.

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Educational and outreach programs focus learning opportunities on disciplines associated with the IALR's research and information technology expertise, toward the goal of building a workforce in targeted economic sectors. Baccalaureate completion programs and graduate degrees that build on curricular partnerships with regional community colleges and K-12 systems provide advanced education opportunities to local citizens in addition to attracting talented graduate students from other places. Dozens of science, technology, engineering, math, and entrepreneurship outreach programs target audiences ranging from grade school children to senior citizens. The Institute Conference Center brings visitors to the region. IALR technology infrastructure and staff offer cutting-edge capabilities.

In summary, the program model evolved into a miniature, disaggregated version of campus programs, designed specifically for the Southside community. The transformation goal envisioned a climate for and atmosphere rich with innovation and ingredients for a newly developed private economy. The required creative inputs, normally present on campus, had to be designed as a sustainable set of activities that can actually effect the desired outcome of creating an innovative climate capable of transforming the regional economy. If, metaphorically, innovation is viewed as fire built from learning, discovery, and engagement, then traditional university extension and outreach are its radiated heat as knowledge is transferred from fire to field. The Institute for Advanced

Learning and Research model has moved beyond radiated heat to build a fire in the field, permitting combustion, and the private economy it spawns, to occur in the needy locale.

Answering the Question of How to Do Broad-Scale Out-of-Region University Engagement

The scale and scope of the effort in Southside Virginia suggest a robust engagement model. However, unlike state-level commitments to open new campuses with the associated fiscal commitments made early in planning and implementation, this initiative grew out of a region's invitation for Virginia Tech to help transform it and its economy. Virginia Tech made a commitment to the region as a way to reshape its land-grant mission. While a basic vision guided formative efforts, the strategy, programs, and funding were systematically improvised in partnership with community- and campus-based faculty and staff over the past seven years. Funding commitments and implementation occurred in a sequential pattern that gained momentum as it developed. The following sections describe critical implementation considerations that supported this effort: readiness, rules of engagement, relationship-building, foundational strategies, ramping up, and sustainability.

Readiness: recognizing antecedents to successful out-of-region engagement

From the university perspective, recognizing the antecedents to a successful out-of-region engagement opportunity is critical to allocating investments by faculty and staff and developing appropriate expectations about the university's commitment.

Community recognition of the need to engage in economic and community transformation: Change is welcomed when it is happening to someone else; however, the severity of economic conditions provided a critical sense of urgency. The core economy of Southside was in deep trouble, resident public programs and infrastructure were pointed at failing economic sectors, and elected leaders were purposefully scanning for remedies and willing to take much bigger risks because the stakes were so high. As Virginia Tech proposed plans that addressed local economic problems, they were adopted. Early successes reinforced an emerging sense of potential economic turnaround, which in turn buoyed subsequent funding commitments.

Private, selected leadership: The presence and leadership of a private, selected leadership group, the Future of the Piedmont, supplied Virginia Tech with a primary local partner. Its members

were essential in setting priorities, supplying start-up resources, and advocating for substantial funding; they influenced local and community decision making as the agenda for change visibly developed; and they provided staying power when early developments and initial investments had yet to produce program outcomes. Every two-year election cycle brought renewed questions about the prudence of the strategy; these were answered through the leadership of credible local business leaders.

Rules of engagement

New money is necessary for new, regionally based university programs: It is critical to keep the university engaged by offering the incentives sought by academe: new research space, new faculty positions, research equipment, graduate students, and program funding. New funding provides powerful incentives to campus-based faculty and staff. The basic policy supporting understandings between Virginia Tech and regional leaders meant that new money would be needed to support new university activities in the region.

University brand serves as an incentive for regional investment: In turn, Virginia Tech's expertise and prestige offer credibility to a disenfranchised region and the startup IALR, helping to attract new money to a needy region. The Southside region had senior, elected representation at all levels of government and a public need that justified redistributive fiscal policy. Concurrently, the Commonwealth of Virginia made a decision to dedicate 50 percent of its tobacco settlement funds (generated from the states' suits against tobacco companies in the 1990s) to economic development in tobacco-growing regions. Through these several sources—federal, state, and tobacco settlement funds—the region had an opportunity to raise new capital for compelling projects.

Research expenditures must occur within a commuting distance: Since new companies and jobs associated with economic growth occur within a commuting distance of research expenditures *(Kirchhoff et al. 2002)*, it was clear that Southside would need to house research operations if it wanted the associated economic benefits. The IALR became a "home away from home" for university research by establishing laboratories, hiring scientists, and attracting graduate students. This "distributed research" model ensured that the economic impact of research would occur where economic needs were present. Unique research labs and equipment became magnets for world-class faculty and graduate students. This cadre began to reverse regional brain drain and invest the region

with its own capacity to create new technologies, enabling the IALR to build Virginia Tech's research capacity while growing the region's innovation capability.

Relationship-building: partnerships as essential building blocks

The speed with which commitment was developed was related to at least three principles of relationship-building, designed to build trust in a new regional stewarding institution (IALR). These principles are outlined below.

Ensure structured reciprocity and decision making: In a partnership involving significant fiscal resources, shared priority-setting builds trust between partners, legitimizes the goals of the spending effort, and adds incentives for greater levels of funding. IALR is a regional stewarding institution established as a subdivision of the Commonwealth of Virginia and governed by a fifteen-person board of trustees. One board appointee represents Virginia Tech; the other fourteen represent the Southside region. The IALR Board funds Virginia Tech–affiliated executive, research, and program leadership positions constituting the IALR senior management team. In this shared governance relationship, the IALR Board develops and advocates priorities to serve IALR's mission. IALR staff operationalize the funding advocated for and raised by the IALR. State, federal, and tobacco settlement funds are invested in IALR, effectively putting the money in the region for Virginia Tech to spend on its programs there.

Build resonance and scale of impact through public partnerships: The IALR is essentially a partnering organization, serving its mission of economic and community transformation through a combination of its own activities and programs delivered through its partners. Shared priority-setting in program partnerships helps create regional alignment across K-12 systems, not-for-profit organizations, community colleges, and senior institutions. This cooperation provides critical ballast in fulfilling the transformation agenda. IALR has structured collaboration, beyond the Institute's Board and Future of the Piedmont, with the Virginia Tech Southside Implementation Team (a group of forty-plus faculty and administrators who advise regarding program development), IALR Academic Council (academic partners from K-12, community college, and senior institutions), IALR Outreach Council (academic and nonprofit partners coordinating noncredit community and education programs), and interinstitutional research councils

(university, government, and private partners to IALR research centers).

Engage the community grassroots: In a region with a history of racial disharmony, IALR partnered with the local minority community to create Southside Community Advocates for Learning Excellence, United for Progress (known as SCALE-UP), focused on building strong links between IALR and the minority community to close the region's education achievement gap. SCALE-UP has partnered with the IALR to offer college readiness programs and symposia for educators on closing the achievement gap in science and math. As a by-product, the creation of SCALE-UP has led to greater minority representation in regional leadership through membership on strategic local boards.

Foundational strategies: steps for developing a new high-tech economy

Re-create the primary economy: When a region loses its primary economy, it loses its central pillar of support. Retail, K-12 education, health care, and many other dimensions of the community all need the dollars that come to the region from selling goods and services to someone elsewhere. The Virginia Tech/IALR design addressed this dynamic through a mission centered on economic transformation, broadly defined. Rather than targeting low educational attainment through education and outreach programs, the approach explicitly invested in research and innovation to diversify the region's job structure and increase the proportion of higher paying, higher skill jobs. Breaking the perverse cycle of educational investments accelerating regional brain drain was a clear priority.

The strategy includes offering high-value, low-demand programs, such as science and engineering, to attract and develop technology and talent, to build research and innovation infrastructure, and to focus on areas in which Southside had a chance to be globally competitive. According to Building Engineering and Science Talent *(2004)*, 50 percent of U.S. economic growth in the second half of the twentieth century was attributable to the contributions of the 5 percent of college graduates in science and engineering fields.

Create distinctiveness by building on the region's assets and the university's expertise: Academic program needs assessments were of little help in setting a transformation course because a successful future cannot be projected from the failing present that a dying economy represents. Instead of looking to the unmet needs of resident

public and private organizations that were necessarily pointed at the existing economy, the strategy took its direction from the region's needs for research and innovation capacity, advanced networking infrastructure, and a talented, capable workforce in sectors of opportunity. Matching regional assets and opportunities with university research strengths and entrepreneurial faculty gave focus to the research efforts. In Southside, researchers found vacant tobacco fields, world-class race tracks, polymer manufacturers, and a heritage in military development and contracting. In turn, Southside—through the IALR—found visionary faculty who conceived exciting programs that brought together good science with good economic development. These programs in turn defined the sectors of opportunity and the region's competitive effort to determine its global niche. From there, programs and partnerships were aligned to resonate with these economic sectors.

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Ramping up

Implement appropriately scaled programs: Equation-changing economic and community transformation requires scale. Programs designed for the public good must be capable of effecting it. Regional economic and community transformation forms a massive agenda requiring a commensurate scale of response. Institute space now occupies nearly 160,000 square feet in three jurisdictions. Over $30 million has been invested in the research labs, equipment, and programs. Plans include growing to more than twenty-five tenure-track faculty, so there will be a community of scholars. The holistic program is designed to effect transformation at many levels. Scale matters!

Broadly define economic and community transformation, then sequence program implementation: Economic and community transformation requires very large scale planning and a broad, holistic set of program efforts. Southside's regional leadership was anxious for early efforts to reverse the imminent economic crisis. As a result, the initial sequence of program investment focused on research facilities, technology infrastructure, conference center operations, and technology outreach programs targeted at K-12 teachers. A second wave of investments facilitated the hiring of research program leaders and technicians, the recruitment of graduate

students, the employment of information technology staff, and STEM outreach programs for teachers, students, adults, and businesses. In a third phase of development, additional scientists were hired, graduate students added, and academic pathways created, linking K-12 education to graduate degrees in strategic disciplines. In this manner, exogenous economic development strategies are advocated before endogenous ones. This sequence addressed local urgency by focusing on increasing the region's high-paying job base, which then increased demand for programs to develop the talent to fill those jobs.

Build ubiquitous communications capacity: The programs developed at the institute and in Southside Virginia need the same kind of information technology infrastructure that supports learning and discovery on campus. The region needs to be connected to campus and to adjacent economic regions. The publicly funded and operated seven-hundred-mile gigabit infrastructure conceived by Virginia Tech supports economic and program development, brings down the cost of this capability, and is a magnet for private companies.

Sustainability: embedding the university in the community to ensure a long-term partnership commitment

An intellectual community supports commitment: Distributed research programs need a critical mass of faculty, graduate students, and technical personnel. Since faculty and graduate students learn from one another, it is important to address the concern that faculty careers might be at risk in a remote academic outpost. With over forty faculty, engineers, technicians, and graduate students, as well as plans to more than double this number, IALR is well on its way to creating an intellectual community. These high-quality faculty and graduate students have come to the IALR from seven countries and across the United States. Several declined offers from the finest institutions in the country to do so. The richness of the experience at IALR has led some students to informally report preferring it to Blacksburg, the main campus of Virginia Tech.

Community settings offer intrinsic benefits to teaching, learning, and scholarship: The community setting, with its focus on economic renewal, provides public relevance, new problems, and interdisciplinary opportunities that invigorate multiple forms of scholarship. Industry relationships offer problem-solving opportunities formed outside traditional disciplinary dialogue. Synergies with campus-based labs couple basic and applied research settings, stimulating productive research relationships and yielding increased grantsmanship

competence. Students and faculty alike have indicated that the teaching-learning experience rivals that available on campus. As an unintended consequence, multiple distributed research areas have led to greater interdisciplinary interaction, resulting in multidisciplinary research and product development efforts. This by-product, in turn, has a positive impact on IALR's economic development mission, as the interdisciplinary projects tend to result in a greater product development focus. While much will be learned in time, the early returns counter many negative initial assumptions about the quality of scholarly experience available in a community setting.

The university's essence matters: Finally, the approach underlying this project assumes we need to help the community by doing what universities do. Our essence matters. By expanding faculty research, adding faculty lines and graduate student assistantships, enriching student learning, partnering with industry and government, building unique labs, opening new funding sources, and integrating with departments on campus, IALR programs have created a virtuous circle of discovery, learning, and engagement. In addressing the public need from our core strength, the ability to sustain the effort is greatly enhanced.

What Happened . . . The Early Review

On community partners: Since the project started in 2000, the IALR initiative has garnered over $80 million in total commitments (2000–2008), including nearly $8 million of private funding and ongoing, annual state appropriations of nearly $6.3 million. This total includes over $30 million for 160,000 square feet of IALR facilities with an additional $35 million currently committed in research programs, personnel, and equipment. In 2006–7, research expenditures were $5,579,049, with total IALR budgeted funds in excess of $19.5 million. Competitive grants and industry contracts amounting to over $3 million have been awarded, including a successful National Science Foundation grant.

IALR has directly created 70 jobs. It is a magnet and symbol of a new economic future. Danville and Pittsylvania County have announced 6,000 new jobs since 2004; the number of new jobs across IALR's service region approaches 9,000. In 2007, the region's job growth increased after more than a decade of declining numbers. Through IALR's influence, three firms, two with a high-technology focus, chose the region for new enterprise, creating 800 jobs. One company started a new division in Danville and hired nearly twenty employees to Danville who hold doctoral degrees.

Research and development partnerships with local Corning and Goodyear facilities add value and stabilize those plant locations and jobs; they also provide university-driven research links back to the corporate R&D function (with associated new funding in the works).

IALR's impacts on education and outreach since its opening have included: (1) 885 K-16 educators in science, technology, engineering, and/or math training; (2) 53,871 conference participants and 116 statewide events; (3) over 2,320 K-12 students participating in camps, labs, and workshops; and (4) training to upgrade skills and incorporate e-commerce into their businesses for 115 business owners and employees. In 2006–7, IALR hosted (1) research assistantships for 14 full-time Virginia Tech graduate students who worked in the research labs and (2) at least 9,144 participants across the service region in IALR-sponsored programs, workshops, courses, internships, and seminars. These academic and outreach programs are creating a pipeline to supply a twenty-first-century workforce.

On university partners: The governance model featuring shared priority-setting means the university is applying new institutional and program resources on behalf of a regional economic transformation mission. The institutional base provided by IALR permits the location of permanent program elements, such as the four IALR research and innovation centers, paid for with new funds to the university. The program focus on applied research and commercialization has led to closer relationships between the university and industrial partners, with IALR serving as another front door to Virginia Tech.

Both faculty and students experience benefits intrinsic to learning and discovery by working in the IALR setting. Community and industry problems combine with new resources to supply a rich and rewarding academic and professional environment. Rather than acting as a remote learning or outreach site, IALR is an extension and composite of the research university where faculty gain professional advancement and world-class graduate students study.

On engagement scholarship: The IALR experience is providing Virginia Tech administrators and faculty with new ways to think about engagement with a regional community and is defining new approaches to assessing the value of the engagement enterprise. The holistic IALR model and its short-term impact (three-plus years after the building's opening) are now being studied and adapted

by the university in response to requests from other regions in Virginia. Numerous national presentations are being made and articles for scholarly and popular journals are being published. Since the IALR focus is transformation, the model presents the opportunity to study societal change as it happens. The multifaceted IALR initiative offers numerous complex areas of study for social scientists, educators, and others, who are turning their attention to the possibilities for scholarship centered around this new engagement model.

As *Returning to Our Roots (Kellogg Commission 1999)* envisioned, expectations for increased public good can be served through university-community partnerships. When universities engage with the complex problems of a community in need, scholarship, teaching and learning, and interdisciplinary efforts gain academic vitality and public relevance that synergistically benefit each other. Good science makes for good politics as partnerships that further such an approach—characterized by redesigned programs, collaborative priority-setting, and mutual learning and change—can lead to increased public funds for the academy. Virginia Tech's role in building a stronger Southside region through a sympathetic, reciprocal engagement approach has yielded multifaceted enrichment for both community and university.

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