



University of North Carolina Tomorrow Summary of Scholars Council Recommended Areas of Focus

Introduction

As part of the University of North Carolina Tomorrow initiative, the UNC Tomorrow Scholars Council, a fourteen-member council of distinguished faculty from across the UNC system, prepared a series of briefs on major trends impacting the State of North Carolina. In their briefs, the Scholars identify certain areas of focus for the UNC Tomorrow Commission to consider. These recommended areas of focus are summarized below.

Economic Change in North Carolina: Implications for Workforce Development Dr. Michael L. Walden

- ◆ More skilled and higher educated workers are required, especially in technology, pharmaceuticals, and banking. The firms compete not with low labor costs, but with high productivity (output compared to input) rates.
- ◆ Professional and managerial positions, many jobs in the service sector, as well as employment in finances, require educational training beyond high school.
- ◆ Importantly, to fill the demands for more educated workers, the NC Commission on Workforce Development estimates North Carolina will have to produce 15,000 more bachelor degreed and higher workers annually and 19,000 more two-year degreed workers annually *than currently is occurring*.
- ◆ And what if we don't create the required number of workers with these skills and training? Then the private sector jobs will likely go elsewhere, either in the U.S. or to foreign countries such as China and India that are rapidly increasing their supply of workers with higher degrees. Public sector jobs (teachers, nurses, public safety officers, social service workers) will remain in the state, but they will be filled by less qualified individuals, consequently implying that the services provided in those positions will be of lower standards.

Regional Differences in North Carolina

Dr. Keith Debbage

The following challenges face the UNC Tomorrow Commission and the University of North Carolina in addressing our state's regional differences:

- ◆ Although North Carolina's economic development strategy is focused on bringing development to all parts of the state, it is clear that **substantial** regional differences exist in the state economy.
- ◆ While the rapid growth of service jobs, especially in health care and retail have helped to cushion the decline in manufacturing jobs, very real differences exist in the overall skills and abilities of North Carolina residents by both region and county.
- ◆ One of the key challenges facing the UNC Tomorrow Commission will be developing a UNC system-wide strategy that can mitigate some of these skill differences while simultaneously supporting and encouraging technological innovation and enhancing competitive advantage in the rapidly growing 'hotspots' of the state economy.

Workforce Readiness and Global Competitiveness

Dr. Beryl McEwen

The first bulwark in the face of rapidly changing economies and job markets is the flexibility and adaptability of the labor force. This adaptability begins with the formal educational system, especially the public schools. North Carolina and the UNC System need to be proactive in their responses to current workforce preparedness trends.

Appropriate actions might include:

- ◆ The percentage of high school students who take upper-level math courses is good, but needs to continue to grow. Currently, North Carolina is one of the top-performing states in terms of the percentage of high school students who take upper-level math courses, with the percentages growing over the last 12 years. But, at approximately 72%, there is still room for improvement.
- ◆ The chance of a North Carolina high school graduate enrolling in college by age 19 has increased by 13 percent from 1992 to 2006, in contrast to a nationwide decline of 2 percent. However, there is need for a much faster growth rate, especially when one considers that the downward trend in the number of high school students who graduate in four years and enroll in colleges and the fact that by 2012 more than 40 percent of manufacturing jobs will require postsecondary education.
- ◆ The State and the University System must work together to ensure that graduating high school seniors are actually prepared for college. It requires more than a listing of the courses that are needed for college admission. It requires working together to

align curricula. Teachers and professors need to agree on what constitutes adequate and what constitutes excellent preparation for college.

- ◆ The commitment to expanded college access must be coupled with an equally strong commitment to educational excellence. The focus of schooling needs to shift from accumulating course credits to building strong real-world capabilities.
- ◆ The soft-skills gap needs to be addressed by the education system as employers report that it is easier for them to train entry-level workers on hard skills than on soft skills. Necessary soft skills include global awareness, team-building, critical thinking/decision making, and communication skills.
- ◆ The State Board of Education recently approved a new requirement that high school students pass four math courses starting in the 2009-10, up from three currently. The goal is to make high school graduates more globally competitive for work and for higher education. This initiative has the potential to greatly increase the global competitiveness of the workforce and should receive strong support from the state and its higher education institutions.
- ◆ While employers recognize that colleges and universities play a significant role in economic success, they believe improvements are needed in the level of preparation of current college graduates. For example, 73 percent of employers think colleges and universities play an important role in ensuring the nation's ability to compete in the global economy. Traditionally, community colleges have placed more emphasis on meeting specific workforce needs than has the University System. Maybe it is time for this to change.
- ◆ It is very important that the University System learns from its graduates and their employers as it works to improve its mission and image in the community. A national survey by Peter D. Hart Research Associate, Inc. (2006), identified some areas that are most important to employers and recent graduates, and areas in which recent college graduates think their colleges should place more emphasis, including teamwork, critical thinking/reasoning, and oral/written communication. What would a similar survey in the UNC system tell us? Being responsive requires that we first learn the needs of our customers/clients.
- ◆ Strengthening our schools is important, but the pace of change in the modern economy means that job training and the acquisition of skills must be a lifetime endeavor. To participate fully in the modern economy, some people may need to acquire new skills in their forties, fifties, or beyond. Currently, continuing workforce development skills are largely provided by the community colleges, social programs, and corporate training. It might be time for the University System to play a more active role.

**The Impact of “Soft Skills” in the Information – Knowledge
Management Economy and the UNC System**
Dr. Deborah Bosley

- ◆ *Work more closely with business and alumni to provide or bequeath resources appropriate for developing “soft skills.”* For example, in 2006, the Writing Center at Miami of Ohio University received a \$10.5 million dollar endowment from Roger Howe, retired chairman and CEO of U.S. Precision Lens and former chair of Miami’s board of trustees, and his wife, Joyce, an artist
- ◆ *Increase attention and resources to experiential learning (internships, cooperatives, etc.) where students gain many of these “soft skills” by working in professional environments.*
- ◆ *Train faculty in these “soft skills.”* For example, for the past three years, MIT’s engineering faculty have completed a workshop to gain significant insight into being effective leaders, dealing with conflict, fostering creativity, etc. The intention behind this effort is that faculty must have these skills themselves they are to impart them to their students.
- ◆ *Provide training, support, and rewards for faculty who use non-traditional teaching methods.*
- ◆ *Establish Teaching Centers on all UNC system campuses.*
- ◆ *Increase focus on and support for the humanities, where many of these interpersonal and cultural issues are taught and learned (literature, philosophy, history, etc.).*
- ◆ *Require that all UNC universities offer Writing-Across-the Curriculum (WAC) or Communication-Across-the Curriculum (CAC) programs and support these programs through additional hiring and resources.* These programs have proven records of success when communication skills are integrated throughout a student’s four years of undergraduate work.
- ◆ *Develop a plan for integrating “soft skills” into graduate programs particularly at the Master’s level.* Our graduate students are just as lacking in “soft skills” as our undergraduates, yet few WAC programs extend into graduate curricula. Students at the doctoral level often become professors, but students with Master’s degrees most frequently leave the university and enter the workforce.
- ◆ *Strengthen existing business and technical communication curricula currently offered at many UNC universities.* These courses are often required of certain majors (business and engineering, for example), but one courses is not enough to develop the communication skills required in the workplace.

- ♦ *Require that all graduating seniors take at least one course that teaches them the writing thinking, and analytical skills that they will need in the workplace. Some majors, for example, require a business or a technical writing and/or a communications' course, but not all.*
 - ♦ *Require that courses in the humanities are integrated throughout the curricula of the "professional schools" so that students continue to understand the relationship between their technical skills and the "soft skills." For example, NYU integrates the humanities into their medical school.*
 - ♦ *Develop a strategic plan to propose how the UNC system can integrate the "soft skills" more fully throughout all curricula, including humanities, science and the social sciences, and the professional schools.*
 - ♦ *Increase the support given to all ESL enculturation and language programs. Both students and faculty need increased instruction in the cultural norms of the students who populate our classes.*
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North Carolina's Higher Education Demographic Challenges
Dr. Jim Johnson

- ♦ North Carolina colleges and universities must become substantially more involved in K-12 education.
- ♦ As a component of their overall K-12 outreach strategy, North Carolina colleges and universities will need to develop specific programs to improve college access, matriculation, and graduation for the African American male.
- ♦ North Carolina colleges and universities must create innovative scholarship and financial aid packages, which do not violate U.S. laws regarding racial and ethnic preferences, to under-write the education of the college age population of the future.
- ♦ Colleges and universities will have to figure out how to accommodate undocumented immigrant students and native born students whose parents are undocumented immigrants.
- ♦ North Carolina colleges and universities will have to develop succession plans to address the aging faculty challenge.

Effect of High School Dropouts on the Workforce of the Future
Dr. Aminifu Harvey

Students dropping out of high school in the state are a serious problem. Particular attention needs to be paid to the Hispanic and Black populations both in elementary and high school.

The elementary, high school and university systems should provide:

- ◆ Training in Hispanic culture, basic Spanish language and its use in the elementary, high school and university classroom.
- ◆ Outreach and tutoring programs to elementary, high schools and University students focusing on Hispanics and Blacks.
- ◆ Out reach programs to students placed in juvenile homes, shelters and on probation
- ◆ Intervention programs for schools, parents and students who have the characteristics of possible dropouts.

The Hispanic population is increasing on campus; thus activities and the atmosphere, or ambience needs to be more welcoming to Hispanics and Blacks. This includes the presence of Hispanic faculty, male and female in courses other than Spanish language courses.

There are an increasing number of African American students attending college with more from Africa and the Caribbean, bringing different cultural orientations; but being lumped together with African Americans. In non-HBCU's there needs to be an increase in Black faculty in all areas of concentration.

Student Diversity in Education
Dr. David Oxendine

What can be done in order for colleges and universities and more specifically the UNC System, to recruit a more diverse student body?

- ◆ Education programs need to actively recruit people of color to their programs in order to have a more diverse teacher population within the various public school systems. For example, through the First Americans Teacher Education (FATE) program at UNCP, the teacher education program accepts qualified American Indian students and provides them tuition, a laptop computer, tutoring services, childcare allowance and a stipend each month., and in return, the students agree to teach in the state of North Carolina where there are American Indian students for two years or for the time of their training. Programs such as these could be implemented within the UNC System for other populations of color helping to ensure these students for success and hopefully for those students in the public school pipeline.

- ♦ The UNC System could review their admissions policy. There is much research to support the notion that standardized tests such as the Scholastic Aptitude Test (SAT) is culturally biased to students of color. All students do not test well; one size does not fit all. Other means of assessment should be implemented in the admissions process. Interviews, letters of reference, extracurricular activities should carry more weight than an entrance exam.
- ♦ Studies conducted by Wightman (2000) demonstrated that national law school admission data suggests that test scores and grades alone accounted for nearly 60% of the variance for admission decisions for White applicants. When the same analyses were applied to people of color the number of admissions for minority applicants were reduced to the levels of the 1960s. This data is clearly pertinent considering the projected increase of Hispanic/Latino students and the decline of male African American students in North Carolina. Certainly, the UNC System needs to review admission policies that are more inclusive to people of color with diverse worldviews than the majority population. Again, as with most social issues, there is no one clear solution. An eclectic perspective, which would implement various methods including those previously mentioned, should be explored.

The Two North Carolina Problem and The Civil Society Implications
Dr. Nelson Reid

- ♦ The University of NC has been directly and importantly involved in previous economic and social changes in the state.
- ♦ The University has an opportunity to recommit itself to expanding the capacity of NC citizens and residents to participate knowledgeably and meaningfully in the social and economic development of the state through systematic engagement and dialogue and to contribute to the strengthening of civil society, both in the sense of shared values, understanding and intentions as well as the development of non profit and non governmental organizations so necessary for social stability and progress.
- ♦ NC is experiencing a triple revolution of sorts: The transition from an agriculturally linked manufacturing economy to a “new” economy of finance, health, research, education, and urban and suburban services; the death of the rural, small town life as many North Carolinians have known it; and, the dramatic population change at both ends of the socioeconomic spectrum.
- ♦ It is attention to the emergence of the new civil society that is vitally important to the future of North Carolina if we are not to endure long and damaging divisions that will produce conflict ridden, and conflict driven, governmental structures and that will reinforce the balkanization of society that makes a genuinely civil society impossible.
- ♦ The UNC system should consider adopting a “civil society” mission would seek to create discourse across a wide range of policy areas that impact the quality of life of the state’s residents. The emphasis would not simply be on creating a dialogue among the usual

governmental and prominent business leadership but would be focused on those active in community level organizations. Over time, the state would come again to look to the university as a catalyst for inclusive discussion of important trends and issues confronting the state and the university would again have a link to leadership at the community and non governmental level.

- ◆ The University is the perfect place to host such a capability of gathering information, analyzing data carefully and thoroughly, creating thought-provoking dialogue among citizens, forging strategic partnerships, and disseminating its findings throughout the regions and the state.

Health Care in North Carolina and the UNC System Dr. Thomas C. Ricketts & Dr. Elizabeth Layman

- ◆ A growing population requires more health care resources and an aging population exponentially more.
- ◆ The North Carolina Institute of Medicine anticipates that by the year 2020, the state would need an additional 2,000 more physicians above what it is expected to gain to maintain its current population-to-physician ratio. This has important implications for the University system as it explores its role in the training of physicians for the state as well as providing the quality of life opportunities for physicians and their families.
- ◆ A shortage of nurses in North Carolina is anticipated starting after 2009 with long term predictions of a shortfall of 9,000 in 2015. To replace the nurses leaving the workforce, we will need more teachers, and nurse training programs across the state report difficulty in hiring and retaining nurses and other faculty with the appropriate training to teach. The North Carolina Institute of Medicine issued a report on the nursing workforce in 2004 that made several recommendations that touched on the University system: strengthening the faculty fellows program for nursing, increasing funding to AHECs to improve articulation across RN-BSN-MSN program, and expansion of enrollments in their UNS system prelicensure BSN programs. Further, the Comprehensive Articulation Agreement between community colleges and UNC System campuses should be further refined and implemented fully. Nursing education programs and clinical agencies should work together to develop creative partnerships to enhance/expand nursing education programs and help ensure the availability and accessibility of sufficient clinical sites.
- ◆ The “Allied Health” field is seen as an important area of future employment in the State as well as a required set of skills to maintain an effective healthcare delivery system.
- ◆ The growth of health care costs is viewed by many as a problem of affordability but it also reflects an important sector of economic growth and opportunity. Improvements in health status and longevity come at a cost and, more and more, we are having to pay for healthier and longer lives. It is part of the role of the University to help its citizens understand this tradeoff as well as to support efforts to make the health care system as efficient and accessible as it can be. This will require a fusion of disciplines and points of

view to help North Carolinians benefit from the advances of sometimes costly technology while maintaining a fair and equitable system of care.

- ◆ National efforts to reform health care financing have been, to date, only partly successful. North Carolina has not been in the lead in these initiatives but the state may become more active as administration priorities change or there is substantive national legislation passed. This will require the state's universities to respond to help interpret policy options, generate estimates of program and policy effects on the state, as well as serve as the incubators for ideas and options that the state can lead with.
- ◆ The universities in the state contribute to the analysis of data for the state's Medicaid agency, the General Assembly and the Governor's office, but there is little formal linkage between the substantial analysis and research resources in the universities and the agency itself. This is not the case in many other states where there is direct involvement of university campuses; the partnership between Maryland and the University of Maryland-Baltimore is a leading example.
- ◆ The University system can and should do more to become involved in an on-going process of creating standards for communication and accountability in the healthcare delivery system through the adoption of electronic standards and systems.
- ◆ The state maintains a health data system in its State Center for Health Statistics, but its resources are stretched thin. The several campuses and the AHEC system draw on this system for background data and for research purposes but many data streams are distributed and not easily accessed. The University system can play a role in the coordination of these data streams as well as host a statewide data network for research as well as policy decision support. This might include an ongoing survey of population health status to supplement the work of the State Center.

Energy and Environmental Challenges Confronting North Carolina and UNC Dr. Dennis Grady

UNC's role [in responding to energy and environmental challenges] falls into three general categories.

- ◆ First, adjust our own environmental footprint.
- ◆ Second, expand opportunities for teaching, research, and public service in sustainable development, environmental science and engineering, and environmental policy.
- ◆ Third, imbue environmental literacy throughout the System institutions' curricula.

Adjust UNC's Own Environmental Footprint

Collectively, the 16 universities in the UNC System are, by far, the single biggest public energy and water user in the state of North Carolina. According to data supplied by the State Energy Office in the NC Department of Administration, the UNC System is responsible for 70% to 80% of state expenditures on energy illustrates. In Fiscal Year

05-06, the System spent almost \$167 million on utilities of which \$156 million was for electricity. The System is also the largest water user in the state. In FY 05-06 the System reported using 4.7 million gallons of water at a cost of \$10.7 million.

There are steps that the UNC institutions can and should take to reduce their environmental footprint, from small (putting light sensors in every classroom and laboratory) to large (requiring all new facilities to meet LEED - Leadership in Energy and Environmental Design certification) actions. Leading by example should be a minimum expectation of each university, and accountability for reaching specific carbon targets should be a General Administration priority.

Expand Opportunities for Teaching, Research, and Public Service

There is already a significant amount of environmental research, education and outreach occurring across the System. How much and how it relates to specific needs of our state is an open question. For example, one System school (ASU) recently conducted a review of the research underway by faculty across its five colleges and found that over 60 faculty were engaged in environmental research, most of whom had no idea that others were also working in the environmental area. And this is just one campus.

From an instructional perspective there should be mechanisms in place to allow students to pursue courses of study relying on the environmental science, engineering, and policy curricula of the entire UNC system. For example, NC A&T SU recently developed a PhD program in Energy and the Environment. It would be helpful to students in that program to be able to easily take courses in the ASU Appropriate Technology Graduate Program, UNC-CH's Environmental Sciences curriculum, NC State's Graduate Engineering Programs, and/or UNC Wilmington's Marine Sciences Programs.

Incorporate Environmental Literacy into Curricula

Finally, just as we expect our graduates to be effective communicators and have advanced skills in their fields of study, we should also expect our graduates to have a basic sense of environmental literacy. Global changes begin at the individual level and the UNC System has an obligation to insure that each graduate has an appreciation of what s/he should do to make the globe sustainable for future generations. Environmental literacy should be a part of each institution's core curriculum.

Collectively, these actions could have a profound impact on the state, national and global environment.

Technology Innovations, Research, and Universities' Global Competitiveness **Dr. Ruben Carbonnel and Dr. Ken Harewood**

There is some clear overlap between national recommendations to enhance competitiveness and the UNC system's goals to enhance economic development in the state of NC. This alignment is important since it allows a clearer path to leveraging state and federal efforts to reach the university's goals and objectives. By comparing the detailed action items for each of the four recommendations A-D of the National Academies and Institute of Medicine to the strategic steps described for each of the five goals 1-5 of the UNC Board of Governors Special Committee on Community and Economic Development, it is possible to obtain a combined set of strategies that are aligned with both the national and state or UNC system goals, and these are listed below.

Goal 1: Deliver Learning That Meets the Needs of the 21st Century

Strategies

- ◆ Emphasize quality and scholarship for all learning and training programs
- ◆ Enhance educational, mentoring and training opportunities for K-12 teachers by UNC system faculty, especially in the areas of science, technology, engineering and mathematics (STEM)
- ◆ Increase the availability of a college of education and the number of out-of-state applicants through scholarship and work-study programs
- ◆ Significantly increase the state financial support for undergraduate research opportunities
- ◆ Provide special graduate fellowships for state residents willing to attend graduate programs on state university campuses
- ◆ Provide tax incentives for private firms funding graduate study for employees on state university campuses
- ◆ Streamline and facilitate the process of appointing foreign students and researchers with the appropriate visas for research and training
- ◆ Offer educational experiences that prepares students for work in an interdisciplinary environment, combining creative thinking, technical and analytical skills, business expertise and communication skills for a variety of audiences
- ◆ Integrate campus experiences with what is learned on the job, enhancing cooperative education, service-learning and internship programs
- ◆ Enhance emphasis of entrepreneurship training and leadership training in and out of the classroom
- ◆ Provide life-long learning opportunities to our graduates when and where it is needed
- ◆ Establish strong institutional links with universities in Europe, Asia and South America to provide internationalization experiences for undergraduates, graduate students and faculty

Goal 2: Enhance the Capacity of Public Institutions to Implement Successful and Sustainable Economic Development Policies

Strategies

- ◆ Establish mechanisms for linking teaching and research activities to economic development opportunities
- ◆ Establish web based portals on capabilities and expertise at the university in various areas
- ◆ Faculty should be available to provide applied research, studies and analyses to state and other leaders as needed
- ◆ Provide reward system for faculty participation in economic development efforts
- ◆ Provide enhanced training opportunities to staff and managers in the public sector

Goal 3: Enhance Opportunities for Research and Innovation

Strategies

- ◆ Establish strong collaborative research relationships among institutions
- ◆ Enhance ability to conduct innovative research
- ◆ Enhance the ability to transfer new ideas into commercial opportunities
- ◆ Continue research in core areas and establish links with emerging capabilities in nanotechnology and biotechnology
- ◆ Provide state support for multi-institutional research programs involving scientific and engineering advances
- ◆ Enhance the level of support for early-career researchers addressing state and regional economic development priorities
- ◆ Coordinate regional economic development needs and opportunities with university research and potential funding sources

Goal 4: Provide Support to Build Competitive Businesses

Strategies

- ◆ Establish web based portal describing university intellectual property available for licensing
- ◆ Streamline the licensing process for university intellectual property
- ◆ Provide tax incentives for regional industry support of university research
- ◆ Address gaps in service and outreach to support technology based economic development
- ◆ Develop research capacity in the areas of need of technology based companies in the state or region
- ◆ Campuses should serve as hubs of networks to disseminate university technology, best practices, counsel, training and regulatory compliance support for industry
- ◆ Management programs should foster entrepreneurship
- ◆ Universities should help start venture funds to support investments in technology
- ◆ Extension and outreach programs from land grant and regional campuses should be coordinated to maximize strengths and increase accessibility

Goal 5: Grow High-Quality, Healthy and Attractive Communities

Strategies

- ◆ Support art and culture networks that break down barriers between university and local communities

- ◆ Integrate the academic and clinical sides of public health and nursing programs across the state
- ◆ Encourage faculty and student participation in community programs
- ◆ Make university facilities available to cultural and community groups

These goals and list of strategies or recommendations are offered for consideration and discussion, recognizing that they are all subject to implementation in different ways at the different campuses of the UNC system. The adoption of many of them will be a challenge because they will require a change in the culture of the faculty and the institutions in question. Others that cut across all of the campuses will require coordination and support from the UNC system itself to make them feasible. Finally, many of them can only be made possible through the financial support of the legislature.

Trends in Higher Education
Dr. Bruce Henderson

- ◆ How the system-level administration can strike a balance between local campus autonomy and statewide coordination
- ◆ The development of a mechanism for helping with the identification and assessment of key system-wide student outcomes, especially soft skills
- ◆ System-level guidance in the development of distinctive missions with faculty reward systems that are mission based
- ◆ Mechanisms for continuing faculty development in teaching, research and service within and across campuses with a special emphasis on innovation & experimentation
- ◆ Mechanisms for involving universities in the public schools in innovative ways
- ◆ Explicit recognition of the advantages and disadvantages in the use of part-time and non-tenure track faculty members
- ◆ The systematic review of campuses' approaches to involvement in economic development
- ◆ How to make the provision of opportunities for life-long learning a reality
- ◆ Ways to ensure public and private support for research and development activities
- ◆ How to maintain a high degree of accessibility of the UNC campuses to all citizens of the state