The rapid technological innovation of the past 20 years has spawned numerous opportunities to globally improve the quality of life and work. But to take advantage of technology-driven opportunities, people and the communities in which they live must have affordable access to the tools—including advanced telecommunications, computers, and software—and they must learn how to use these tools and to create new uses that benefit their lives and work. In short, a citizen’s ability to take advantage of these opportunities depends on how well the standard and innovative uses of new technologies are woven into the fabric of community life.

Land-grant and other higher-education institutions have long histories of community outreach activities. In recent years, the Kellogg Commission (created by the National Association of State Universities and Land-Grant Colleges to help define the direction of public universities) and concerned leaders have called for institutions to migrate their activities from one-way outreach to two-way engagement partnerships with their surrounding communities. One such model is the recent community-development partnership between one state institution and a region seeking economic revitalization.

When a group of local leaders from Southside Virginia asked Virginia Tech to assist in community revitalization efforts, the university proposed extending its own technology integration and implementation processes to the distressed region. Early descriptions of the effort depicted an economic development project in which Virginia Tech would serve as a catalytic agent in the community’s transformation of its economy from one based on textiles and tobacco to one based on net-
work economy initiatives. In practice, the project’s success hinges upon the extent to which a regional ethos develops that encourages and engages the community’s imagination on its own behalf, in part by using powerful technological tools as interventions and other knowledge-based resources as levers for change.

**Context and challenge**

Bordering on North Carolina, the Dan River region of Southside Virginia is a largely rural area south of Richmond and 135 miles east of Virginia Tech’s main residential campus in Blacksburg. The structural problems evident today in this expanse of wooded areas, fields, small cities, and towns were born, in large measure, from the region’s decades-long economic dependence on textiles, tobacco, and furniture. Over the past 25 years, severe economic downturns in these industries and the associated migration of jobs offshore have directly contributed to the inability of rural communities like these to compete on a statewide, much less a national or international, basis. This, coupled with a dearth of interstate roads and airports in the region, has helped isolate citizens from modernization and innovative enterprise.

Because advanced education traditionally has not been necessary for employment in the region’s traditional industries, many citizens have not placed value on education in general and higher education in particular. As a result, nearly half of the adult population has only a high school diploma, and a fifth has no more than an eighth-grade education. Those who complete high school tend to go elsewhere for postsecondary education or work, never to return. After at least a decade or more of attempts at using traditional development strategies to overcome such structural problems, the region remained mired in decline, with unemployment figures continuing to climb.

Dire circumstances made worse by recession prompted a local group to think that traditional strategies were insufficient to return the region to prosperity. This core leadership group formed a non-profit organization called the Future of the Piedmont Foundation to turn the region’s fortunes around. The foundation members understood that the effort they were launching would involve systemic social, political, economic, and educational activities designed to encourage cultural change over many years.

**Assumptions**

Several assumptions informed the university’s vision for working with the citizens of the Dan River region:

- Numerous reports recognize the value of research universities to economic growth, providing evidence that investments in research have an impact on economic growth within commuting distance of the investments. Consequently, revitalization must include strategic investments in basic and applied research and the experts associated with such enterprises. Modern communities need to attract and retain bright, innovative people—the kinds of citizens who contribute new ideas and practices to a region on many fronts.

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A regional model for new economy communities

Many of Virginia Tech’s strategies in the Dan River region could function as proof-of-concept initiatives for new distributed teaching and research models in other communities across the commonwealth. To develop this model, several ingredients are necessary for a region to progress.

Self-selected leadership group: Internal community development advocates who:
• coalesce behind an idea and form a mission-specific, nonprofit organization;
• exert community-based pressure for change;
• demonstrate change and explain the need for change in multiple aspects of community life;
• spearhead efforts to secure or leverage the resources required for change; and
• form partnerships with other appropriate organizations (e.g., education, community-based nonprofit, profit-making, and governmental entities).

Strategic partners: External community development advocates, such as:
• Schools—public and private
• Colleges and universities—public and private, national and international
• Community-based nonprofit organizations
• Businesses and industries
• Local, regional, state, and federal government entities

Elements of change: Infrastructure and content; components include:
• Advanced telecommunications network infrastructure linking regions to the world, such as:
  - Advanced optical infrastructure
  - Fiber and wireless “last mile” technologies
• Advanced computing and information technology infrastructure linking powerful tools to regional challenges, which necessitates:
  - training sites (technology enabled), and
  - project sites (technology enabled).
• Advanced educational development initiatives linking human resources to advanced knowledge and skills across the globe; examples include:
  - Elementary and high school programs—technology enriched
  - Community college programs—technology enriched
  - College and university programs, public and private—technology enriched
• Advanced research and development initiatives linking islands of discovery and commerce; these are geared toward:
  - identifying strategic research and development programs built on regional strengths, and
  - connecting university research programs to regional strengths, which requires technical assistance and capacity building.
• Advanced leadership development initiatives linking regional leaders and needs; examples include:
  - Grassroots leadership training and projects
  - Elected leadership training and projects
  - Selected leadership training and projects
• Advanced urban and rural community development initiatives linking traditional physical infrastructure to changing needs; integral for:
  - identifying historic spaces for renewal;
  - connecting renewal to modern space need (students, researchers, seasonal, and resident citizens);
  - planning for land use that is ecologically sound and aesthetically appealing; and
  - accommodating contemporary transportation needs.

Sources of funding: public and private
Regions ought to target and secure funds for strategic purposes. Private foundations and other sources of one-time support can provide excellent seed funding for strategic initiatives while a region systematically establishes long-term structural support from local, state, and federal sources, such as:
• Virginia Tobacco Indemnification and Revitalization Fund
• Federal grants and earmarks
• Private foundations
• Local investments
• Governor’s and other venture-capital initiatives
• State investments in long-term structural support and short-term incentive programs

• Much good work involving familiar, time-honored approaches to economic development and citizen engagement had already been accomplished. The university would not compete with local initiatives and would attempt to partner with these efforts where appropriate, but in the main would propose strategic interventions focused on life and work in a new economy.

• Education is a vital element of any community’s well-being. An educated citizenry with its skilled labor pool remains an important ingredient in attracting new businesses to a region. Focusing on traditional educational practice alone seemed to be an insufficient strategy for regional revitalization, however, since students who graduate and matriculate successfully in the nation’s colleges and universities tend to move to other places where they can find productive work. Also, it seemed probable that traditional educational practice, particularly in a distressed region, should be revisited in light of contemporary learning requirements for life in global societies.

• Contemporary communities must have an affordable, advanced telecommunications infrastructure to compete in today’s global economic arena. Without such an infrastructure, neither the education and research nor the business and civic applications of a new economy might emerge and grow. Hence, a focus of Virginia Tech’s proposal would be the integration of advanced communications infrastructure in strategic aspects of life and work across the Dan River region.

Based on these assumptions, the university proposed to help the community create places where creative and innovative people and companies would want to be by adding strategically targeted research and technology infrastructure development to advanced education access. With technology, research, and education as an integrated set of strategies, Virginia Tech proposed that the region might have the right ingredients to draw its own children back to the area, attract new creative talent to the region, and develop and extend its own innovative initiatives to the community and beyond. Virginia Tech’s Office of
Information Technology spearheaded the development of a revitalization plan, and its networking and learning technologies staff continues to coordinate or facilitate selected technology-integration activities.

Revitalizing the Dan River region

The university proposed revitalization projects for the Dan River region in two comprehensive activity areas, which were to develop

• an advanced telecommunications and computing infrastructure, and

• the related knowledge and skill base required for a human infrastructure that could drive renewal.

Under these two umbrella activities, several projects were designed and implemented.

Taking stock of community assets

University experts from the information technology organization and from community-development disciplines conducted preliminary environmental scans of businesses, schools, governmental entities, and other community organizations to determine the extent to which technology was a factor in daily operations. Once a picture of existing conditions became clearer, lists of potential technology-assisted interventions were developed with aims of introducing technological opportunities to business, education, and civic organizations as appropriate.

Early tactics on the interventions list involved obvious next steps to working in technology-enabled environments rather than radical interventions. For example, encouraging the use of geographic information systems in regional planning efforts was a logical first step.

Installing an advanced telecommunications network

Because Virginia Tech is involved in developing successive iterations of the Internet to enable its own access to cutting-edge teaching and research activities, the university proposed extending advanced Internet capabilities to the Dan River region. Such access allows a community to leapfrog into a highly technology-enabled working environment—and perhaps into a competitive economic development arena. Incremental approaches to acquiring advanced telecommunications would doom the region to competitive disadvantage since no business case exists for major telecommunications providers to extend advanced communications access (optical fiber providing high bandwidth capabilities) to the region at affordable rates.

The university also proposed teaching interested citizens to install the network themselves in hopes of beginning to develop a sustainable economy in this arena. Virginia Tech’s Office of Information Technology drew up regional blueprints for deploying advanced communications infrastructure in Southside and other rural regions of the commonwealth, working with local leaders to put the plan into operation (see http://www. ecorridors.vt.edu/).

Helping teachers learn to use and integrate technology

In partnership with the Future of the Piedmont Foundation and the region’s congressman, Virginia Tech secured a federal grant that provided the seed funding for a three-year teacher development program in the Danville Public Schools and Pittsylvania County Schools. The university’s learning technologies staff coordinated instructional development planning, and faculty members specializing in instructional technology and in content-specific educational domains offered workshops to scores of teachers in the region. In addition, a youth development program was launched to bring disadvantaged high school students to three-week summer workshops at Virginia Tech to develop science, technology, engineering, and math abilities and to encourage college-going behaviors and preparation.

Both of these development programs are now seeking funding to sustain longer-term activities, propelled by positive formative assessments of these endeavors. In addition, the university’s learning technologies staff and instructional technology faculty joined with Danville Public Schools to compete successfully in the federally funded magnet school program. With the aid of an $8 million grant and the partnership of the National Aeronautics and Space Administration, Danville’s Galileo Magnet School offers an international baccalaureate high school curriculum with specializations in aerospace technology, biotechnology, and advanced communications technology. At the end of Galileo’s second year of operation, students were performing above average on state-mandated Standards of Learning tests. Having developed its own technology-enriched curriculum, Galileo can serve as a resource to other schools in the region and beyond.

Partnering to develop faculty in technology-assisted teaching

Virginia Tech’s Faculty Development Institute has successfully engaged more than 96 percent of the university’s faculty in integrating technology in teaching (see http://www.fdi.vt.edu/). The university’s learning technologies division extended this training opportunity to faculty at Danville Community College and Averett University, a private liberal arts institution in Danville, assisting Averett especially in creating its own faculty development and technology integration plans. Regional education leaders are currently discussing ways in which complementary and joint
technology-enriched program opportunities might occur. For example, Virginia Tech’s Math Emporium, a technology-assisted, advanced-learning community in mathematics, could serve Dan River region students who want to take linear algebra or pre-calculus courses in an online environment.

**Research benefiting the local economy**

Virginia Tech invited selected members of its own research faculty to visit the region and propose basic and applied research activities that would build upon the university’s strengths and the region’s assets. Research projects that have emerged to date include advanced polymer research, which complements a number of local industries; robotic vehicular research and development, which takes advantage of an excellent local test track; niche biotechnology projects aimed at creating high-value horticultural crops; and e-textile development in concert with regional textile mills. Transferring these technologies into the commercial sector remains a central focus.

**Developing local leadership**

Virginia Tech joined with other regional institutions, in particular the University of Virginia, to offer leadership development programs to local citizens. Facilitated by university experts in technology integration and in community development, the programs acquaint participants with:

- the challenges facing contemporary communities,
- modern solutions that productive communities around the world are developing and using effectively,
- a network of regional colleagues who will assist in revitalization, and
- resources that might aid their own community development efforts.

Activities will use newly deployed advanced communications networks to forge relationships and to link people, projects, and resources. If successful, the networks will create a new regional identification among participants.

**Establishing the Institute for Advanced Learning and Research**

Virginia Tech joined with the Future of the Piedmont Foundation, Danville Community College, and Averett University to create the Institute for Advanced Learning and Research (IALR), a visible symbol of and fulcrum for revitalization activities. This institute serves as a demonstration site and as a catalytic and collaborative agent in bringing technology-enriched programs and research to the region from Virginia Tech, other colleges and universities, and business and industry.

The IALR will host advanced-learning programs focused on preparing people for innovation-economy jobs. Indeed, institute plans call for it to be an “engine of innovation” by having a small cadre of resident faculty, research scientists, and graduate students focused on strategic regional projects, with connections to Virginia Tech and other major research universities. It will also join with regional schools, governments, chambers of commerce, and other entities to create conditions that support economic transformation.

With its high-tech conference center, the institute aims to make Southside a destination for business meetings, educational programs, and other technology-focused gatherings, and to build strategically upon the region’s attractions. The institute hired two dynamic young leaders to direct institute activities and to drive planning and implementation processes in the community while remaining linked to resources that the university can bring to bear on revitalization efforts. With community, state, and federal support, other faculty and staff members are joining the institute’s innovation team.

Funding for the $20 million facility was provided by the Tobacco Master Settlement Agreement ($15 million) and the federal Economic Development Administration ($5 million). In addition to support from the Commonwealth of Virginia, other seed operating funds came through federal and private support and the Tobacco Indemnification and
Community Revitalization Commission. (For more information, see http://www.ialr.vt.edu/)

Seeking linkages with the Research Triangle

Danville and Pittsylvania County lie on the border between Virginia and North Carolina. Traditionally, this Southside region of Virginia has looked north for development opportunities, but its close proximity to North Carolina’s Research Triangle and access to advanced telecommunications allow the Dan River region to serve as a bedroom community and economic partner for its neighbors to the south. Whether for living spaces or for telecommuting locations, the area between the Research Triangle and Danville offers reasonable land prices along with well-preserved Victorian mansions. This setting provides a good test of the proposition that neither distance nor borders matter in new-economy enterprises.

Learning lessons, creating models

Using the Southside partnership as an engagement model for the 21st century, many of the strategies employed could function as proof-of-concept initiatives for models useful in other communities.

When proving concepts and designing new models for potential replication, the learning curves are steep for all participants, both within and outside higher education. With this in mind, the following discussion outlines a few salient observations about community development and learning in Virginia Tech’s engagement with the Dan River region’s development process to this point.

Learning anxiety

Transformational learning at an individual, organizational, or community level is difficult and—without coercion—rarely occurs unless desired, indeed invited, by the learner(s). If people accept the need to learn, tactics such as training, coaching, community support, communication strategies that provide feedback on progress, and incentive programs will usually assist the change process.¹ In this case, the practical, though difficult, intervention of integrating technology—which Virginia Tech’s information technology office planned and led in its early stages—offered the community recognizable reasons for change. In turn, catalytic agents—whether universities or other entities (evidence exists suggesting that regional corporations can serve this role as well²)—can fully engage a community in the give-and-take of change, after which partners can develop training, support, and communication programs across community sectors and organizational boundaries.

Impetus for change

Transformational community change may be motivated by external factors but rarely occurs unless enough citizens inside the community want change, are willing to work for it, and know how to secure or leverage the resources required for change. In fact, external factors may either inspire or force people to think about the need for change, perhaps even moving them to the point of proposing directions. But unless a critical mass of community members coalesce behind an idea to exert internal pressure for substantive change, a transformational learning process is not likely to get off the ground.

Internal advocates need to be willing to work with neighbors, friends, and colleagues to bring about change and must themselves demonstrate change in various aspects of community life. Couple such internal efforts with appropriate resources, and transformational change is more likely to take root.

Without these three components—external forces, internal pressures for change, and resources for change—piecemeal, incremental adjustments to the status quo will be the order of the day.³ In the Dan River case, the Future of the Piedmont Foundation served as the first critical internal force for change. The foundation has since been joined in its efforts by numerous other community members as the project gains momentum, breadth, and depth. The foundation has also maintained vital links to Virginia Tech’s information technology and out-
reach organizations and to related research programs and faculty.

**Multiple approaches to learning**

While accounting for the histories and cultures of places, citizen-learners must also consider larger public environments. Every community is unique, but modern advances in transportation and communications have created an environment that requires change agents and civic activists alike to pay special attention to and learn from multiple contexts. These political, social, and economic contexts extend far beyond a particular community yet must figure in visible ways in meeting immediate and long-term goals for change. For example, developing communities today usually understand the need for a robust telecommunications infrastructure and may be willing to build it themselves, but apparently fearing some loss of competitive advantage they do not always see the need to link their infrastructure with others across a region or around the world. Communities might benefit from exposure to notions of globalization as an elemental ingredient of 21st-century community endeavors. In response, the Southside leadership development programs seek to foster this awareness.

Furthermore, creating valuable local services—in business, education, and government—that might be provided electronically to other places might help combat isolationist tendencies or other defensive tactics that limit opportunities for learning and exchange. Establishing such viable projects and programs is one goal of leadership development efforts in the region.

**Technology as a catalyst**

Today’s technologies are just tools, however powerful, pervasive, or necessary they may be for modern commerce. At the heart of community change lies the development of human relationships focused on change, human capital that responds to new challenges, new and sustained alliances that cross traditional community boundaries, and other kinds of relationship-building activities. The technology, if thoughtfully employed, can serve as intervention implements and motivational objects on behalf of social, economic, and political change.

Many people seem to accept the need to learn about new computing and telecommunications technologies. Once they consider what the technology allows them to do differently, it can inspire them to rethink an activity or enterprise, whether social, economic, or educational. From the perspective of profit-making and nonprofit entities, modern technologies—beyond being a useful tool for change—can also be disruptive, changing the ways people work, interact, and more. As such, disruptive technologies might be dismissed as unfamiliar, threatening, or seemingly unproductive, according to traditional measures. Again, change agents must attend to aligning human and financial resources with community processes in order for disruptive technologies to gain a foothold.

Community capacity-building efforts in Southside seem to have passed the point of having participants dismiss unfamiliar technologies, ideas, and practices out of hand, and re-thinking of activities is occurring in selective places. But much work remains. As a community’s familiarity with and ease in using technology increases, broader and deeper conversations about technology’s influences on life are in order. Much of the community-leadership development in Southside aims to bring such an awareness of choices and consequences in using new technologies.

**Campaigns for change**

A vision of the change desired is essential, as is the constant communication of it. In the past, literature on change talked of unfreezing old structures, reconfiguring them to desired forms, and then refreezing them for some period. This model posited a static quality to institutional change—not particularly descriptive of the dynamic environment in which many think transformational learning occurs today.

Recent descriptions of substantive change suggest that a campaign metaphor or model is more appropriate to contemporary change processes. In this model, change agents employ three different but well-connected campaigns, with all of the liabilities and assets inherent in campaign models:

- They use the tactical elements of political campaigns, such as creating coalitions to guide and support initiatives.
- They use elements of marketing or promotional campaigns to explain the vision in understandable terms, to stay in touch with and provide feedback to stakeholders and constituents, and to avoid being pegged as social engineers or out of touch.
- They employ various tactics reminiscent of military campaigns—securing lines of supply and capturing important beachheads to keep pilot efforts from stalling.

Most important, modern change agents keep these campaign elements in constant motion, dynamically re-engaging appropriate tactical or strategic elements as needed. This approach is exhausting for all involved, from university to local news organizations. Still, it is absolutely necessary to keep a new narrative growing, to keep unfounded and defeatist rumors at bay, and to explain frequently to citizens the benefits of the changes before them.

**Community development revisited**

Developing communities for a new age is fairly common today. But the scale
and scope of learning required by all who participate in such development activities suggest that much more is at stake than adding a few new smokestacks to the existing horizon. In contrast, a new horizon may be coming into view, with contemporary community developers serving as designers, architects, and builders of its unfolding landscape. In this view, today’s vanguard of change has enthusiastic innovators and anxious survivors alike learning to create new structures and processes that will benefit their re-envisioned vistas of life and work.

In modern times, educational institutions have often acted as important vehicles for social, political, and economic progress. Today, however, some argue that the social conditions in which education has traditionally occurred are changing beyond recognition. In an examination of the forces of change in society today, Jarvis, Holford, and Griffin suggest that the risks, illusions, and ambiguities of a postmodern world call for replacing traditional notions about education—a vestige of modern societies where stability, confidence, and progress were the social order of the day—with a new concept of learning over a lifetime. This argument parallels and reflects provocatively on discourse in other research and practice and on the community development activities mentioned here. Businesses, governments, universities, and communities have publicly stated that they are setting their sights on difficult, complex, and sometimes illusory aims. Furthermore, the forces of change influencing these efforts are unprecedented in modern times.

Jarvis, Holford, and Griffin listed several forces of change confronting societies today, noting such influences as globalization processes that are social and cultural, not just economic; shifts in work toward providing services and away from manufacturing mass-produced goods, with a concurrent disappearance of the job-for-life; and the commoditization of style, culture, and knowledge, with various forms of media replacing production as a basis of social life. They see these influences, in which new technologies figure significantly, and others as harbingers of the lifelong learning required to realize transformational shifts that adjust to such influences.

It remains to be seen how a comprehensive view of any emerging landscape might look if mainstream institutions in communities across the nation and beyond fully engage these contemporary forces. Histories are better suited to capturing the warp and woof of such shifts, whether sweeping or limited.

While it is too soon in what is effectively a cultural change process to declare a definitive proof of concept, early signs of progress are present. The formative assessments of technology deployment and of faculty and community development activities that have occurred to date in Southside Virginia are positive and suggest staying the course. Further, nearby communities are now looking at ways to link to Southside’s revitalization efforts or to create their own initiatives employing key elements of the Dan River region’s plan. While flattering, imitation of a concept is not the same as proof of concept; at the same time, successive iterations of concept components offer opportunities for broad-based refinement of ideas and practices. (See the sidebar on page 20 for suggested model components for Distributed Teaching and Research Centers aimed at community engagement and development for a new economy.)

For the present, these communities are seeking or engaged in revitalization efforts in order to remain part of a landscape of social, cultural, and economic activity. Many of the institutions that have traditionally constituted and supported such communities are either under fire or on the cusp of change themselves. For community development partners—universities, corporations, chambers of commerce, local governments, schools, nonprofit foundations—it seems that the time for two-way engagement processes has indeed arrived, as many good learners are required for the tasks at hand.

Acknowledgments
My sincere appreciation to Tim Franklin, director of the Institute for Advanced Learning and Research, and Nancy Franklin, Southside regional director of information technology at the institute, for their continuing contributions to creating this community development narrative. An earlier version of this article appeared in Educause Quarterly, Vol. 27, No. 2, 2004.

Endnotes