LEVERAGING HIGHER EDUCATION
FOR A STRONGER SOUTH CAROLINA

RECOMMENDATIONS FOR THE ACTION PLAN IMPLEMENTATION

DRAFT

November 14, 2008
Preface

“Make no little plans; they have no magic to stir men’s blood.”¹

On behalf of the entire higher education community, thank you for participating in the critically important development of a new ACTION PLAN FOR HIGHER EDUCATION in the state of South Carolina. This planning process has involved dozens of committed citizens representing education, government, business, and industry who have committed thousands of thoughtful hours to considering what the collective goals of our higher education system should be and what strategies might be pursued to attain them. We are honored to present a draft report crafted over the past eighteen months to citizens attending ten public hearings throughout the state on November 17-21 as well as online (see http://www.che.sc.gov/InfoCntr/HiEdStudyComm.htm) and solicit your reactions and comments to the proposed Action Plan.

To provide a brief context for this potentially transformative collaboration, a summary of the major steps on the ladder toward the new Action Plan may be useful. At the end of the 2007 Session, the General Assembly established the Higher Education Study Committee, whose members were appointed by the Governor and the House and Senate leadership. Chaired by Mr. Daniel Ravenel of Charleston, the Higher Education Study Committee established six expanded subcommittees to ensure broad-based representation from a larger cross-section of stakeholders. Collectively, these participants identified four primary goals for higher education:

- Making South Carolina One of the Most Educated States
- Increasing Research and Innovation in South Carolina
- Increasing Workforce Training and Educational Services for South Carolina
- Realizing South Carolina’s Potential: Resources and Effectiveness

These four core goals as well as priority areas of action are examined in considerable detail in the Higher Education Study Committee report issued in September 2008 entitled Leveraging Higher Education for a Stronger South Carolina: The Action Plan Framework (see http://www.che.sc.gov/InfoCntr/HESC_Files/HESC_FrameworkPlan_Letter.pdf). The Higher Education Study Committee then appointed four Task Forces to develop specific recommendations that colleges and universities would be able to implement in the six-year timeframe covered by the new Action Plan. The collective recommendations to date of these four task forces make up the basis of this draft report. Given the time available, the Higher Education Study Committee has not had the opportunity to review these recommendations in detail, and it will not make final decisions until it has received feedback from the ten public hearings, web-based responses, and a subsequent meeting with the college and university presidents. Once the Study Committee analyzes all the feedback, it will produce a final draft that will be posted to the web site and circulated for additional comment. The broad-based input during the formative stage of the plan’s development will, the Study Committee believes, strengthen the plan immeasurably.

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Making South Carolina One of the Most Educated States

Overview

There is overwhelming evidence, nationally and internationally, that higher levels of education lead to greater prosperity and competitiveness in the knowledge economy. In this context, it is a great concern that South Carolina is well short of the national average and very far behind the national leaders in the proportion of adults (aged 25 and older) who hold graduate/professional and baccalaureate degrees. For example, the U.S. average for holders of graduate and professional degrees is 9.9%, compared with 7.9% in South Carolina (for a state rank of 37).\(^2\) At the associate degree level, South Carolina (7.9%) barely exceeds the national average (7.4%) but is well behind the leading state, North Dakota (11.2%).

Table 1 below illustrates the degree attainment levels of South Carolina residents aged 25 and older as compared to the nation and the leading states:

| Table 1. Degree Attainment Levels of Residents Aged 25 and Older |
|------------------------|------------------|------------------|
|                        | S.C.  | vs. U.S. | vs. Leader |
| Graduate/Professional  | 7.9%  | 9.9%     | 15.7% (MD) |
| Baccalaureate          | 14.9% | 17.1%    | 22.0% (CO) |
| Associate              | 7.9%  | 7.4%     | 11.2% (ND) |
| Overall educated adults (Associates and above) | 30.6% | 34.4% | 44.7% (MA) |

Source: 2006 American Community Survey, U.S. average for 50 states

South Carolina’s position is especially worrisome given that the importance of higher education in wages and employability is increasing with respect to degree attainment (including certificates that are not formal degrees but nonetheless significant indicators of ability). The state is largely an importer of college-educated talent relative to the numbers of college degrees awarded.\(^3\) While recruiting necessary human capital helps meet the current needs of the state’s economy, South Carolina must advance at every degree level to remain competitive and afford better opportunity for its citizens. According to Foundations for the Future: Higher Education in South Carolina, South Carolina has significant deficits in the educational levels necessary for successful life and work in the 21st century.\(^4\) The 2003 study also noted: “[S]ignificant disparities exist in South Carolina in education attainment and performance by race, gender, income, and between urban and rural populations.”\(^5\) Furthermore, the study also cited that “a strong relationship [exists] between low education attainment and quality of life indicators in South Carolina, in areas like per capita income, health, the environment for young children, and crime.”\(^6\) The report concludes that South Carolina must significantly

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\(^3\) Census population and educational attainment statistics for adults 25 years and over.


\(^5\) Foundations for the Future, iii.

\(^6\) Foundations for the Future, iii.
increase the percentage of younger citizens who complete secondary education and are prepared for postsecondary education and/or employment in a knowledge-based economy.

One need only look at South Carolina’s neighboring states for a highly instructive lesson on the price the state has paid for its failure to give early support to increased levels of higher education attainment for its citizens. In 1960, South Carolina’s per capita income was 48th in the U.S., while North Carolina and Georgia ranked 45th and 42nd respectively. In the subsequent four decades, North Carolina and Georgia emphasized higher education as a cornerstone of their economic development strategies, with the result that in 2007, North Carolina had risen to 36th and Georgia to 38th. South Carolina, which did not make higher education as high a priority in that time, ranked 47th in 2007. It is no wonder that many states, most visibly Kentucky, are widely following the North Carolina and Georgia examples in using higher education as a vehicle for economic transformation.

South Carolina must increase the educational attainment levels of its citizenry by generating more graduates (both traditional and non-traditional) and attracting graduates from other states. Given the transition to a knowledge-based economy and increasing globalization, South Carolina needs not only to be nationally competitive but also internationally competitive. The recommendations contained in this report represent the Higher Education Study Committee’s effort to provide a clear pathway to create a more educated population in South Carolina.

**Setting an Aspirational Goal**

South Carolina’s aspirational goal for 2030 is to be among the top states in persons with at least a bachelor’s degree. Setting the goal at this high level is designed to inspire South Carolinians to do what we know we can do—compete with the best. The Action Plan will describe the activities necessary in the first stages of this twenty-one year period (2009-2030); subsequent planning efforts will adjust and revise as necessary.

While data sources available at this point do not permit the development of precise numbers, the magnitude of the challenge is clear: achieving our aspirational goal will mean adding significant numbers of degree holders. If we strive to be in the top 15 states, more than 180,000 degree holders are needed to move South Carolina from its current percentage of those holding the baccalaureate or above from 23% to 29%, the level of the 15th ranked state. The two primary sources for the required increase are the traditional P-12 to higher education pipeline and the adult pipeline

**The Traditional Pipeline**

South Carolina graduates about 38,000 students from high school each year. Natural population growth is not expected to increase this number significantly over the next 10-12 years, meaning that increases in traditional college students will have to come from some combination of improved high school graduation rates and higher college-going rates.

Since South Carolina’s college-going rate of 67% is among the highest in the country, it will be difficult to affect significant increases in the short-term. There are many and widely varying estimates of the high school graduation rate, but by most accounts South Carolina’s rate ranks comparatively low nationally and therefore a more likely candidate for near-term change (and as noted elsewhere, there are significant efforts already underway).

Here are some rough estimates: increasing the numbers of South Carolina high school graduates entering college by about 20% would yield some 6,900 additional entrants per year assuming the percent attending college in-state held steady at 90%. Over the

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1 Bureau of Economic Analysis. Table SA1-3: Per capita personal income tables at the state level. Data extracted from online resource at: [www.bea.gov](http://www.bea.gov).

2 Because the Baccalaureate is consistently granted across states, it is the standard measure. South Carolina should expect comparable progress in Associate’s degrees.

3 Based on 2006 Census American Community Survey data South Carolina’s population twenty-five and older has at least a bachelor’s degree. That ranks South Carolina 39th nationally. The national average is 27%. The top state, Massachusetts, is at 37% while Illinois at 28.9% ranks 15th. Considering 2006 population estimates, to close the gap in SC, requires 122,367 additional persons twenty-five and older holding at least a bachelor’s degree. To reach the level of Illinois translates to 179,281 more degrees.


5 Ibid. SC estimated high school graduates 38,221 in 2009-10 and expected to be at 37,834 in 2020-21.
Aspirational Goal period of 21 years, this would yield some 57,000 new baccalaureate degree holders, or 123,000 short of the required 180,000.

The final mechanism to be considered for the traditional pipeline would be to increase success to college graduation. Currently, about 56% of those entering college obtain a baccalaureate degree within six years. If that percentage were increased to 70% (a very high number in the national context) assuming no changes in SC’s high school graduation rate, it would increase the number of degrees granted on average each year over the plan by 2,200.

In summary, if we project: 1) a stable population of young people; 2) a sharply higher number of students entering college from high school graduation rate; and 3) a significant improvement in the percentage earning a degree, South Carolina will meet about 66% of its need over the 21-year period. Another way of looking at this issue is that we will be 62,000 degrees short or the equivalent of a county the size of Georgetown, South Carolina.

The Adult Pipeline
The other major source of graduates that must be considered is that of non-traditional college students or what will be called here the Adult Pipeline. This category is not as easy to understand as the traditional pipeline since there is not a system with clear progression for these students. The following provides some rough calculations.

In Fall 2007, the state’s public colleges and universities enrolled about 38,000 persons 25 years of age and older who were degree-seeking undergraduates.12 This enrollment represents just 3% of the approximately 1.4 million South Carolinians 25 years of age and older who have just a high school diploma or some college but no degree. The number of enrolled adults (persons 25 years and older) who earned bachelor’s degrees in FY 2006-07 was just under 2,800. This number represents 14% of the 20,103 bachelor’s degrees awarded in FY 2006-07 at public and independent institutions. Significant focus on both enrolling and graduating more adults will be absolutely essential to closing South Carolina’s higher education gap.

In conclusion, a rough analysis of the available data shows that for South Carolina to compete effectively in the knowledge economy, sharp improvements in the traditional P-12 to higher education pipeline must occur. However, absent concurrent and dramatic improvements in the non-traditional (adult) pipeline, it will be impossible to close South Carolina’s higher education gap.

Outline of Section Recommendations
There are several key areas where South Carolina must work to increase its educational levels: (a) the traditional P-12 to higher education pipeline; (b) the higher education experience; (c) the vast number of adults who lack degrees or advanced certificates; and (d) the numbers of highly educated people who choose to locate in South Carolina.

Recommendations intended to increase the flow in the K-12 to college pipeline fall into several categories:

**Academic Preparation and Relevance:** The recent EDA legislation (*Personal Pathways to Success™*) contains a series of reforms that are intended to improve preparation and relevance; this legislation builds on and complements efforts of colleges and universities with schools around the state. **Objective 1: Increase the Number of High School Graduates Who Are Well Prepared for College** consists of a series of recommendations designed to attract students to higher education while providing them with a high school education that is purposefully designed and sufficiently rigorous to prepare them to meet the challenges they will face upon pursuing higher education at any level.

**Transitions from High School to College:** The transition from high school to college is often more difficult than expected or necessary and can create a barrier to achievement and completion in higher education. **Objective 2: Strengthen the Transition from High School to College** contains a series of recommendations which, if implemented, will allow for more seamless transition from high school to college. In addition, the recommendations call for greater cooperation, collaboration, and consistency among the state’s institutions of higher education, thereby allowing for easier transfer and greater availability of programs.

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12Enrollment at independent and proprietary institutions would make numbers somewhat higher; however, complete data for these institutions are not available at present.
Affordability - As a consequence of historically low levels of state support, higher education in South Carolina is very expensive for students and their families. Investments in merit scholarships have helped many parents and students pay for college and have also helped to retain students in state. Unfortunately, the state’s financial aid portfolio is not balanced between need and merit, with the result that many students from poor families cannot afford to attend college. Yet much of South Carolina’s increased participation must come precisely from such families. Adequate funding for higher education is included as a recommendation in Objective 3: Increase Higher Education Graduation Rate.

The higher education experience affects graduation rates, student academic accomplishments, and student transfers between institutions, among other issues. South Carolina is already a national leader in university graduation rates, but improvements are in everyone’s interest. Achieving higher educational levels will require mechanisms to increase graduation rates. The recommendations in Objective 3: Increase Higher Education Graduation Rate cover transfer and articulation policy, information systems, university-based limits of degrees to 120 credit hours where possible and appropriate, alternative delivery methods, and increased integration of business needs in program creation.

The adult to higher education pipeline is another critical part of any initiative to increase the numbers of degree holders in the state. More than 500,000 South Carolinians over the age of 25 are without a high school diploma. More than 900,000 South Carolinians have a diploma but no higher education, and more than 500,000 of the state’s citizens have some college but no degree.13 These nearly 2 million people account for close to half of the state’s population. Bringing a significant number of these individuals into the knowledge-based economy will require an array of actions, including: flexible formats; low-cost, multiple providers; no-fail competency-based testing; and certificates that build confidence and provide assurances to employers. The recommendations in Objective 4: Increase Adult Participation in Higher Education include these and other suggestions aimed at this critical population.

Finally, a way to increase educational levels is to retain in the state as many graduates as possible while at the same time attracting graduates from other states and nations. Retaining graduates (already a relative strength of South Carolina’s higher education institutions) and attracting educated outsiders are the subjects of Objective 5: Attract and Retain More Graduates. These recommendations emphasize the need to partner with industry to create a financial and cultural environment which will attract top intellectual talent to the state.

Objectives and Recommendations to Achieve Goal One

OBJECTIVE 1: Increase the Number of High School Graduates Who Are Well Prepared for College

As noted in The Action Plan Framework, South Carolina ranks 48th among the states in the percentage of ninth graders who graduate from high school in four years and then directly enter higher education.14 As a result, South Carolina has engaged in a number of significant recent reforms in P-12 education, including the Education and Economic Development Act (EEDSA) of 2005. Among the many positive outcomes expected is significant improvement in the state’s high school graduation rate.

Despite low high school graduation rates, South Carolina ranks fourth nationally in the percentage of high school graduates who go on directly to college.15 Therefore, if the state wants to increase its educational levels, it must begin by increasing high school graduation rates and strengthening the P-12-to-higher education pipeline. The Action Plan Framework identifies three areas of emphasis in the P-12-to-higher education pipeline: (a) academic preparation and relevance, (b) affordability, and (c) aspiration.16

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14 The Action Plan Framework, 16.
In terms of academic preparation and relevance, the recent EEDA legislation, also known as Personal Pathways to Success™, contains a series of reforms that should improve both preparation and relevance. However, more needs to be done to prepare students for college-level coursework since “college-eligible” is not the same as “college-ready.” The state must focus on aligning high school and college curricula to better prepare students for college.

Additionally, as a consequence of historically low levels of state support, higher education in South Carolina is comparatively expensive for students and their families. The state must increase operating funding for institutions as well as need-based financial aid for students and make students more aware of the opportunities available to finance higher education.

Furthermore, many families, particularly those who are economically disadvantaged, do not really believe that college is a feasible option for their children. Raising aspirations—increasing the belief that children can go to college and succeed—is a critical part of the state’s effort.

**Supporting Actions in Process**

**The Education and Economic Development Act (EEDA)**
- Focuses on the need to increase the number of high school graduates who are well-prepared for college. One component of the act addresses the promotion of seamless transitions from high school to college.
- Calls for more articulation agreements between school districts and public institutions of higher education in South Carolina to provide seamless pathways for adequately prepared students to move from high school directly into institutions of higher education.
- Supports increased dual/concurrent enrollment or offering college courses to high school students.
- Calls for the coordination of work to study the content and rigor of high school courses in order to provide a seamless pathway to postsecondary education.
- Encourages long-term planning in high school as it provides for increased contact between students, their families, and guidance counselors by employing a new electronic tool to facilitate the creation of individualized graduation plans.
- Allows for the use of career clusters so that students explore career opportunities and related coursework to enhance the relevance of their high school experience.

**State-Funded and Institutionally-Funded Financial Aid Programs**
- Provide incentives to pursue higher education, including Palmetto Fellows, HOPE, LIFE, Need-based Grants, the Lottery Tuition Assistance Grant Program, Tuition Grants Program, Institutional Grants, Scholarships, and Work Study.

**The S.C. Gaining Early Awareness and Readiness for Undergraduate Program (S.C. GEAR UP)**
- Designed to increase the number of low-income students who are prepared to enter and succeed in higher education by offering a variety of enrichment, information, family, and experiential programs.

**The Higher Education Awareness Program (HEAP)**
- Targets 8th grade students and their families by providing information about college preparation and funding.

**College Access Programs**
- Provides students with academic or other experiences to acclimate to college life (e.g., TRIO programs, dual/concurrent enrollment; college information and counseling; and other outreach programs).

**RECOMMENDATION 1.1. Implement compulsory high school attendance until the age of 18 or high school graduation.**

Several states have compulsory attendance laws that require students to stay in school until the age of 18. If South Carolina were to enact such a policy, it could retain more students. By extension, increased matriculation along with expanded early and/or middle

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17 GEAR UP is a national grant program sponsored by the U.S. Department of Education which supports early college preparation and awareness activities for rural and low-income students and ensures that students are prepared to take advantage of postsecondary opportunities. Currently CHE is implementing a six-year, multimillion-dollar GEAR UP grant to the state of South Carolina. In addition to the state GEAR UP program, the U.S. Department of Education also provides GEAR UP funding for local partnership programs. At present, there are five GEAR UP local partnership grants in South Carolina: The Citadel GEAR UP, Claflin University GEAR UP, Lancaster County School District GEAR UP, South Carolina State University GEAR UP, and Richland County School District Two GEAR UP. U.S. Department of Education Website (Last updated September 12, 2008) <http://www.ed.gov/programs/gearup/index.html>.

18 TRIO offers a comprehensive set of services through several different programs, each targeted at a specific group of individuals from the sixth grade through adulthood. Services and activities include academic tutoring, cultural enrichment, financial aid and admissions counseling, and student mentoring.
college programs could better prepare these students for college. Preeminent labor economists Joshua D. Angrist and Alan B. Krueger conducted a study which determined that “students who are compelled to attend school longer by compulsory schooling laws earn higher wages as a result of their extra schooling.”20 Furthermore, the study found, “[T]he estimated monetary return to an additional year of schooling for those who are compelled to attend school by compulsory schooling laws is about 7.5 percent.”21 While compulsory high school attendance to the age of 18 would be costly because it would require more teachers, more physical facilities, and funding for the number of students in question, the possible benefits resulting from those students earning higher incomes (such as increased tax revenue and decreased use of social services) makes this compulsory attendance a worthy endeavor.

**RECOMMENDATION 1.2. Use and promote Standards for Success as a common standard of college readiness.**

Not all high school teachers understand the level of preparation required of their students for college success.22 At the March 31, 2004, meeting of the Advisory Committee on Academic Programs (ACAP), the Committee voted unanimously to endorse Standards for Success from the Understanding University Success report23 so that high school faculty members, guidance counselors, principals, and students would be able to understand with some precision what constitutes preparation for collegiate-level work. Standards for Success addresses college preparation as more than acquiring content knowledge because it involves developing contextual skills and awareness including critical thinking and problem solving skills and developing effective academic behaviors, study habits, and habits of mind such as intellectual openness, inquisitiveness, and precision and accuracy. By using Standards for Success, the state should focus on improving college readiness through strengthened P-16 cooperation and communication as advocated in both Understanding University Success and Redefining College Readiness.24

End of courses tests and high school exit examinations should be aligned with these standards. In addition, using common college readiness standards, high schools could better align end of course tests, the high school exit examination, and other assessments of student ability with placement exams used by postsecondary institutions. Such assessments could enable schools to fill learning gaps prior to graduation and therefore reduce the need for remediation.

**RECOMMENDATION 1.3. Identify a common, statewide assessment that high school students can take to identify and remedy gaps in their preparation for college.**

Colleges and universities will work together to identify an existing or develop and implement a new common diagnostic assessment for high schools students so that they, their parents, and their teachers know how to improve students’ preparation for college.25 Students should take such an assessment during the sophomore and/or junior years so they can engage in more intense preparation for college during the senior year, if needed. Strategies to use the senior year of high school to better prepare students for college should be developed since the best college readiness preparation occurs before students enter college. The intent of this recommendation is to enhance the usefulness of existing assessments rather than to expand their number.

Faculty will work collaboratively to compare the content of postsecondary placement exams and K-12 exit standards and assessments to determine if better alignment is possible to enhance college readiness.26

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20 According to the Education Commission of the States, as of June 2007, these states are: California, Connecticut, Hawaii, Kansas, Louisiana, Nebraska, New Mexico, Ohio, Oklahoma, Oregon, Texas, Utah, Virginia, Washington State, and Wisconsin. [See: www.schoolengagement.org/TruancypreventionRegistry/Admin/Resources/Resources/131.doc.]


22 Angrist, 981.


24 Conley, David T. (Educational Policy Improvement Center), Redefining College Readiness (March 2007) <www.epiconline.org/files/pdf/Redefining_College_Readiness.pdf>. [Also, see footnote 23.]


26 Inequitable Opportunities, 283-307.
**RECOMMENDATION 1.4. Create a South Carolina College Access Network (SC CAN) as a statewide network of local community-based college access programs.**
The state will create a college access network that will develop “college-going communities” which promote academic, financial, and career counseling to students and adults from a local perspective through a statewide effort comparable to those of other states. The state should also assist communities to develop informational and financial resources for “last dollar” scholarships to help those in need of financial assistance.

**RECOMMENDATION 1.5. Develop a funding mechanism to expand and enhance offerings for college credit during high school.**
The state will develop targeted funding for programs for students to earn college credit during high school in order to broaden the number of institutions and students who can participate in such programs. According to one study, high school students who take college courses subsequently perform better in college than those with no history of dual enrollment course-taking. According to the article: “[D]ual enrollment gives students practice at doing college-level work while receiving support from collaborating high school and college instructors.” As such, dual enrollment can be used as an “on ramp” to postsecondary education to increase the pool of historically underserved students who are ready for college and provide realistic information about the knowledge and skills needed to succeed in postsecondary education. Currently, the only funding source is the Lottery Tuition Assistance program, available only to students attending two-year institutions.

While dual/concurrent enrollment should be used as a tool to engage students who might not otherwise go on to college, the state should also place an equal emphasis on the expansion of Advanced Placement (AP) and International Baccalaureate (IB) options.

**RECOMMENDATION 1.6. Develop a marketing campaign to promote college attendance and completion.**
The state will develop a highly-visible and adequately-funded marketing campaign (and enter appropriate information on the new EEDA student web portal) which promotes college attendance, comparable to those of other states. The state has access to all the professionally developed materials from participating states in the Southern Regional Education Board’s “Go Alliance” program. A marketing campaign should not only aggressively sell the need to attend college but it should also increase awareness about higher education opportunities, make students aware of what is needed to go to college, including academic preparation and cost information, and create a college-going culture.

**RECOMMENDATION 1.7. Create outreach programs to target ninth graders.**
Colleges and universities will develop outreach programs that target ninth grade students since ninth grade is an extremely important transitional year. More students fail ninth grade than any other, thus “creating what is known as the ninth grade bulge—and drop out by tenth grade—contributing to the tenth grade dip.” Outreach programs need to target at-risk students and should focus on preventing these students from dropping out and encouraging them to aspire to higher education.

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27 College access networks are community-based, non-profit organizations designed to increase the number of students who pursue higher education. Such organizations usually have a particular focus on low income, underrepresented, first generation college students. For example, the National College Access Network (NCAN) improves access for these students by “helping a network of state and local college access programs that provide counseling, advice, and financial assistance; sharing best practices among the network; providing leadership and technical assistance; helping communities create new college access programs, and advocating for public policy in support of the students our programs serve.”


28 For example, in Ohio, the Ohio College Access Network (OCAN), founded in 1999, “is the first statewide coordinating body for college access programs in the nation. The organization is focused on helping Ohio residents pursue postsecondary education by building and supporting (through hands on technical assistance, professional development and grant opportunities) local college access programs throughout the state. Currently, 35 college access programs serve nearly 205 of Ohio’s 612 school districts, touching 173,000 students annually.”


30 On Ramp to College, 2.

31 On Ramp to College, 2.

32 Examples of such marketing efforts include “Go Higher Kentucky” [see: www.gohigherky.org/ ] and the “College Foundation of North Carolina” [see: www.cfcn.org/].

33 Easing the Transition to High School: Research and Best Practices Designed to Support High School Learning, National High School Center (eds., Kennelly Louise, Maggie Monrad and National High School Center at the American Institutes for Research) (July 2007) 2
RECOMMENDATION 1.8. Produce more and better prepared teachers in all critical needs areas, including more male and minority teachers.
In order to have better prepared students, South Carolina must produce more and better prepared teachers. In doing so, the state should focus on the areas identified as critical.34 The state and institutions should also expand pre-collegiate teacher recruitment programs such as Pro-Team, Team9REACH, and Teacher Cadets. The state should increase grant and scholarship opportunities in programs such as Teaching Fellows and the Program for the Retention and Recruitment of Minority Teachers for those interested in becoming teachers.

The state and institutions must do more to encourage and enable males and minorities to enter the teaching field. The state and institutions should expand programs similar to “Call Me MISTER”35 and create new programs aimed at attracting males and minorities into the teaching profession. In addition, more programs like USC’s Diverse Pathways are essential to encourage students in two-year institutions to pursue teacher education.

RECOMMENDATION 1.9. Encourage higher education institutions to share more feedback information with high schools concerning how their students perform in college.
Currently, colleges report back to high schools only first semester grade point averages. However, more information, such as grades in courses tracked over a longer period of time, will be shared in order to track trends and make informed decisions, especially concerning college preparatory curriculum.

The state needs to fund transcript exchange among higher education institutions and electronic transmission of data for students enrolled in colleges and universities. Additionally, funding should be provided to expand the electronic records exchange system in order to send data back to high schools. This feedback would allow for electronic analysis of student performance.

RECOMMENDATION 1.10. Restore matching funding and expand services for HEAP, GEAR UP, and other related early awareness and readiness programs.
The state must strengthen guidance and support for students and help make them aware of the requirements needed to be successful in postsecondary education through the expansion of programs such as the Higher Education Awareness Program (HEAP) and the Gaining Early Awareness and Readiness for Undergraduate Program (GEAR UP).

Seventy-seven percent of high school students believe that obtaining a high school diploma means that they have at least learned the basics, while only 33% of professors believe the same.36 A better job needs to be done in communicating the requirements and skills students need to be successful in higher education. The state will target first-generation and low-income students who need information about college, assistance in understanding how and when to begin preparing for college, and help completing college applications.37 Overall, more opportunities need to be provided for all students—not just higher-performing students—to learn about college.

RECOMMENDATION 1.11. Continue to support EEDA initiatives, including dual/concurrent enrollment, transfer and articulation, college course alignment, and other related projects.
With its focus on better preparing students for higher education, the EEDA needs the continued support of the state’s higher education institutions and continued if not expanded funding.

34 The critical needs areas for the 2008-2009 school year are: agriculture, all middle level areas, art, business education, dance, Early Childhood Education, English/Language Arts, family/consumer science, music, French, German, industrial technology, Latin, mathematics, media specialist, physical education, science (all areas), Spanish, special education (all areas), speech and drama, speech therapist, and theatre. [See: www.sccstudentloan.org/criticalsubjectareas.aspx .]
35 According to the Call Me MISTER website: “[T]he mission of the Call Me MISTER National Initiative is to increase the pool of available teachers from a broader and more diverse background particularly among the State’s lowest performing elementary schools.” Student participants for this program are “largely selected from among under-served, socio-economically disadvantaged and educationally at-risk communities.” [See: www.callmemister.clemson.edu/ .]
OBJECTIVE 2: Strengthen the Transition from High School to College

South Carolina must do more to ensure that strongly integrated state and local policies, systems, and programs are in place to assist students so they may move seamlessly from high school to higher education. According to a recently-released report38 from the Southern Regional Education Board (SREB):

When states achieve an effective system of student transitions from high school to college and careers, they will enjoy improved high school completion rates; improved college preparedness; higher postsecondary enrollments; reduced college remediation rates; and improved student persistence toward employer certifications, associate’s degrees and bachelor’s degrees.39

Furthermore, according to national expert Dr. David Conley of the Educational Policy Improvement Center (EPIC) at the University of Oregon: “An aligned K-16 system is one with clear, sequential expectations for students at each level. These expectations are designed to prepare students for success in postsecondary education, the workplace and society.”40 To prepare students for postsecondary success and to increase students’ aspirations for higher education, South Carolina must focus efforts to ease the transition from high school to college. The EEDA (Personal Pathways to Success™) focuses on creating seamless transitions through educational pathways; however, South Carolina must do more to strengthen transitions from one educational level to the next.41

Many state higher education plans (Georgia, Kentucky, New Jersey, North Carolina, Ohio, Oklahoma, Tennessee, Texas, Virginia, and Washington State) focus on strengthening the transition from high school to college. Many of these states include among their objectives strategies to develop collaboration between and among state educational institutions to facilitate this transition.

Supporting Actions in Process

South Carolina Course Alignment Project (SC CAP)42 [component of EEDA43]

- Focuses on aligning secondary and postsecondary systems from high school and college courses in English, math, and science.
- Provides explicit information on the content and skills necessary for postsecondary success in order to improve student preparation for college coursework.
- Creates clear pathways between high school and college coursework and reduces curriculum redundancy between high school and college.
- Defines more clearly and shows in exemplar documents what high school and college work is expected to be in math, science, and language arts and enables entry-level college courses to be calibrated to the appropriate cognitive challenge level—neither too high nor too low.

College Readiness Preparation Programs (provided by most, if not all, institutions)

- Provide tutoring, coaching, academic learning centers, math and writing labs, mentoring, computer-assisted instruction, etc.

College Access Programs (provided by most, if not all, institutions)

- Provide early exposure to college through initiatives such as TRIO programs, dual/concurrent enrollment, college information and counseling, early and middle college programs, etc.

Summer Transition Programs

- Provide opportunities for students to acclimate to college learning, usually during summer school, by earning college credits, orienting to campus life, and reviewing skills necessary for success in college.

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38 Bottoms, Gene, and Marna Young, Lost in Transition: Building a Better Path from School to College and Careers (2008) iv. This report synthesizes the major conclusions reached from “a series of 15 state-level forums [including one held in South Carolina] aimed at identifying ways to foster collaboration between secondary and postsecondary education systems and build successful transitions from high school to college and careers” (iv).

39 Bottoms, iv.


41 For information about South Carolina Personal Pathways to Success, see: www.palmettopathways.org/EEDA2/default.aspx.

42 The S.C. CAP is a statewide project initiated by the South Carolina Commission on Higher Education and led by national expert Dr. David Conley of the Educational Policy Improvement Center (EPIC) at the University of Oregon.

43 EEDA focuses on the need to increase the number of high school graduates who are well-prepared for college. One component of the Act addresses the promotion of seamless transitions from high school to college: “The advisory committee [ACAP], in collaboration with the Department of Education, shall coordinate work to study the content and rigor of high school courses in order to provide a seamless pathway to postsecondary education” (S.C. 59-59-210).
Teacher Cadet Programs

- Recruit talented young people to the teaching profession through a challenging introduction to education taught as a high school class for which college credit is usually offered.

**RECOMMENDATION 1.12. Promote more rigorous high school coursework.**

According to the report *Diploma to Nowhere*, 59% of college students enrolled in remedial courses indicated that their high school courses were easy and nearly half would have preferred more rigorous coursework in order to be better prepared for college. This report also reveals that a conservative analysis of data on college students in 2004 shows that 43% of all students at public two-year institutions and 29% of all students at public four-year institutions have enrolled in a remedial course. In order to prepare these students better, the state needs to create higher expectations and require all high school students to take a rigorous *college preparatory* curriculum in order to graduate prepared for postsecondary education and work. In addition, all students must be provided with access to a rigorous, *advanced* curriculum such as AP, IB, and other courses, and, more importantly, be encouraged to enroll in advanced courses, including dual/concurrent enrollment courses.

**RECOMMENDATION 1.13. Align college course prerequisites with high school graduation requirements and sequence undergraduate general education requirements so that they are linked with appropriate high school senior-year courses.**

The senior year must be a time of intense preparation. South Carolina should eliminate early dismissal and should align high school graduation requirements with college prerequisites and sequence undergraduate general education requirements so that they are linked with appropriate high school senior-year courses. Students should be required to take rigorous courses, especially mathematics and science courses, throughout high school, including the senior year, to prepare for the general education requirements of higher education institutions. In addition, senior projects, capstone courses, workplace internships, and specially designed college transition courses should be offered. The State Department of Education should conduct a study to examine whether block scheduling provides optimal preparation for college in terms of continuous, sequenced instruction, particularly in disciplines such as mathematics and foreign language, which are developmental and build on prior learning.

**RECOMMENDATION 1.14. Improve high school course-taking patterns and monitor results.**

District administrators and high school staff, in cooperation with college faculty, should reevaluate the content of college-oriented curriculum to ensure that high school courses are focused on the rigorous skills needed for college. South Carolina students who take the recommended college preparatory curriculum perform better in college. According to a report issued by ACT, a rigorous, college-oriented curriculum puts students on a trajectory aimed toward college, from grades nine through 12. This curriculum is especially important for minority and low-income students, who have not always been provided access to challenging content.

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45 *Diploma to Nowhere*, 4.
46 According to the 2007 ACT *High School Profile Report*: “11% of the cohort took less than three years of math courses. Of these students, 21% were college ready. 17% of the cohort reported taking the minimum core (Algebra I, Algebra II, and Geometry). 15% of these students were college ready. In comparison, 55% of the students who advanced beyond minimum core were college ready.” ACT High School Profile Report, ACT (2007) 4. <www.act.org/news/data/07/pdf/National2007.pdf>.
47 The *South Carolina Department of Education* recognizes the following block scheduling options: strictly 4x4 semester block (classes meeting approximately 90 minutes daily for one semester); strictly A/B (classes meeting approximately 90 minutes everyday other day all year); 4x4 semester block with modifications; and A/B with modifications.
49 According to the report *High School Reform Strategies: A Summary of Research and Implications* (South Carolina Department of Education), “[H]igh schools that adapt a block schedule need to raise graduation requirements. [H]igh Schools That Work* sites that made the greatest gains in achievement in 1998 and 2000 were the sites that had gone to a block schedule and had raised their graduation requirements to 26-28 credits. The schools making the greatest gains were those that required four years of math and science along with either an academic or a career concentration.” *High School Reform Strategies: A Summary of Research and Implications*, South Carolina Department of Education Website (2004) <http://ed.sc.gov/agency/innovation-and-Support/innovation/old/grants/documents/HighSchoolReformStrategies2004.pdf>.
50 According to the *South Carolina Department of Education*: “South Carolina students who took the core academic courses recommended by ACT had an average score of 20.1 for 2007. Nearly 40 percent of the state’s students did not take the core courses and scored an average of 18.5, about a point-and-a-half lower.” (“South Carolina High School Seniors Raise ACT Scores for Fourth Consecutive Year,” *South Carolina Department of Education News* [August 15, 2007] <http://ed.sc.gov/news/more.cfm?articleID=810>.
Encouraging minorities and low-income students to take rigorous, college-oriented classes should enable those students to achieve higher scores on standardized tests such as ACT and SAT as well as perform better in gate-keeping courses when they enter college.

**RECOMMENDATION 1.15. Expand and enhance student transition programs to reduce repetition of courses or course content and attrition.**

This expansion and enhancement should include a variety of accelerated learning options such as AP, IB, dual/concurrent enrollment, early and middle college programs, and early intervention programs in addition to HEAP and GEAR-UP. For example, the state could develop a program similar to Washington State’s Running Start Program, through which 11th and 12th grade students are eligible to take college courses at Washington’s community and technical colleges and at five eligible four-year institutions. Students earn high school and college credits for these courses and do not pay tuition. Because Running Start students are able to earn college credit during high school, there are considerable benefits both to state and student, including reduced costs and the opportunity to graduate from college earlier. In 2005-2006, Running Start saved Washington taxpayers $43.8 million. Furthermore, in comparison to their peers, Running Start students complete more of the courses they take with better grades.

**RECOMMENDATION 1.16. Develop statewide policies for assessing college readiness levels.**

South Carolina’s two-year public colleges will adopt a common assessment and determine a common score for student placement into courses which apply to academic programs of study to include certificates, diplomas, or degrees. Students scoring at or above this level will not be placed in developmental courses. For college transfer courses, input will be solicited from public and independent four-year institutions with respect to establishing the common placement score. This goal could be accomplished by establishing appropriate statewide cut scores or score ranges using a common instrument such as ACT’s COMPASS/ASSET, which was adopted by the S.C. Technical College System in 2007. In addition, higher education institutions, in collaboration with the South Carolina Department of Education, will identify or develop an appropriate assessment instrument to measure proficiency in life and physical sciences.

**RECOMMENDATION 1.17. Encourage school districts to foster a college-going culture by developing and implementing activities such as high school senior seminars.**

Colleges and universities will work with school districts to foster and actively promote an integrated college-going culture to ease the transition from high school to college. For example, high school senior seminars will be designed with the four facets of college readiness in mind: (a) key cognitive strategies; (b) key content; (c) academic behaviors; and (d) contextual skills and awareness. These seminars can be designed for any subject area and do not necessarily need to include college-level material because their main focus will be on key issues within the discipline and investigate them in depth.

Another approach to foster a college-going culture could be similar to the approach used by Michigan, which uses national models such as College Summit. College Summit focuses on transition by targeting high-achieving, low-income students who often lack many of the resources and information available to their more affluent classmates when applying to college. Such an approach includes courses in test preparation, college visits, and application guidance.

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51 According to Washington State’s Office of Superintendent of Public Instruction, the Running Start Program was initiated by the Legislature as a component of the 1990 parent and student “Choice” Act (Chapter 9, Laws of 1990, 1st Ex. Sess.). It is intended to provide students a program option consisting of attendance at certain institutions of higher education and the simultaneous earning of high school and college/university credit. Both 11th and 12th grade students can participate in Running Start at the public’s expense. [See: www.k12.wa.us/RunningStart/default.aspx.]


55 One distinct advantage of adopting COMPASS/ASSET for use statewide is the service available from ACT which allows institutions to send their data to, and subsequently receive free, analyses back from ACT.


58 College Summit uses courses and workshops to assist in the postsecondary planning process. [See College Summit Approach Website: www.collegesummit.org/about-the-college-summit-approach;]
RECOMMENDATION 1.18. Create a P-20 council.
Many efforts in South Carolina target improving secondary-to-postsecondary transitions. In addition to these efforts, the state must create and fund a formal council to focus on the definition and execution of a policy agenda to achieve an integrated system of education that encompasses pre-kindergarten through postsecondary education in order to increase student achievement and improve economic outcomes.

South Carolina is one of only a few states that does not have a formal P-16/P-20 council. Kentucky was among the first in the nation to bring K-12 and higher education together through a P-16 council.60 Currently, 40 states have P-16 or P-20 councils to address concerns about P-12 to higher education alignment.61 According to the Education Commission of the States, the issue of P-16/P-20 Councils matters because “[e]stablishing a P-16 or P-20 council sets a formal expectation and a venue for collaboration across early learning, K-12 and postsecondary providers,” and “a focused agenda can reduce the likelihood that time and effort will be spent on duplicative efforts.”62 Additionally, establishing statistical P-16 or P-20 performance goals, as opposed to more generalized statements of expectation, has been found to provide additional focus, accountability and validation for P-16 and P-20 reform efforts.63

South Carolina should establish a task force to determine how best to create and fund a dedicated P-20 council in which members focus on issues of intersecting interest across sectors such as college readiness, minority enrollment and assessment, teacher recruitment and retention, science and mathematics pipeline, and other important issues. The task force should investigate effective models in other states and ensure that the proposed council does not duplicate the work of other committees. The task force should draw on resources such as the Education Commission of the States’ database of P-16/P-20 councils. This resource reveals that similar councils in other states include members from the following stakeholder groups: Early Childhood Education, K-12 Education (State Superintendent of Education and other representatives), Postsecondary Education (representatives from coordinating or governing board and representatives from both public two- and four-year institutions, as well as independent institutions), Government (Governor, chair of the House Education Committee, and chair of the Senate Education Committee), and Business (State Chamber of Commerce and other business representatives). Such a composition would place the council in a position to effect policy changes and should facilitate the adoption and implementation of P-20 policies.

RECOMMENDATION 1.19. Create a longitudinal data system.
The state should create a longitudinal data system to strengthen P-16 coordination through expanded data collection and analysis. The state must extend its current capacity to share and use student achievement and employment data from preschool through college and beyond. Efforts should also be made to ensure that all private information/data is safeguarded.

A Longitudinal Data System (LDS) federal grant received by the S.C. Department of Education (SDE) three years ago was targeted to improve state-level data systems primarily at the K-12 level. These funds are also being used for the implementation of an electronic transcript project statewide. In support of these projects, a common identifier has been created in the K-12 sector. The unique identifier can be transported to the higher education institutions and used for tracking purposes.

In addition, conversations are occurring at the regional and national levels for states to talk with each other about the P-16 initiatives occurring and the lessons learned from successful implementations of such data systems. The first round of K-12 grants awarded by the U.S. Department of Education went to 14 states, including South Carolina. Subsequent grants are being awarded to states where there is evidence of P-16 data collaboration in progress.

60 Klein, Allison, “For Kentucky’s P-16 Council, Quiet Influence Proves Best” Education Week Vol. 27, Issue 40 (June 5, 2008) 12-13
61 P-16/P-20 Councils Database, Education Commission of the States Website. [Accessed on October 3, 2008.]
63 “Education Commission of the States’ High School Information” Webpage.
Additionally, the state will participate in an initiative sponsored by the Southern Regional Education Board (SREB) and the Data Quality Campaign (DQC) to bring together P-12, postsecondary, and P-20 council education policy and information system leaders to discuss the potentials and challenges of linking P-12 and postsecondary education data systems to better inform educators and policymakers with high-quality student-level longitudinal data.

**OBJECTIVE 3: Increase Higher Education Graduation Rates**

In 2007, 56.4% of undergraduate students at four-year South Carolina institutions received their degree within a six-year time period, compared to the national graduation rate of 56.1% during the same time period.\(^\text{64}\) In 2007, 13.4% of students at two-year South Carolina institutions received their intended certificate within a three-year time period, compared to the national average of 27.8%. South Carolina is on par with the national average in the four-year institution category (ranking 22nd in 2007), yet ranks 49th in the nation in the two-year institution category.\(^\text{65}\)

Unfortunately, too many South Carolina students at both two-year and four-year institutions withdraw from postsecondary education programs each year without earning a degree or certificate. The decision to withdraw from college often occurs during the first year of enrollment: in 2006, South Carolina was precisely at the national norm of 77.7% for full-time freshman retention at four-year public institutions, yet still well below the national leader, Delaware (84.9%).\(^\text{66}\) However, full-time first-year student retention at two-year public institutions in South Carolina was considerably lower: in 2006, South Carolina ranked 40th in the nation at 52.9%, as compared to the national norm of 58.5% and well below the national leader, South Dakota, at 71.6%.\(^\text{67}\)

The old adage that “some college is better than no college” unfortunately rings hollow in a society that increasingly places importance on higher education credentials as a key employability factor.\(^\text{68}\) Many issues influence whether a traditional or non-traditional student will earn a credential or degree from an academic institution, including but not limited to a student’s socioeconomic background, parental education attainment, financial means, general college readiness, and support network. Reports from ACT and the College Board (SAT) indicate that rigorous academic preparation in elementary and secondary school increases the chances of a student’s success in college. However, South Carolina’s colleges and universities also have a major role to play in promoting student success, and they are obliged to improve and create new supporting actions which will help increase higher education graduation rates across the State.

**Supporting Actions in Process**

**Retention Programs**
- Includes academic support services, new student orientation, service learning, academic advisement, counseling, tutoring, cultural enrichment, “freshman year” and “sophomore year” programs.

**Summer Transition Programs**
- Provide opportunities for students to acclimate to college learning, usually during summer school, by earning college credits, orienting to campus life, and reviewing skills necessary for success in college.

**High School to College Transition Programs**
- Assist high school students to improve academic skills through offering pre-college experiences such as “campus Saturdays,” dual/concurrent enrollment courses, and summer transition programs.

\(^\text{64}\)“Graduation Rates 2007,” The National Center for Higher Education Management Systems Information Center Website. [Information gathered from National Center for Educational Statistics (IPEDS Graduation Rate Survey); [Accessed October 2, 2008.]
\(^\text{65}\)“Graduation Rates 2007.” [The national leader in associate degree graduation rate, South Dakota, graduated 76% of students within a three-year time period.]
\(^\text{66}\)Nebraska’s Coordinating Commission for Postsecondary Education—2008 Progress Report, Nebraska Coordinating Commission for Postsecondary Education (2008)
\(^\text{67}\)Nebraska’s Coordinating Commission for Postsecondary Education—2008 Progress Report, 85.
\(^\text{68}\)According to a March 28, 2005 U.S. Census Bureau news release: “Workers 18 and over with a bachelor’s degree earn an average of $51,206 a year, while those with a high school diploma earn $27,915.”

"College Degree Nearly Doubles Annual Earnings, Census Bureau Reports," U.S. Census Bureau Website (2005)
\(<\text{www.census.gov/Press-Release/www/releases/archives/education/004214.html}>\).
Financial Aid
- Provides support for students, including Palmetto Fellows, HOPE and LIFE Scholarships; Need-based Grants; and Lottery Tuition Assistance programs, as well as the Tuition Grants Programs and institutional grants and scholarships, which enable students to attend college.

Enrichment, College, and Career Information Programs
- Enhance student awareness through GEAR UP, College Access Challenge, College Goal Sunday, Student Portal (via EEDA).

Accelerated Learning Programs
- Provide enriched high school curricular options including AP, IB, dual/concurrent enrollment, Project Lead the Way (Engineering), College Level Examination Program (CLEP).

College Readiness/College Success Programs
- Provide academic enrichment and support via academic success/learning centers, math and writing labs, developmental studies/remedial courses (technical colleges), computer-assisted instruction, mentoring/coaching/peer tutoring.

Bridge Programs
- Provide academic enhancement and seamless pathway for transfer students.

**RECOMMENDATION 1.20. Ensure affordability of higher education through increased state funding.**

The State needs to invest more in the operating funds of institutions of higher education. In South Carolina, the total percent of the state budget appropriated to institutions of higher education (recurring appropriations) decreased every year from 1998 to 2008 (14.9% to 11.3%). The appropriations of state tax funds for operating expenses for higher education significantly increased between 1998 and 2008 for a number of states, including neighboring North Carolina and Georgia. During this ten-year period, funding for the University of Georgia System increased from nearly $1.4 billion to $2.4 billion (51.6% increase). Higher education funding in North Carolina increased from $2 billion to $3.7 billion (86.6% increase). Funding increased in South Carolina from $759 million to $975 million (merely 28.3%, compared to the national norm of 56.3%).

The State also needs to invest more in the capital needs of institutions of higher education. In 2000, North Carolina passed the $3.1 billion 2000 Higher Education Bond Referendum for the state’s higher education system. These funds were used for the repair and renovation of university dorms, classrooms and science and technology labs for more than 300 public university and college facilities across the state. In contrast, South Carolina last approved a statewide capital bond bill in 2001 for all state agencies and public institutions of higher education for $137 million.

Finally, the State needs to reduce the financial burden on students through increasing need-based grants. In 2008-2009, need-based grants accounted for only 17.3% ($53 million) of State financial aid, compared with 67.3% for merit-based grants ($207 million). In addition, a task force should study whether LIFE Scholarship recipients should be allowed to receive State financial aid for the summer terms if they are enrolled in a program which is designed with summer as an expected term in their program of study.

**RECOMMENDATION 1.21. Create incentives and requirements for seamless student transitions between and among two-year and four-year institutions, including the implementation of a statewide initiative to monitor transfer effectiveness.**

Since seamless transitions should exist for students who wish to (a) transfer from a two-year to a four-year institution; (b) transfer between four-year institutions; and (c) transfer between two-year institutions, relevant existing provisions of the 1996 Statewide Policy on Transfer and Articulation will be enforced. The policy states that any student who has completed either an associate of arts or associate of science degree program which contains a transfer block will automatically be entitled to junior-level status (i.e., for priority in registration for courses, residence hall assignments, etc.); this promotes seamless transition and timeliness toward the degree. An explicit listing of rights of students transferring will also be added to this list.

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Many Southern Regional Education Board (SREB) states have developed successful college transfer programs that have a number of common elements (transfer/articulation committees, core curriculum, common course numbering systems, transfer guide, guarantees of transfer, transfer-counselor networks, appeals procedures, monitoring and auditing systems, and faculty involvement) that help ensure that students can transfer credits from one institution to another with relative ease. SREB recommends that states monitor the comparative number of credit hours taken in the junior and senior years by both transfer and non-transfer students and to evaluate the guarantees the state makes to transfer students regarding credits earned from two-year colleges and how they are applied to four-year degrees.

Bonus funding should be provided by the state to institutions for transfer students who complete baccalaureate degrees within 150% of normal degree completion. (The 150% normal degree completion rate is six years for a baccalaureate degree and three years for an associate’s degree.) This funding would help to maximize the number of students transferring from two-year institutions to four-year institutions. This funding would also help to minimize the number of courses taken by transfer students which are not needed for a degree.

The state will also implement a policy so that a student who transfers from a two-year institution to a four-year institution may “reverse” transfer courses back to the two-year institution for the conferring of an associate’s degree by sending a transcript back to the two-year institution.

**RECOMMENDATION 1.22.** The state-funded Course Articulation and Transfer System (CATS) should be implemented at the earliest possible opportunity in order to improve the efficiency and effectiveness of transfer processes, to reduce time-to-degree, and to monitor progress to degree completion. The state of South Carolina currently does not have a statewide system for academic reporting, course articulation, course transfer, and similar functions. CHE is in the process of acquiring and implementing a multi-user, multi-campus commercial package based on current technology that can meet the needs of students and higher education institutions. A web-based system for statewide use (software, hardware, and licensing) will assist students in academic planning and transfer of credits between and among institutions.

**RECOMMENDATION 1.23.** Increase alternative delivery methods of appropriate courses and/or programs to reach underserved students, especially non-traditional students, and create greater flexibility as to the time and location of the learning process.

Institutions are encouraged to make greater use of distance learning capabilities and non-traditional formats (including shorter courses, weekend formats and accelerated scheduling) to extend education to students who have geographic restrictions and who need scheduling flexibility. Higher education institutions will collaborate to expand distance education across the state. The two primary modes of instructional delivery for distance education are the Internet and “two-way video technologies.” Adults are more likely to participate in distance education courses than traditional students because of work schedules and family responsibilities.76

73 Clearing Paths to College Degrees: Transfer Policies in SREB States, Southern Regional Education Board (2007) 3-7. SREB recommends that states monitor the effectiveness of transfer policies including performance of transfer students, the comparative number of credit hours taken by transfer and non-transfer students and degree completion for transfer and non-transfer students. SREB also recommends that states “insist on performance measures that monitor the total hours accumulated in undergraduate education by both transfer and non-transfer students” (11).

74 Clearing Paths to College Degrees, 11. [SREB recommends that states should “set statewide policies that give transfer students similar total credit hours toward a bachelor’s degree as students who begin at four-year institutions” (11).]

75 Tabs, E.D., Distance Education at Degree-Granting Postsecondary Institutions: 2000-2001, National Center for Education Statistics, U.S. Department of Education (July 2003), v. The institutions that offered distance education courses in 2000-2001 indicated that they would continue offering distance education courses, and 88% of these institutions stated that they would increase the number of Internet courses. “Sixty-nine percent of the institutions indicated that increasing student access by making courses available at convenient locations was very important, and 67% reported that increasing student access by reducing time constraints for course-taking was very important” (vi).

76 Nontraditional Undergraduates: Findings from the Condition of Education (2002), National Center for Education Statistics (2002) 10. [1999-2000 survey results of students taking distance education courses show 60% participate through the Internet. Thirty-nine percent of these student participated through prerecorded television or audio, and 37% of these students participated through live television or audio (11).]
RECOMMENDATION 1.24. Promote timely degree completion by establishing appropriate credit hour maximums. Institutions will consider limiting the credit hour requirement for baccalaureate degrees to 120-130 credit hours (unless accreditation requires a greater number of credit hours). Restructuring programs to a four-year graduation expectancy will greatly benefit students financially and will increase the capacity of the system.

Institutions will also consider limiting the credit hour requirement for associate degrees to 60-72 credit hours. As noted above, South Carolina ranks 40th in the nation for full-time, first-year student retention at two-year public institutions. Lowering the credit hour requirement will greatly increase the chance of certificate completion by associate degree students.

RECOMMENDATION 1.25. Promote additional options for timely degree completion such as expanding use of test-out provisions (including College Level Examination Program examinations) and awarding credit based on life experience.

Institutions will expand the use of “test out” provisions to award college credit based on knowledge and experience. Many institutions in the U.S. accept credit equivalency examinations as demonstration of knowledge in a particular subject area and grant credit accordingly. Institutions will also establish a rigorous, carefully monitored process for awarding credit and/or exemptions based on life experience for non-traditional students.

RECOMMENDATION 1.26. Redesign academic programs to improve student results while reducing cost through the exploration of course redesign initiatives.

Course redesign is the process of redesigning whole courses (rather than individual classes or sections) to achieve better learning outcomes at a lower cost by taking advantage of the capabilities of information technology. The National Center for Academic Transformation (NCAT) worked with institutions to redesign courses to achieve better learning outcomes at a lower cost through the use of information technology. The Program in Course Redesign (funded through a Pew Charitable Trusts grant) produced five flexible yet distinct course redesign models that achieved both positive gains in student learning and reduced costs to the institution. Of the 30 institutions studied, 25 measured significant increases in student learning in the “redesigned” course. Twenty-four of the institutions studied also measured student retention; of these, 18 showed significant increases in course completion. All 30 institutions reduced instructional cost by an average of 37%.

RECOMMENDATION 1.27. Develop and monitor institutional retention plans for student success. Using best practices, institutions will establish aggressive retention plans with particular emphasis on freshmen-to-sophomore and sophomore-to-junior retention and report regularly on results. The Center for Retention Studies at Syracuse University developed a five-year plan to improve the overall graduation rate for Syracuse University. Since 2002, the MetLife Foundation Initiative on

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77 CHE conducted a 1996 study on credit hours to degree: (Credit Hours to Degree, S.C. Commission on Higher Education, 1996 (http://eric.ed.gov/ERICdocs/data/ericdocs2sql/content_storage_01/0000019b/80/14/6b/3c.pdf) The study analyzed the number of semester credit hours required for graduation from baccalaureate degree programs at South Carolina’s public institutions with data from 1995-96 and 1985-86, and found that the “average number of semester credit hours required for graduation from a four-year, baccalaureate program at a public institution had increased from a system wide average of 125.8 credits in 1985-86 to 127.9 credits in 1995-96.” Additionally, 30 of over 400 programs exceeded 140 credit hours and six of these were first professional or 5-year programs. A CHE survey conducted in September 2008 further revealed that institutions do not have policies that stipulate a maximum number of credit hours.

78 The College-Level Examination Program (CLEP) consists of a series of equivalency examinations that are offered by The College Board. Dantes Subject Standardized Tests (DSST) sponsors a wide range of examination programs to assist service members in meeting their educational goals and allows people to earn college credit for knowledge gained outside the traditional classroom. Excelsior College Exams (ECE), formerly the Regents College Examination series, offer 40 exams in the arts and sciences, business, nursing, and education.

79 [See the National Center for Academic Transformation Website: www.thencat.org/index.html]


81 [Additional programs which were funded by a FIPSE grant include Roadmap to Redesign (2003-06) and Colleagues Committed to Redesign (2006-09).]


83 [Recommendations from this report include (a) higher education institutions should have a full understanding of the academic needs of first-year students long before they are on campus, (b) policymakers should be more aware of instructors of remedial courses at the postsecondary level and the type of professional development needed, and (c) institutions should review many indicators of college readiness, including Act data, Advanced Placement scores, and first-year course failures.]


85 [“The goal of the five-year strategic plan is to raise the six-year graduation rate, for undergraduate classes entering Fall 2001 and later, to at least 80% in six years and to at least 85% in ten years.”]
Student Success has recognized 16 community and technical colleges for exemplary performance in student retention. The Success Challenge Program (Ohio Board of Regents) requires institutions to submit plans that outline how funds will be used to assist at-risk students to complete baccalaureate programs. In addition, institutions will increase the retention of first generation and low-income students through initiatives such as Achieving the Dream.

Recommendation 1.28. The South Carolina General Assembly should consider the possibility of legislative incentives (tax credits, tuition rebates for degree completion, etc.) to encourage students to earn an academic certificate or degree, especially for students who remain in South Carolina for a certain period of time following degree completion. The state should offer tax credits to graduates who agree to stay in South Carolina as one option. Such tax credits would lead to retention of educated individuals who contribute to the state workforce and citizenry. In 2007, the State of Maine passed legislation which provides tax credits to lower the cost of student loans for college graduates who decide to stay and live in Maine. In 2008, Ohio legislators announced intentions to draft legislation to give tax credits to college graduates who stay in the state following graduation.

Recommendation 1.29. Create an early warning system at institutions of higher education to prevent student withdrawal during first semester of first year.
A number of issues in addition to academic performance can result in a student’s withdrawal from a degree or certificate program, including but not limited to changes in the family structure, psychological challenges, emotional or social distractions, etc. The majority of students who withdraw from postsecondary degree programs determine to do so during the first three weeks of the first academic term. Institutions will develop networks and early-warning systems to support students when they need help, and they will also strive to provide students with prompt, frequent feedback on academic performance, especially during the first year.

Recommendation 1.30. Increase availability of applied baccalaureate degrees to meet workforce needs, and increase available pathways in order to bolster educational attainment for associate degree holders.
Many South Carolinians with a technical associate degree can increase their educational attainment level by obtaining an applied baccalaureate degree. Additionally, increasing the availability of applied baccalaureate degree programs could increase the number of students who transfer to a four-year institution after receiving an associate’s degree from a technical college. These programs could also increase the number of nontraditional students who pursue a baccalaureate degree.

The curriculum for applied baccalaureate degree programs is focused on meeting industry’s demand for employees with specific skills. As such, an applied curriculum curriculum requires the understanding of theory and its use in the workplace. One outcome of this emphasis is that more of the required courses are related to the specific skills needed and fewer general liberal education credits are required to meet the degree requirement.

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85 “Achieving the Dream “is a multiyear national initiative to help more community college students succeed. The initiative is particularly concerned about student groups that traditionally have faced significant barriers to success, including students of color and low-income students.” Achieving the Dream Website (2005). [Accessed: October 3, 2008.] <www.achievingthedream.org/default.tp>.
86 M.R.S. Title 20-A, Chapter 428-C: “Job Creation Through Educational Opportunity Program.”<http://janus.state.me.us/legis/statutes/20-A/title20-Ach428-Csec0.html>. [See also: http://opportunitymaine.org/index.php.] Tax credits are capped at $2,100 per year and will last for 10 years or until the recipient moves out of state.]
87 Marshall, Aaron, “Tax Credits Proposed for College Graduates Who Stay in Ohio,” The Plain Dealer Bureau (August 21, 2008) <www.cleveland.com/news/plaindealer/index.ssf?base/news/1219307676150810.xml&coll=2>. [The plan would offer tax credits over a 10-year period totaling $5,000 for completing an associate’s degree, $20,000 for completing a bachelor’s degree, and $30,000 for a master’s degree or higher.]
88 Of the 45% of students who fail to earn degrees nationally, only 25% are dismissed for academic performance. More Student Success: A Systematic Solution, State Higher Education Executive Officers, 2007, 96.
RECOMMENDATION 1.31. Explore how the higher education funding mechanism could be better structured to support student success more effectively.

While finance policies for state higher education have historically focused on enrollment growth, some states have begun shifting policies toward outcome indicators, such as degree completion. The National Governor’s Association Center for Best Practices recommends that stronger fiscal incentives be placed upon postsecondary completion. The Commission on the Future of Higher Education has also advanced the idea of tying accreditation to degree completion rates and job placement rates.

Working collaboratively with the institutions of higher education and other policymakers, CHE will lead this exploration. This exploration should also take into consideration the Voluntary System of Accountability, in which many of the state’s institutions of higher education participate.

RECOMMENDATION 1.32. Add a new component in the higher education funding model to increase support of college readiness services such as tutoring, coaching, math and reading labs, academic success/learning success centers, computer and technology labs, mentoring, and other supplemental instruction.

Currently, the Mission Resource Requirements (MRR) funding model includes student readiness for college success as part of a multi-faceted step process under the category of Student Services. This category includes funds to be spent on activities that contribute to the student’s emotional and physical well-being and to the intellectual, cultural, and social development outside the context of the formal instructional program. To allow for a better focus on college success, student readiness should be pulled out of this process and become a separate component.

OBJECTIVE 4: Increase Adult Participation in Higher Education

South Carolina has approximately 954,015 residents 25 years of age and older who hold just a high school diploma and another 519,807 residents who have some college but no degree. These numbers, large for a state of South Carolina’s population (4,407,709), represent a significant pool of citizens who may have much to gain from increased education at the certificate, associate, and baccalaureate levels. Non-degree holding adults are an unrealized potential source for economic growth within the state. A recent Texas study indicates that programs aimed at increasing the overall educational level of these citizens will have significant and lasting positive effects for the state.


92 Conklin, 1. [The report further states: “[S]tate responses to increased demand for postsecondary skills must also address institutional incentives for degree completion, such as course completion, credit-to-degree, and the number of postsecondary credential conferred” (9).]


94 “Current Funds Expenditures and Transfers.” Section 6.15, Student Services, 32. “This category includes funds for supplemental education services to provide matriculated students with supplemental instruction outside of the normal academic program [remedial instruction is an example], counseling and career guidance, student aid administration, and student health service.”


96 American Community Survey 2007.

The state’s technical college system is the primary source of education for adult learners in South Carolina. It offers a wide range of certificates, diplomas, and associate degrees, including the Associate of Arts and the Associate of Science degrees, and serves as a conduit to four-year institutions for both traditional and adult learners. Within this system in which the average student is approximately 27 years old, academic policies affecting adult learners are largely controlled by individual institutions. Even with this emphasis, however, there is no statewide marketing plan or other statewide initiative within the system to serve this population. The technical colleges are far more likely than the senior institutions to offer evening and weekend courses for adult learners, but there are institutional differences in policies on course expiration, forgiveness of previously earned grades after long absences, and the assessment of prior knowledge and experience.

There are no statewide policies in place for senior institutions that define institutional processes or policies on assessing prior knowledge, on-campus residency requirements or course credit expiration. All of these affect adult learners, and all are controlled at the institutional level. The state’s public senior institutions are overwhelmingly oriented toward the traditional student at the undergraduate level. Although several of the state’s senior institutions advertise programs oriented toward adult learners, no public senior institution has a link for adult learners on its home page.

South Carolina provides limited financial aid to its adult learners through the Lottery Assistance Tuition Program (available only at two-year institutions) and need-based grants. The preponderance of state level financial aid is merit-based and targeted to traditional students.

The Lottery Tuition Assistance Program is the largest state grant program in South Carolina, disbursing $43 million in the 2007-08 academic year to 42,017 students. Statistics for Fall 2007 indicate that 39% of the Lottery Tuition Assistance and 23% of the S.C. Need-based Grant recipients are adult learners, ages 25 and above. According to CHEMIS data, 11,458 of the 29,211 Lottery Tuition Assistance recipients between 2002 and 2008 were adult learners. Of these adult learners, 3,454 were full-time, and 8,004 were part-time students.

Supporting Actions in Process

Information Website for Non-Traditional Students (USC)
- Summarizes non-traditional means by which students may take courses and earn degrees (e.g., courses delivered by satellite, off-site locations, online, etc.); provides information about weekend and evening courses; and provides contact with adult student services advisors to help with admissions, course advisement, financial aid, etc. (www.learn.sc.edu)

“New Start” Program (Winthrop University – Admissions Office)
- Helps non-traditional students with the admissions process and also provides support once enrolled.

Alternative Delivery Modes
- Assists students with services such as online learning; off-site courses; distance learning via correspondence and video courses; courses at the Lowcountry Graduate Center and University Center of Greenville; certificate programs; on-site job training and seminars for the workforce; and evening undergraduate programs.

Certificate Evaluation (Technical Colleges)
- Evaluates certificates (such as Cisco Certificates, etc.) for academic course credit equivalency.

The Personal Pathways to Success web portal (EEDA)
- Links adult learners to the Regional Education Centers, which provide higher education and financial aid information. (www.scpathways.org)

Kuder® 4 Adults (Component of Kuder® Career Planning System)
- Allows adults to assess their skills and interests; identifies related occupations; and provides information about postsecondary institutions, available through the web portal. (www.Kuder.com)

Recommendation 1.33. Create a “New Front Door” that makes the transition to higher education vastly easier for adults.
A system of stackable pre-college certificates could change the dynamics of learning for adults, many of whom lack the time, funds, flexibility and confidence to extend their education. The certificates would be low-cost, self-paced, and (like much industry training)
competency-based (no fail). Students earning certificates could move on to degree programs or advanced training. (For the latter, as many certificates as possible would later transfer to a degree program.) Implementing a clear, coherent, standardized statewide pathway for adults to further their education would also make possible an active marketing program, something that is essential for this segment of the population. The New Front Door concept has been endorsed by the Technical College System Board of Trustees and by the Connect Adults Committee of the New Carolina Education and Workforce Development Task Force. [For further information, see Appendix I.]

RECOMMENDATION 1.34. Provide state financial aid and/or state grants targeted to adult learners.
Cost can be a significant barrier to adults considering higher education. Adult learners should be provided with comprehensive financial aid information as well as targeted grant programs in order to increase their access to higher education. For example, Kentucky provides the need-based Go Higher Grant to resident students at least 24 or older who enroll part-time at a participating Kentucky college or university. Also, Kentucky’s Project Graduate provides incentives such as targeted financial aid to encourage students who have 90 or more college credit hours to return to higher education. Targeted grants can also enable adult learners to enroll full-time and significantly reduce time in earning a degree.

RECOMMENDATION 1.35. Create statewide policies for assessing prior knowledge, on-campus residency requirements, and course credit expiration.
Each of the elements in this recommendation represents a barrier to an adult learner who may have mobility needs, be relatively unsophisticated in higher education matters, and/or have significant time gaps in between enrollments. A common approach to providing services is necessary to eliminate these barriers.

RECOMMENDATION 1.36. Develop a coordinated set of blended online/on-campus degree programs delivered cooperatively through different institutions.
Colleges and universities could jointly develop blended degree programs with much of the content provided online but with important components offered on campus. For example, a student living in Florence and enrolling in a statewide baccalaureate program would enroll at Francis Marion (FMU) and receive the degree from that university, but much of the coursework would be online with instruction and administration shared through the university partnership. Important components, for example labs or seminars, would be offered on-campus. This approach would lower the unit cost of instruction and provide more diverse program opportunities while ensuring that students still have access to the personal connections and physical resources that can be an essential part of a high quality program.

Currently under consideration in higher education in South Carolina is the creation of the South Carolina Graduate Professional Alliance. Among other things, this alliance would explore development of collaborative statewide graduate programs that would emphasize flexible learning, including extensive online coursework, statewide graduate certificate programs in critical areas, and the exchange of specialized coursework among institutions using advance video technology.

RECOMMENDATION 1.37. Create a web portal that serves as a clearinghouse of information for adult learners.
There is no easily identifiable state source for information on adult learner-focused programs, including financial aid and student support services. This lack creates an initial barrier to information that may discourage potential adult learners. The institutions of higher education and CHE will develop web content dedicated to the adult learner, including online admissions and financial aid applications and information about services geared exclusively toward adult learners (e.g., grants and financial aid targeted to adult learners, career planning, online learning). This content could reasonably be accessed through the Personal Pathways to Success.

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98 Ohio is creating a system of basic academic and technical certificates that can be combined to count toward a college degree. See: Pyle, Encarnacion, “Building blocks lead to a degree,” The Columbus Dispatch (March 31, 2008).
99 New Carolina is a non-profit, public-private partnership working to increase South Carolina’s economic competitiveness (also known as South Carolina’s Council on Competitiveness).
101 Both Oklahoma and Tennessee have experimented with collaborative online degrees.
102 Walters, Dr. Garrison, “South Carolina Commission on Higher Education Graduate/Professional Initiative” (September 26, 2008), 2-3. This proposal envisions funding 20 stipends per year for a total cost of $200,000 per year, and students could hold them for up to four years.
and Regional Education Center (REC) websites being developed through the EEDA, thereby giving adult learners easy access to other business and educational content on those websites.

**RECOMMENDATION 1.38. Develop coordinated outreach programs that focus on adults without college degrees.**

In order to eliminate information barriers which limit access for adult learners, marketing and outreach plans that acknowledge and address the unique qualities of adult learners in recruiting, programs, and support services will be developed. A 2000 publication released by The Council for Adult and Experiential Learning highlights strategies such as focused marketing and on and off-campus presentations of information for adult learners. The publication also states that an integral part of outreach is changing the campus culture to meet more readily the needs of adult learners. Some examples of campus cultural changes might include the use of creative scheduling such as “mini-mesters” and evening classes; increased availability of services such as admissions, advising, faculty hours outside of normal business hours; and basic services such as the availability of General Equivalency Diploma (GED) preparation and testing in a college setting.

**RECOMMENDATION 1.39. Create a centralized transcript repository.**

A voluntary centralized database of course transcripts for each student who enrolls in a South Carolina higher education institution will be created. This database will be designed to allow adult students to build a single transcript from courses taken at multiple institutions and maintained in a single location at CHE. Such a database will allow adults who attended South Carolina institutions to access multiple records from a single source.

**RECOMMENDATION 1.40. Implement a cooperative, statewide initiative to reduce gaps in technological literacy among potential adult learners.**

If alternative delivery methods, especially online learning, are used as a significant portion of efforts to reach adult learners, it is important to bridge existing gaps in technological literacy among those learners. These efforts might include no-cost enrichment courses, seminars, and presentations offered in non-traditional settings (e.g., libraries, community and adult education centers, businesses, and churches). Such offerings should be designed and offered by higher education institutions and should be focused on helping participants to reap maximum benefits from future non-traditional course offerings in which they enroll.

**OBJECTIVE 5: Attract and Retain More Graduates**

Attracting and retaining more graduates can be a significant part of making South Carolina one of the most educated states. Quality of life—which is related to but greater than new jobs and higher incomes—is likely to attract persons from outside the state with significant academic credentials and new ways of looking at issues and possible solutions. Likewise, quality of life is likely to retain recent South Carolina graduates of higher education in the state.

This process of attracting and retaining talented graduates will be occurring in an environment in which South Carolina’s demographic projections will be greatly changed from past eras. Two major shifts will occur: (a) a 123% increase in population groups over 60 by 2030, and (b) significant growth in both the legal and undocumented populations of Spanish-speaking people (e.g., an estimated 453% increase of legal immigrants from 1990 to 2007).  

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In addition to these shifts in population bases in the state, the basis for trade in goods and services will no longer be within the United States (and/or just within South Carolina), but rather directed to and from the rest of the world in an increasingly sophisticated environment driven by natural resources, adequate labor supply, and sophisticated knowledge bases and technology accessible to the labor supply. South Carolinians’ ability to work, trade, and enjoy the pursuit of happiness will increasingly be dependent upon how the state responds to these impending changes.

**Supporting Actions in Process**

**Spoletto Festival**
- Annual spring festival of the arts in Charleston, which has made the world take notice of the arts tradition in South Carolina.

**S.C. Geriatric Loan Forgiveness Program**
- Grants medical school loan forgiveness for physicians who open and maintain a practice in the field of Geriatric Medicine or Geriatric Psychiatry in South Carolina, for no fewer than five consecutive years; applicants declare intent that 60% of patients in the practice will be Medicare recipients age 60 or older.

**National Health Service Corps State Loan Repayment Program (S.C. Office of Rural Health)**
- Attracts physicians and other healthcare advanced practitioners who agree to practice in rural and underserved areas in exchange for loan forgiveness (totals as much as $40,000 over several years).

**Governor’s Schools for Mathematics and Sciences (Hartsville) and for the Arts and Humanities (Greenville)**
- These are both residential programs for the state’s most gifted secondary students. The former, located in Hartsville, provides a powerful program in mathematics and the sciences for juniors and seniors in secondary schools. It has made great strides in retaining its graduates in the state’s institutions of higher education. According to its website, the school is ranked among the Top 20 best academic secondary schools in the nation. [See: www.scgssm.org/]
- The latter, also a residential facility, is located in Greenville and provides rigorous pre-professional arts training as well as an intense and innovative academic education that fosters connections to the arts. [See: www.scgsah.org/]

**Partnership Among South Carolina Academic Libraries (PASCAL)**
- Unites all 53 public and private academic libraries in the state through modest statewide funding (which had been $2,000,000 until this year when it diminished to $200,000, owing to the economic problems of the state), creating access to thousands of volumes of scholarly research to all postsecondary students.

**Health Sciences South Carolina**
- Improves research and education in the health sciences through an alliance of health-related institutions, including the State’s three senior research institutions, Greenville Hospital System University Medical Center, Palmetto Health, and Spartanburg Regional Healthcare System.

**S.C. LightRail**
- Connects higher education research entities across the state of South Carolina to the National LambdaRail, an ultra-high-speed fiber optic network, for purposes of rapid data transmission essential to the conduct of leading-edge, collaborative research.

**Recommendation 1.41. Encourage business and industry to cooperate with institutions of higher education to create multiple, diverse internships, cooperative work programs, and registered apprenticeship programs for students.**

As much as possible, the development of these kinds of offerings will be tied to the awarding and credentialing process. Such experiences have been shown to root students into their communities, to provide them with realistic understanding of the world of work, and to motivate them to stay in an area.\(^{107}\)

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Recommendation 1.42. Create a Fulbright-like scholarship program to attract international students in knowledge-based clusters.

Chosen on their academic merit and leadership potential, Fulbright Scholars have added considerable value to American institutions of higher education as professors and students. This program would function like the Fulbright Program at the state level and could, experimentally, be financed by a mix of eleemosynary contributions, public and private grants, corporate sponsorship and state funding.\(^{108}\)

Recommendation 1.43. Increase higher education operating funding to allow institutions to offer graduate student stipends that are nationally competitive

Data on average stipends in graduate education are difficult to obtain. However, information available suggests that research institutions in South Carolina—while not at the bottom of the scale—must do more to be competitive to attract the best and the brightest students in the country and the world. Although dated, CHE’s review of existing programs conducted in the 1990s consistently noted across all disciplines that graduate stipends were lower than at most of the institutions of higher education represented by the out-of-state evaluators.

For example, average stipends at the University of Chicago in the humanities and social sciences were changed in 2007 to packages which, per year, provided for paid tuition, $19,000 for living expenses, and health insurance for each of five years. In addition, two summers of research support at $3,000 per summer will be available. This initiative “will place Chicago among the more competitive institutions in the country.”\(^{109}\)

University of Buffalo School of Medicine and Biomedical Sciences offers $21,000 per year for doctoral students and an opportunity to apply for the Presidential Fellowship program of $25,000 for candidates from underrepresented groups who have outstanding academic credentials. Similarly, the University of Texas-Southwestern Medical Center at Dallas offers $22,000 stipends plus tuition, student services, and insurance per year for graduate students. (The average for completion of the Ph.D. at University of Texas-Southwestern Medical Center is five-and-a-half years.)\(^{110}\)

One proposal currently under discussion within higher education in South Carolina is the creation of an Innovation Scholars Program, which would provide enhanced stipends (in addition to normal) of $10,000 per year to exceptional graduate and professional students (including medical residents) who state their intention to seek employment in the state after graduation.\(^{111}\)

Recommendation 1.44. Encourage business, industry, the Chamber of Commerce, and institutions of higher education to cooperate in creating low cost access to online, asynchronous instruction in at least four important foreign languages (e.g., Mandarin, Spanish, French, and German) to promote economic development, cultural knowledge, and tolerance.

This proposal would allow persons to take written and oral proficiency examinations at any time during the year to demonstrate their levels of language competency for “stackable certificates,” for workforce preparation and advancement in globally-related corporations, and for promotion of national security.\(^{112}\)

Recommendation 1.45. Initiate new graduate programs to support new clusters and to attract talented individuals from other states and countries to South Carolina.

This is one aspect of the models which have been followed at the Research Triangle in North Carolina and at Georgia Tech in Atlanta and which have proved so successful in attracting some of the most talented teams of researchers and the most interesting research projects ongoing anywhere in the world in the life sciences, engineering, and bio-engineering.

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\(^{108}\) See the Fulbright Scholar Program Website at: [http://fulbright.state.gov/](http://fulbright.state.gov/).


\(^{111}\) Walters, “South Carolina Commission on Higher Education Graduate/Professional Initiative” 3. This proposal envisions funding 20 stipends per year for a total cost of $200,000 per year, and students could hold them for up to four years.

**RECOMMENDATION 1.46. Increase opportunities for loan-forgiveness programs.**

Broadening access to loan forgiveness for disciplines other than teacher education would encourage students to return to or stay in South Carolina to work. For example, the Pennsylvania Higher Education Assistance Agency helps eligible graduates of veterinary medicine or agriculture repay student loans when they return to Pennsylvania to work in a qualifying agriculture field. 113 Any loan forgiveness program will be integrated with the scholarship programs.

The S.C. Teachers Loan and the Career Changers Loan are loan forgiveness programs already in place in South Carolina. Under these programs, loans may be forgiven at the rate of 20% or $3,000, whichever is greater, for each full year of teaching in a critical subject or critical geographic area. For teaching in both a critical subject and a critical geographic area, the loan will be forgiven at the rate of 33 percent or $5,000, whichever is greater, for each year of full-time teaching. 114 These types of loan forgiveness programs should be developed to serve students in other high need or shortage disciplines.

One proposal currently under consideration within the South Carolina higher education community is a program of tax abatements that would provide $5,000 per year over ten years to distinguished graduates of designated critical needs programs who stay and remain employed in the state. 115

**RECOMMENDATION 1.47. Develop a system scale-up plan**

The Action Plan sets an Aspirational Goal for 2030 that calls for the much higher education levels that will be essential for South Carolina’s long-term competitiveness. Specifying the nature of enrollments necessary to achieve those levels and how the state’s colleges and universities will meet this longer range goal will require substantial analysis and planning. The Commission on Higher Education will convene college and university leaders to develop a plan for accommodating increased numbers of student participation in 2009.

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Goal Two Task Force
Draft Report
Increasing Research and Innovation in South Carolina

Vision Statement

Fundamental demographic shifts in the state are creating enormous opportunities and risks by thoroughly reshaping important institutions across academia, industry, and government. New markets and competitors are being created by the globalization of a connected economy. From nano-materials to new energy sources, science is creating the raw material of the future at an unprecedented pace. Essential to South Carolina’s future prosperity is developing a culture of creativity that attracts, develops, and retains the most talented people in the world who not only adapt to change, but lead it.

South Carolina must develop the infrastructure that supports the transfer of technology from academia to industry. The identification of new markets is often sparked by the informed intuition of knowledgeable individuals. The state needs more forums, online and in person, to cross-pollinate technical knowledge with market knowledge. The state needs to develop the eco-system of capital and professional services that is the foundation on which the best innovators and entrepreneurs build and develop their enterprises. Research on the leading edge of science is one driver of change, but infrastructure to support innovation and entrepreneurship should support the best and brightest researchers throughout the higher education system across the state.

In conclusion, if efforts to increase research and innovation in South Carolina are successful, the result is likely to be a revitalization of the South Carolina economy, as has occurred in the states of Georgia, Kentucky, and North Carolina following major state investment in academic research [see Forbes Business and Career rankings mentioned later]. Such a revitalization would have a considerable, positive impact on the state’s P-16 education system. Not only will the state’s school systems and institutions of higher education benefit from increased revenues, but they will have a critical role to play in such an economic reshaping. The state will require a better-educated and better-prepared workforce to accommodate all the complex needs of a knowledge-based economy. This effort will require unprecedented collaboration and partnerships between public and independent institutions of higher education, the P-12 community, the business community, and state government leadership.

Overview

According to a 2007 report of the premier academic research institutions in the United States published by the Center for Measuring University Performance (Arizona State University), “The value of university research to the nation is exceptional by every measure or study ever done.”

While such a statement may appear obvious to anyone with even passing knowledge of the Bayh-Dole Act or the history of Silicon Valley, it may be useful to consider why university research and development (R&D) is now a commonplace component in state higher education plans and why so many higher education institutions scramble for membership in prestigious organizations such as the American Association of Universities.

117 A March 2007 survey of ten state higher education plans found that “[n]ine of the ten statewide plans under review list as an objective the need to attract more research funding into the state, to increase grant competitiveness, and to develop institution-based technology transfer and commercialization that leads to statewide economic growth.” The states surveyed included KY, OK, VA, TX, NJ, OH, TN, WA, UNC System, and UGA System. “Higher Education Statewide Plan Categories,” S.C. Commission on Higher Education, Division of Academic Affairs & Licensing (March 17, 2008), 2.
[Presently, no South Carolina institution of higher education is an AAU member. Regional members include Duke University (NC), Emory University (GA), the University of Florida, the University of Virginia, the University of North Carolina at Chapel Hill, and Tulane University.]
In many if not most states, both public and independent institutions of higher education are now seen as a “mechanism to drive local economic development.” The Center for Measuring University Performance suggests that higher education laboratories and research facilities serve as a natural meeting ground for a variety of “secondary consumer” entities which have a vested interest in scientific progress and, just as importantly, have the ability to contribute funding to scientific discovery and commercialization: “Successful research universities find alternative, secondary consumers of research success who will pay the difference between the cost of research and the compensation provided by direct research sponsors in exchange for a wide range of benefits.”

The American Association of Universities refers to the collaboration of academic research and secondary research consumers as an “innovation matrix.” When “universities, businesses, nonprofit organizations, government agencies, and individual innovators” team up, not only is there usually a high economic return on investment, but a state’s citizenry is served by improved health and well-being and increased educational aptitude.

In 1990, the state of Georgia engaged in such an innovation matrix: the Georgia Research Alliance (GRA), a non-profit organization which allows “business, research universities and state government to collaborate to build a technology-driven economy fueled by innovative university research.” Georgia’s $450 million investment has “leveraged an additional $2 billion in federal and private funding” and created more than “5,500 new science and technology jobs” and “more than 150 new companies.”

Another innovation matrix is the Kentucky Research Challenge Trust Fund (Bucks for Brains). Since 1997, the state of Kentucky has funded the program at $410 million with very positive results to that state’s academic and economic system. According to the National Science Foundation, the University of Kentucky ranked 52nd in the nation (of 630 institutions) in terms of total R&D expenditures between 2002-2005. In 2007, external research grants at the University of Kentucky totaled $280 million compared to $122 million in 1997 (a 130% increase) and accounted for 8,824 jobs throughout Kentucky.

The most well-known innovation matrix in the Southeast is the North Carolina Research Triangle, one of the world’s foremost research parks. The Research Triangle encompasses a three-county area in North Carolina (Durham, Orange, and Wake) where three major research universities are located: the University of North Carolina at Chapel Hill, Duke University, and North Carolina State University.

During the 1950s, the economic landscape in North Carolina was bleak: “The region’s employment base was concentrated in low wage manufacturing industries (textiles, tobacco, furniture), marginal farming, state government, and higher education ... Generally, a poorly educated resident labour force persisted.” However, in 1955, Governor Luther Hodges convened a group of political, education, and business leaders from around the state to strategize the reinvention of the North Carolina economy:

In particular, the University of North Carolina’s chemistry department, with a national reputation in organic and biochemistry, had a long tradition of supplying the laboratories of the nation’s and the world’s major chemical corporations with highly trained graduates. That, combined with North Carolina State University’s highly regarded School of Textiles, explains the subsequent success in attracting and developing an early concentration of textile chemistry R&D labs in the region. Later, the strengths of the biomedical research faculty and facilities of Duke University and the University of North

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121 Science as a Solution: An Innovation Agenda for the Next President, American Association of Universities (March 2008), 1. [Note: the phrase apparently was first coined by Paul Herbig in his book The Innovation Matrix: Culture and Structure Prerequisites to Innovation (Quorum Books, 1994).]
123 Baker, Elizabeth (Director of Planning; Office of Planning, Budget and Policy Analysis; University of Kentucky), email to Ark Bjorn (S.C. Commission on Higher Education), October 9, 2008.
124 “Academic Institutional Profiles” Webpage, National Science Foundation Website [Accessed October 8, 2008].
127 Goldstein, “The Role of Knowledge Infrastructure.”
Carolina, and the strengths of North Carolina State University’s agricultural sciences faculty became instrumental in attracting pharmaceutical and biotechnology research labs to the area. Likewise, the engineering schools at North Carolina State and at Duke, and the computer science department at the University of North Carolina paved the way for microelectronics R&D facilities to locate in the region.\(^{128}\)

In the subsequent half-century, “more than 140 R&D facilities have located in the park, with over 40,000 employees....The Research Triangle started at below 90% of the average income for the U.S. in 1969, but was over 110% of the national figure by 2001. For average earnings per job, the region was below 85% of the national figure in 1969; by 2001 it was over 105%.”\(^{129}\) The region’s population has boomed as well, from just under 300,000 in the mid-1950s to over one million in 2000.

The Georgia Research Alliance, the Kentucky Research Challenge Trust Fund, and the North Carolina Research Triangle are all stellar examples of successful innovation matrices. It should come as no surprise, then, that in its 2008 10th Annual Best Places for Business and Careers rankings, Forbes ranked Raleigh (NC) 1st, Lexington (KY) 5th, and Atlanta (GA) 6th.\(^{130}\)

Over the past decade, South Carolina has engaged in the serious development of its own innovation matrix.\(^{131}\) When the state ramped up investment into the research activities of its three senior research institutions through the S.C. Centers of Economic Excellence (CoEE) Program and the Research University Infrastructure Act (RUIA),\(^{132}\) a vast array of “secondary consumers” leaped at the opportunity to collaborate with the world-renowned scientists being recruited to USC, Clemson, and MUSC.\(^{133}\) These secondary consumers include state and local government (Richland County, City of Charleston, etc.), philanthropic foundations (Duke Endowment,\(^{134}\) BlueCross BlueShield of South Carolina Foundation, etc.), corporations (BMW, Fluor, Michelin, Timken, etc.), and the federal government (U.S. Department of Energy, U.S. Department of Defense, etc.).

However, in today’s very competitive world of academic research, South Carolina still has many regional public institutions to outcompete. According to the Center for Measuring University Performance’s 2007 survey of the 196 major academic research institutions (institutions with $20 million or more in federal research expenditures), all three of South Carolina’s senior research institutions scored considerably lower than other major public regional academic research institutions in measurement categories such as Total Research Dollars, Endowment Assets, and National Academy Members as shown in the following tables.

\(^{128}\) Goldstein, “The Role of Knowledge Infrastructure.”
\(^{129}\) Goldstein, “The Role of Knowledge Infrastructure.”
\(^{130}\) “Best Places For Business And Careers (Special Report),” Forbes Website (March 19, 2008), <www.forbes.com/lists/2008/1/bestplaces08_Best-Places-For-Business-And-Careers_Rank.html>. (“Topping the list for a second straight year is Raleigh, N.C. Business costs are 14% below the national average, and the area boasts one of the most educated labor supplies in the country, with 38% of the adult population possessing a college degree and 12% holding a graduate degree. Raleigh’s secret is out, though, as people have been flocking to the area.” Badenhausen, Kurt, “Best Best Places For Business And Careers,” Forbes Website, March 19, 2008.)
\(^{131}\) See the full list of recent South Carolina research and innovation initiatives in the September 15, 2008 Leveraging Higher Education for a Stronger South Carolina: The Action Plan Framework, 21.
\(^{132}\) The state investment thus far includes $190 million in the CoEE Program (2003-2009) and $250 million in RUIA bond funds (2004-2009). All state funds for both initiatives must be matched dollar-for-dollar from non-state sources. To date, matching pledges for the CoEE Program exceed $124 million, while non-state matching for RUIA projects exceeds $260 million.
\(^{133}\) See the South Carolina Centers of Economic Excellence Program Website at: www.sccoee.org.
\(^{134}\) The Duke Endowment contribution was a $21 million grant, “the largest award ever made by the 82-year-old private foundation’s health care division” "Duke Endowment awards $21 million to HSSC,” Catalyst Online, Medical University of South Carolina Website, August 18, 2006.
Table 1. South Carolina Senior Research Institution Total 2005 Research Funding Compared to Regional Competitors.

<table>
<thead>
<tr>
<th>Institution</th>
<th>2005 Total Research Expenditures (in millions)</th>
<th>Ranking in Field of 196 Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Florida</td>
<td>530.7</td>
<td>19</td>
</tr>
<tr>
<td>UNC-Chapel Hill</td>
<td>441</td>
<td>27</td>
</tr>
<tr>
<td>Georgia Tech</td>
<td>425</td>
<td>30</td>
</tr>
<tr>
<td>University of Georgia</td>
<td>316</td>
<td>45</td>
</tr>
<tr>
<td>University of Kentucky</td>
<td>306.7</td>
<td>46</td>
</tr>
<tr>
<td>North Carolina State University</td>
<td>302.6</td>
<td>48</td>
</tr>
<tr>
<td>University of Virginia</td>
<td>239</td>
<td>66</td>
</tr>
<tr>
<td>MUSC</td>
<td>176.7</td>
<td>89</td>
</tr>
<tr>
<td>Clemson</td>
<td>175.1</td>
<td>91</td>
</tr>
<tr>
<td>USC</td>
<td>122.2</td>
<td>114</td>
</tr>
</tbody>
</table>

Source: Center for Measuring University Performance at Arizona State University (2007).

Table 2. South Carolina Senior Research Institution Total 2006 Endowment Assets Compared to Regional Competitors.

<table>
<thead>
<tr>
<th>Institution</th>
<th>2006 Endowment Assets (in billions)</th>
<th>Ranking in Field of 196 Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Virginia</td>
<td>3.6</td>
<td>18</td>
</tr>
<tr>
<td>Georgia Tech</td>
<td>1.3</td>
<td>45</td>
</tr>
<tr>
<td>UNC-Chapel Hill</td>
<td>1.2</td>
<td>52</td>
</tr>
<tr>
<td>University of Florida</td>
<td>1.0</td>
<td>60</td>
</tr>
<tr>
<td>University of Kentucky</td>
<td>0.785</td>
<td>77</td>
</tr>
<tr>
<td>University of Georgia</td>
<td>0.52</td>
<td>115</td>
</tr>
<tr>
<td>North Carolina State University</td>
<td>0.412</td>
<td>139</td>
</tr>
<tr>
<td>USC</td>
<td>0.385</td>
<td>142</td>
</tr>
<tr>
<td>Clemson</td>
<td>0.344</td>
<td>160</td>
</tr>
<tr>
<td>MUSC</td>
<td>0.115</td>
<td>330</td>
</tr>
</tbody>
</table>

Source: Center for Measuring University Performance at Arizona State University (2007).

Table 3. South Carolina Senior Research Institution Total 2006 National Academy Faculty Members Compared to Regional Competitors.

<table>
<thead>
<tr>
<th>Institution</th>
<th>National Academy Members as Faculty (2006)</th>
<th>Ranking in Field of 196 Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNC-Chapel Hill</td>
<td>34</td>
<td>12</td>
</tr>
<tr>
<td>Georgia Tech</td>
<td>28</td>
<td>36</td>
</tr>
<tr>
<td>University of Virginia</td>
<td>26</td>
<td>41</td>
</tr>
<tr>
<td>University of Florida</td>
<td>20</td>
<td>47</td>
</tr>
<tr>
<td>North Carolina State University</td>
<td>17</td>
<td>53</td>
</tr>
<tr>
<td>University of Georgia</td>
<td>9</td>
<td>69</td>
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<tr>
<td>University of Kentucky</td>
<td>2</td>
<td>122</td>
</tr>
<tr>
<td>USC</td>
<td>2</td>
<td>122</td>
</tr>
<tr>
<td>MUSC</td>
<td>2</td>
<td>194</td>
</tr>
<tr>
<td>Clemson</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Source: Center for Measuring University Performance at Arizona State University (2007).
Fortunately, state political leaders have recently expressed full support for the continued building of the South Carolina knowledge-based economy through the development of academic research. In a letter to economic development community leaders, Speaker of the House Bobby Harrell, President Pro Tempore of the Senate Glenn McConnell, House Ways & Means Chair Daniel Cooper, and Senate Finance Committee Chair Hugh Leatherman univocally declared: “[T]he General Assembly will continue to initiate and promote policies which support the innovation and advancements in science, technology and commercialization.” With such steadfast state support and with so many secondary consumers collaborating with the state’s senior research institutions, the South Carolina innovation matrix is poised to become a highly-competitive national R&D sector.

Objectives and Recommendations to Achieve Goal Two

OBJECTIVE 1: Create a culture of discovery in order to establish a competitive knowledge-based innovation matrix in South Carolina

RECOMMENDATION 2.1. Create opportunities for communication and “cross-fertilization” between and among institutions of higher education and the state’s major industries to encourage idea sharing, on-site explorations, and formal partnership agreements.

- Add industrial liaison officers in Economic Development offices at higher education institutions to promote enhanced relationships with strategic business and industry research clusters.
- Fund entrepreneur-in-residence or professor-of-the-practice programs where industry employees or recent retirees are embedded within an institution.
- Increase awareness of the value of basic research as a mechanism to stimulate broad interest in creativity which will lead to concrete applications.
- Identify targeted areas for pairing discovery and applied technologies and offer incentives to nurture them.
- Encourage research vice presidents to visit regularly each of the other research universities, the four-year comprehensive institutions, and the technical colleges to facilitate engagement.
- Encourage researchers to spend a specific amount of time outside of the laboratories meeting with private businesses and industries.

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• Maximize opportunities for people in industry and academia to get to know each other and work together because the state needs to bring together people in the industry who know the market with those in academia who know the technology.
• Encourage the co-location of faculty and students from all levels of higher education with industry professionals and entrepreneurs.
• Create comprehensive, multi-institutional, interdisciplinary research institutes designed to attract external funding. These institutes should focus on areas where there is great potential for discovery at the intersections of disciplines, cultures, and institutions. To aid the creation of such institutes, the state should develop a differential funding model for joint programs with a research emphasis.

**RECOMMENDATION 2.2. Seek appropriate regulatory relief to enhance innovation and promote research.**
• Review and revise state hiring, compensation, and purchasing regulations relative to university research and education operations.
• Provide regulatory relief related to the construction of new buildings.
• Minimize/eliminate legal barriers to technology transfer.
• Provide regulatory relief for intellectual property issues; review and revise intellectual property policies so they do not unnecessarily constrain or restrict technology transfer.
• Provide a clear mechanism for addressing conflict of interest issues relative to the use of university space to nurture technology transfer.
• Provide regulatory relief to allow universities to compete with and be attractive to corporate partners.
• Provide tuition waiver and reciprocity for faculty dependents. [See Recommendation 2.23.]

**RECOMMENDATION 2.3. Engage more undergraduates in research.**
• Encourage undergraduate research through partnerships across institutions.
• Pursue additional Research Experiences for Undergraduates (REU) grants through the National Science Foundation. Promote participation in organizations such as the Council for Undergraduate Research (CUR) and National Conferences on Undergraduate Research (NCUR). Foster undergraduate collaborations which represent multiple institutions.
• Increase opportunities for undergraduate research through faculty-mentored research projects at both two- and four-year institutions.

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136 Georgia Tech has several such institutes, including: the Enterprise Innovation Institute that helps companies, entrepreneurs, economic developers, and communities improve their competitiveness through the application of science, technology, and innovation (http://innovate.gatech.edu/); the Advanced Technology Development Center (ATDC), a nationally recognized science and technology incubator, that helps Georgia entrepreneurs launch and build successful companies (http://www.atdc.org/); and the Georgia Tech Research Institute (GTRI) that helps companies bring new products to market and supports technology initiatives in federal, state, and local governments (http://www.gtri.gatech.edu/).


138 College and university presidents attending the American Council on Education Roundtable on Innovation recognized that traditional disciplinary boundaries “often are becoming increasingly counterproductive to the type of intellectual work needed for the 21st century. They championed interdisciplinary research and curricula, new approaches to teaching that involve problem-solving, and community focused research.”

139 According to the National Science Foundation (NSF) website, the “Research Experiences for Undergraduates (REU) program supports active research participation by undergraduate students in any of the areas of research funded by the National Science Foundation. REU projects involve students in ongoing research programs or in research projects specifically designed for the REU program... REU Sites are based on independent proposals to initiate and conduct projects that engage a number of students in research. REU Sites may be based in a single discipline or academic department, or on interdisciplinary or multi-department research opportunities with a coherent intellectual theme.”

140 According to its website, the mission of the Council on Undergraduate Research (CUR) “is to support and promote high-quality undergraduate student-faculty collaborative research and scholarship.”

141 According to its website, the National Conferences on Undergraduate Research (NCUR), was established in 1987 and “is dedicated to promoting undergraduate research, scholarship, and creative activity in all fields of study by sponsoring an annual conference for students.” This conference for young scholars “welcomes presenters from all institutions of higher learning and from all corners of the academic curriculum.” As such, the conference “creates a unique environment for the celebration and promotion of undergraduate student achievement, provides models of exemplary research and scholarship, and helps to improve the state of undergraduate education.”

142 “What is NCUR?” webpage, National Conferences on Undergraduate Research Website. [Accessed October 7, 2008.] http://www.ncur.org/aboutNCUR.htm
RECOMMENDATION 2.4. Produce greater numbers of teachers in all critical needs areas, especially in Science, Technology, Engineering and Mathematics (STEM) disciplines, including more male and minority teachers.

- Expand pre-collegiate teacher recruitment programs such as ProTeam and Teacher Cadets.¹⁴¹
- Increase grant and scholarship opportunities in programs such as Teaching Fellows¹⁴² and the Program for the Retention and Recruitment of Minority Teachers.¹⁴³
- Expand programs similar to “Call Me MISTER”¹⁴⁴ and create new programs aimed at attracting males and minorities.
- Provide state matching funds for the federal grant for the South Carolina Alliance for Minority Participation Program.¹⁴⁵ [See Recommendation 1.8.]

RECOMMENDATION 2.5. Integrate entrepreneurship into curricula at colleges and universities (especially in programs in the liberal arts and STEM disciplines).

- Expand entrepreneurship learning opportunities within two- and four-year institutions through credit and non-credit offerings, including certificates (pre-baccalaureate, baccalaureate, and post-baccalaureate).

RECOMMENDATION 2.6. Develop a system of "Research Sabbaticals" for faculty from comprehensive teaching institutions.

- Promote administrative internships/fellowships/sabbaticals to assess best practices outside the state, e.g., a shadowing program similar to that offered by the American Council on Education.¹⁴⁶
- Increase opportunities for summer research for faculty from comprehensive four-year institutions, including at research universities and business and industry.
- Establish in-state sabbatical programs for researchers across institutions.
- Develop formalized sabbatical programs targeting specific industries.
- Encourage faculty at comprehensive institutions to perform research at the research institutions during sabbaticals.

¹⁴¹ According to the Center for Educator Recruitment, Retention, and Advancement (CERRA), “the ProTeam Program aims to interest middle school students in the education profession before they become “turned off” to the possibility of a career in teaching” and “the Teacher Cadet Program is an innovative approach designed to attract talented young people to the teaching profession through a challenging introduction to teaching.” Center for Educator Recruitment, Retention, and Advancement Website [Accessed October 8, 2008.] <http://www.cerra.org/teacherCadets>.

¹⁴² In 1999, the SC General Assembly funded the Teaching Fellows Program for South Carolina. This program “provides Fellowships for up to 175 high school seniors who have exhibited high academic achievement, a history of service to their school and community, and a desire to teach in South Carolina.” Eligible students receive yearly scholarships of $6000 for four years while they complete a degree leading to teacher certification. Students who receive the Teaching Fellowship agree to teach in South Carolina one year for every year they receive the Fellowship. “Teaching Fellows” Webpage, Center for Educator Recruitment, Retention, and Advancement Website [Accessed October 8, 2008.] <http://www.cerra.org/teachingFellows>.

¹⁴³ The South Carolina Program for the Recruitment and Retention of Minority Teachers (SC-PRRMT), located at South Carolina State University, is designed “to increase the pool of minority teachers in the state by making education accessible to non-traditional students (teacher aides, technical college transfer students and career path changers) and by providing an academic support system to help students meet entry, retention and exit program requirements.” The program also administers a forgivable loan program.


¹⁴⁴ According to the Call Me MISTER website, “the mission of the Call Me MISTER National Initiative is to increase the pool of available teachers from a broader, more diverse background, particularly among the State’s lowest performing elementary schools.” Student participants for this program are “largely selected from among under-served, socio-economically disadvantaged and educationally at-risk communities.” [See: www.callmemister.clemson.edu/]

¹⁴⁵ This program, with twelve member institutions, is designed to increase minority participation in the STEM disciplines through summer bridge programs, academic workshops, tutoring, undergraduate research internships, scholarships, and mentorships. "Program Overview” and “Program Activities” Webpages, South Carolina State University’s South Carolina Alliance for Minority Participation Website. [Accessed November 4, 2008.] <http://scamp.scsu.edu/holdindex.htm>.

¹⁴⁶ The American Council on Education Fellows Program is a higher education leadership development program that prepares senior leaders to serve American colleges and universities. The Fellows Program enables participants to immerse themselves in the culture, policies, and decision-making processes of another institution. In having Fellows work directly with senior higher education leaders, the program condenses years of on-the-job experience and skills development into a single year. “ACE Fellows Program.” American Council on Education Website. [Accessed November 3, 2008]. <http://www.acenet.edu/Content/NavigationMenu/ProgramsServices/FellowsProgram/index.htm>.
OBJECTIVE 2: Optimize the process of technology transfer to create jobs and develop new industry in South Carolina

RECOMMENDATION 2.7. Create a state model for formal agreements between institutions of higher education and the state’s business and industry to facilitate shared research and reduce barriers to the commercialization of resulting discoveries and inventions.

- Foster presence of “support industries.”
- Raise awareness of the roles of business and industry in encouraging campus participation in technological development that would be transferrable.
- Align research emphases with the needs of business and industry.
- Encourage and support collaboration between faculty and Centers for Entrepreneurship and similar entities in order to foster new venture creation.

RECOMMENDATION 2.8. Review\textsuperscript{147} and/or revise Intellectual Property (IP) policies based upon successful models at other research institutions (e.g., Georgia Tech, North Carolina State University, and the University of Kentucky\textsuperscript{148}).

- Establish a network of programs to encourage statewide technology transfer of South Carolina-derived technologies/patents (e.g., Maryland technology transfer consortium\textsuperscript{149}).

RECOMMENDATION 2.9. Broaden the scope of the South Carolina Research Authority (SCRA) and SC Launch\textsuperscript{150} to encourage and support research and technology transfer across all South Carolina institutions of higher education.

- Create a virtual, web-based Intellectual Property office for the independent and smaller public universities.
- Establish an organization that serves as a state resource for research development, technology transfer, seed funding, business planning, and marketing of intellectual property (e.g., NC Biotechnology Center\textsuperscript{151}).
- Provide a sufficient number of experts and staff to assist researchers in the patenting process, with particular focus on multi-institutional (public/public, public/private) intellectual property and consortia.
- Increase the number and quality of grant submissions.
- Provide an array of formalized consortia, advisory networks, or councils that will optimize the process of technology transfer (e.g., Maryland technology transfer consortium\textsuperscript{152}).
- Create a core team of experienced, perhaps retired, business executives to advise start-up companies.
- Establish a network of programs to encourage statewide technology transfer of South Carolina-derived technologies/patents.

\textsuperscript{147} The Medical University of South Carolina (MUSC) reviewed national programs and revised its IP policy last year.

\textsuperscript{148} Georgia Tech IP Policies: http://otl.gtrc.gatech.edu/documents/GIT_Policy_IP_from_Faculty_Handbook_2006-04.pdf (see section 50) and http://otl.gtrc.gatech.edu/sect/industry/policies_procedures

North Carolina State University IP policies and forms: http://www.ncsu.edu/ott/resource.html


\textsuperscript{149} The Maryland Technology Transfer Offices Partnership, or MDTTO, is a technology transfer consortium focused on increasing collaboration between university transfer offices not only to commercialize some of the most innovative technologies in the nation, but also to do a better job of working together to make sure people know about innovative technologies.


Also see the Federal Laboratory Consortium (FLC) for Technology Transfer http://www.federallabs.org/.

\textsuperscript{150} SC Launch! provides qualifying companies with commercialization support and guidance and up to $200,000 in seed funding.


\textsuperscript{151} According to the North Carolina Biotechnology Center Website, the mission of the center is to “provide long-term economic and societal benefits to North Carolina by supporting biotechnology research, business and education statewide.” The Biotechnology Center works to strengthen the research capabilities of North Carolina’s companies and universities by avoiding duplication of effort and using limited resources more efficiently. The Biotechnology Center receives most of its funding from the General Assembly. For example, the state appropriation for 2006-2007 was $13.1 million and the budget for the center that year was $17.6 million. Since 1984, the Biotechnology Center has invested more than $187 million in state monies to develop biotechnology statewide. That investment includes a range of grants and loans for young companies and education training programs. As a result of North Carolina’s investment in biotechnology, the state ranks third in the nation in the number of biotechnology companies according to Ernst and Young’s 2007 industry survey.


\textsuperscript{152} See footnote 149.
• Support the growth of infrastructure that promotes entrepreneurship, including incubators, angel groups, InnoVenture, entrepreneurial support organizations, etc.
• Establish a business relationship with an Intellectual Property (IP) development group that actively vets Intellectual Property to set development strategies.
• Facilitate venture capital funding for incubator space and related activities.
• Identify state and private support to fund more start-ups across all colleges and universities.

RECOMMENDATION 2.10. Establish Enterprise Campuses at technical colleges statewide.
• Commercialize ideas developed at the research universities and attract knowledge-based companies to South Carolina through public-private partnerships.
• Accelerate business growth and ensure a ready workforce by co-locating companies with educators and students.
• Establish an effective mechanism to grow and attract knowledge-based companies to all parts of the state.

OBJECTIVE 3: Enhance research and innovation partnerships among all colleges and universities and among colleges, universities, and the private sector, resulting in increased numbers of state and regional research programs and initiatives

RECOMMENDATION 2.11. Encourage increased communication, shared programs, and formal partnerships among institutions of higher education.
• Target consortia in high impact areas.
• Establish state-industry funded programs similar to the Defense Advanced Research Program Agency, where institutional partnerships are required to participate.
• Encourage joint research proposals and collaborative partnerships through augmented funding.
• Encourage and support collaboration among institutions and between faculty in four-year institutions and research universities.
• Form connections among sectors when working with industry by bringing together researchers and technicians to meet business needs.
• Sponsor an annual technology transfer conference for all universities to attend.
• Encourage the use of shared (across universities) search committees for new faculty.
• Consider a “postdoc sharing” program whereby postdocs act as conduits for sharing discovery and knowledge.
• Explore how institutions with federal and state liaisons can work with those which do not have such liaisons to use those resources more effectively.

RECOMMENDATION 2.12. Create or use existing local higher education/industry advisory boards to identify potential research, collaboration, and consulting opportunities.
• Use the technical college business advisory groups as natural forums for discussing research topics (i.e., include the four-year institutions and research universities in these discussions).
• Encourage small businesses and entrepreneurs to look to local institutions of higher education for technical assistance for real world problems and for local institutions to reach out and seize those opportunities to integrate practical applications with theory.
• Use industry problem areas as case studies.
• Develop college and university outreach or company visitation programs with the purpose of meeting with industry management personnel and others to learn what technical issues and opportunities may be facing South Carolina companies that academia could support or become involved in.

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153 The Defense Advanced Research Projects Agency (DARPA) manages and directs selected basic and applied research and development projects for the Department of Defense, and “pursues research and technology where risk and payoff are both very high and where success may provide dramatic advances for traditional military roles and missions.”


154 The college presidents attending the American Council on Education Roundtable noted that innovation “emerges through the interaction of people – and the more diverse the interaction of people – the more diverse the interaction, the greater the potential for progressive action.”

The Times Demand Innovation, 13.
- Connect private sector innovation back to the universities and work with groups like SPAWAR\textsuperscript{155} to make the connections to universities.
- Establish state training programs to promote better understanding of university/college and industry cultures so participants in each understand the drivers and therefore the barriers to collaboration.
- Provide opportunities for people from the private sector to be university guest lecturers or seminar leaders as appropriate.
- Conduct a series of strategic planning meetings with targeted private sector companies to develop college/university roadmaps for joint investment programs.
- Conduct “Industry Days” to capture research needs and identify challenges and opportunities.
- Develop programs for private sector partners to work with colleges and universities to develop “think tank” opportunities.

**RECOMMENDATION 2.13. Provide creative incentives to industries to collaborate with S.C. research institutions.**

- Provide state match of private industry R&D investment at research institutions.
- Provide tax credits that will lure industries to relocate R&D activities to S.C.\textsuperscript{156}
- Create grant programs to encourage companies to partner with research institutions.\textsuperscript{157}
- Provide additional incentives for start-ups and relocation of small companies such as:
  - Applying existing S.C. state tax and other incentives (e.g., employee training) to companies with fewer than 100 employees if these companies have qualified for funding from SC Launch! or a S.C.-sponsored venture capital firm.
  - Matching/double-matching Small Business Technology Transfer Program Reauthorization(STTR) and/or Small Business Innovation Research (SBIR) funds received by a company\textsuperscript{158}
  - Providing free rent or incubator space for 6-12 months.
  - Financing leasehold improvements at subsidized rates.
  - Providing tax breaks to large businesses in S.C. that collaborate with or support emerging companies, e.g., R&D, manufacturing, IT support, etc.
  - Supplementing health care benefits.
  - Providing legal and accounting assistance at reduced rates.
  - Enabling industrial revenue bond issuance to assist with plant construction and machinery/equipment purchase.

**RECOMMENDATION 2.14. Grow existing and/or develop new STEM programs which reflect the economic needs of the state.**

- Develop programs in engineering modeling; computational and instrumentation methods; and systems engineering. Expand and increase the number of graduates in computer, industrial, mechanical and electrical engineering, and engineering technology.

\textsuperscript{155} As part of its mission, the Space and Naval Warfare Systems command (SPAWAR) delivers and supports business internet technology (IT) capabilities.

\textsuperscript{156} Several states offer tax credits for research and development (R&D). Similar to the federal credit, Georgia’s R&D tax credit is a ten percent credit on expenditures in excess of the base amount, but unlike the federal credit “the base amount is defined to be a product of the firms’ taxable net income in the current year and the average ratio of qualified research expenses to its taxable income for the past three years.” Additionally, North Carolina’s credit is five percent of excess qualified R&D expenditures or 25 percent of the federal alternative R&D credit amount. Also, as of May 1, 2005, North Carolina implemented a nonincremental tax credit of one to three percent of qualified research expenses and 15 percent of research expenses for research conducted at a state university.

Wheeler, Laura. “A Review of State Tax Incentives for Research and Development Activities.” *State Tax Notes*, Vol. 44, No. 3, April 16, 2007, 164-166. Ohio provides a nonrefundable tax credit (equal to 7% of the excess amount of Qualified Research Expenses) against the corporate franchise tax and is designed to encourage corporations to invest in increased research and development activities.

Business Incentives Tax Credits Webpage. Ohio Department of Development Website. \texttt{<http://www.odod.state.oh.us/EDD/Tax_Credit.htm>}

\textsuperscript{157} Many states offer grant programs designed to foster collaboration. For example, Texas established the Emerging Technology Fund, which includes the research grant program that provides matching grants to companies that partner with state universities on emerging technology projects. Florida created The Florida High Tech Corridor (FHTC) Council which has grant programs designed to stimulate industrial R&D activities conducted as joint projects between university faculty and industry partners by awarding grants between $20,000 and $100,000 in value or using state grant dollars to match federal grants from the Small Business Innovation Research (SBIR) or Small Business Technology Transfer (STTR) programs.


\textsuperscript{158} The U.S. Small Business Administration (SBA) Office of Technology administers the Small Business Innovation Research (SBIR) Program and the Small Business Technology Transfer (STTR) Program. Through these two competitive programs, SBA ensures that the nation’s small, high-tech, innovative businesses are a significant part of the federal government’s research and development efforts. Eleven federal departments participate in the SBIR program; five departments participate in the STTR program awarding $2 billion to small high-tech businesses.”

Small Business Innovation Research Website. \texttt{<http://www.sbir.gov/about/index.htm>}. 
• Develop Professional Science Master’s Programs where appropriate.\(^{159}\)
• Develop an articulated program of earned college credits based on work with key industries, possibly linked to the stackable certificates concept advocated for adult learners. [See Recommendation 1.33.]
• Enhance existing graduate programs to include applied, industrial practica.

RECOMMENDATION 2.15. Encourage businesses, colleges, and universities to apply for more Small Business Innovation Research (SBIR) and Small Business Technology Transfer Program (STTR) grants through the South Carolina Department of Commerce.\(^{160}\)

RECOMMENDATION 2.16. Establish a South Carolina Energy Independence Consortium to promote collaboration and the sharing of energy-related expertise and to research and develop innovative energy systems through the South Carolina Energy Office.\(^{161}\)
• Base the model on the recently established Florida Energy Systems Consortium\(^{162}\) and draw on the experience of Health Sciences SC.\(^{163}\)
• Coordinate and increase collaborative interdisciplinary energy research.
• Provide a state resource for objective energy systems analysis.
• Develop education and outreach programs to prepare the workforce and inform the public.
• Solicit and leverage state, federal, and private funds in sustainable energy fields.

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\(^{159}\) For example, the University of Connecticut has Professional Master’s Degrees in Science and Mathematics. These degree programs “are hybrids between the traditional coursework degree (emphasizing formal theoretical coursework) and the traditional thesis degree (emphasizing original research project), incorporating the best of both.”


Also see http://www.cgsnet.org/portals/0/pdf/GR_GradEdAmComp_0407.pdf for the Council of Graduate Schools’ report, *Graduate Education: The Backbone of American Competitiveness and Innovation*, which describes a Professional Master’s Degree as a promising practice of innovative collaboration.

\(^{161}\) The Small Business Innovation research (SBIR) program “is a set-aside program for domestic small business concerns to engage in Research/Research and Development (R/R&D) that has the potential for commercialization.”


The STTR Program requires research partners at universities and other non-profit research institutions to form a collaborative relationship with the small business concern; “at least 40 percent of the STTR research project is to be conducted by the small business concern and at least 30 percent of the work is to be conducted by the single, ‘partnering’ research institution.”


The NC Small Business and Technology Development Center serves as an example of a state entity designed to facilitate interaction with the SBIR/STTR programs.


The SBIR Assistance Program for the State of Georgia, located at the Georgia Institute of Technology, is an example of a campus-based SBIR support entity.


\(^{162}\) The Washington Advisory Group, consultants conducting an evaluation of the CoEE program during August – November 2008, believes South Carolina has a significant opportunity to leverage its current expertise in this area.


\(^{164}\) Health Sciences South Carolina is “a dynamic statewide entity that includes Clemson University, Greenville Hospital System University Medical Center, Palmetto Health, the Medical University of South Carolina, the University of South Carolina and Spartanburg Regional Healthcare System.” The mission of this entity is to improve the health and economic well-being of the state through a coordinated strategy to advance research and education.

OBJECTIVE 4: Recruit and retain the brightest innovators to create long-term intellectual infrastructure in South Carolina

RECOMMENDATION 2.17. Recruit and retain more students in the state’s existing science, technology, engineering, and mathematics (STEM) programs to facilitate increased enrollment.164

- Increase participation in existing programs rather than create new programs.
- Reallocate institutional resources accordingly.
- Identify business and industry partners.

RECOMMENDATION 2.18. Revitalize and expand the universities’ research infrastructure.

- Issue a second round of bonds under the Research University Infrastructure Bond Act to expand research facilities which are at capacity.
- Provide major equipment grant opportunities.
- Fund and build new physical space and catch up on deferred maintenance for existing research space.
- Provide a one-time $10 million investment to purchase the most exciting new technology and instrumentation to enhance research core support services.
- Increase computational connectivity and complete funding of S.C. Light Rail to link all higher education institutions.
- Support and fully fund with recurring dollars the Partnership Among South Carolina Academic Libraries (PASCAL), which is used by faculty in their research.
- Explore by working with appropriate stakeholders the development of a major transportation hub in the state which is essential to enhance corporate partnerships and venture investment and to attract and retain researchers.
- Position and support the state as a destination for significant national and international science and technology conferences.
- Develop a program of industry-funded faculty consulting.165

RECOMMENDATION 2.19. Colleges and universities should develop or expand programs to increase the number of women and minorities in engineering, math, and science.166

- Establish centers to recruit and retain under-represented populations to existing engineering programs.167
- Develop special programs to target women and minorities early, beginning in the 8th grade so that academically they can prepare to major in engineering, math, or science in college.168

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164 The task force conducted a survey in October 2008 to determine the capacity of existing programs. In general, if demand remains constant, the state’s public baccalaureate institutions have adequate capacity to accommodate students with only two reported exceptions (South Carolina State University and USC-Upstate). However, if demand increases as expected, since the state plan advocates several strategies to grow the STEM pipeline, then most public institutions will not have adequate faculty, laboratories, or equipment to support expanded programs.

165 Industry has become less willing to pay the full cost of research at higher education institutions, but it is willing to pay an institution for access to its faculty. See “MIT: The Impact of Innovation,” (March 1997) which was prepared by the Bank Boston Economics Department. <http://web.mit.edu/newsoffice/founders/Founders2.pdf>

Also see Louis G. Tomatzky’s, “Building State Economies by Promoting University-Industry Technology Transfer,” a report for the National Governors’ Association. <http://www.nga.org/Files/pdf/UNIVERSITY.PDF>

166 As the enrollment in higher education becomes increasingly female (in 2007, 60% of students enrolled in public and independent South Carolina institutions were female), the degree production in the STEM disciplines may be further compromised unless these disciplines respond aggressively to attract, recruit and retain more women. For example, the total number of degrees awarded in the STEM disciplines decreased from 2408 during 2005-2006 to 2352 in 2006-2007. In addition to the decrease in total degrees awarded, in 2006-2007, males received 528 more bachelor’s degrees from public institutions in the STEM disciplines than females whereas in 2005-2006, males received 386 more bachelor’s degrees from public institutions in STEM disciplines than females. Such an increase in disparity is significant given the number of degrees awarded.


Degrees awarded data obtained from CHEMIS.


168 Math, Science and Engineering: It’s a Girl Thing!@ Clemson University targets young women entering the 8th grade and is intended to give these students a better introduction to the science, engineering and mathematics disciplines and the opportunities they offer. The young women participate in a one-week camp in which noncredit minicourses in engineering and science are taught by Clemson professors. In the minicourses, the students have the opportunity to experience collaborative and hands-on learning through practical applications of math and science. Project WISE Website. Accessed October 20, 2008. <http://www.ces.clemson.edu/wise/programs/projectwise/index.html>
During recipient other college mentor Morehouse considering qualified minority Aaron, states "For also the accomplishment of FACES Minority degree Tax credits, tuition rebates for degree completion, etc. to encourage students to earn an academic certificate or degree—especially for students who remain in South Carolina for a certain period of time following degree completion. Provide entrepreneurial opportunities for graduate students (e.g., incubator space; business support). Create technical innovation scholarships.

RECOMMENDATION 2.20. Create innovative scholarship programs and pathways to attract and retain top-notch graduate students.

Consider the possibility of legislative incentives (tax credits, tuition rebates for degree completion, etc.) to encourage students to earn an academic certificate or degree—especially for students who remain in South Carolina for a certain period of time following degree completion.

Provide entrepreneurial opportunities for graduate students (e.g., incubator space; business support).

Create technical innovation scholarships.

169 Purdue offers a Preview Day (usually sponsored by engineering companies) for high school juniors to give these students the chance to get an overview and specific information on the various areas of engineering and to learn more about the field and the different careers one can pursue with a degree in engineering. During this preview, there are lectures and demonstrations presented by professors and Purdue students. Students also receive information about the first-year engineering program, admissions procedures, residence halls and careers in engineering. "Purdue Women in Engineering Preview Day set for April 11." Purdue University Website. April 1, 2005. <http://news.uns.purdue.edu/html3month/2005/050401.Holloway.previewday.html>

170 North Carolina State University's Summer Transition Program (STP) is a significant recruiting activity available to admitted high school minority students considering NC State as their undergraduate engineering school. Participants spend five weeks during the summer academic session enrolled in their initial math course while also attending weekly industrial visits and workshops on a variety of topics. “For Minority Engineering Programs at NC State, It’s All About Success” NC State University College of Engineering Website (August 1, 2000) <http://www.engr.ncsu.edu/news/news_articles/mep.profile.html>

Clemson University offers the WISE* Experience program, which is a one-week camp held in July for incoming freshman women majoring in general engineering, math, or science. This camp is intended to orient the students to college-life and provide them with an opportunity to meet their counselors as well as interact with other women majoring in engineering, math, or science. * WISE stands for Women in Science and Engineering. The WISE Experience Website. Accessed October 20, 2008. <http://www.ces.clemson.edu/wise/programs/sneakapeak/sneakapeak.htm>

171 North Carolina State University has a Student Advancement and Retention Teams Program (START) in which all entering minority freshmen are assigned a peer mentor who shares the responsibility for social and academic development of the mentees. Mentors, who are upper-division minority engineering students, are selected and trained by the START program. Mentors meet regularly with their mentees to provide guidance in academic areas as well as to help them transition to college-life. While the program is intended to ease the transition into their engineering education and be a notable support system for minority engineering students, it also develops leadership and mentoring skills in upper-division minority students. “For Minority Engineering Programs at NC State, It’s All About Success” NC State University College of Engineering Website (August 1, 2000) <http://www.engr.ncsu.edu/news/news_articles/mep.profile.html>.

172 For example, Facilitating Academic Careers in Engineering and Science (FACES) is a National Science Foundation-sponsored effort between Georgia Tech, Morehouse College, Emory University and Spelman College focused on increasing the number of African-Americans attaining doctorates in engineering and science. The ultimate goal of the FACES program is to alter the "face" of the engineering and science professoriate, so that it includes a greater number of African-Americans. To accomplish this goal, FACES offers opportunities for undergraduate research and fellowships and grants for Ph.D. students. FACES Webpage. Georgia Tech, College of Engineering Website. <http://www.coe.gatech.edu/diversity/faces.php>

Additionally, Georgia Tech's Summer Undergraduate Research in Engineering/Science Program (SURE) is a ten-week summer research program designed to attract qualified minority students into graduate school in the fields of engineering and science. Summer Undergraduate Research in Engineering/Science Program Webpage. Georgia Tech Website. <http://www.sure.gatech.edu/>

173 Several states provide incentives for graduates who remain in state. For example, in 2007, the State of Maine passed legislation which provides tax credits to lower the cost of student loans for college graduates who decide to stay and live in Maine. Tax credits are capped at $2,100 per year and will last for 10 years or until the recipient moves out of state.

M.R.S. Title 20-A, Chapter 428-C: “Job Creation Through Educational Opportunity Program.” <http://janus.state.me.us/legis/statutes/20-A/title20-Ach428-Csec0.html>. [See also: http://opportunitymaine.org/index.php ]

Similarly, in 2008, Ohio legislators announced intentions to draft legislation to give tax credits to college graduates who stay in the state following graduation. The plan would offer tax credits over a 10-year period totaling $5,000 for completing an associate's degree, $20,000 for completing a bachelor's degree, and $30,000 for a master's degree or higher.


The state could create a scholarship similar to the one offered by the Institute of Industrial Engineers that is awarded to a student who has provided an innovative technical contribution to the industrial engineering profession that may be recognized in any of several forms, including theory, design, application, implementation, and leadership. To be eligible for the scholarship, the student must be distinguished in one of the following ways:

Significantly expanded the body of knowledge associated with a functional area of industrial engineering through theoretical development or innovative application constituting a major new concept, tool, or technique Established or adapted, through work and reputation, a body of knowledge new to industrial engineering such that it is accepted theoretically or successfully implemented in industry, thus expanding the traditional IE universe
• Create competitive scholarships for applied research in technical fields.
• Allocate funds to use as matching funds to enable institutions to compete for federally designated research centers and grants. 175
• Increase graduate students in Science, Technology, Engineering and Mathematics (STEM) disciplines. 176
• Create an Innovation Scholars Program, 177 which would provide enhanced stipends to exceptional graduate and professional students (including medical residents) who state their intention to seek employment in the state after graduation.
• Increase opportunities for non-traditional learning.
• Fund summer research fellowships.
• Establish pathways (articulation agreements, co-op programs, joint research projects, etc.) from four-year public and independent comprehensive colleges and universities to research university graduate programs.
• Develop more intern programs for graduate students.

[See Goal One Objective 5.]

RECOMMENDATION 2.21. Ensure that faculty entrepreneurial activities and industry-related research are recognized in the tenure and promotion process.

RECOMMENDATION 2.22. Build upon the S.C. Centers of Economic Excellence (CoEE) Program to further stimulate research and innovation.

• Establish a fund to assist with faculty start-up and retention packages.
• Sustain the CoEE Program with full funding.
• Consider ways to expedite recruitment without waiting for endowments to “yield” funds.
• Consider suggestions from the Washington Advisory Group, CoEE’s external program evaluator, to enhance the program.
• Use existing “stars” in both recruiting and retaining endowed chairs and other faculty and students.
• Consider changing the scope of the CoEE Program to include institutional research grants and the funding of programs or individuals currently in the state.
• Consider expanding the CoEE Program beyond funding for an individual and that individual’s program to the funding of programs and initiatives (e.g., equipment and resources).
• Make a state investment in high risk/high impact science (such as the California investment in stem cell research 178).

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Provided exceptional technical leadership in a major interdisciplinary project.”

175 Federally Funded Research and Development Centers (FFRDCs) conduct research for the United States Government. For example, the Industry/University Cooperative Research Centers (I/UCRC) Program develops long-term partnerships among industry, academia, and government. The centers are catalyzed by a small investment from the National Science Foundation (NSF) and are primarily supported by industry center members, with NSF taking a supporting role in their development and evolution. Each center is established to conduct research that is of interest to both the industry and the center. An I/UCRC contributes to the Nation’s research infrastructure base and engineering and science workforce.  
176 For example, the University of Buffalo School of Medicine and Biomedical Sciences offers $21,000 per year for doctoral students and an opportunity to apply for the Presidential Fellowship program of $25,000 for candidates from underrepresented groups who have outstanding academic credentials. Similarly, the University of Texas-Southwestern Medical Center at Dallas offers $22,000 stipends plus tuition, student services, and insurance per year for graduate students. (The average for completion of the Ph.D. at University of Texas-Southwestern Medical Center is five-and-one-half years.)  
178 A proposal currently advanced by CHE envisions funding 20 stipends per year for a total cost of $200,000 per year, and students could hold them for a maximum of four years. [See Recommendation 1.43.]  
Walters, Garrison. "South Carolina Commission on Higher Education Graduate/Professional Initiative" (2008), 3.  
179 Passed by California voters in 2004, the California Stem Cell Research and Cures Bond Act authorizes "an average of $295 million per year in bonds over a 10-year period to fund stem cell research and dedicated facilities at California's universities and other advanced medical research facilities throughout the state." The Act was proposed to maximize “the use of research funds by giving priority to stem cell research that has the greatest potential for therapies and cures, specifically focused on pluripotent stem cell and progenitor cell research among other vital research opportunities that cannot, or are unlikely to, receive timely or sufficient federal funding, unencumbered by limitations that would impede the research.”

To read the California Stem Cell Research and Cures Bond Act of 2004, see the California Codex Health and Safety Code Section 125291.10-125291.85.  
For more information about the research funded by this Act, see http://www.universityofcalifornia.edu/news/stemcell_factsheet07.pdf.
RECOMMENDATION 2.23. Propose a statutory change to authorize tuition relief for faculty dependents and tuition reciprocity with peer institutions in order to increase competitiveness in recruiting and retaining faculty.\footnote{For example, dependents of full-time Furman University Faculty receive tuition scholarships if attending Furman University. [See http://www.furman.edu/policies/view.htm?policy=488&name=228.1+Tuition+Benefits+for+Faculty+and+Staff&arc for full policy.] In addition, Minnesota State Colleges and Universities offer multiple plans for employees in regards to tuition waiver benefits for dependents. [See pages 1-4 of http://www.hr.mnscu.edu/matrix/tuitionWaiver.pdf.] The University of Kentucky provides a 50% discount on tuition for eligible family members of full-time regular employees. [See http://www.uky.edu/HR/benefits/fep_overview.html.]}

As a recruitment tool to attract faculty, colleges and universities will benefit from the ability to offer tuition waivers to dependents of faculty. In addition, the ability to make arrangements with peer institutions relating to tuition reciprocity may also aid colleges and universities in their faculty recruiting efforts. Presently, state colleges and universities may provide waivers of tuition for permanent faculty and staff for no more than four credit hours a semester.\footnote{SC Code of Laws, as amended, Section 59-111-15} Additionally, full time faculty and administrative employees of South Carolina state-supported colleges and universities and their dependents are eligible to pay in state tuition and fees.\footnote{SC Code of Laws, as amended, Section 59-112-60 and SC Code of Regulation 62.609(A)(2)} While there are a number of other provisions in state code relating to tuition waivers and tuition reciprocity for certain individuals, no other tuition waiver or reciprocity provisions expressly apply to faculty and their dependents. The General Assembly should consider amending existing provisions to add language that would afford state colleges and universities the ability to use tuition relief for faculty and their dependents as a mechanism for attracting quality faculty to their institutions.
Goal Three Task Force
Draft Report

Making South Carolina a Leader in Workforce Training and Educational Services

Overview

To operationalize a South Carolina Strategic Plan for Higher Education, it is the task of the Higher Education Study Sub-Committees to produce a series of tactical plans and action strategies that directly impact the state’s ability to progress and thrive in the coming decades.

Having universally agreed that South Carolina’s competitive advantage largely rests on the state’s ability to maximize the educational potential of its citizens, specific actions that can ensure economic vitality and raise the quality of life for all of the state’s citizens through career attainment are essential.

The critical mass of individuals in the job pool who are educated beyond high school is a recognized stumbling block to economic progress. Accordingly, the Sub-Committee for Goal Three, Workforce Training and Educational Services, developed five categories for recommended action. They are:

- Preparing the Workforce for Economic Development Cluster Needs
- Communicating to Targeted Groups Including Young Students, Parents, and Adults
- Connecting Adults to Education and Training Opportunities
- Identifying or Creating Financial Pathways to Attain Education and Training Goals
- Cataloging Higher Education Services

The following report outlines specific steps tied to each of these five categories that the sub-committee urges be taken to ensure the state’s higher education environment is robust and progressive.

Objectives and Recommendations to Achieve Goal Three

Objective 1: Prepare Workforce for Economic Development Cluster Needs

Increasing educational attainment in South Carolina is the first goal of the Higher Education Study’s Action Plan: Transforming SC’s Economy and Quality of Life through Higher Education (working title). Increasing Workforce Training and Education Services for South Carolina is goal three of this action plan. Strategies and actions necessary for increasing the attainment of certificates, associate degrees, bachelor’s degrees and graduate/professional degrees by South Carolinians are defined in goal one. Increasing educational attainment and advanced training in specific occupational areas is the focus of goal three. These occupational areas support economic clusters that drive and will continue to drive South Carolina’s economic prosperity. New Carolina defines a cluster as “a group of businesses in a certain region that focus on or service the same industry.” Many of the clusters identified by New Carolina have statewide impact, but several are regional and will require regional approaches.

Recommendation 3.1. Align higher education programs to support statewide and regional clusters.
There are nine statewide clusters currently identified by New Carolina: Agribusiness/Forestry, Apparel, Automotive, Distribution Services, Engineering, Nuclear, Recycling, Textiles, and Tourism. The regional clusters are:

- Lowcountry: Advanced Security, Aerospace, Automotive, Biosciences, Creative Industries
- Midlands: Hydrogen, Fuel Cells and Nuclear, Insurance and Technology, Advanced Manufacturing, Health Care, Transportation and Logistics
Recommendation 3.2: Develop or expand higher education programs to support cluster growth, especially in workforce shortage areas and the Technical Colleges’ Adult Pathways critical workforce clusters.

The Technical College’s Adult Pathways Critical workforce clusters include:

- Advanced Manufacturing and Technologies
- Energy
- Health Care
- Tourism and Creative Industries
- Transportation and logistics

Workforce shortages, both current and projected (0 to 5-10 years) exist in occupations found in each of the Adult Pathways critical workforce clusters. Education areas experiencing critical shortages were also included since K-12 teachers provide the foundation for all occupations. The existence of or the prediction of shortages in these occupational areas is based on industry and industry association dialogue, and/or on state publications. Occupations with high demand and current or potential shortages include but are not limited to:

- **Advanced Manufacturing and Technologies**
  - New Carolina Clusters: aerospace, advanced security, apparel, automotive, composites, engineering, hydrogen and fuel cells, medical devices, recycling, textiles
  - Mechatronics184 Technicians
  - Engineering Technicians
  - Industrial Maintenance Technicians

- **Energy**
  - New Carolina Clusters: agribusiness, engineering, hydrogen and fuel cells, nuclear, recycling
  - Skilled crafts
    - Pipe-welders,
    - Industrial Electrician
    - Industrial Ironworker
    - Industrial Maintenance-Mechanical
    - Industrial Millwright
    - Industrial Pipefitter
    - Instrumentation Technician
  - Radiation Protection, Electrical, Mechanical, Chemistry
  - Instrumentation and Control Technicians
  - Non-Licensed Operators
  - Line-workers
  - Engineers
  - Heating, Ventilation, and Air Conditioner Technicians

- **Health Care Occupations**
  - New Carolina Clusters: biosciences, insurance technology, medical devices
  - Healthcare technicians and professionals
    - Nurses
    - Radiation Technicians
  - Nursing and other allied health faculty

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182 An adult education program of the SC Technical College System for transitioning adult students to postsecondary opportunities.
183 Also known as South Carolina’s Council on Competitiveness, New Carolina is a non-profit, public-private partnership working to increase South Carolina’s economic competitiveness through a cluster development strategy, where similar companies come together to increase efficiency and innovation within that industry, while boosting the overall economy in their region. A cluster is a group of businesses in a certain region that focus on or service the same industry (e.g., Silicon Valley for computers, Napa Valley for wine and Detroit for automotive).
184 Mechanical and Electronics Engineering (mechatronics) is the combination of mechanical engineering, electronic engineering and computer engineering. The purpose of this interdisciplinary engineering field is the study of automata from an engineering perspective and serves the purposes of controlling advanced hybrid systems.
• Tourism and Creative Industries
  o New Carolina Clusters: creative industries, tourism
    – Graphic Arts
    – Culinary Arts: Kitchen Managers, Executive Chefs and Sous Chefs, Baking and Pastry Chefs, Line Cooks
    – Marketing, Sales and Service: Sales and Marketing Managers for - Restaurants, Hotels and Attractions
    – Hospitality and Tourism: Hotel General Managers, Food and Beverage managers, Catering Directors, Hotel Division Managers

• Transportation and Logistics
  o New Carolina Clusters: automotive, aviation, distribution services
    – Commercial Truck Driver
    – Diesel Mechanic

• Education (Pace Approved Subjects 2007-2008)
  o Agriculture, art, business education, dance, emotionally disabled, English (secondary), family and consumer sciences, foreign languages (Spanish, French, German, Latin), health, history (secondary), industrial technology mathematics (secondary), media specialist, library science, middle level areas language arts, mathematics, science, social studies, music, physical secondary science education (biology, chemistry, physics), social studies (secondary), theatre

**Recommendation 3.3. Support a bond bill to support necessary infrastructure and facilities renovation, maintenance and expansion.**
Program expansion and development often incurs additional cost to an institution. Programs that require extensive equipment purchase, the dedication of lab space and programmatic accreditations are particularly costly.

**Recommendation 3.4. Identify sources of funding to hire additional and replacement faculty.**
As faculty retire and programs expand, it will be essential to have a mechanism to replace and hire additional faculty in fields that produce graduates for occupations in key clusters and critical areas.

**Recommendation 3.5. Improve student recruitment into high demand occupations which support targeted clusters.**
Colleges have difficulty recruiting students into programs which support some high demand fields such as industrial and engineering technology. Efforts to increase student awareness of these occupations are essential. Employers must be encouraged to proactively promote careers in their industry by engaging vigorously with higher education, K-12 and adult workforce service agencies. Regional Education Centers provide the comprehensive framework to connect students and adult workers to education and then real jobs in South Carolina companies. Use process and tools created by Personal Pathways to Success to introduce students to a variety of occupations with emphasis on those areas of high demand in the state and region (in progress).

**Recommendation 3.6. Identify and implement avenues/processes for higher education and business and industry to communicate regarding workforce needs.**
Key agencies/groups include:
  - New Carolina Clusters Workgroups - encourage participation of higher education institutions in New Carolina Cluster Committees/taskforces.
  - Department of Commerce and the Workforce Investment Boards should meet regularly with and report to local and state higher education institutions regarding workforce projections.

**Objective 2: Communicate to Targeted Groups Including Young Students, Parents, and Adults**
It is the recommendation of the Goal Group Three, Workforce Training and Educational Services Subcommittee of the Higher Education Study Committee, that the following action items be implemented to improve the awareness of and support for the action plan.
Implement an aggressive public relations and communications plan targeted at both the decision makers who would support and fund the action plan as well as those citizens who would benefit directly from its successful implementation.

**Target Audiences**
- Decision Makers and Programmatic Champions
- Business leaders and government power brokers (Governor, legislators) for the purpose of obtaining support and resources for implementation
- Higher education community (leadership and rank and file) to ensure acceptance and enactment of key strategies
- Collaborative partner agencies such as the S.C. Department of Commerce, Workforce Investment Act Boards, and the State Department of Education to obtain support and the implementation of key strategies
- K12 leadership, counselors, and rank and file to ensure the development and maintenance of a seamless transition between K-12 and higher education within the strategies implemented in the action plan
- Parents and students
- Working adults, specifically those un- or underemployed and those in occupations facing obsolescence
- Under-served populations who don’t see education as potentially transformational. Perhaps if we can look into how our institutions target materials to those communities then we can have a better idea as to how to get the word out on this report.

**Messages**
- South Carolina must leverage its educational resources to be competitive in the global marketplace, and must fund its colleges accordingly.
- The fact that with no education, there are no longer jobs that will support a family.
- The importance of higher education to wages and to quality of life for all citizens.
- The specific careers that are and will be in high demand in South Carolina and/or in specific regions of the state.
- How to access education and training in these occupations, listing available resources.

**Media**
Available modes of communication: TV, business journals and newspapers, websites, social networks (MySpace), public meetings/forums, print media, outdoor advertising, water bill inserts, web links, radio, and through interaction with Kuder4Adults, church and community organizations, etc.

**Recommendation 3.7.** Collect media outreach materials and examples of services supporting various programs and recruitment strategies for underserved populations including minorities, the under-employed and adult learners from the state’s universities, technical colleges, and the national for-profit colleges.

**Recommendation 3.8.** Collect and review existing career awareness and information materials and develop a comprehensive information campaign and budget.
Communications offices at the S.C. Technical College System, the four-year colleges and universities, and representatives of the S.C. Arts Commission should be responsible for this task.

**Recommendation 3.9.** Develop a compelling united message from all institutions of higher education to the targeted stakeholders to ensure broad understanding of the critical relationship between education and the state’s economic future.

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185 Kuder4Adults is designed to support the workforce development system and provide adults with the necessary resources to effectively plan for a career, make a career change, and keep their career on track.
OBJECTIVE 3: Connect Adults to Education and Training Opportunities

It is the recommendation of the Goal Group Three, Workforce Training and Educational Services Subcommittee of the Higher Education Study Committee, that the following action items be implemented to improve the connectivity of adults to education and training.

RECOMMENDATION 3.10. Make the state’s technical colleges the service provider for adults (18 years old and above) seeking to obtain a General Equivalency Diploma (GED).
This move recognizes the lifestyle differences between those under 18 and those over 18, and also facilitates the successful transition of adults into workforce training programs. 2009 legislative action required with full implementation January 2010. [See Goal One Objective 4.]

RECOMMENDATION 3.11. Implement the fully the certificate system (as proposed in the “New Front Door” CHE white paper) for adults seeking to gain higher level employment skills.
This system creates a flexible, non-threatening, and relevant approach for adults to follow that allows them to succeed. 2009 legislative action required. Program development and testing complete by October 2010. Statewide implementation by January 2011. [See Recommendation 1.33.]

RECOMMENDATION 3.12. Implement fully the technical colleges’ Adult Pathways initiative.
This effort would help ensure that business and industry in identified critical clusters have access to a reliable, productive workforce. Full technical college buy-in, Fall 2008. Supporting state funding provided by 2009 legislature. Programs in place at the 16 technical colleges for identified clusters, October 2009.

RECOMMENDATION 3.13. Implement fully both components (QuickJobs Carolina\(^{186}\) and Retool Carolina\(^{187}\)) of the technical colleges’ competesC initiative.
These two targeted accelerated job readiness programs will assist adults in gaining new skills to participate effectively in the 21\(^{st}\) century work environment. 2009 legislative funding required. Program fully functional by January 2010.

RECOMMENDATION 3.14. Support the timely implementation of Regional Education Center’s Kuder4Adults system.
This system will allow adults to easily access, through web-based technology, needed assistance and services as they seek ways to enhance their workforce skills. Pilot testing to be complete in January 2009. Statewide implementation by June 2010. Will need 2009 legislature funding for continuance beyond 2009.

RECOMMENDATION 3.15. Develop a comprehensive statewide plan to facilitate the re-entry of those who have been incarcerated.
This plan should include education, workforce skills training, and enhanced workplace placement. Comprehensive plan developed by June 2009, with full implementation by June 2011.

RECOMMENDATION 3.16. Support the statewide implementation of the Department of Commerce’s WorkReadySC\(^ {188}\) employee credentialing program (i.e., WorkKeys\(^{189}\)).
Through this program, adults will be able to obtain a nationally recognized certificate that provides potential employers proof of their work readiness. Will need 2010 legislature funding for continuance beyond 2009.

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\(^{186}\) QuickJobs is a continuing education program offered at technical colleges where the college works with area businesses to identify critical employment needs and develops streamlined programs for students to train and move into the workforce quickly.

\(^{187}\) Retool Carolina is a collaboration between the SC Tech System and the SC Chamber of Commerce where existing businesses and local technical colleges work in partnership to provide specialized existing worker training for eligible businesses.

\(^{188}\) Collaboration among public educational institutions and SC businesses, WorkReadySC uses WorkKeys to create a common “skills” language to facilitate communication and interaction between the partners. Partners across the state include the 16 technical colleges, the 12 local Workforce Investment Act areas, providers of adult education and businesses.

\(^{189}\) Developed by the non-profit group American College Testing, the WorkKeys system is employed in South Carolina to analyze specific job requirements, specific employee skills and develop training solutions to help workers meet the skill requirements of their jobs.
**RECOMMENDATION 3.17.** Ensure that the state’s higher education institutions have the necessary capacity to satisfy the expanding need for adult career counselors.

Conduct survey of currently available programs and associated student participation. Communicate the anticipated future need and the survey findings to all institutions and ask that they consider ways to close any gaps.

**OBJECTIVE 4: Identify or Create Financial Pathways to Attain Education and Training Goals**

**RECOMMENDATION 3.18. Fund a comprehensive analysis of financial pathways and barriers.**

During this analysis, compile a list of all state, federal, and private agencies that provide financial assistance for postsecondary education and training. This list should agencies and initiatives such as:

- Two and Four-Year Institutions/College funds
- South Carolina – LIFE/HOPE/SNBG/Lottery Tuition Assistance Program (LTAP)/S.C. Tuition Grant/Palmetto Fellows/Access and Equity funds
- CHE – Scholarships
- Workforce Investment ACT (WIA)
- Department of Social Services
- Vocational Rehabilitation
- Military Benefits
- Student Loan Companies
- Americorp
- Federal funds (with Free Application for Federal Student Aid\(^{190}\)) - Pell,\(^{191}\) Supplemental Educational Opportunity Grant (SEOG),\(^{192}\) Academic Competitiveness Grant (ACG),\(^{193}\) Teacher Education Assistance for College and Higher Education (TEACH),\(^{194}\) Science and Mathematics Access to Retain Talent (SMART),\(^{195}\) Stafford loans,\(^{196}\) and Federal Work-Study Program\(^{197}\)
- TRIO Program funds
- Employer supported tuition, especially registered apprenticeships
- Trade Assistance Act\(^ {198}\)

Such an analysis should also identify gaps in financial aid for programs needed to accomplished the recommendations in this reports such as QuickJobs, which allows for an upgrade of skills for existing labor force, change of career, etc. Current financial aid gaps could exist:

- If an individual already has bachelor degree limited to loan assistance at the four-year level, however, lottery tuition assistance may be available at a two-year institution

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\(^{190}\) The Free Application for Federal Student Aid (FAFSA) is a form that students must fill out annually to determine their eligibility for many state and federal financial aid programs.

\(^{191}\) The Federal Pell Grant Program provides need-based grants to low-income students to promote access to postsecondary education. Grant amounts are dependent on the student’s expected family contribution, the cost of attendance, and other factors.

\(^{192}\) The Supplemental Educational Opportunity Grant (SEOG) program is for undergraduates with exceptional financial need. Pell Grant recipients with the lowest expected family contributions (EFCs) will be considered first for a FSEOG. The FSEOG does not have to be repaid.

\(^{193}\) The Academic Competitiveness Grant (ACG) provides up to $750 for the first year of undergraduate study and up to $1,300 for the second year of undergraduate study. The ACG award is in addition to the student’s Pell Grant award.

\(^{194}\) The Teacher Education Assistance for College and Higher Education (TEACH) Federal Grant Program provides grants of up to $4,000 per year to students who intend to teach in a public or private elementary or secondary school that serves students from low-income families.

\(^{195}\) The National Science and Mathematics Access to Retain Talent (SMART) Grant provides up to $4,000 for each of the third and fourth years of undergraduate study. The National SMART Grant award is in addition to the student’s Pell Grant award.

\(^{196}\) A Stafford Loan is a student loan offered to eligible students. These loans may be subsidized by the U.S. Government or unsubsidized depending on the student’s financial need.

\(^{197}\) The Federal Work-Study Program (FWS) is a need-based financial aid program in which eligible students work part-time on-campus while enrolled at a college. Students must complete the Free Application for Federal Student Aid (FAFSA) every year to apply for FWS.

\(^{198}\) The Trade Assistance Act provides re-employment services to workers who have lost jobs as a result of imports from overseas and shifts of production to other countries due to foreign completion. Eligible workers may also receive classroom and on-the-job-training, trade readjustment allowances, and relocation and job search payments.
If there is insufficient financial support for student/family trying to obtain higher level of education full-time by exiting workforce
If individuals without a bachelor’s degree are potentially eligible for grants, but may need financial aid professional judgment consideration if prior year income tax indicates inaccessible income.
If a dependent student who cannot obtain parent financial info can receive lottery at two-year institution but not grants. Can now receive unsubsidized loan under new Higher Education Opportunity Act\(^\text{199}\) at two- or four-year institution.

**CHE to coordinate**

**RECOMMENDATION 3.19. Construct a model indicating categories of students entering postsecondary and types of training that they will need to meet the state workforce demands.**

Example Categories of Students include:
- Retiree desiring change of career
- Individuals with high school diploma needing to increase skills
- Individuals with high school diploma loss of employment or downsized
- Individuals corporate downsize
- Others desiring career change
- Unemployed individuals choosing to seek employment due to a personal status change (after staying at home with a family, etc.)
- Kuder4Adults website student categories http://www.palmettopathways.org/EEDA2/portal/k4a.aspx

**Taskforce to include WIA, representatives from two- and four- year institutions, Voc Rehab, Student Loan Corporation, etc.**

**RECOMMENDATION 3.20. Encourage Legislative action to close the gaps to make relevant education and training available for all adults.**

This action could include:
- Tuition reduction for target population
- Additional grant/scholarship funds for target population
- HEOA allows a school to determine if a student meets ATB\(^\text{200}\) requirements with satisfactory completion of six credit hours (rather than obtaining certain scores on an ATB test)
- HEAO excludes all veterans benefits and national service education awards from estimated financial assistance calculations effective 7/1/2010. This action will allow a student to qualify for more aid.

**OBJECTIVE 5: Catalogue Higher Education Services**

Higher education services promote and support the kind of learning students need to meet emerging challenges in the workplace, in a diverse democracy, and in an interconnected world. Services are broadly defined as those that promote access to and success in postsecondary education students through financial pathways, learning centered teaching, and partnerships which broaden the academy (AACC, 2002).

Additionally, higher education services provide opportunities for education and enrichment to communities that enhance quality of life and provide amenities that can help to attract and retain a qualified workforce.

Examples of higher education services in South Carolina include: [to be added].

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\(^{199}\) The Higher Education Opportunity Act of 2008 reauthorizes the Higher Education Act of 1965 for another six years and includes other provisions intended to improve college affordability, access, and accountability.

\(^{200}\) The Ability to Benefit (ATB) is a U.S. Department of Education approved test for students who do not have a high school diploma or equivalent, such as a GED, who wish to receive federal financial assistance. Students without a high school diploma or GED must successfully pass the ATB examination to be considered for federal financial assistance.
Public service activities serve undergraduate education needs through creative inquiry programs conducted by researchers, graduate needs through thesis-based research, and many citizen groups through focused research that improves the knowledge base that drives economic development. Economic development is supported through research funded on a wide variety of topics. Extension programs transfer new knowledge from the research programs to targeted groups through certificate programs, continuing education programs, workshops, and one-on-one assistance at the county level.

Graduate programs provide relevant work experience for PhD and master’s level students, medical residents and postdoctoral fellows. Continuing education programs provide ongoing educational opportunities.

Arts and cultural offerings provided by many institutions of higher education offer programs and learning experiences that encourage interaction between institutions and their communities, and help create communities where knowledge- and creativity-based workers choose to live and work (Richard Florida – *The Rise of the Creative Class*).

**RECOMMENDATION 3.21.** Encourage use of best practices in learning-centered teaching including community and problem based research, service-learning, interdisciplinary course models, study abroad integration, intensive writing, and creative inquiry (*AACU, 2002*).

**RECOMMENDATION 3.22.** Increase opportunities for relevant work experience as part of instructional programs. 
*Resource needs: Institutions of higher education would need personnel assigned to develop, implement, and evaluate this on-going initiative.*

**RECOMMENDATION 3.23.** Develop a reverse bridge pathway from four-year to two-year institutions to provide students enrolled in liberal arts programs and liberal arts graduates access to practical, technical and hands-on training in order to match their range of skills with workforce needs.

The concept should be presented to four-year college and graduate school students so that they can acquire marketable technical and professional skills as a part of their education either prior to and following graduation. The graph on the next page illustrates this concept.

**Reverse Bridge Concept**

*Traditional higher education pathways are shown in blue, the Reverse Bridge is illustrated by the green arrows.*

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Figure 2: Reverse Bridge Concept

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RECOMMENDATION 3.24. Develop a comprehensive listing of credit and non-credit academic programs, services, and resources of South Carolina higher education institutions that assist in addressing the diverse needs of a developing workforce.

Resource needs: A central agency or committee would need to be assigned and supported to accomplish this task.

RECOMMENDATION 3.25. Develop a central website which any interested person or employer may use to find higher education programs, providers, instructions, links to helpful sites and other information relevant to workforce needs. Include appropriate evaluation instruments for this website. Resource needs: A central agency would need to be assigned and supported in the development and ongoing maintenance of this service.

RECOMMENDATION 3.26. Create a branding/marketing plan for the purpose of attracting citizens and employers to the workforce resource and for communicating the direct and indirect value of these services to communities and a strong workforce. Include appropriate evaluation instruments for this plan. Resource needs: A central agency would need to be assigned and supported to coordinate marketing efforts.

OBJECTIVE 6: Strengthen the Foundations for a World-class Scientific and Technical Workforce

Over the last decade, repeated studies have warned that America’s competitiveness in the knowledge economy is in danger because too few of our young people pursue careers in science and technology. There are many prescriptions for change, but to a considerable extent they fall into the category of doing what we do now, but doing more of it. This strategy has not been very successful to date. South Carolina could be a leader in pursuing innovative approaches that have the potential to make a real difference. (See also recommendations in the Goal One report that address important science/mathematics, transition and college-preparation issues.)

Supporting Actions in Process

- The Education and Economic Development Act (EEDA)
- Enhancements to Palmetto and LIFE Scholarships

RECOMMENDATION 3.27. Develop an innovative and flexible mathematics curriculum that makes it easier for undergraduate students and entering adults to consider scientific and technical majors.

Mathematics is an enormous barrier to student entry into scientific and technical fields. National studies indicate that students who have not consistently pursued mathematics from the ninth grade on are very unlikely to succeed in baccalaureate-level science and engineering fields—the ability to enter Associate-level programs is diminished as well. The thinning of the science/technology pipeline is not entirely the consequence of failure to pass courses—many students opt not to pursue majors because they believe they won’t have a chance to acquire the needed mathematics in a reasonable time.

South Carolina faculty in mathematics should team with colleagues in science and technology areas to develop programs that enable students to effectively and quickly acquire the mathematical knowledge needed for science and technology programs. To be successful, such programs will likely need to be limited to essential skills and be organized in a modular and competency-based fashion.

RECOMMENDATION 3.28. Increase the productivity of gateway science and mathematics courses.

Recent research suggests that many students are lost to science and mathematics majors because of the lack of support they encounter in the “gateway” (introductory) courses they take their freshman and sophomore years in college. A recent book, Talking About Leaving: Why Undergraduates Leave the Sciences, by Elaine Seymour and Nancy Hewitt of the University of Colorado (Boulder: Westview Press, 2000) provides interesting perspective. The authors interviewed hundreds of students with equivalent SAT scores and high school grades and planning to major in science/ mathematics/ engineering (SME) fields and found that, despite the beliefs of faculty, those who dropped out of the SME majors were as qualified as those who remained:

The authors found it very difficult to predict which students had switched out of SME-track majors and which had stayed using any of the stay-vs.-switch criteria commonly cited by SME faculty members, which include native ability, willingness to
work hard, college grades, gender, ethnic background, and high-school preparation for college-level work in the sciences. Rather, they found that the chief distinguishing characteristic of those who did not switch was the individuals’ willingness to put up with the mental and emotional abuse heaped upon them by this "drinking from a fire hose" approach to instruction in their freshman and sophomore years.

While we do not have data that suggest South Carolina has a particular problem with retention of students from gateway courses into science and technology majors, it is in everyone’s interest that as many qualified students as possible be successful in these fields. Accordingly, the colleges and universities should develop a statewide Science and Technology Gateway Course Initiative (SCGCI) to ensure that all institutions have access to and implement the best and most effective ideas and strategies.

**Recommendation 3.29. Increase minority participation in science and technology fields.**

If South Carolina is to expand its science and technology workforce, most of the new students will need to come from our African-American and other non-traditional student populations. The technical colleges should make their engineering technology programs more appealing to minority students while at the same time articulating to the university baccalaureate programs.

Also, the State of South Carolina needs to strengthen its support to programs that recruit, support, and enhance the participation of minority in the science and technology fields. One such program is the South Carolina Alliance for Minority Participation (SCAMP). The State of South Carolina has recognized and supported the Alliance for Minority Participation (AMP) as a key component of reform within the state’s educational infrastructure. The SCAMP is a statewide consortium of universities and colleges, whose goal is to increase the quantity and quality of minority students in South Carolina receiving bachelor’s degrees in Science, Mathematics, Engineering, and Engineering Technology Fields (SMET). SCAMP consists of twelve South Carolina institutions including six Historically Black Colleges and Universities (HBCU’s).

Although all colleges and universities share responsibility for increasing African-American participation, South Carolina State University, the state’s only public four-year HBCU, should have a significant role. SC State should provide individual and collaborative leadership with other universities to extend offerings in the STEM areas (e.g., SC State, jointly with another institution, has the only undergraduate nuclear engineering program in the state). In addition, South Carolina State should provide state leadership and assist technical colleges in making their engineering technology programs more appealing to minority students while at the same time articulating to the university’s baccalaureate programs.

Finally, Bridge Programs should be expanded among two- and four-year institutions in order to enhance the recruitment of minority students into STEM disciplines at the baccalaureate level.

**Recommendation 3.30. Develop a statewide undergraduate minor program in computational science.**

The field of computational science uses computer-based mathematical models to analyze and solve scientific, social scientific and engineering problems. Also known as simulation and modeling, computational science is rapidly becoming a critical technique for business and industry, where sophisticated computer-based models sharply accelerate the design and production of new products and services. Unfortunately, only the largest companies can afford to fully implement this technology: small and medium-sized businesses have serious difficulty finding the personnel and often can’t afford the required software. South Carolina could take a series of steps to become a leader in deploying computational science in all kinds of businesses:

- For personnel—computational science is a technique that augments other areas, and in consequence should primarily be considered as a minor—for example, a student could have a computational science minor with a major in Biology. A collaborative, statewide minor program developed by the public (and if interested also the independent) universities could offer qualities of scale not easily produced by a single university. Similarly, collaborative offerings, with significant portions online, could offer both a greater range of choice and lower unit cost.
- For personnel - colleges and universities could create “computational co-ops” that place students in business settings both to provide expertise and to serve as a communications medium so that faculty can ensure that programs are designed to meet business needs.

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• For infrastructure - colleges and universities could work together with the S.C. Department of Commerce to provide small and medium businesses with “jump start” software/hardware/technical assistance packages that help them evaluate their ability to mount a computational science program.
Goal Four Task Force
Draft Report

Realizing South Carolina’s Potential: Resources and Effectiveness

Resources for Higher Education in South Carolina

In order to support the recommendations in this report, it is critical that higher education in South Carolina receive increased support from the state. Without such support, the state will continue to trail its neighboring states in higher education funding, and the initiatives necessary to increase the educational and economical competitiveness of the state will falter. As it stands, South Carolina’s level of support per full-time equivalent (FTE) student based on FY 2007 State Higher Education Finance (SHEF) data was $5,838 compared to a national average of $6,773. South Carolina ranks 38th nationally and 15th out of the 16 Southern Regional Education Board states. Such low levels of state support do not encourage the kind of innovation needed to advance the state’s agenda for excellence.

State leaders often cite 17% as the level of state support provided for higher education; that is, 17% of the state’s total budget for FY 2007-08 goes to higher education. However, even this low figure is inflated as it represents the total spending authorization for higher education as compared to spending authorization for all state agencies. For higher education, this percentage includes the authorization to spend revenue derived from several non-state sources including:

- revenue from tuition and fees (which includes scholarship and grant aid);
- institutionally-generated revenues, including benefactor support;
- revenue from auxiliary enterprises such as dormitories, cafeterias, and athletic programs; and
- revenue from federal grants, private grants, and contracts.

Spending authorization is not the same as appropriated funds. Rather, it is purely a case of permitting an institution to expend funds from various sources. In reality, if only funding from state sources is included, the percentage of state support in FY 2008 is 11.6% of the state’s appropriated funding compared to 15.3% received a decade ago. This change represents a significant decrease in support.

Understandably, some policy makers might wish to count scholarship funds as support for higher education. The amount that South Carolina appropriates for scholarships is in fact both significant and important. These funds benefit individual citizens, typically parents, but do not support the ability of colleges and universities to provide a higher quality education. Scholarship and grant funds are a part of each institution’s tuition and fees. To count these funds separately would be to double count them.

The operating budget is not the only component of state support to higher education that affects institutional ability to provide a quality education for South Carolinians. In addition, capital funding is a normal part of every college and university’s operation. National data comparing South Carolina’s capital funding to that of neighboring states demonstrate the disparity in the average educational appropriation plus the average capital support per FTE. Over the most recent ten-year period in combined operating and capital support, North Carolina’s average per FTE is $9,192, Georgia’s is $8,278, and South Carolina’s trails far behind at $5,120. In other words, North Carolina’s total funding is 80% higher and Georgia’s is 62% higher than South Carolina’s.

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202 “Support” in this context traditionally includes only operating funds that are appropriated by the S.C. General Assembly for use by colleges and universities.

Higher education in South Carolina has both a resource allocation problem, with a steadily declining proportion of state resources devoted to higher education institutions, and a resource reporting problem, with questionable figures that hide the true extent of the decrease. Both problems must be resolved.

**Recommendation 4.1. The state will fund higher education at the SREB average or above.**

General fund appropriations for higher education in FY 1998-99 were approximately $700 million and increased to just under $900 million in FY 2007-08, a percent change of 23.8 percent over the ten-year period, compared to a 47.7 percent increase in K-12 education funding over the same time period. There is no argument regarding the importance of providing funding for a quality foundational K-12 education; however, if South Carolina wants to see its economy flourish, it must also promote higher education through additional support from general fund appropriations. An under-supported higher education system will be severely hampered in its efforts to impact positively and improve the state’s economy. The following chart demonstrates that higher education in South Carolina is underfunded in comparison to other southern states.

![2007 Educational Appropriations per FTE](chart.png)

**Figure 1: 2007 Educational Appropriations per FTE**

*Note: This calculation was derived by dividing educational appropriations by FTE.*

**Recommendation 4.2. The state will support routine and predictable capital funding of colleges and universities with a portion of funding directed at eliminating maintenance needs.**

The last bond bill for higher education in South Carolina was approved in 2000. Absent such a bill, our colleges and universities have been at a distinct disadvantage when compared to institutions in Georgia, Kentucky, and North Carolina. An analysis of their capital program support clearly demonstrates the importance these states have placed on addressing the whole program of higher education. [See Recommendation 1.20.]
**Funding Methods in Neighboring States**

Capital funding is a critical component of the investment in higher education. [See Goal Two Overview.] South Carolina's neighboring states use the following methods for providing physical resources:

- **In Georgia**, the Legislature provides two major sources of funding for the state’s 34 public colleges and universities. While larger facilities are typically financed through the sale of bonds issued by the Georgia State Financing and Investment Commission, cash appropriations from the Georgia General Assembly are also a major source of funding for construction projects. Each year, the Georgia Board of Regents uses the top-ranked building requests from each institution to develop a priority list of new buildings to be included in the University System’s budget request to the Governor. Institutional lists of major repair and renovation projects are used by the Georgia Office of Facilities in administering the annual appropriation.

- **In Kentucky**, the Legislature provides capital funding through three mechanisms: general fund appropriations; an information technology and equipment pool; and a capital renewal, replacement, and maintenance pool. The Kentucky Council on Postsecondary Education (CPE) is responsible for submitting a six-year capital plan in odd-numbered years to identify the facilities and facilities-related needs of the state’s public institutions. The Kentucky CPE identifies funding priorities based on a process which uses a statewide capital projects evaluation model, a space needs model, institution project priorities, and a review by the Council’s architect.

- **In North Carolina**, the University of North Carolina Board of Governors develops biennial capital budget priorities based on each institution’s six-year capital plan. Additionally, the Reserve for Repairs and Renovations addresses current maintenance needs and the documented backlog of deferred maintenance projects. This fund is an amount equivalent to three percent of the replacement value of state-supported buildings. The Reserve is currently allocated on the basis of 46% for UNC projects and 54% for other state agencies. In 2000, 73 percent of North Carolina voters authorized a landmark $3.1 billion bond bill in response to a legislatively-mandated study that identified a need for $6.9 billion for renovation and modernization, current capacity, future capacity, and other needs.

The following chart illustrates the ten-year average capital funding appropriated per student which includes all sources of funding:

*Source: Charlotte Observer, November 17, 2004*

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**Average per Student Appropriation for Capital Needs**

**FY1997-FY2006**

- **South Carolina**: $289
- **Georgia**: $836
- **North Carolina**: $2,219
- **Kentucky**: $728

*Sources include capital improvement bonds, capital reserve fund, and supplemental appropriations. Funding associated with the Life Sciences Act of 2004 is not included. These funds provided $220 million to S.C.’s three research institutions to support and expand economic development and $30 million to the remaining public colleges and universities. Including this funding brings S.C.’s number per student to $445 which is still significantly below the level of support of the neighboring states.*

Figure 2: Average Student Appropriation for Capital Needs

Note: For South Carolina, capital funding includes capital improvement bonds, the capital reserve fund, and supplemental appropriations.
When support for both capital and operating needs of colleges and universities is considered, the comparison changes dramatically. As the following table shows, South Carolina trails significantly:

<table>
<thead>
<tr>
<th>State</th>
<th>Average Educational Appropriation per FTE FY 1997-2006&lt;sup&gt;204&lt;/sup&gt;</th>
<th>Average capital support last ten years</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Carolina</td>
<td>6,973</td>
<td>2,219</td>
<td>9,192</td>
</tr>
<tr>
<td>Georgia</td>
<td>7,442</td>
<td>836</td>
<td>8,278</td>
</tr>
<tr>
<td>Kentucky</td>
<td>6,293</td>
<td>728</td>
<td>7,021</td>
</tr>
<tr>
<td>South Carolina</td>
<td>4,831</td>
<td>289</td>
<td>5,120</td>
</tr>
</tbody>
</table>

**Recommendation 4.3.** To maintain a more accurate picture of higher education funding, state data reporting should clearly distinguish between restricted funds (e.g., funding which is limited to a specific auxiliary activity or by donors or external agencies to a specific purpose) and unrestricted funding (e.g., funding derived primarily from state appropriations for Educational and General [E&G] support and student tuition and fees). As an example of the confusion created by mingling these two distinct budget categories, the mandated budget reductions of FY 2009 reduced Education and General (unrestricted) support to South Carolina institutions by 14-15%. Unfortunately, in some descriptions of the cuts, restricted and unrestricted budgets were added together and followed with a statement that funding was reduced by only 4-6%. Such a description is erroneous because it suggests that all funds have the same flexibility, whereas in most cases institutions could not shift restricted monies to cover gaps left in unrestricted cuts.

**A Strong Foundation of Effectiveness**

[To be added]

**The Importance of Effective Management Systems**

Cost-benefit analysis long has been a standard process by which both private- and public-sector entities have evaluated the worth of initiating or continuing an activity, be it an adjustment in a product line or adding or deleting a step in a production process. In an era when appropriations of public dollars have become a comparatively small part of the overall budget of most public colleges and universities, a number of S.C. public institutions have been looking at the cost-benefit of having to deal with old-fashioned regulatory approaches that come with their status as public entities; they have found the costs high and the benefits lacking. Given that the Education Commission on the States in 2002 documented a trend away from “centralized control and regulation” on the part of state government as it relates to higher education, with a shift to “strategic planning for dynamic markets models” and “more decentralized management,” S.C. institutional leadership has begun a conversation about ways to achieve accountability through effective management systems as opposed to multi-layered and often redundant regulatory processes that were created in a different era and continue simply because “it’s always been done that way.”

By emphasizing an approach anchored in individual institutional accountability and assessment through accepted audit procedures, the network of South Carolina’s public institutions sees significant potential to gain enhanced flexible capacity to meet varied regional needs in a timely manner in 21<sup>st</sup> century terms, while also contributing to the overall achievement of the goals set forth within this overall strategic plan for serving South Carolina’s public purposes. A set of specific recommendations in this regard is presently under development.

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<sup>204</sup> SHEF data by state in current dollars. [http://www.sheeo.org/finance/shef/shef_data.htm](http://www.sheeo.org/finance/shef/shef_data.htm). (For South Carolina, this includes general fund; education endowment; lottery scholarships/grants; and local support for the technical colleges.)
Opportunities for Increased Effectiveness

INTRODUCTION

South Carolina’s colleges and universities have actively pursued strategies to improve effectiveness through campus-level reorganization, restructuring, and multi-campus collaborations. This section describes a number of additional ideas that are under consideration. Some are largely academic or instructional while others are primarily administrative or operational. The descriptions are brief, but all of these ideas are complex and will require substantial further exploration to determine feasibility. This process is made much more difficult given the severe budget cutbacks experienced in 2008. (See conclusion on page 59.)

ACADEMIC/ INSTRUCTIONAL

Course Redesign

A national effort funded by the Pew Charitable Trusts and led by the Center for Academic Transformation205 examined the potential of redesigning introductory-level courses in the cluster of disciplines that nearly all students must take in the first few years—e.g., psychology, chemistry, mathematics, history, biology, and so on.206 Courses would be re-structured in such a way as to improve efficiency (lower the unit cost of instruction) and improve student learning. After about ten years, the effort has proven to be highly successful.207 Reports from a wide array of colleges and universities, including universities in Iowa, Colorado, Tennessee, Alabama, and Ohio, demonstrate that it is possible to meet Course Redesign’s demanding goals.208 The techniques used are diverse and vary according to discipline, but the foundation work for each effort begins with a systems analysis of the program that focuses on how expensive resources (usually faculty time, but also laboratories and equipment) can best be deployed to improve student learning while moving activities such as drill to less expensive vehicles including online instruction and undergraduate tutors. Unfortunately, systems analysis is time-consuming and requires the commitment of individuals who are already fully engaged. As a consequence, Course Redesign has considerable start-up costs. It may be possible to defray these costs through collaboration, an idea which will be actively explored.

Technical Baccalaureate Programs

South Carolina has relatively few targeted baccalaureate “completion” programs in technical areas.209 Regardless of the area of the curriculum in which they are found, baccalaureate degree programs known as “completion” programs typically follow a “2+2” model.210 Programs of this type have emerged because of the increasing importance of the baccalaureate degree to individuals who are looking either to deepen their knowledge and skills base or to compete for better jobs or career upgrading.

205 The Program in Course Redesign was created by Dr. Carol A. Twigg with the support of an $8.8 million grant from the Pew Charitable Trusts from 1999 to 2004. [See the National Center for Academic Transformation Website: <www.thencat.org/index.html>.


The Course Redesign Projects focus on introductory courses that tend to have large enrollments. The courses include “English, mathematics, psychology, sociology, economics, accounting, biology, and chemistry,” 35-36.


208 [See the National Center for Academic Transformation Website: http://www.center.rpi.edu/PCR/Outcomes.htm.]

209 For a listing of all academic programs available in South Carolina’s public institutions, see the Inventory of Academic Programs at http://www.che.sc.gov/AS400/Inven/Default.asp.

210 A “2+2” model refers to an academic baccalaureate degree program in which the student first completes a two-year associate degree and then takes two more years of mostly complementary general education and support coursework at a four-year institution to earn the baccalaureate degree. In a few cases, there are baccalaureate programs which are known as a “3+1” model. In this model, the student takes three years of coursework at a four-year institution and completes the baccalaureate with one year of residency, for which academic credit is earned, usually in a laboratory or healthcare setting.
In South Carolina and elsewhere in the United States, employers have expressed interest in “2+2” program models. New academic programs of the “2+2” model should be developed only with active business involvement. Some baccalaureate degrees have been developed exclusively as “completion” programs. Others have both generic tracks (for those who have no prior experience in the field) and completion tracks (for those who have an associate degree in field). Examples in South Carolina of “completion” degree programs and completion tracks of degrees with both generic and completion options include the following:

- Bachelor of Science in Nursing (BSN), Completion Track. Available at all public four-year institutions with BSN-Generic programs of study.
- Bachelor of Health Sciences. Available through MUSC at various sites (almost always at technical college campuses) in the state where cohorts of students with associate degrees in healthcare-related fields can take the remaining credits for a baccalaureate degree.
- Bachelor of Science in Engineering Management. Available at USC-Upstate with Greenville Technical College as the main feeder institution and also available at the Greenville University Center.
- Bachelor of Science in Criminal Justice, Completion Track. Available at several campuses, this program is for students who possess an associate degree in the field. Lander University offers this option as a track within the Sociology major at both the Greenwood campus and the Greenville University Center; USC-Upstate offers the program at Greenville University Center and at the main Spartanburg Campus as a stand-alone program of study.
- Bachelor of Science in Engineering Technology, Completion Track. Two of these exist in the state, one at South Carolina State and one at Francis Marion University. The latter is solely a completion track program; the former has both off-campus completion track programs found on two-year campuses, most recently one implemented in Fall 2008 at Aiken Technical College.

These existing programs are promising, but other technical associate degree programs should be surveyed systematically to assure the optimal use of such degrees as foundations for building additional technical baccalaureate degree options which show promise to expand student career choice, meet the needs of business and industry, and promote the economic development of the state. Some of the technical programs which need to be surveyed carry with them difficult issues which would require negotiation for national professional accreditation. Programs of this nature include associate degree programs in business, physical therapy, and occupational therapy. Nevertheless, such issues should not preclude efforts to develop new baccalaureate programs in these and other degree fields and to provide seamless transitions from the associate to the baccalaureate program level.

Collaborative Approaches to Serving the Adult Education Market
South Carolina has approximately 500,000 adults who have completed some college coursework but hold no degree. Adults, especially those with some college experience, comprise a very different higher education “market” from traditional undergraduates. They are often very highly motivated and disciplined and are therefore good candidates for predominantly on-line programs that are typically not a good fit for younger students. But online education also poses significant challenges: in a high proportion of cases, online programs are more expensive than the regular campus model; and the logistics of “blended” programs that also provide in-person contact (and are widely thought to be superior) are difficult to deploy for adult learners. Led by its ten comprehensive universities, South Carolina could organize to meet this challenge.

One approach could be a Shared Program Model (SPM) such as the ReachHigher program in Oklahoma. In this approach, the comprehensive universities could work together through the SPM to develop new baccalaureate degree programs in popular fields such as organizational management, health care management and similar programs. Each participating university would contribute some of the online courses so that start-up costs would be spread evenly. A contributing university might be responsible for instruction at a given time, depending on the decisions of the group. Students who enroll in a program would be registered at and receive the degree from the university in the area where they reside. The participating university would also sponsor a number of in-person seminars, internships, or other experiences for its students. In some areas, such as Charleston, arrangements would need to

<http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=ACS&_submenuId=&_lang=en&_ts>

212 See Recommendation 1.36 in the Goal 1 (Making South Carolina One of the Most Educated States) Task force report.
213 ReachHigher Website, (Accessed October 28, 2008) <http://www.okhiginter.org/reachhigher/>. The Center for Adult Learning in Louisiana (CALL) and the Tennessee Regents’ Online Degree Program (RODP)213 serve as a central clearinghouse for online programs offered through their respective state’s colleges and universities. The model these programs use is slightly different from the SPM, but represents an alternative approach to baccalaureate degree completion.
be made between and among local institutions. An SPM approach could be constructed in a way that requires very little administrative overhead. The ability to share marketing costs would be a significant advantage.

Another strategy to serving the adult education market would be to adopt a model similar to that of the proprietary (for-profit) institutions that appear to be more willing than public or independent institutions to structure themselves to offer such things as flexible schedules (e.g., six-week courses instead of full twelve-week semesters) and other services that appeal to adults. Since the proprietary institutions tend to be very expensive and to restrict offerings to a narrow range of the most popular programs, South Carolina’s colleges and universities could work together to respond to the adult education market by creating an entity they own and control. This new institution would probably need to be accredited separately but could be more flexible than traditional institutions in a variety of ways. College and university ownership would ensure that programs complement rather than compete with existing offerings and meet quality standards set by institutional faculty. Careful design could make the new university an efficient, high quality, and low-cost option for adult students.

Western Governors University (WGU) is a good example of an institution that provides services that appeal to adults. The University is a regionally accredited, non-profit online university offering a convenient, flexible online education. WGU was founded by the governors of 19 western states. The University takes into account a student’s academic background, career experience, and expected time commitment, all of which are important issues to the adult learner.

The partnership between Kent State University and Ohio University, which expands access to higher education throughout 33 counties in eastern Ohio, appears to have goals similar to those of the proposed Palmetto State University. The Ohio universities’ Complete to Compete Program provides adult learners with flexibility by offering classroom-based, web-based and hybrid class formats. Leveraging the resources of each university keeps the cost of these programs affordable. Additionally, the partnership combines and expands the two universities’ degree offerings, provides maximum flexibility through distance learning, offers seamless transfer of credits, and extends accelerated degree programs. Together, the universities have 14 campuses, 12 of which are regional or branch campuses.

Administrative/Operational

Shared ERP systems
Enterprise Resources Planning (ERP) systems are among the most expensive software projects any organization can undertake. These “back-office” systems offer the potential for significant cost-savings but also usually require significant up-front investment. The best current example for sharing inter-institutional costs for technology in South Carolina is the Partnership Among South Carolina Academic Libraries (PASCAL), the statewide higher education electronic library, which has been functioning for five years...

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and resembles the efforts of other states.\textsuperscript{216} The efficiencies realized through this process are both monetary and conceptual. Such sharing is based upon the idea that a negotiated group price from a vendor will be a better deal than individual institutions could negotiate, especially since some of the smaller, less well-financed institutions in the partnership otherwise could afford only a small portion of what the group could provide for all.

Part of the potential investment in an ERP, such as software licenses and hardware components, is able to be shared, but the largest expense typically stems from “business process reengineering” which is usually required when moving to a new system.\textsuperscript{217} Another major cost associated with moving to a new ERP platform is the conversion of institutional “legacy” systems and data which are peculiar to the institution and cannot typically be converted through automated processes. For these reasons, collaborations are unlikely to produce large cost savings with new ERP platforms.

Although conversions are not likely to benefit greatly from collaboration, the long-term costs of running ERP systems may well be offset substantially through shared resources. Colleges and universities should follow industry by carefully investigating the potential of “cloud computing” to reduce system costs. Cloud computing applications are “applications that are extended to be accessible through the Internet. These cloud applications use large data centers and powerful servers that host web applications and web services.”\textsuperscript{218} Several vendors (e.g., Google\textsuperscript{219} and IBM\textsuperscript{220}) offer services over the Internet for a fixed cost, freeing users from dealing with licenses, hardware capacity and maintenance.\textsuperscript{221}

Common Statewide System to Support Articulation and Transfer
One of the key recommendations made by the Education and Economic Development Coordinating Council’s Articulation, Dual Enrollment, High School Graduation and Postsecondary Education Alignment (or “Expanded ACAP”) Committee in response to Education and Economic Development Act (EEDA) mandates is to provide automated degree and course audit capabilities through the procurement and implementation of a common statewide course articulation and transfer system. Increased enrollment has led to an increasingly larger number of courses which are transferred each year between and among colleges and universities. According to the National Center for Education Statistics (NCES), “One-half of the undergraduates who start at a public 2-year institution with the intention of obtaining a bachelor’s degree and about one-fourth of those who start with an associate’s degree goal transfer to a 4-year institution within 6 years.”\textsuperscript{222} Transfer students need assistance so they can move from one school to another and earn degrees in a timely manner, plan for courses, and reduce the cost of degree completion. By using transfer and articulation technology, institutions can list credit transfer policies and students can explore procedures and rules regarding how academic transcripts will be evaluated. Such an approach would also help to ensure statewide consistency in transfer procedures and policies.

A decentralized electronic advising system provides prospective students and their advisors direct access to information regarding course equivalencies, programs, courses, and degree audits. Such a system can show how courses will transfer from one institution to another and how courses will apply to meet academic program requirements at other institutions in the state. Through the use of an online system that provides degree audit and transfer evaluation automation, students can easily understand which additional courses can be taken at their current institutions to fulfill further requirements at target transfer institutions. The system can develop and promote a systemic process for statewide acceptance of transfer courses and create a plan for transfer pathways. It

\textsuperscript{216} Most states now have statewide electronic libraries for higher education, but PASCAL is one of the most ambitious in its reach, encompassing all public and private non-profit institutions in the state.

\textsuperscript{217} Business process reengineering refers to the rethinking of procedures such as document workflow, etc. that is a logical part of moving to new software.


\textsuperscript{220} Google Apps Education Edition provides e-mail, calendar, and collaboration tools (such as Google Docs which allows anyone to edit documents, spreadsheets, and presentations online from anywhere) directly from the browser. See http://www.google.com/sa/help/intl/en/edu/index.html and http://www.google.com/sa/help/intl/en/edu/demos.html.


\textsuperscript{222} For more information about cloud computing, please refer to \textit{The Tower and The Cloud}, edited by Richard N. Katz, which is available as an Educuse e-book at http://www.educuse.edu/thetowerandthecloud/133998.

also will promote increased enrollment, improved retention rates, heightened student knowledge about required courses, and more useful academic advising.

**Other shared hardware/software resources**
Other areas in which resources can be shared should be actively explored.

**Outsourcing**
In order to operate programs in the most cost-effective manner, college and university leaders routinely consider opportunities to outsource central campus operations such as bookstores and food services. Colleges and universities are encouraged to continue actively pursuing further outsourcing of activities and, where possible, pursue these collaboratively.

**CHE Cost Reduction Committee**
The Commission on Higher Education (CHE) will create a Cost Reduction Committee (CRC) with representatives of all colleges and universities. The CRC will meet regularly by videoconference and the CHE will establish a website where participants can share information and discuss possible collaborations.

**CONCLUSION**
All of the ideas described above offer the potential to save money and improve quality. Many will also require substantial investments in time and effort to evaluate and, if found to be meritorious, will require substantial up-front investment to implement. For this reason, the Action Plan advances these opportunities for increased effectiveness as ideas rather than commitments. Unfortunately, in the sharply constrained financial environment that follows the 2008 budget cuts, it will be difficult to find the resources to evaluate fully these opportunities, much less to implement them.
Appendix I
Higher Education Needs a “New Front Door” for Adults
Dr. Garrison Walters, CHE Executive Director

Educating more adults, by which I mean people 21 or over who lack college degrees, has to be at the top of South Carolina’s agenda for achieving competitiveness in today’s knowledge economy.

Even if South Carolina were to somehow immediately increase its high school graduation, college-going, and college graduation rates (two and four year) to the highest levels in the country, we would still be 112,000 degrees short of economically competitive education levels in 2025.

What about doing something for the more than a million people in South Carolina who are between the ages of 25-54 (peak working years) and who lack the college education—degree or certificate—that is needed for today’s high wage jobs? Colleges and universities do have many programs to support non-traditional students, but we need to reach much more of the potential audience. How?

First, we have to recognize that our target adult audience lacks confidence in their abilities. Many were poor students in high school and as a result fear that they cannot ever succeed. The reality, of course, is that most are quite capable but their high school work was hobbled by immaturity—they didn’t realize learning was important.

Second, these potential students are usually working or have family responsibilities or both. Finding the time for traditional class work is a big challenge for them.

Third, adults lacking college education generally have limited financial resources and, even with financial aid, can’t afford to enroll at current prices; and

Fourth, adults are often unwilling to take the risk to go to college because they don’t see any near-term relevance to their employability or job advancement.

So, what’s a solution? Let’s build a system of certificates that: 1) provide credit for relevant existing knowledge and abilities; 2) are no-fail; 3) are flexibly scheduled; 4) are low or no-cost; and 5) include content of relevance to people in today’s workplace. No-fail for these early courses is critical—it will send message to these folks that we really want them to succeed. Standards will remain high—grades are “pass” or “not yet.”

Including knowledge that’s immediately applicable to work—core information technology skills and instruction in critical thinking (the ability to analyze and evaluate information) will enhance employability.

The certificates would give adults a “you are here” map that is as easy to understand as grades in school, except that there would be choices: take a traditional college program or go to advanced training. And, if you choose training, most of the work could transfer back to a college program. There must be “no wrong door” for adults.

The certificate system could be offered by a wide array of providers across the state. Standardized certificates would have clear meaning to employers (who would help define them) and the new system would have the scale to be marketed effectively. Many of today’s local programs are very strong and effective, but lack of critical mass makes it hard to advertise to a clientele that needs effective persuasion far more than most. To increase accessibility, some certificates or parts of certificates could be offered by an array of providers, including businesses working under the aegis of a technical college.

Solving the adult education problem will take a lot of work, but the good news is that there’s a real commitment to change. The Commission on Higher Education, the Technical College system, the Department of Education, the Department of Commerce, and others are all working together under the leadership of New Carolina to develop a bold strategy that will move our state forward—and soon. Your ideas are most welcome.
Appendix II
Prepared Liberal Arts Graduates for Business Employment

Issue: Liberal arts graduates from South Carolina colleges and universities could benefit from specific preparation for work in business, especially in the cluster areas that are the state’s greatest employment priority. Currently, following the recommendations put forward by the Association of American Colleges and Universities in their Greater Expectations Report and through their LEAP Initiative (Liberal Education and America’s Promise), many institutions are recognizing the many practical skills that are part of a traditional liberal education (quantitative reasoning, critical thinking and writing, communication, group process and leadership, ethical reasoning, foreign language competencies, analytical and synthetic skills, etc.) To emphasize the use of these skills, institutions of higher education are building capstone experiences, internships, service learning, and civic engagement elements into their academic programs. These applications of knowledge and skills gained in liberal arts and sciences majors and minors and in interdisciplinary programs should be encouraged and expanded.

Certificate Concept: One way to do this would be to create a special capstone-type certificate that students would normally take immediately prior to or immediately after graduation. The certificate would also be available to past graduates seeking preparation for re-employment.

Key Question: Would the capstone certificate be offered in a regular academic format - a semester or so - or in a “lite” online version that would not go into much depth?

Investigation Process: For efficiency, much or all of this consultation could be accomplished via e-mail and video/or telephone conferencing.

- Convene a group of university business professors and ask what useful content could be provided to prepare liberal arts graduates for business employment. The depth of the certificate, as described above in “Key Question” would likely be the initial topic from which other decisions flow. Prior to meeting, the group would compile information about existing programs across the nation. The outcome of the meeting would be a draft document.
- The Chamber of Commerce would convene a consultation of business representatives to consider the university draft. Their comments would be added to a revised version.
- The university group would meet to consider the business suggestions, and then make revisions as appropriate.
- The university and business groups would meet together for final review and approval.

The process might be longer or shorter depending on whether existing programs have appeal and on whether agreement could be reached on key issues.

Second Stage: In a second stage, New Carolina would consult with cluster representatives as to whether an additional certificate, almost certainly short-term and online, could be developed in a way that would strengthen employment for their areas.

Engaging the Higher Education Community the CHE should utilize ACAP to study this potential direction for liberal education by providing workshops that bring experts to demonstrate best practices and benchmarks/ metrics that are transferable to South Carolina colleges and universities. Dr. George Kuh, the Director of the National Survey of Student Engagement (NSSE) has recently reviewed the practices identified through NSSE results to have had the most benefit to students to prepare them for engagement as active citizens and as a skilled workforce. The results of his research could be used to engage faculty and administrators in South Carolina in designing a variety of capstone experiences, to include the proposed certificate program, as a way of providing students in the liberal arts and sciences with the opportunity to bridge from their academic major to entering the workforce, especially in the New Carolina clusters.

223 The University of Oregon’s minor in business illustrates a approach (thought it is six courses): [http://lcb.uoregon.edu/undergrad/minor/requirements.html](http://lcb.uoregon.edu/undergrad/minor/requirements.html)