



Ohio's Challenge and Choice in the Knowledge Economy

by Joseph C. Burke

WHITE PAPER
UNDERWRITTEN BY



CENTER FOR PUBLIC HIGHER EDUCATION TRUSTEESHIP AND GOVERNANCE

Association of Governing Boards
of Universities and Colleges

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WHITE PAPER PREPARED FOR

COMMUNITIES, HIGHER EDUCATION AND THE CHANGING ECONOMY

A CONFERENCE BY OHIO'S HIGHER EDUCATION COMMUNITY

JUNE 17-18, 2003 ■ COLUMBUS, OHIO

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Introduction

The “knowledge economy” confronts Ohio with a challenge and a choice. A recent report from the Battelle Institute describes the challenge and prescribes the choice:

Ohio is at a critical juncture in its development. Prospering during and since the Industrial Revolution, the state is now in transition from an economy where firms depended on natural resources, semi-skilled workers, and mass production to an economy driven by talent [and] technology... and characterized by constant innovation... (2002, p. vii).

“Ohio really has but one choice,” the report concludes, “either embrace and adapt to a technology-driven world or be left behind.” (p. vii).

Governor Bob Taft confirms that challenge and champions that choice. “Now, it’s our turn,” he declared in his February 5, 2002 State of the State address. “We are the pioneers of Ohio’s third frontier... where knowledge is king. Clearly, the real choice for Ohio’s business community, higher education, and state government is not *whether* or *when* but *how* to respond to the ‘knowledge economy.’ ”

Ohio is not alone! The challenge confronts every state in the country. The company of other states carries competition as well as comfort. A report titled *Building a Knowledge Economy for Minnesota’s 21st Century* warns:

Other regions in the United States are gearing up for the ‘grand knowledge race’ of the coming decades. They are investing heavily in research and innovation, workforce training and business climate...issues. Minnesota is engaged in fierce and inescapable competition with all of these areas (2000, p. 9).

For Ohio, being behind in “the grand knowledge race” calls for a strategic plan and swift action, but it also allows the Buckeye State to learn from the successes and shortcomings of other state initiatives. If Ohio had gone first, it would have risked the possibility of starting a fad rather than stressing a proven trend. Yet following also has dangers. Too often, the initial response of latecomers to great challenges is abject imitation, which can lead lemming-like to disaster. The key for Ohio is to build on its own assets while learning from other states.

**Ohio must build on
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from other states.**

Characteristics of the knowledge economy

Ideas, information, and innovation drive the “New Economy.” The source of wealth is not material; information and knowledge are what creates value. Following the fall of the “dot coms,” many practitioners of traditional manufacturing predicted the demise of the New Economy. But the information and technological revolution did not die with the stock market plunge of “dot com companies.” It moved from the fringe to the mainstream of America’s—and Ohio’s—economy.

“The New Economy is not simply about high-tech industries,” says the Arizona Partnership for a New Economy, which includes business, education, and government leaders. “It is about how that technology is applied to everything we do.” (2001, p. 1).

The Morrison Institute for Public Policy at the University of Arizona defined the broad characteristics of the new “knowledge economy”:

- *Technology is a given.*
- *Globalism is here to stay.*
- *Knowledge builds wealth.*
- *People are the most important raw material.*
- *There’s no such thing as a smooth ride.*
- *Competition is relentless.*
- *Alliances are the way to get things done.*
- *Place still matters—but for different reasons (1999, p. 7).*

States differ, but the knowledge economy is diminishing their diversity. The new economy is based less on natural resources grounded in geography and more on innovative ideas that know no boundaries. Although markets are more global than local, the paradox is that competitive advantages lie in regional clusters of interrelated industries, supply networks, and skilled workers. In the industrial clusters of the New Economy, the theme is marketing globally while producing locally. (Porter 1998; DeVol, 2002).

Globalization is the reason that the collaboration between companies and campuses becomes critical. American firms can compete with those from low-wage economies only by raising their level of talent and technology to increase productivity and reduce product costs. Whatever the differences in state strategic plans, nearly every state initiative in economic development sees higher education as central to success in the New Economy. Experts estimate that the whole of human knowledge now doubles

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between companies
and campuses
is critical.**

every half-decade. In such times, the educated workforce, the innovative research, and the public service produced by the knowledge industry of colleges and universities are a major source of success in the knowledge economy. The charge of the Ohio House Select Committee on Higher Education confirms this:

Our colleges and universities are uniquely positioned to have a major impact on the economic status of our state. The better our system of higher education, the better our chances of creating a workforce environment that Ohio graduates will want to embrace.... (Ohio Board of Regents, 2002).

Closing the chasm

In an earlier era, combining campuses and companies would seem odd. Tying the terms “knowledge” and “economy” turns the traditional relationship of higher education, business, and state capitals on its head. It shifts the traditional question from what states and companies should do for colleges and universities to what colleges and universities can do for states and companies. As the report from the North Dakota Roundtable on Higher says, “We need to do this, not for higher education, but for the sake of North Dakota” (2000, p. 1).

Today, colleges and universities—once viewed by nearly all outsiders as self-serving—are beginning to define institutional excellence on the quality and quantity of their services to states and society, including business and industry. Business leaders—who once complained of irrelevant research and overpaid professors—are now helping universities recruit top researchers, supporting endowed professorships, and matching research grants. They realize that the innovations and inventions of the best professors can produce the competitive edge for business and industry in a global economy driven by ideas and information.

Report after report stresses the past gaps—even chasms—between campuses and companies, but notes the emergence of a new “engaged” and “entrepreneurial” college and university (Business-Higher Education Forum 1999; 2001). The Kellogg Commission on the Future of State Universities and Land Grant Colleges concedes the challenge of bridging the chasm:

One challenge we face is growing public frustration with what is seen to be our unresponsiveness. At the root of the criticism is a perception that we are out of touch and out of date.... What these complaints add up to is a perception that

...our institutions are not well organized to bring them to bear on local problems in a coherent way (1999, p 13).

The commission—composed of leaders of state universities across the country—goes beyond analyzing the problem by proposing the solution:

... It is time to go beyond outreach and service to ... 'engagement.' By engagement, we refer to institutions that have redesigned their teaching, research, and ...service functions to become even more sympathetically and productively involved with their communities.... (13)

Engagement means more than one-way outreach, controlled by campuses. The commission proposes true partnerships between higher education, the business community, and state government. Engagement neither disputes nor diminishes critical differences in the goals and interests of the three partners. It does recognize that none of the partners can go it alone in the knowledge economy. It insists that the success of states, campuses, and companies depends on collaboration.

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A study by the Southern Growth Policies Board, titled *Innovation U*, identifies 12 universities that have become “entrepreneurial” as well as “engaged” in relating to business and industry. It reports examples of connections with states, communities, and businesses that that would have astonished readers just a decade ago. A faculty senate committee at North Carolina State University listed “engagement with... constituencies outside the university” as a faculty responsibility (Tornatzky, 2002, p. 52-53). Land-grant universities, such as Texas A&M, have expanded extension activities from agriculture to industry and now talk of the “knowledge economy land grant.”

Statements of university missions and speeches of their presidents reflect this new commitment. *Vision 2020* from Texas A&M states that the university “aspires to national prominence”, but “it ...must first stay committed to Texas” (93). The statement proposed a Center for Business and Industry responsible for “marketing the intellectual capabilities of the University to the private sector...” (94-95) The mission statement for Purdue University claims a “vital role ...in strengthening Indiana’s economy” and in “improving the qualifications of the state’s workforce” (80). At the University of Utah, the president proclaims, “We choose to measure our success in terms of the service we provide to all of the people of Utah” (37).

The economic development connection is not limited to public universities. Stanford University’s Research Park transformed an agrarian valley around Santa Clara County into Silicon Valley (158). And the mission statement of Carnegie Mellon University

pledges to “use our strengths, in collaboration with other Pittsburgh institutions, to advance the educational, economic, social and cultural opportunities of the region or all of its citizens” (147).

The new “engagement” represents internal campus commitments and not merely external public relations. College, schools, and departments—especially in business, engineering, and the sciences—increasingly have advisory councils with business members. New titles for university positions mark the engaged and entrepreneurial campus. Virginia Tech has an associate vice president for strategic partnerships, while the University of Wisconsin, Madison, has an Office of University-Industry Relations. (Eighty percent of the professors at Madison signed on to the office’s database of faculty expertise for use by business, government, and community groups.)

Ohioans need not go out of state to find one of the Southern Growth Policy Board’s 12 innovative universities. As its report notes:

...Ohio State has gone through something of a renaissance over the past few years. This has involved an exciting rethinking of mission, goals, and investment—particularly as they pertain to contributing to the knowledge economy of the state (55).

“Brit” Kirwan, the former president and the champion of change at Ohio State, in the same report noted the convergence of campus and company:

In the Information Age Economy, where success is rooted in the strategic application of technology and knowledge..., the lines between business and academia are being blurred by partnerships that deliver value to a company’s bottom line, just as they advance a university’s academic and research missions (56).

Though the above examples come from a dozen innovative research universities, they mark a growing trend among two and four-year colleges and universities across the country. Ohio—known as the land of colleges and universities—has many campuses both public and private contributing to that trend. For example, Columbus State Community College has opened an ACT Center For Workforce and Economic Development that provides testing and training programs for area businesses; and Cuyahoga Community College established a “Corporate College” with multiple sites to prepare a skilled workforce for business and industry in northeast Ohio.

Other states: purposes, constraints, goals

A paper by Dennis Winters compares economic development strategies in the neighboring states of Illinois, Indiana, Iowa, Michigan, and Minnesota. Three of them (Illinois, Indiana, and Michigan) like Ohio must move into the new technological era without forsaking the manufacturing economy. Winters' conclusions apply to Ohio, which shares many of the characteristics of his study's states. He notes that "all states are essentially going after the same thing—high-tech jobs" (2001, p.1). Their economic development strategies seek not just more jobs but more high-paying jobs, which tend to come in high tech-fields. He warns that states are picking many of the same competitive industrial clusters.

Winters also suggests that his states confront many of the same constraints as Ohio.

- aging baby-boomers
- little in-migration
- old versus New Economy knowledge and skills
- shortage of investment capital, and
- low state external image, based on manufacturing and agriculture (p 2).

Most of these states—along with Ohio—are also hurt by a combination of low degree attainment and low per capita income.

All of these states have developed some sort of economic development plan or strategy, either through statewide economic summits or gubernatorial commissions. Take Wisconsin. Its governor authorized an interagency task force to analyze the state's economy and to devise a development plan. Meanwhile, the state has held no less than three statewide economic summits sponsored by the university system and its board of regents, state government, and the business community.

Development plans in Winters' states show similar components but different origins and lead groups. Legislation in Illinois mandates its development strategy. Michigan has established a private corporation to execute its economic development design. Indiana and Iowa have adopted formal development plans with proposed deadlines. All of these states view economic development as a collaborative activity of business, higher education, and state government.

Colleges and universities are at the center of nearly all of these economic development plans. The plans stress improved and expanded instruction, research, and service from colleges and universities. Some sample themes:

State development plans have similar components—but different origins and leaders.

Workforce development:

- Forging college/school partnerships
- Reforming teacher education
- Raising college going and degree attainment
- Increasing graduates in high-tech fields
- Improving adult education and literacy training
- Continuing education and lifelong learning

Research and Development:

- Increasing sponsored research
- Improving technology transfer
- Raising the number of licenses and patents
- Building collaborative research with industry
- Expanding endowed chairs and professorships

States increasingly are emphasizing the role of postsecondary education in workforce development, business partnerships, and new business opportunities through research and service. Increasingly, the initiative is coming from business and industry. Michael Porter, the guru of the “cluster theory” of economy development, advises states to “make significant investment in colleges and universities in each major region of the state; focus research and training initiatives around regional clusters; [and] employ cluster-based business recruitment strategies” (Lyne, 2001).

AGB’s study states

For this AGB study, we deliberately chose states that lack the obvious natural assets of California, Massachusetts, Maryland, or Virginia. Most of the states selected are considered competitors or peer states for Ohio. Kentucky is included to demonstrate that dedicated leaders and comprehensive plans can overcome staggering problems. The choices are intentional to show that states with current deficits, such as Ohio, can aspire to success. The selection process produced another conclusion—that adversity can be an asset, if it inspires business, education, and government leaders to accept the challenge and make the choice. In a changing knowledge economy, businesses, states, and campuses that rest on their laurels find that they soon fall behind. More and more, business, states, and institutions of higher education are realizing that they fall or rise together.

Georgia

Outsiders forget that not long ago Georgia had the image of a poor Southern state, with an economy based on peaches and peanuts. Its astonishing accomplishments tell a tale of critical challenges and courageous choices. Georgia is a classic example of adversity producing action. A couple of decades ago, Georgia ranked near the bottom nationally on most social, economic, and educational indicators. A dynamic duo of then-Governor Zell Miller and then-Chancellor Steve Portch of the University of Georgia System changed that image in a remarkably short time. They built a coalition between business, campuses, and the state that addressed the full range of education and economic problems. They preached the New Economy gospel that the future of business begins in the classroom and the laboratory.

A terrible education image posed one of Georgia's biggest problems. Many high school graduates never went to college, and the best and brightest left the state for higher education—never to return. The governor and chancellor responded to this challenge with the Hope Scholarship program. It paid for the tuition and books of high school graduates with "B" averages who maintained that record in college. This initiative stemmed the brain drain of Georgia youth. It also won the greatest compliment: widespread imitation by other states and the federal government. Although some critics charge that Hope Scholarships divert financial aid from needy to middle class students, Georgia has increased its college-going rates, apparently even among students with financial need.

The governor, chancellor, and the business community realized that education—both good and bad—begins in early childhood. They developed one of the earliest and the best college/school partnerships to build a seamless and sound education system from nursery school through graduate school. The program recognized that schools could not improve themselves on their own. They required better teachers and partnerships with colleges and universities and continued support from state government and business. Such programs are not unique to Georgia; at least half of the states—including Ohio—have similar initiatives.

Behind Hope scholarships and the pre-K-16 partnerships lay the goal of building a better-educated workforce for Georgia. Workforce development in the Peach State provides both long-term education and short-term term training. The Georgia Intellectual Capital Partnership provides one-stop shopping that makes the resources of the University System of Georgia and its campuses available to businesses, matches



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college graduates to their needs, and collaborates with business and other organizations to find solutions to regional economic problems. For three straight years, business site location consultants picked Georgia as No. 1 in workforce training (Lance Yoder, 2001).

Everyone in the country now knows that Atlanta is booming. But Georgia has to grapple with the problem of how to extend that prosperity to its rural areas. The OneGeorgia Authority—again supported by a coalition of business, government, and education—was created in 2000 with the sole mission of determining how to promote economic development in counties that need it most. The authority is funded with one-third of Georgia's receipts from the national tobacco settlement.

No doubt remains about Georgia's initiatives to couple university research with business products. The Georgia Research Alliance, founded in 1990, is a partnership of universities, business, and state government that leverages the capacities of research universities to further high-tech industries in communications, biotechnology, and environmental sciences. The alliance fosters interdisciplinary and inter-university research and facilitates technology transfer in selected areas. It directs strategic investment through the Eminent Scholar Endowment program, the Research Infrastructure Development program, and the Technology Development Partnership (see the Georgia Research Alliance Website). Georgia's strategic initiative, founded in 1999 and sponsored by the Research Alliance, is called Yamacraw. It combines university research with industry collaboration and \$100 million in state funding to make Georgia a world leader in broadband, high-speed, communications (Yamacraw Web site).

Spurred by a creative governor and chancellor, Georgia clearly has created a "public agenda" for higher education that has harnessed education and research efforts to build a thriving business climate. One remaining question is whether the innovations live on after their initiators are gone. The initial evidence suggests that the business/university/government alliance and initiatives have become part of the state culture. Governor Roy Barnes sustained the momentum, and his successor Sonny Perdue is expected to. The Georgia Board of Regents 2002 Accountability Report recounts a range of achievements in P-16 partnerships, increased access and degree attainment, expanded research, and continued contributions to workforce and economic development (2002).

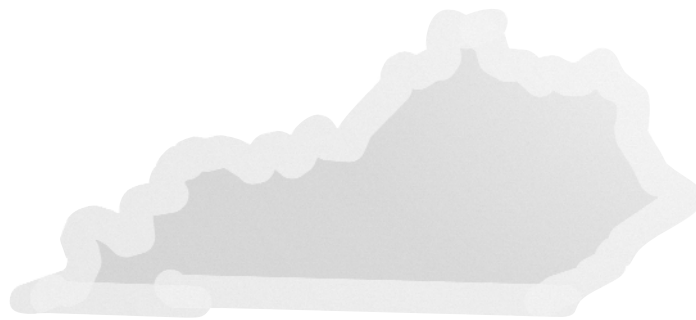
Kentucky

Kentucky also suffered from the image of a backward state, with an economy based on tobacco growing, coal mining, and horse racing. The unbeatable combination of a strong and persistent governor and a determined and resourceful president of the higher education board reorganized and strengthened the Postsecondary Education Council. Along with a supportive business community, they moved to improve Kentucky's image. These two leaders took on the toughest tasks: a depressed economy grounded in natural resources, poor public schools plagued by dropouts and questionable standards, and a higher education system that attracted a low percentage of high school graduates and appeared to allow the best and brightest to leave the state to attend college. They pushed postsecondary education as the driver of economic development, school reform, adult literacy, and a higher quality of life for Kentuckians.

Governor Paul Patton believed that Kentucky's could "leapfrog" over the economy of some states by reforming and reorganizing postsecondary education. His Postsecondary Education Act in 1997 redefined the mission "to assure that Kentucky's postsecondary education... is positioned to provide the human capital ...to allow the Commonwealth to become a leader in the global economy of the 21st Century" (House Bill 572). The law authorized \$110 million as a match for private fund-raising by universities, and \$220 million for endowed chairs and professorships to increase the number of world-class investigators to strengthen basic and applied research, to compete for private and federal research grants. Patton pledged this as merely a down payment to give Kentucky a competitive higher education system worthy of the knowledge economy.

The governor and Gordon Davies, then-president of the Postsecondary Education Council, put higher education to the toughest tests. They decided to judge performance solely on its service to students, the state, and society, including business and industry. The council adopted the following goals:

- Increasing adult literacy and work skills;
- Weaving together elementary, secondary, and postsecondary education;
- Increasing college going and completion; and
- Helping to build a new economy in Kentucky: new industry, new jobs, and higher earnings (Kentucky Council, 2002).



Kentucky's leaders pushed postsecondary education as the driver of economic development, school reform, adult literacy, and a higher quality of life.

The council decided to assess success on five deceptively simple—but devilishly difficult—performance measures:

- Are more Kentuckians ready for postsecondary education?
- Are more students enrolling?
- Are more students advancing through the system?
- Are we preparing Kentuckians for life and work?
- Are Kentucky’s communities and economy benefiting?

Although the economic development indicator came last, it represented the bottom line that benefits from the contribution of the other measures. To test the impact of Kentucky’s colleges and universities, the council members followed the business practice of asking the customers. They surveyed employers to determine their satisfaction with the graduates of Kentucky colleges and universities and their satisfaction with the research and services provided by those institutions to businesses and communities.

The governor created a comprehensive “bucks for brains” program and one of the better funded virtual campuses, the Kentucky Virtual University. One initiative offered merit-based scholarships that prompted the brightest high school graduates to stay in state for college. An example of the payoff came early in 1998, when the governor announced that United Parcel Service had agreed to build its new \$860 million automated sorting hub at the Louisville Airport—largely because of the new capabilities in research at the University of Louisville (Economic Development Cabinet, 1998). Bucks for Brains—along with private support—is also helping initiate a new Logistics and Distribution Institute at the University of Louisville. The Louisville Chamber of Commerce declared a need, and the university, the state, and UPS pooled resources to make it happen.

The governor and the postsecondary council, supported by the business leaders, realized that the state economy and higher education depended on the success of elementary and secondary education. A primary-through-college council (P-16), composed of leaders of business and education, endorsed creation of a single rigorous curriculum for all high school students. With support from the P-16 council, public and independent colleges and universities have adopted an agenda that addresses teacher shortages and teacher preparation. To raise substantially its poor college-going rates, Kentucky has launched an “Education Pays” program that preaches the benefits of higher education for better jobs and lives, targeted at adults and at-risk adolescents.

A 2001 “Status Report” shows substantial progress on many of the goals. Kentucky’s eighth-graders now outperform at the national average on the National Assessment of

Educational Progress, tying one other state for the most progress since 1999 (Kentucky Postsecondary Council, 2001). Kentucky has a lower student- to-computer ratio than the national average and has worked diligently to conquer the digital divide and provide equal access to the Internet in poor and affluent schools. College enrollment increased by 19,000 since 1998, and adult education enrollment rose by 12,000 since 1999. The number of endowed chairs climbed from 47 to 137, and endowed professorships rose from 55 to 175. Externally funded research at the University of Kentucky and the University of Louisville increased by 41 percent since 1998.

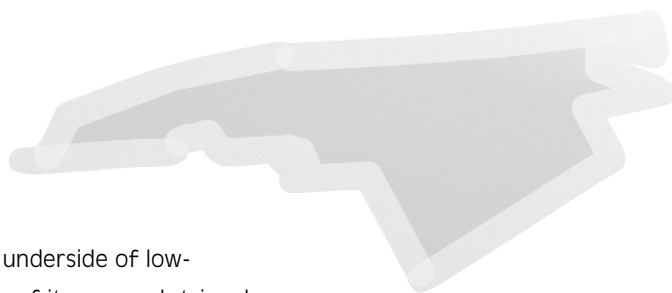
Governor Patton in 2000 created the Office for the New Economy to develop a statewide strategic plan for high-tech development. Drawing on six regional priorities, the statewide plan focuses on five industrial/research clusters:

- Human Health and Development
- Biosciences
- Information Technology and Communications
- Environmental and Energy Technologies
- Materials Science and Advanced Manufacturing

Kentucky has a long way to go, but it clearly has momentum. An article titled "Sizzlin' States" in 2001 listed Kentucky as an attractive option for corporate clients looking for new or expanded industrial sites. The publisher observed that Kentucky's progress "tells you that things are happening and employers are interested in where things are starting to happen..." (Bizsites, 2001). Despite falling state revenues from the recession, Patton and the legislature added \$130 million in 2003 to the endowment for "bucks for brains," bringing its total to \$500 million.

North Carolina

Every state evokes diverse images, and North Carolina is no exception. Outsiders know it for its thriving research universities and high-tech parks, but insiders see its underside of low-wage, low skill, and undereducated workers. Despite the luster of its research triangle, North Carolina ranks 17th on the Milken Institute's recent Science and Technology Index, with a score 26 points behind top-ranked Massachusetts (DeVol, 2002). Like Georgia, North Carolina has the problem of a chasm between haves and have-nots based on geography and skills.



Three major economic engines have driven the state's economy in recent years—the greater Charlotte metropolitan region, the Research Triangle Park area, and the Greensboro-Winston-Salem-High Point Triad area. These three metropolitan centers have accounted for almost half of total new job creation in the state over the past decade. The Economic Development Board, made up of leaders from the business, education, and communities around the state, acts as the top advisory body for economic development.

Thirty years ago, North Carolina embarked upon a period of rapid growth and development. The state made major investments over the following decades to address critical needs:

- Roads and other infrastructure;
- An advanced system of technical colleges for worker training;
- A renowned university system; and
- A first-class industrial recruitment program.

This strategy worked well. In a remarkably short period, North Carolina moved from an agriculturally oriented economy to the most manufacturing-intensive state in the nation. Still, the 30 years shows the necessity of persistent efforts over time in economic development strategies.

North Carolina's future challenge is to maintain the health of these areas while raising the economies of the poor regions of the state, dominated by tobacco and sweet potatoes, not research and high tech (North Carolina Economic Development Board, 1999). Experts see their higher education and public/private partnerships as the key to past and future success.

The Research Triangle, anchored by the University of North Carolina, North Carolina State, and Duke, has become a model for the nation. Its heart is Research Triangle Park, which houses research and development operations for some of the nation's largest companies. The region's economy is white collar-oriented, with education, government, and high-value manufacturing and services predominating. The success of Research Triangle Park exemplifies what business, higher education, and state partnerships can accomplish in economic development.

Economic developers in North Carolina see higher education as the state's best asset. Its community college system of 59 campuses is the third largest in the country and recently ranked No. 1 for providing state-sponsored worker training.

The 16-campus University of North Carolina System is also among the nation's best for instruction, service, and research (North Carolina Economic Development Board, 1999). The "Long-Range Plan of UNC" demonstrates its commitment to economic development (Board of Governors, 2002). Its six strategic directions form the core of a public agenda for the university system:

- 1. Access:** Ensure affordability and access to higher education for all who qualify and embrace a vision of lifelong learning;
- 2. Intellectual Capital Formation:** Through high quality and relevant graduate-level, professional, and undergraduate programs, develop an educated citizenry that will enable North Carolina to flourish;
- 3. K-16 Education:** Continue to propose and support initiatives to serve the needs of the state's public schools;
- 4. Creation and Transfer of Knowledge:** Expand the frontiers of knowledge through scholarship and research and stimulate economic development in North Carolina through basic and applied research, technology transfer, and public service activities;
- 5. Internationalization:** Promote an international perspective throughout the university community to prepare citizens to become leaders in a multi-ethnic and global society;
- 6. Transformation and Change:** Use the power of information technology guided by IT strategy and more effective educational, administrative, and business practices to enable the university to respond to the competitive global environment of the 21st century (37-40).

The University of North Carolina System is moving to meet most of those expectations (Board of Governors 2002, Appendix A). The system ranks third behind California and Texas in federal research dollars, with \$767 million in awards for fiscal 2001. Examples of collaborative research include the Biotechnology/Genomic initiative focused on research clusters in genomic, bioinformatics, proteomics, bioethics, and environmental technologies and marine sciences. A Research Technology Institute assesses technology transfer opportunities and provides training on each UNC campus. A Distinguished Professors Endowment Trust Fund, established in 1985 to provide matching grants, has produced 191 endowed professorships, with a match of private to public funding. UNC participates with community colleges and school leadership in the Research Council that coordinates research on major policy issues for the Governor's Education Cabinet.

North Carolina

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In partnership with business organizations and the community colleges, the University of North Carolina System has launched a "Pathways" program to inform families about the availability of higher education and financial aid. It is also exploring options for the development of a state need-based financial-aid program for undergraduates because North Carolina is one of the few states without such a program.

The university and community college systems have pushed K-16 reforms and are focusing resources on the needs of the public schools (Office of the President Initiatives). The two systems are collaborating to meet a huge growth in K-12 enrollment, which will require thousands of teachers over this decade. The system has started initiatives that attract the best students and mid-career entries into teacher education, provide continuing training to practicing teachers, and a distance-learning program in teacher training. Most of these initiatives are collaborative efforts of universities, community colleges, and public schools. The university system has long supported a comprehensive transfer articulation agreement, which eases transfers from two to four-year campuses and also delivers baccalaureate and graduate programs at community colleges.

North Carolina's fourth and eighth grade students exceeded both national and regional averages scores on the National Assessment of Educational Progress 2000 Mathematics Assessment. The state also has reduced the gap with the national average in SAT scores. It has raised the college-going rate of high school graduates, including minorities, and is making strides in closing the gap with national average on degree attainment (Board of Governors, 2002). As North Carolina has raised the educational attainment of its people, it has also narrowed the gap with the national average income.



Illinois

Illinois has long benefited from active governors and a strong higher education coordinating board. Like the best development plans in other states, the Illinois effort combines a statewide strategy with regional variations. It also follows the classic pattern of identifying industrial/research clusters. Although the strategy is unique in mandating a development plan by legislation, its industrial clusters repeat the pattern of many states: biotechnology, health sciences, information technology, and advanced physics.

The main initiative is VentureTECH, which encourages partnerships with private industry, state universities, and the federal government. This effort will generate \$4 billion in private/state/and federal technology-related investments. It also provides grants to

schools, colleges, and universities to enhance the high-tech skills of teachers and professors and students and adults. In addition, it offers building grants to universities and laboratories. For example, the state shared the cost of building the \$80 million Siebel Center for Computer Sciences, with \$32 million donated by the CEO of Siebel Systems. Thanks in large part to the investments from VentureTECH, Chicago ranks first in the nation for the number of high-tech jobs (Illinois Technology Office, 2000).

The Department of Commerce and the Illinois Coalition—a partnership of business and academic leaders—have established *Illinois Technology Enrise Centers* in several cities. These one-stop shopping centers assist entrepreneurs in locating capital, talent, and technical services. In 2002, they aided more than 100 entrepreneurs. But Illinois' programs do more than help high-tech entrepreneurs. They recognize that no state can prosper unless all of its citizens have access to technology and education. The "Eliminate the Digital Divide Law" in 2000 helped low-income families gain the technological skills and access to hardware needed to help them get jobs in the New Economy.

Economic development in Illinois benefits from an effective higher education coordinating board, the Illinois Board of Higher Education. In 1999, the board adopted "A Citizens' Agenda For Higher Education" and laid down benchmarks and timetables for achieving the following goals:

- Higher education will help Illinois business and industry sustain strong economic growth.
- Higher education will join elementary and secondary education to improve teaching and learning at all levels.
- No Illinois citizen will be denied an opportunity for a college education because of financial need.
- Illinois will increase the number and diversity of citizens completing training and education programs.
- Illinois colleges and universities will hold students to even higher expectations for learning and will be accountable for the quality of academic programs and the assessment of learning.
- Illinois colleges and universities will continually improve productivity, cost-effectiveness, and accountability (p. 1).

Illinois has benefited from active governors and a strong higher education coordinating board.

An example of higher education's responsiveness to business needs occurred in 1999, when the Illinois Board of Higher Education initiated a targeted effort to address a massive shortage of qualified workers in information technology. By fiscal 2001, the initiative had increased IT graduates by 14 percent and created 97 new IT programs, 57 on campus and 40 off campus. To improve teacher preparation, the board supported legislation requiring that students pass a basic skills test before admission to teacher education programs and a subject matter test before student teaching. Illinois has maintained college affordability by funding one of the largest financial aid programs in the country. This need-based program supplied aid to 140,000 students with appropriations of \$371 million in FY2002. The board also supports active K-16 programs, transfer efforts between two and four-year colleges and universities, and special initiatives to raise not only college-going rates but degree attainment levels (Illinois Board of Higher Education, 2002).



Michigan

All the states seem to be leaping on the high-speed biotechnology train as it leaves the station. Michigan is devoting \$1 billion of tobacco settlement money to research universities over the next 20 years, forming a life-science corridor in southern Michigan. Pfizer (and formerly Pharmacia) invest more than \$1.2 billion annually, and the research universities fund \$400 million. The \$1 billion Van Andel Research Institute in the health sciences shows that the corridor is flourishing (Michigan Economic Development Corporation Website).

Michigan has taken a unique approach to economic development by establishing a private corporation, the Michigan Economic Development Corporation (MEDC). In 2001, MEDC received \$98.3 million from the state and \$34.4 from private corporations. It operates as a for-profit entity, under the assumption that income from current investments will fund the corporation in the future. New business development focuses on three emerging sectors: advanced manufacturing, information technology, and—of course—the life sciences. The Michigan plan will build industry clusters through Smart Zones, which are areas within the state that show a potential critical mass of business, workforce, and research activity. The state is also establishing Renaissance Zones for economic revitalization. These community development programs reclaim distressed areas for renewed economic development and target incentives to attract new businesses to old industrial centers (Michigan Economic Development Corporation, 2000).

Education and workforce development are also specific initiatives included in the Michigan plan to build a state-of-the-art labor force. LinkMichigan proposes to give every citizen access to the education and training resources, and every citizen and business ready access to government information. Michigan leaders realize that a sophisticated technology and telecommunications infrastructure is the key to both business and community development. Improving access to high-speed telecommunication services is a priority issue. (Michigan Economic Development Corporation, 2000).

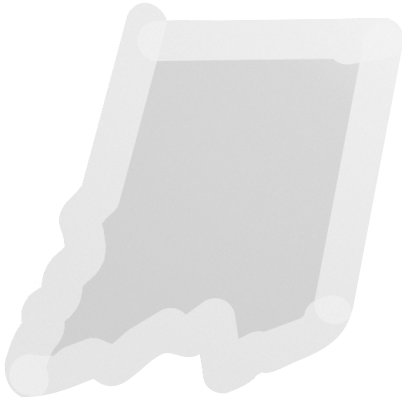
Michigan colleges and universities individually are committed to the education and especially the research initiatives required for economic development. But Michigan lacks a statewide agency capable of building an overall agenda for higher education, such as that provided by the University System in Georgia and the coordinating boards in Kentucky and Illinois. The Michigan Council of Presidents, a voluntary association of the state's 14 university chief executives, has partnered with the Michigan Economic Development Organization to try to provide some coordination, but it lacks the authority for comprehensive planning. All of the public universities have their own K-16 partnerships, teacher training reforms, and degree attainment efforts, but they lack the critical connections offered in a comprehensive plan.

The publications of the MEDC slight the instructional efforts of colleges and university, while stressing their applied research and technology transfer. The MEDC recognizes the shortage of skilled workers as a basic long-term threat to Michigan's economic competitiveness. Low birth rates and a lack of in-migration of workers from other states over the past decade heightens the importance of this issue. As a result, the MEDC 2001 Operating Plan tries to correct this problem by connecting high school students to business and workers to technical education that will advance people's careers in the new economy. The MEDC recognizes technical training beyond high school (some of it provided by community colleges), but slights the importance of universities in workforce education in business, science, and technology. MEDC claims that most of the high-tech jobs of the New Economy may require some training beyond high school but not at baccalaureate level. This claim may fit the auto industry but not the state's designated clusters in information technology and the life sciences (Michigan Economic Development Corporation, Workforce and Career Development, May 2002).

To assess the workforce needs of the state, the MEDC held eight forums throughout the state with business owners, economic and workforce development officers, and local officials. The responses stressed the shortage of technical workers and the poor image associated with technical careers. This outreach has obvious advantages but also inherent disadvantages. In states such as Michigan that have a long history of basic

Michigan established a private corporation to spur economic development.

manufacturing, asking business owners about workforce needs may produce answers more suited to the old than the New Economy. The slighting of baccalaureate and advanced degrees in the MEDC study and in the forums on workforce development may reflect that phenomenon.



Indiana

Hoosiers know that scores count and that Indiana is not scoring well in economic development or higher education. The state's income fell behind the U.S. average during the early 1980s recession and has lost ground ever since. Government and business leaders recognize that it is no coincidence that the state also scores poorly on degree attainment at the high school and bachelor levels. The Indiana Fiscal Policy Institute recommended that the state's public and private policymakers make every effort to reverse this troubling trend by: "(1) restructuring the state's tax system; (2) meeting the demand for quality education of our children; and (3) working to retain our college graduates as an integral part of a 21st-century workforce" (2002, p. 4).

The State's "Break Away Growth" plan (BAG) developed by the Economic Development Council sets six goals for achievement by 2016:

- Raise per capita income and average annual wages above the U.S. average;
- Attain the best purchasing power (living affordability) of any state in the nation;
- Secure the lowest poverty rate in the Midwest;
- Bring productivity above the U.S. average and rank the best in the Midwest;
- Earn the highest livable places rating in the Midwest;
- Create the highest growth rate in the number of high-skill, high-paying jobs in the Midwest (Indiana Economic Development Council 1999, p. 28).

The plan sets out six growth boosters to achieve the above goals. The first is *Learning a Living*, which notes that Indiana ranks poorly in high school and baccalaureate degree attainment and has no formal community college system. BAG designates the following initiatives under this booster:

- Provide consumers with timely information on secondary and postsecondary programs, including data on placement and earnings.

- Create a lifetime Learning Opportunity Card, a debit/credit card that provides financing for continual learning and degree completion.
- Offer tax incentives for training to companies for investment in worker training.
- Develop performance-based customized training programs for businesses.

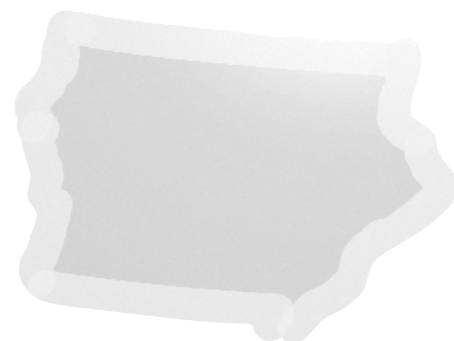
The Indiana Fiscal Policy Institute, in its *Metrics 2002: Measuring Indiana's Technology Progress*, makes a top priority out of raising the level of baccalaureate degrees to the national average. On the state's Web site, the link to "Learning in Indiana" covers K-16 education, access and financial aid for postsecondary education, and teacher certification. Indiana and Purdue Universities and their campuses are also deeply involved in instructional and research programs that further economic development. On the other hand, the Web site for the Indiana Commission for Higher Education suggests that the state lacks a comprehensive public agenda for higher education and economic development.

Early this year, Governor Frank O'Bannon announced an "Energize Indiana" plan to "jump-start the state's economy, create jobs, help us emerge from the national recession and lay a strong economic foundation for the future" (O'Bannon, 2003). This \$1.25 billion plan, funded by private not public sources, will create high-skill, high-wage jobs in four sectors—advanced manufacturing; life sciences; 21st-century logistics (or high-tech distribution); and information technology. The initiative will also help more Hoosiers, especially those from ethnic minorities or low-income families, to complete colleges through increased funding for scholarships.

Over the past several years, evolving roles and missions for the state's universities—as well as for the state's recently established community college system—also have had an impact on access, persistence (especially in terms of transferring student credits from community college to the state's four-year institutions), and completion.

Iowa

Iowa faces the same demographic, income, and economic challenges as the other Midwest states. The Governor's Strategic Planning Council—composed of 37 business, education, and government leaders—developed a plan called "Iowa 2010, The New Face of Iowa." It sets out costs, required actions, timelines, and performance indicators for achieving the following goals:



- Increase the number of working people through in-migration by 310,000;
- Have all lowans electronically connected to each other and the world;
- Make Iowa known as the life sciences capital of the world;
- Make Iowa a premier working, living, and recreational destination;
- Make Iowa's wages and income equal to or higher than other Upper Midwest States;
- Have all Iowa children secure in their education attainment;
- Recognize that clean air, water, and soil is integral to the state's infrastructure;
- Achieve national recognition for state and local government effectiveness and efficiency.

"Iowa 2010" stresses the connection of higher education and economic success. It proposes government/industry partnerships to encourage Iowa college graduates to stay in the state through better job prospects and financial incentives such as student loan forgiveness. It also seeks to attract immigrants to Iowa with advanced degrees. The report urges improved access to education, training, and skill development through Iowa Passport, an electronic distance learning system, and the latest telecommunication networks tying together schools, colleges, and libraries. The plan targets higher education as a growth industry for Iowa through financial incentives for both in-state and out-of-state students to attend Iowa's colleges and universities and businesses to encourage workers to upgrade their skills through continuing education.

By 2010, the plan promises, all Iowa children will benefit from early education and all adults from lifelong learning. The plan also pledges to use and leverage Iowa's higher education system to achieve its goals. University research will support industrial clusters in information technology, advanced manufacturing, and life sciences. Business, government, and university partnerships will accelerate entrepreneurial development of target industries, particularly technology and life sciences start-ups. Despite the claims of "Iowa 2010," the 68 pages of the Strategic Plan of the Iowa's Board of Regents has only a single reference to "economic development" (2000).

One has to admire the ambition of Iowa 2010 and commend the state's willingness to fund the plan's estimated cost of nearly \$5 billion dollars. Still, one does wonder whether Iowa can achieve its proclaimed goal of "becoming the life science capital of the world by 2010." Simply saying it cannot make it so.

Lessons learned

Lessons learned from the economic development strategies of other state—and follow-up interviews with policymakers in successful states—suggest some general principles Ohio should consider:

Leadership makes the difference. Leadership has impact on all quarters—in business communities, at state capitols, in state coordinating boards, and on college campuses.

Institutionalize the effort. Leadership initiates the start, but continuing institutional commitments make the development effort live on after the initial leaders are gone.

Collaboration is crucial. Business, higher education, and state government must collaborate in public/private partnerships because the knowledge economy demands cooperation of all these critical partners in economic development.

A public agenda for higher education is a must. The collaboration should produce a public agenda for higher education that says what the state needs most—not what every group desires—from colleges and universities.

State priorities should be limited in number and stated in simple language. Too many priorities mean no priorities, and convoluted priorities don't get remembered.

Accountability demands designated responsibilities and high standards. The best plans state clearly who is responsible for what and set high standards of performance.

Honor the diversity of college and university missions. The New Economy needs the special contributions of all campus types, public and private, two and four-year institutions, and comprehensive and research universities. The development plan should honor and reward campuses for their performance of the public agenda and not for their prestige in national ratings.

Statewide strategy should consider regional variations. States are not monoliths, for they contain cities and regions with different as well as common needs.

Adversity can be an asset. Adversity helps only if it stimulates collaborative action.

Success is not instant. Success in the Knowledge Economy requires both patience and persistence.

Competing is not cheap. Building an educated workforce and bringing university research to the competitive marketplace demands a combination of strong private and public support.

Visions must be realistic. Visions come in two varieties. The first sees things that could be based on what already is, while the second imagines things that are not there and can never be.

Every state needs some but not the same research/industrial clusters.

The state choices of research/industrial clusters have a repetitive ring. All states have medical schools and research hospitals. But how many can lead the nation and the world in the health and biomedical sciences?

Victory is never won. Staying competitive is a continual battle in the New Economy, where knowledge changes every half-decade.

A piecemeal plan is no plan at all. A comprehensive, long-term strategy for business, higher education, and state government is the secret to success in workforce and economic development.

Plan now and fund in phases. It is never too soon to design an economic development plan, but funding can be phased in over time.

Ohio can't wait for better times

Everyone knows that serious budget problems challenge Ohio. Some observers will undoubtedly say, Why not delay designing a state strategy for the New Economy until the return of better economic times? Ohio must reject this course for three reasons. First, Ohio is already behind many of its competing states in responding to the New Economy. Second, the competing states will not wait for Ohio, for many of them are already implementing their plans. Third, and most important, a strategic plan for economic development should look to the long-term needs of the state and not to the short-term availability of funding. In economic development, planning must come first, while funding can come in phases over time. The idea is not to throw money at the New Economy, but to fund over time a comprehensive and well-conceived plan for Ohio.

To repeat at the end what was said at the beginning, "The real choice for Ohio's business community, higher education, and state government is not *whether* or *when* but *how* to respond to the 'knowledge economy.' " The lessons learned from other states can point the way.

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AGB expresses its appreciation to the foundations and generous individual donors who have made the Center's work in Ohio and across the nation possible, including the John S. and James L. Knight Foundation, the Houston Endowment, Inc., the Atlantic Philanthropies, and the Lumina Foundation for Education.

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