

How much should community colleges specialize? What's the right balance between addressing individual needs and desires, and developing distinctive place-based programs to match the strengths of a regional economy? Although specialization may seem to be a counterintuitive strategy in a global and changing economy, place still matters to businesses, and they continue to cluster around common interests. Colleges that want to be place-based as well as globally responsive have to make hard choices in the allocation of their resources, and that may mean disproportionate attention to certain occupations and industries.



# Cluster

## Putting Learning in Context

Where similar and complementary businesses concentrate—or “cluster”<sup>1</sup>—and where community college and industry leaders are in synch, clusters deserve—and have received—special attention. In 1984, for example, leading members of Northeast Mississippi’s motion furniture cluster turned to technology to raise their productivity and improve their quality. They looked to Itawamba Community College to acquire the new equipment to demonstrate the potential and train the more highly skilled workers they would need to create a technology center for upholstered furniture.

Similarly, in 1988, members of the Catawba Valley Hosiery Association in North Carolina realized they needed to automate to meet both growing competition from developing countries and pressures from large chain store customers. They convinced the county and state to fund a Hosiery Technology Center at Ca-



*Caption*

many places intuitively knew their sector strengths. Companies able to aggregate demands for education and training were able to generate programs and services that added to their collective advantage. The community college was most often the institution of choice.

By the early 2000s, the term cluster had become commonplace in economic development. Virtually every state has produced some form of a cluster-based

### What Is a Cluster Hub?

The cluster hub is more than the Generation X of ATCs. It is a new breed of centers with different responsibilities. While ATCs focus mainly on what’s common across advanced manufacturing companies in many sectors, the successful cluster hub concentrates on what’s distinctive about work in a set of related industries. Further, cluster hubs are not just about manufacturing. In fact, U.S. exports of content-based goods have exceeded the export of product-based goods for at least a decade.

The following five characteristics distinguish an effective cluster hub.

1. Cluster hubs recognize the changing occupational and industrial composition of the U.S. economy due to a shift from manufacturing jobs to service industries. Much of the nation’s growth comes from new clusters around the digital arts, design-intensive industries, logistics,



# Hubs:

tawba Valley Community College,<sup>2</sup> which has proven to be a very wise investment.

Until the 1990s, the term “cluster” had not entered the popular vernacular, and these two illustrative centers were dubbed “Advanced Technology Centers” (ATCs), community colleges’ innovative response to the modernization needs of small and mid-sized companies. Although many ATCs embraced generic manufacturing process technologies, some were specialized responses to locally dominant industries. Even before states and regions hired consultants to identify their clusters,

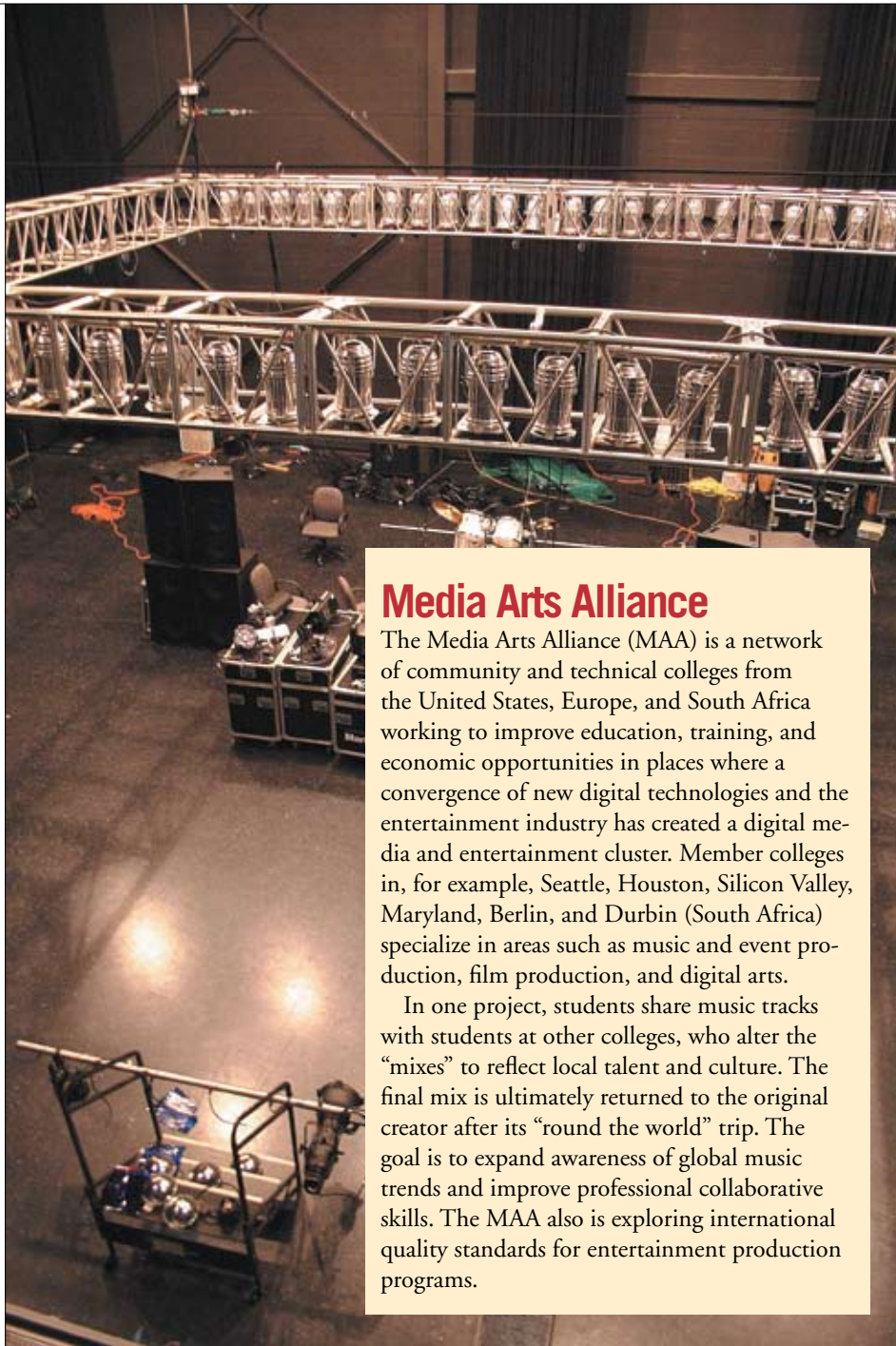
strategy<sup>3</sup> that included organizing members to articulate their needs and set priorities. Lo and behold, in most cases their highest priorities and leading reasons for geographic clustering were the workforce and skill development. As a result, community colleges emerged front and center in many cluster initiatives.

State systems such as Washington, Alabama, North Carolina, and South Carolina have either put into place or are exploring strategies that align their community colleges in some fashion with specific regional industry clusters.

gaming, and cultural industries. Thus, cluster hubs have to delve into relatively new areas where they may have limited experience and, within more traditional clusters, reach deeper into “all aspects of the industry.”

2. A cluster hub recognizes the importance of context in education and training, and the value of skills and knowledge that can be directly applied to a particular business environment. Industrial maintenance, for instance, has generic skill requirements. But the knowledge necessary to maintain equipment in

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## Media Arts Alliance

The Media Arts Alliance (MAA) is a network of community and technical colleges from the United States, Europe, and South Africa working to improve education, training, and economic opportunities in places where a convergence of new digital technologies and the entertainment industry has created a digital media and entertainment cluster. Member colleges in, for example, Seattle, Houston, Silicon Valley, Maryland, Berlin, and Durbin (South Africa) specialize in areas such as music and event production, film production, and digital arts.

In one project, students share music tracks with students at other colleges, who alter the “mixes” to reflect local talent and culture. The final mix is ultimately returned to the original creator after its “round the world” trip. The goal is to expand awareness of global music trends and improve professional collaborative skills. The MAA also is exploring international quality standards for entertainment production programs.

a biotech company, defense contractor, auto supplier, or food processor is in each case somewhat different. Employers recognize the value of a new employee being able to understand their respective business environments, which is one reason that they place such a high premium on experience in their hiring decisions. Contextual knowledge also enhances mobility among different types of work within the industry cluster.

3. Cluster hubs necessitate disproportionate allocation of resources among programs within colleges and among colleges. No institution can fulfill all the needs of every set of employers; it must make hard choices, and those choices invariably are tied to the sources of greatest current and expected demand. In order to acquire the state-of-the-art equipment, develop and update curricula, accumulate knowledge about the cluster, establish

working relationships with industry, stay on top of technological changes, gather information about a particular set of related industries, a cluster hub needs sufficient resources.

4. Specialization can only work if there is broad collaboration within a state community college system. The best rationale for targeting investments to create cluster-based expertise at a particular college is spreading the resulting products and services throughout the system. The geographic boundaries of clusters are porous. Therefore, even if a college resides at the heart of an auto supply cluster, for example, other regions are home to lesser concentrations of auto suppliers who need the same specialized workers. The college within a state that is given the responsibility and resources to develop cluster expertise should not hoard it but rather must ensure that they are accessible and available to the companies through “sister” institutions in the state. (See sidebar on North Carolina’s BioNetwork.)

5. Some cluster hubs look beyond state lines to form learning networks with other institutions specializing in the same industry cluster that enhance their programs and increase their depth of expertise.<sup>4</sup> The most innovative networks include leading cluster hubs in other countries that broaden their exposure to new approaches. The formal and informal sharing of information and ideas that takes place through learning networks keeps a cluster hub on the cutting edge of industry needs, which are increasingly global. Student and faculty exchanges and joint projects can also ensue. CraftNet, AMTEC (Automobile Manufacturing Technical Education Collaborative), and EntreNet (cluster-specific entrepreneurial programs and services) plus the Media Arts Alliance and MDIEC (see sidebars) are examples of such networks.

### Who’s Doing It and Why?

Advantages of cluster hubs reach far and wide. Colleges benefit by being able to achieve true excellence, having more relevance to regional economy, and using resources more cost efficiently. Students benefit from better and deeper programs

(know what), better employment information and more rungs on career ladders (know who), deeper understanding of industry context (know why), and more informal learning opportunities (know how). Businesses get access to a more specialized labor pool, greater array of programs and courses, more opportunities for training networks, and access to new ideas through labor mobility.

These are just a few examples of leading cluster hubs at community colleges.

*Alabama Southern Community College* operates a highly specialized Paper and Chemical Technology cluster hub supported by the National Science Foundation’s Advanced Technological Education program. Developed in concert with local paper and chemical industries and Auburn University, students learn using advanced industrial labs that model full-scale industrial plants. Local industry offers scholarships and internships and serve as mentors for students. The curriculum combines “real-life” work settings with foundational theory, and is viewed as a model by a national industry group.

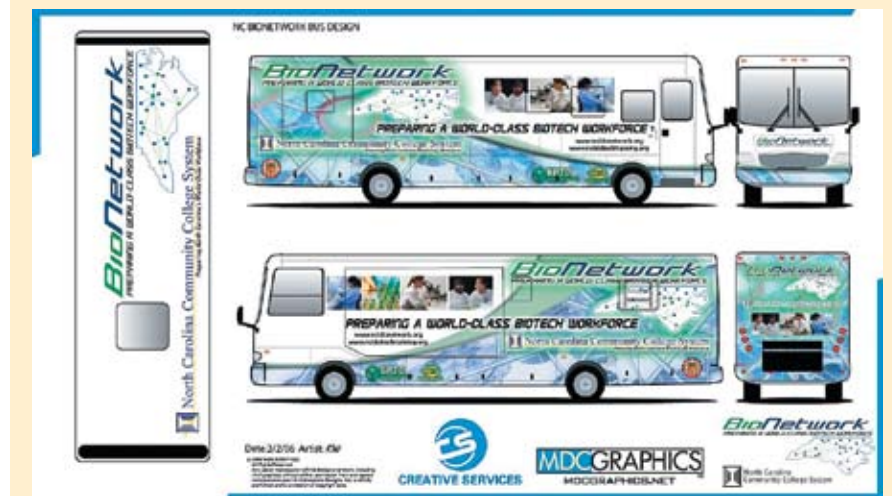
*The Furniture College at Letterfrack*, part of Galway Mayo Institute of Technology in western Ireland, specializes in artistic design and technology for Ireland’s furniture cluster. While design and manufacturing are the core programs, the college also teaches entrepreneurship, theory and applied skills for furniture industry business managers. There is high demand for graduates from the college, and the college participates extensively in exchange programs throughout Europe. Started more than a decade ago in part as a rural economic development initiative in a depressed community, the program has contributed to a resurgence of the Irish furniture industry.

*Guilford Technical Community College’s Larry Gatlin School of Entertainment Technology* in North Carolina taps the state’s rich music heritage and provides skilled technicians for the growing entertainment industry. Housed in a new state-of-the-art facility, the school includes three recording studios, two mastering studios, and two electronic music labs. There are also a large concert staging room and

## North Carolina’s BioNetwork

North Carolina uses a “cluster hub” model to support its large and growing biotechnology cluster. Started in 2003 with a grant of \$7.1 million from the GoldenLeaf Foundation, BioNetwork funds nodes of expertise at individual colleges but links them together through a “central office” located at the state’s community college system office. Most BioNetwork activity occurs at five centers located at community colleges, each of which specializes in a different aspect of the biotech cluster.

Three are differentiated by product: bio-processing, pharma, and bio-ag. Two have functional niches, one for biotech distance education and non-credit training, and the other for business support services, including entrepreneurial support and small business assistance. The sites were chosen after a competitive selection process that took into account regional differences in the biotech industry, college capacity and geography.



In all cases, the materials and resources developed are shared statewide. In fact, BioNetwork staff at colleges do not teach classes on their own campus—thus freeing their time to develop curricula and services, and train instructors at their own colleges and elsewhere how to adopt it. BioNetwork also runs a statewide mobile lab to take training to companies and partnerships with industry groups to create new curricula and sponsor seminars and job fairs. Any NC community college can apply to receive support from an “innovation fund” to improve their biotech and life science programs and labs. See <http://www.bionetwork.org>.

an outdoor amphitheater. Staffed by seasoned professionals who still make and produce music, students in the program choose from concentrations such as recording engineering, lighting and sound production, artist management, or live performance.

### What’s Next for Cluster Hubs?

The most successful colleges that have successfully targeted clusters cannot rest on their laurels. They understand that their economies are affected by new technologies and global pressures, and that

those changes affect their labor markets, skill requirements, and industry needs.

Globalization, for example, is eliminating the production part of clusters on shore but often keeping and even growing jobs in logistics, marketing, design, R&D, and administration. The sports apparel cluster in Oregon manufactures little in the U.S. but retains thousands of jobs in the state. Other clusters are forced to automate which means with fewer but more skilled production work and more jobs in support and administrative functions or refocus on smaller, higher end,



## Medical Device Industry Education Consortium

The medical device and instrument industries represent a growth industry clustered in certain cities around the world. A network of colleges in places with some of the highest concentrations of this cluster, e.g., Minneapolis, Boston, Galway (Ireland), Copenhagen, Southern California, St. Petersburg, and Pittsburgh, was organized in 2003 by the Public Benefit Corporation to share experiences, improve programs, and work collaboratively to address specific industry needs. This “Medical Device Industry Education Consortium” (MDIEC) has been supported by the U.S. Department of Education and the National Science Foundation. MDIEC members surveyed their industry workforce needs using a common protocol, discovering a major skills gap in regulatory affairs. Companies that manufacture medical devices must follow strict and ever-changing regulatory requirements to assure product safety, a process that affects all aspects of R&D, product development, clinical testing, production and distribution. Consequently, MDIEC is collaboratively creating new courses in regulatory affairs for medical device technicians. See <http://www.mdeic.org>.

designer firms that can respond quickly to customer preferences.

Second, firms want more creative and innovative workers, which means a stronger focus on right brain thinking—more emphasis on context, on relationships, and on the big picture.<sup>5</sup> This requires a more integrated approach to education, with project-oriented learning that combines students across disciplines and the cluster.

Third, entrepreneurial skills and support will become more important,

especially for the clusters developing around tourism, logistics, media arts and design industries that are replacing or revising manufacturing. Understanding how to start or support business growth within the context of a particular kind of industry is more effective than a generic approach to teaching entrepreneurship.

Community colleges have taken on many new missions over the years, but aligning themselves with their local clusters is not a new mission; it’s a logical response to how economies develop, a

cost-effective means to allocate resources and build expertise, and a way to improve local economic opportunities for students.

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### Endnotes

<sup>1</sup> A cluster is a concentration of similar or interdependent companies along with the value chains, and all of the organizations and institutions that support it.

<sup>2</sup> Stuart Rosenfeld, *Industrial Strength Strategies: Regional Business Clusters and Public Policy*, Washington, D.C.: Aspen Institute, 1995.

<sup>3</sup> Stuart Rosenfeld, *Governor’s Guide to Cluster-Based Economic Development*, Washington, D.C.; National Governors’ Association, 2004.

<sup>4</sup> An effort of RTS supported by the Ford Foundation.

<sup>5</sup> Daniel H. Pink, *A Whole Mind*, New York: Riverhead Books, 2005.

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