Tapestry of Talent



Educating North Carolina's
Gifted and Talented for the 21st Century

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Tapestry of Talent: Educating North Carolina' Students with Gifts and Talents for the 21st Century

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2nd Edition, Spring 2012

A Joint Publication of the North Carolina Association for the Gifted and Talented and the Duke University Talent Identification Program

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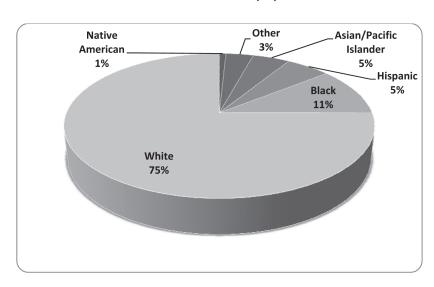
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Gifted Education in North Carolina BY THE NUMBERS

Legislation: Article 9B, Academically or Intellectually Gifted Students (N.C.G.S. § 115C-150.05-.08), is the state legislation that mandates identification and services for gifted students.

Students: In 2011, there were **172,947** identified AIG students in NC. This comprises **12.35%** of the state's total student population.





Funding: LEAs receive funds based on **4%** of ADM at **\$1,192.94** per pupil. For year 2009-10, NC school districts received \$ **70,413,503** to support gifted education. This represents **1%** of the State's education budget.



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Acknowledgements

The information compiled for this publication represents the work of many individuals. In addition to members of the Board of Directors of the North Carolina Association for the Gifted and Talented, the following people (listed in alphabetical order) either contributed content or reviewed drafts, providing thoughtful insight towards the completion of this project. Contributors to the first edition (2006) who may not have provided specific feedback in developing this second edition are listed with a * following their names in recognition of their contributions in developing the earlier edition of this document.

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Preface

These days, we are used to hearing a variety of issues termed a crisis in order to get the public's attention. However, we wish to present a genuine crisis which threatens forty years of excellence in North Carolina education. This crisis comes with hardly a whimper of protest, likely due to lack of awareness from the general public. At a time when we need the finest of our minds to solve our domestic problems and compete effectively in the global market, we are methodically dismantling our ability to do so.

Under the guise of budget balancing, some of our most notable accomplishments for educating talented students are being destroyed or seriously crippled. North Carolina has been justifiably proud of its leadership in the country (and the world) for encouraging our creative and highly-motivated students. This white paper details the nature of that program. Consider what is happening even as this paper is being written:

- 1. The University of North Carolina system of higher education (a model admired around the country) has taken its sharpest budget cuts in forty years, forcing it to cut course offerings, faculty, and staff. Its ability to be the engine of change and creativity has been muffled.
- 2. The Governor's School, an imaginative summer program designed to stimulate talented students (and the first of its kind in the nation), has received praise from observers and students alike; but this innovative program has been summarily and entirely cut from the budget.
- 3. Two other schools of excellence, the North Carolina School of the Arts and the North Carolina School of Math and Science (also among the first in the nation in their areas) have take severe cuts in their programs and are likely next on the chopping block.
- 4. School programs for the gifted, although spared the severest cuts, are forced to do without necessary training for teachers who form the cornerstone of effective programming.

Together, these decisions signify a full-scale retreat from leadership in the country and the world. The truth of the matter is that the proud North Carolina ship of education has hit the shoals and is taking on water. Are we content to put plywood over the hole and ignore the real damage? We believe when citizens of our state realize what is happening, they will lead as previous generations have done. We recognize the functional stress that was a part of these decisions, but feel that priority funding for our future is in order. This white paper makes suggestions as to how that might happen.

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Executive Summary

A distinguished group of North Carolina educators and experts on giftedness worked together in 2011 to update this White Paper, whose first edition was published in 2006. As in the 2006 version, we identify and discuss six critical areas challenging state and federal policymakers:

1. Education;

4. Immigration;

2. Business and Industry;

5. Social Class and Economic Status; and

3. Healthcare;

6. Homeland Security

North Carolina will need innovative, well educated, and competitive citizens to maintain our state's competitiveness for the remainder of the 21st century. After discussing the inter-related challenges we face in each of these six areas, we propose five recommendations related to our academically or intellectually gifted (AIG) students and others who show academic promise:

- 1. Accountability. School systems across North Carolina should conduct yearly performance growth assessments of students with gifts and talents to ensure that they are making progress each year toward the realization of their potential. Testing and data collection systems should be restructured to accommodate this goal. Additionally, schools should collect data that would allow them to examine the relative effectiveness of both AIG-trained teachers and those without such training in helping students with gifts and talents to demonstrate appropriate growth over time.
- 2. *Training of Teachers*. The state should provide the resources to train all teachers and administrators to meet the needs of academically/intellectually gifted learners. Additional training for pre-service and in-service teachers will allow them to provide appropriately differentiated instruction that is accelerated in content and that provides high-end learners with greater depth and complexity in all instructional settings. Highly-trained teachers and administrators will be knowledgeable about the learning needs AND social and emotional needs of academically/intellectually gifted learners from all populations.
- 3. Fostering academic rigor and customization of learning for K-12 learners. Lawmakers should construct policies that support flexibility of program delivery, including online coursework, and that allow for academic acceleration in which mastery of content is emphasized over seat time requirements.
- 4. Support for early education. Early nurturing programs should be supported and developed statewide to cultivate and enhance the potential of all young children, thereby ensuring that the educational needs of our youngest learners are supported, regardless of their socioeconomic status, social class, race, gender, or ethnicity.
- 5. Collaboration with community stakeholders. North Carolina's business, industry, and military sectors should increase their support of and forge stronger partnerships with school systems to ensure our most innovate minds are equipped for the jobs of the future.

North Carolina has a history to be proud of in its many outstanding innovations in education, but we cannot rest on these laurels of past accomplishment. We must continue to be innovative and lead the way in educational excellence, and we should not allow our short-term fiscal challenges to destroy the long-term well-being of our citizens. Our future leaders, innovators, and problem-solvers must be appropriately nurtured and stimulated, so that our state continues to prosper in the decades ahead.

Introduction

Plato said, "What is honored in a country will be cultivated there." Most people would agree that we should honor excellence in all students. However, a pervasive and unsubstantiated belief that our highest achievers will make it on their own – without any additional resources or special instructional accommodations – continues to prevail. While the increased emphasis on accountability in recent years has focused schools' attention on ensuring the progress of our most at-risk children, it has had the unintended consequence of detracting from the progress of our most able learners. It is vital that we not neglect the potential talents of any learners.

We in North Carolina must become adept at cultivating our talent pool to ensure that we are equipped with the brainpower to tackle the issues of this new century and beyond. Devoting resources for the education of our brightest students is an investment that is sure to reap enormous economic and social dividends in the decades to come.

In order to explore ways in which we can better nurture talent in our state, a distinguished group of North Carolina educators and experts on giftedness have worked together in 2011 to develop this White Paper, which draws from the North Carolina Academically or Intellectually Gifted Program Standards (NCDPI, 2009) and updates an earlier White Paper document published in 2006. As in the 2006 version, we identify and discuss six critical areas challenging state and federal policymakers:

- 1. Education;
- 2. Business and Industry;
- 3. Healthcare;
- 4. Immigration;
- 5. Social Class and Economic Status; and
- 6. Homeland Security

Though organized here into separate sections for the reader's convenience, each of these issues in practice is intertwined with the others, and all are vital to maintaining and extending North Carolina's proud traditions of excellence and leadership in K-12 and higher education. This white paper details gifted education's contribution to each of these important areas, and serves to raise awareness among policymakers so the educational needs of our brightest students will not be neglected in North Carolina.

Education

In 2010 there were approximately 1.39 million students enrolled in K-12 public and charter schools in North Carolina. About 169,000 of these students (12.2%) were identified as academically and/or intellectually gifted (AIG), though the AIG funding formula is based on approximately one-third of the number of students who presently meet criteria to be identified as AIG. Out of the \$7.3 billion the state allocated for education in 2010-11, just \$70,413,503 (less than one percent) was allocated for gifted and talented programs. This works out to an investment of just under \$417 per year, per child identified as AIG. We can, and should, do better.

No Child Left Behind, National Benchmarks, and the Excellence Gap

In 2004, the U.S. Department of Education granted the Education Commission of the States (ECS) \$2 million to track state progress toward implementation of the No Child Left Behind Act (NCLB). Although the focus of NCLB has been on low performing students, one of the recommendations made by the Commission was that states ensure the performance growth of all students. This acknowledgement by the Commission validates the criticality of meeting the needs of our gifted and talented, who have been all but forgotten in the rush to raise the achievement of low-performing students. In Education Week Carol Ann Tomlinson, former president of the National Association for Gifted Children (NAGC) stated, "The No Child Left Behind Act, with its focus on proficiency rather than academic growth, enhances the likelihood that this broad swath of learners [proficient students] will be all but irrelevant in daily classroom planning" (2002, ¶ 7).



The law's accountability requirements are based on Adequate Yearly Progress (AYP), which measures the yearly progress of different groups of students at the school, district, and state levels against yearly targets in math and reading. The NCLB legislation requires progress monitoring of nine specific student groups, including: Whites; Blacks; Hispanics; Native Americans; Asians; Multiracial students; economically disadvantaged students; limited English proficient students; and students with disabilities. Because students with gifts and talents tend to meet grade level proficiency targets, they were not specifically listed as one of the groups whose progress is being measured in NCLB. Yet, regardless of their proficiency level, state level test score data suggest that students with gifts and talents are not achieving sufficient individual growth (or AYP) from year to year (Plucker, Burroughs, & Song, 2010).

Researchers at Indiana University (Plucker et al., 2010) have examined the relative performance of different groups within the top performing students in U.S. schools. Though the gap in achievement across different demographic groups has narrowed among students at the basic and proficient levels under NCLB, the gap has not grown smaller among students performing at the highest level on these measures. Still more troubling, these authors found that in some of the cases where the gap has narrowed, this was due to a decrease in performance by some top-achieving subgroups rather than to improved performance among the low-achieving groups. These authors suggest that the widespread failures of states to reduce the excellence gap during this time are likely a result of the lack of accountability for high-ability learners under NCLB. Plucker and colleagues offer analyses specific to North Carolina's excellence gap on their web site at https://www.iub.edu/~ceep/Gap/excellence/North_Carolina.pdf.

While state-level trends can be confounded by changes to performance level goals and test content over time, national and international test score data also show that high-ability learners are not progressing in our schools at a level consistent with their potential. Scores from the National Assessment of Educational Progress (NAEP) reveal a lack of growth among high-achieving learners, while other international comparisons such as the Programme for International Student Assessment (PISA) and the TIMSS (Trends in International Mathematics and Science Study) highlight the relatively weak performance of top U.S. students in comparison to their peers in other countries.

Program accountability is one of the six areas addressed in the North Carolina Academically or Intellectually Gifted Program Standards (NCDPI, 2009), a document that articulates expectations for quality, comprehensive, and effective AIG programming in North Carolina schools. If we were to examine the performance growth of students with gifts and talents in our annual evaluations of student progress, we might confirm not only that these students fail to thrive on their own, but also that they actually may be losing ground each year in comparison to the progress achieved by their non-identified peers. Though the name of the NCLB Act may soon be changing, its emphasis on accountability likely will remain strong. The yearly progress made by students with gifts and talents must be evaluated in order to monitor the effectiveness of our schools in helping these students achieve at levels commensurate with their demonstrated potential.



Career and College Ready, Set, Go! and Computer Adaptive Testing

North Carolina's Race to the Top grant for nearly \$400 million was awarded in response to the state's successful competition in federal grant funding for NC public schools. Governor Perdue's Career and College Ready, Set, Go! initiative is based on four pillars of work that address North Carolina's needs in the areas of Teachers and Principals, Standards and Assessments, School Turnaround, and Data Systems. For students, this initiative will mean a move toward competitive national and international curriculum standards; for teachers, the initiative will lead to greater access to professional development and increased availability of research-based evaluation systems.

Interventions being developed in the areas of Standards & Assessments and Data Systems both show promise for monitoring the needs and performance of high-ability learners in North Carolina schools. In particular, the more widespread adoption of computerized adaptive testing with a diagnostic focus is a positive direction for North Carolina schools. Adaptive testing is better suited to measuring student achievement at the top end of the spectrum, and potentially can provide greater detail about the accomplishments and future learning needs of high-ability learners than is possible using traditional paper and pencil-format tests.



Highly Qualified Teachers

One way to ensure the development of all students, including those with gifts and talents, is to enhance the quality of classroom instruction. Yet, most classroom teachers and school administrators have very little or no training in meeting and identifying the unique learning needs of students with gifts and talents. Despite growing awareness of the need for differentiation both within and across classrooms, research continues to indicate that most teachers use one lesson plan to teach all students, even when their students are a broadly diverse group (Archambault, Westburg, Brown, Hallmark, Emmons, & Zhang, 1993; Gentry & MacDougall, 2011; Westburg & Daoust, 2003).

North Carolina is poised to develop innovative models for training teachers of the gifted. Since mid-2006, the North Carolina Department of Public Instruction (NCDPI) has mandated that teachers complete a minimum of 12 semester hours of coursework in gifted education at an approved institution of higher education to obtain add-on gifted licensure to their teaching certificate. In response to this unfunded mandate, as many as 16 colleges and universities across the state now offer one or more of the courses that count toward such licensure. Only two North Carolina universities offer a master's degree focused on gifted education. To meet the demand for university faculty to teach licensure and master's degree coursework, as of 2010 UNC Charlotte became the only university in the Carolinas to offer the Ph.D. degree with an emphasis in gifted education. While the growth in availability of gifted education coursework is promising, and the demand for AIG licensure is great, many educators are unable to access existing course offerings due to their location, limited finances, and the relative scarcity of teaching positions working with AIG learners.

Research supports that graduate coursework in gifted education for teachers who work with students with gifts and talents improves these teachers' effectiveness; they are more likely to individualize instruction and are more likely to emphasize creativity and thinking skills in their teaching (Starko, 2008). Yet after completing 12 semester hours of graduate-level coursework and obtaining gifted education licensure, teachers in NC receive no financial incentive from the state or their respective school systems for having undertaken this training. If such an incentive were available, perhaps more teachers would seek the training, meaning more students with gifts and talents would be better served.

Even with the growth in training opportunities available in gifted education, North Carolina runs the risk of leaving our schools staffed with teachers ill-equipped and inadequately trained to deal with the needs of our brightest students. Colleges and universities continue to work to meet the emerging need for licensing teachers of the gifted, but funds and other resources must be made available to schools of education throughout our state to encourage, support, and sustain licensure programs in gifted education and to ensure that these programs are accessible to teachers statewide.

It also is clear that certain instructional strategies and best practices used for students with gifts and talents are being increasingly adopted and implemented for mainstream educational use because they benefit all students. Differentiation is one key strategy that can benefit all learners, but it also is widely known that without specialized training, teachers find it difficult to implement differentiation in a manner that benefits students at all levels of ability. Even when training is available, all too often it focuses on simplifying instruction for lower-level learners without a corresponding emphasis on how to make instruction more in-depth and complex for students with high learning potential. Targeted teacher training in this strategy and others used in gifted education would positively impact the learning experiences of students in all classrooms in North Carolina schools.

Online & North Carolina Virtual Public School (NCVPS)

While educators and researchers recognize that students learn in many different ways, traditional education systems generally do not allow for personalization of instruction (Christensen, Horn, & Johnsen, 2008). Differentiated curriculum and instruction is one of the six areas emphasized in the North Carolina Academically or Intellectually Gifted Program Standards (NCDPI, 2009). Online learning offers one effective means of tailoring instruction to more closely match student interest and learning needs. Additionally, for states and school districts striving to raise student outcomes without additional dollars, there is steadily growing evidence of the cost-effectiveness of online learning, whether used in a virtual school or in a classroom—blending a face-to-face classroom experience with online material. Though much of the research about online learning has been conducted at the postsecondary level rather than in K-12 settings, a 2010 report by the U.S. Department of Education (available online at http://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf) concludes,

In recent experimental and quasi-experimental studies contrasting blends of online and face-to-face classes, blended instruction has been more effective, providing a rationale for the effort required to design and implement blended approaches (p. xviii).

At the 6th Annual NC Legislators Retreat in 2008, speakers suggested that the disruptive innovation of computer-based, student-centric technology will result in almost 50 percent of high school courses being delivered online by 2019. North Carolina currently ranks among the top states in use of online schools, with over 45,000 students enrolled in NCVPS courses in 2010-11, but these efforts need to be fully funded without penalizing schools and local school districts for using NCVPS.

Presently, per state law (see http://www.dpi.state.nc.us/fbs/finance/ncvps/), one sixth of Average Daily Membership (ADM) of enrolled NCVPS users is subtracted from each school district to fund NCVPS. Each school district has its own formula for then applying this reduction across its constituent schools. A concern is that this funding model may de-incentivize the principal and school district from using NCVPS to supplement their students' education, due to the potential that NCVPS enrollment may lead to decreased funding for teachers in schools. Although end-of-course (EOC) exam scores from NCVPS participants are reported with EOC scores of their local schools, NCVPS offers centralized online coursework whose teacher and content are beyond the local school's control. Thus, another disincentive to participation in NCVPS is that the EOC score a student obtains in a NCVPS course will be counted toward their principal's report card in the state's student information management and reporting system (NC WISE, the North Carolina Window on Student Education).

Funding and accountability models should be optimized to encourage students to take flexible curriculum pathways, as offered through NCVPS coursework. Flexible pathways benefit all learners, but they are especially beneficial for high-ability learners and those identified as academically or intellectually gifted.



Business and Industry

Business and industry are key stakeholders in the education of North Carolina's youth. As stakeholders, these entities must do more to support schools in workforce development. We must capitalize on our most precious natural resource—our students—if we intend to have the best, most highly skilled workforce in America. Our schools are the wellspring of our future citizenship and of our global competitiveness.

A Quiet Crisis

Business leaders have criticized our state's and nation's public schools for failing to develop the skills and knowledge employees need in order for business to remain competitive in this global economy. These leaders are acutely aware of the economic growth made by other nations, particularly Pacific Rim nations. They are attentive to the data indicating that, as Thomas Friedman (2005), Ann Jackson (2002), and others have articulated, America is facing a "quiet crisis"—the steady erosion of our country's scientific and engineering base, and the concomitant loss in our capacity to innovate.

The decision makers who affect public education are either unaware or unconvinced of the potential benefits, both to students with gifts and talents and to society broadly, that their full and unapologetic support would provide. By allowing these students to move at an accelerated pace, and providing the rigorous instruction and appropriate resources necessary to develop their talents, the time these learners spend in the pipeline pursuing their education (National Center for Public Policy and Higher Education, 2004) will be shortened and the likelihood will increase that the state's return on the dollar spent on these students will be realized and magnified.

An Underutilized Strategy: Acceleration

Academic acceleration takes many forms, and it can be implemented effectively in a variety of ways in addition to the grade skipping that first comes to mind when the term acceleration is used (Colangelo, Assouline, & Gross, 2004). When applied appropriately, with students who are both able and willing to take charge of their own learning, academic acceleration can be the single most effective strategy available to simultaneously improve student outcomes and decrease educational costs. A recent report by a national task force documents that research "consistently demonstrates the academic benefits to students and allows the conclusion that students are not negatively affected in the social-emotional domains" (Colangelo et al., 2010, p. 182) by engaging in grade skipping or related forms of academic acceleration.

By focusing our attention and resources on raising the bar for as many students as possible, while failing to also raise the ceiling for gifted and talented students, we inadvertently may further the erosion of our society's ability to innovate. Fostering appropriate academic acceleration in our schools can reduce educational costs by reducing the number of contact hours required per diploma, and it also allows our young people to assume productive, tax-paying roles in society sooner than they otherwise

might. Of course, acceleration is also a strategy open to all learners, not just those formally identified as academically/intellectually gifted, and it may be used effectively in more than a dozen different approaches (as described by Colangelo et al., 2004) from kindergarten through the end of college.

North Carolina currently occupies a leadership position in the United States with regard to acceleration, because the state allows early entrance to kindergarten for high-ability children and because local districts are permitted to develop their own academic acceleration policies. Also, State Policy GSC-M-001 "Course for Credit" allows middle schools students to take high school courses; but more needs to be done to encourage all forms of academic acceleration at the local district and school levels.

Additional support for acceleration might involve reducing non-academic barriers to acceleration at all levels of education; providing guidance to schools on administrative matters related to implementation of acceleration, such as inter-school transportation or class ranking considerations; increasing the availability of online coursework; providing the same funding for accelerated learners that the school district would have received if these learners had remained on grade level; and providing for regular evaluation of the effectiveness of the various acceleration strategies.

Partnerships

Worldwide, businesses are all about developing talent, as it is in their best interest to do so. One might expect that America's business sector would throw its full weight behind finding and supporting the development of talented individuals as far back into the pipeline as possible, but when this happens it seems to be the exception rather than the rule.

So, what can be done to turn things around for America, North Carolina, and within individual communities? What can we do for students to encourage the development of their talents and skills? The first step is to recognize the need for strong partnerships between business and industry and public schools. Our public schools have many immediate and pressing concerns that demand funding. By providing additional funding, in-kind support, and volunteers to supplement schools' efforts to educate students with gifts and talents, business and industry will help to ensure its own prosperity in the long term.

The economic futures of North Carolina and its young people are yet unwritten, but clearly they are closely linked. Without a long-term collaborative effort between our state's business and industry leaders and our state's educational leaders, the education of our brightest and most innovative minds may be of second-order, and our history of economic prosperity but a distant memory. There are many forces pulling us toward an undesirable future in which our state's major export may well be its brains and youth, but there is still time to ensure a more promising future.

Healthcare

It is evident that efforts to improve North Carolinians' health in the 21st century will be influenced by important changes in our state's demographics. North Carolina, as is true of the nation as a whole, is growing older and is also becoming more ethnically and economically diverse. In addition, there are dynamic interrelationships between health and income, education, race and ethnicity, cultural influences, environment, and access to quality medical services. Even with our brightest minds on the task today, health disparities among populations within our state still exist.

In order to pinpoint disparities in healthcare and improve the overall health of our citizens, North Carolina will need to cultivate and then retain a multitude of talent. We will need individuals with expertise in instrument design, statistics, and other research methodologies. Creative problem solvers, expert debaters, and policy developers will also be required. In addition, leaders who are adept in bringing groups of individuals together in support of a common cause will be critical. So, where do we find such individuals? Many are sitting in classrooms throughout our state, and we need to appropriately nurture and respond to their unique educational and leadership needs today so these students will be in the position necessary to address and resolve the healthcare issues of tomorrow.

As our population grows, we will also need more healthcare providers. Nowhere else is the need for appropriate academic acceleration clearer than in medicine, where a decade or more of formal study beyond high school may be needed before entering the profession. No one complains when their healthcare providers are drawn from the best and brightest students we can produce, or suggests that we should allow alternate licensure for doctors in order to induce more recruits to enter the field of medicine. Where will we find our future cardiologists, oncologists, pediatricians, and neurologists? Many of these individuals sit in classrooms throughout North Carolina today, eagerly awaiting the rigorous and challenging curriculum they are ready to learn. Some of these learners will persevere into college and through medical school, ultimately reaching their desired goal despite the inconsistency of K-12 programming tailored to meet their needs, while others will never realize their potential. They will lose interest, becoming frustrated and unmotivated due to the absence of challenge in their school curricula. They will become potential unrealized, but what will be the real loss to society? It is quite possible that cures for diseases will be lost, or that medical interventions with the potential to save thousands of lives will never be known.

Where will the next major scientific discoveries come from? New scientific innovations do not materialize haphazardly; they require intellectual fermentation. Policymakers, parents, teachers, school administrators, and engaged citizens are encouraged to advocate for supplying our young minds with the academic rigor needed in order to advance our knowledge. Such advancements provide a foundation for great ideas and discoveries to emerge – discoveries that have the potential to change society for the better, whether a child ultimately pursues medicine, engineering, mathematics, law, or any other academically rigorous field of study

Immigration

Approximately one in every 14 North Carolina residents is estimated to have been born outside the United States (Zota, 2010). Of these, nearly 3 in 5 are of Hispanic heritage. While the estimated number of residents present unlawfully has declined sharply with the recent economic downturn, both legal and illegal immigration likely will continue to have a major impact on the state's infrastructure well into the future. In terms of education, the impact of immigration will continue to be felt especially in the overcrowding of schools and in the resources required in training teachers to educate a diverse population. The immigration issue impacts education in three critical areas:

- 1. The neglect of the potential of all of our children, including our most gifted and talented, regardless of their citizenship;
- 2. The "brain drain" of foreign students who have studied in our best universities but who are not remaining here to work after graduation. In some cases, these individuals may be returning to their native countries, possibly to work in American jobs that have been outsourced; and
- 3. The more restrictive work and study visa policies that since 9/11 have restricted our talent pool, inhibiting the best and the brightest from coming to America from around the world.

All three of these areas are important to consider, but the area that could make the most difference for the U.S. is the one that our government and policymakers have the most control over—nurturing the potential of all of our children and developing their skills and abilities to be the best in the world.



Nurturing Potential

The limited number of students from traditionally underrepresented minority groups who participate in AIG programming statewide is proof that there is something seriously amiss in the early nurturing, screening, identification, and placement of these learners in AIG and/or academically advanced programming. A decade ago, Darity and colleagues (Darity, Castellino, & Tyson, 2001) outlined recommendations to help meet the state's mandate to increase the number of students from underrepresented populations in gifted education, but despite recent increases (see Table 1), the overall rate of improvement over the last ten years has been relatively slow.

North Carolina's local school districts revised their plans for identifying and serving children with gifts and talents in 2010, using an updated format designed in part to help increase the number of identified students from underrepresented groups and to improve the services these learners receive. The North Carolina Department of Public Instruction (NCDPI) should have more authority to ensure that plans submitted by school systems are not "paper only" plans, but also are supported, effectively implemented, and periodically assessed for quality. Presently, NCDPI can only make suggestions or comments regarding local plans for identifying and serving the gifted. Statewide, despite mandates in both areas, there is little accountability for these plans or any assurance that appropriate identification and services for our students with gifts and talents exist in all schools.

Building and Maintaining a Talent Pool of Students and Teachers

The future belongs to individuals and to countries whose leaders understand that being smart is a good thing and that intellectual work and creative productivity are necessary to invent solutions to both current and as yet unrealized problems confronting our planet. Despite the historical leadership shown by both North Carolina and the United States as a whole in these areas, international comparisons suggest that we may be falling behind in our ability to innovate. It is quite troubling that even creativity measures—whose scores had been increasing steadily over time— now are apparently beginning to show a declining trend among young children in the United States (Bronson & Merryman, 2010).

Federal and state policymakers play an important role in creating innovative educational environments, by making the education of gifted and high achieving students a priority. North Carolina has a strong history in this respect, and it offers a foundation on which future efforts may be developed. The North Carolina Academically or Intellectually Gifted Program Standards (NCDPI, 2009) offer a framework to guide school districts in developing, coordinating, and implementing comprehensive AIG programming. The Standards reflect the legal foundations of gifted education in North Carolina (Article 9B) as well as nationally-accepted best practices in the education of students with gifts and talents. Policymakers must continue to make the education of students with gifts and talents a top priority in North Carolina, by supporting and building the capacities of North Carolina's teachers, public schools, and colleges and universities, if we are to retain our leadership and our ability to ensure our state's growth and progress.

Social Class and Economic Status

Social class is a combination of income, education, family history, and occupation. From this amalgam comes a cluster of experiences that sharply differentiates the upper, middle, and lower classes of America. While the "American Dream" suggests that with hard work, determination, and an education, individuals from any class can be successful, there is an abundance of evidence correlating social class status with educational opportunities, achievement, and life success. Social class and socioeconomic status (or SES, a closely related construct) remain among the primary mediators determining an individual's access to many of life's opportunities.

Impact on Children with Gifts and Talents

Social class can have many effects on children with gifts and talents. It often determines...

- 1. The likelihood of a child being identified as gifted. A disproportionately low number of children from economically disadvantaged families are identified. These inequities are correlated with differential representation across racial and ethnic groups (see Table 1).
- Which students gain access to differentiated education and high-end
 programming that is challenging for bright students. This issue of access to appropriate
 curriculum and instruction impacts students from kindergarten through college.
- 3. The method for engaging students in the curriculum. Studies show a correlation between active engagement in the learning process and increases in academic performance. Learners who are less engaged or who have low academic performance may be relegated to classrooms that emphasize rote memorization, rather than those that foster students' higher-order thinking skills. Some classrooms may create a climate of disengagement surrounding some students, who are then more vulnerable to dropping out of school entirely.
- 4. How gifted programming is structured within the school. Gifted education programming typically is not structured based on the interests or needs of students from low-SES households. This may create a situation in which some learners choose to opt out of programs that they feel are not an appropriate match for them (Ford & Whiting, 2010). A related structural issue is how incentives for doing accelerated or differentiated assignments are structured, or are not structured, in relation to students' regular classroom responsibilities. Such incentives should be designed to be student-friendly; students with gifts and talents should not be limited to only extra work, a more difficult test, or tougher grading policies, but rather should be engaged in different work that may not always be appropriate for learners in general education settings.

Strong general education programs for all students that provide challenging and meaningful learning experiences are essential and are where we must begin. Some students, however, will need additional support. Several approaches have been developed in attempts to mitigate the negative influences of social class on students who are gifted. These approaches often include:

- 1. Nurturing programs that begin with young children to enhance and develop their potential prior to formal identification.
- 2. Alternative identification protocols to reduce bias in the process, measures, and methods used to find students with gifts and talents.
- 3. Intensive academic support programs used to help support and level the playing field for students with gifts and talents from economically disadvantaged families and linguistically diverse households.
- 4. Counseling support for students and families to help with academic and career planning.
- 5. Scholarship and award programs to provide financial aid to help students develop their gifts. Programs also should be provided to develop family support systems and to help with transportation needs to allow students access to additional educational opportunities

The availability of programming that uses these strategies remains limited, and many students from low-income households do not have access to educational and life opportunities that would help them reach their potential. As the National Science Board recently wrote, "the possibility of reaching one's potential should not be met with ambivalence, left to chance, or limited to those with financial means. Rather, the opportunity for excellence is a fundamental American value and should be afforded to all" (National Science Board, 2010, p. 5).

It is difficult, if not impossible, to estimate the loss to society when students do not reach their potential. It is perhaps easier to think about society's gains when we support the education of students who are gifted. Through such support we can ensure that excellent educational opportunities are available to all of our state's children, regardless of social class. By providing appropriate educational opportunities to all students with gifts and talents we can create a society where the American dream can continue to be realized, and each such realized dream will shine a guiding light for future generations.

Homeland Security

As the home to two of the largest military bases in the world, North Carolina plays a critical role our nation's security. Camp Lejeune Marine Corps Base in Onslow County maintains combat-ready units for expeditionary deployment, and Fort Bragg Army Base in Cumberland County is the principal U.S. Army airborne-training center. In 2008 an impact study revealed that North Carolina's military bases contribute in excess of \$23 billion to the state's economy, or almost 7% of the Gross State Product (North Carolina Advisory Commission on Military Affairs).

Since 9/11, our federal government and state leaders have worked together to guide an unprecedented effort to safeguard our country. Unlike other wars, the war on terrorism involves not only the employment of military power, but also the use of diplomatic and intelligence activities to protect our nation and its citizens. J. J. Gallagher (2005) wrote, "If we believe, or act as if we believe, that our national security depends on how many nuclear weapons we have stockpiled or how many divisions under arms we maintain, instead of our commitment to nurturing the intellectual resources of coming generations, we may well tremble for the future of our nation" (p. 40). Our intellectual resources are a key factor in maintaining a secure society.

World Language Learning

Our homeland security workforce will need individuals who are proficient, not only in science, technology, engineering, and mathematics, but also in the humanities, such as philosophy, the social sciences, and especially languages. To achieve this goal, the United States must expand world language education. The optimum time to begin learning a second language is in elementary school, when children have the ability to learn and excel in second language acquisition (Baker, 2006).



Dual language immersion charter and magnet programs now can be found among our state's most successful elementary schools. Foreign language study can increase children's capacity for critical and creative thinking, and children who study a second language show greater cognitive development in areas such as mental flexibility, creativity, tolerance, and higher order thinking skills (Curtain, 1990). North Carolina's students must be educated from a global perspective, with in-depth exposure to the languages, cultures, and history of other nations. Such education is a vital investment in our state's long-term well being, and one that should not be decimated solely for the purpose of achieving short-term financial objectives.

North Carolina can pave the way and continue to provide a role model for other states by beginning the work necessary to enhance world language education for our students. Our educational system must prepare students for the complicated and interconnected world they will inherit.

Science, Technology, Engineering, and Math (STEM)

A decade ago, the report Road Map to National Security: Imperative for Change (U.S. Commission on National Security, 2001) called the deficiencies in American math and science education "threats to national security" (p. 14). The report went on to state that "America's future depends upon the ability of its educational system to produce students who constantly challenge current levels of innovation and push the limits of technology and discovery" (p. 101). These statements remain relevant today.

The Science, Technology, Engineering, and Math (STEM) fields play a critical role in protecting our nation from known and emerging threats. Our future workforce must have scientific, technical, chemical, biological, radiological, and nuclear expertise, as the war on terror is multi-faceted. In 2010, the National Science Board published a report, Preparing the Next Generations of STEM Innovators: Identifying and Developing Our Nation's Human Capital (STEM Innovators). How will we prepare our future workforce to address such security threats? Where do we find the talent to tackle such problems?

Many countries, including Russia and China, have traditionally cultivated their high-ability students to accomplish just these goals. The government of the United States, individual state governments, and private industry need to make this same prolonged investment, not only through our present research infrastructure, but also in educational resources to develop talent in STEM fields. Many bright students sit in our classrooms today longing for a more challenging curriculum that will prepare them to solve such future problems for the benefit of society.

North Carolina has made some promising steps toward these goals. The state in 2004 introduced high schools on college campuses that allow students to earn college credit as they earn a high school diploma. A new early college high school opened on the North Carolina State University campus in fall 2011. This school focuses on science, technology, engineering, and math (STEM). Despite such promising new programs, recent budget cuts have placed in jeopardy other longstanding and very effective programs such as the North Carolina School of Science and Math and the North Carolina Governor's School. These cuts, as well as cuts affecting the North Carolina Teaching Fellows program, will have serious long-term consequences harmful to the education of high-ability learners in North Carolina. Each of these programs has laid a groundwork that should be supported and expanded as part of our state's goal of enabling high-achieving learners to gain a world-class education in North Carolina schools.



Recommendations

Plucker and his colleagues suggest that policymakers must always consider two related questions when considering new education policies: "How will this affect our brightest students?" and "How will this help other students begin to achieve at high levels?" (2010, p. 30). Our gifted youth of today will become the highly competent and well educated adults of tomorrow, capable of providing our society with a decisive and competitive edge. With our support for their education, these bright minds will go on to develop new products, cures, and innovations for the future benefit of society. In order to ensure that North Carolina is prepared to prosper in the remaining nine decades of the 21st century and beyond, this white paper proposes five recommendations that we believe are consistent with these two crucial questions:

1. Accountability. School systems across North Carolina should conduct yearly performance growth assessments of students with gifts and talents to ensure that they are making progress each year toward the realization of their potential. Data collection systems and reporting requirements should include information such as above-level test scores (as provided by talent search organizations such as North Carolina's Duke TIP; see Lee, Matthews, & Olszewski-Kubilius, 2009; Matthews, 2008) and scores from computerized adaptive testing. Both of these approaches minimize the measurement difficulties that plague efforts to examine growth over time in the performance of students with gifts and talents using End-of-Grade and End-of-Course scores. Data collection systems and reporting requirements should include data that would allow schools to examine the effectiveness

- of both AIG-trained and untrained teachers in helping students with gifts and talents to demonstrate appropriate growth over time.
- 2. Teacher Training. The state should provide the resources to train all teachers and administrators to meet the needs of academically/intellectually gifted learners. Additional training for pre-service and in-service teachers will allow them to provide appropriately differentiated instruction that is accelerated in content and that provides high-end learners with greater depth and complexity in all instructional settings. Highly-trained teachers and administrators will be knowledgeable about the learning needs AND social and emotional needs of academically/intellectually gifted learners from all populations. Financial incentives for teachers who complete the 12 hours of graduate credit required to obtain AIG licensure may offer one appropriate means of encouraging teachers and administrators to pursue this additional training. Teacher preparation programs also should be supported in efforts to incorporate information about students with gifts and talents into the pre-service teacher education curriculum.
- 3. Fostering academic rigor and customization of learning for K-12 learners. Lawmakers should construct policies that support flexibility of program delivery, including online coursework, and that allow for academic acceleration in which mastery of content is emphasized over seat time requirements. Funding formulas and school-level accountability should be examined and revised as necessary to support advanced learning by K-12 students who enroll in the NCVPS and similar accredited programming for non-remedial purposes.
- 4. Support for early education. Early nurturing programs should be supported and developed statewide to cultivate and enhance the potential of all young children, thereby increasing their chances of being appropriately identified for and served by gifted and talented programming. Early nurturing programs would ensure that the educational needs of our youngest learners are supported, regardless of their socioeconomic status, social class, race, gender, or ethnicity.
- 5. Collaboration with community stakeholders. North Carolina's business, industry, and military sectors should increase their support of and forge stronger partnerships with school systems to ensure our most innovate minds are equipped for the jobs of the future. Providing matching grants or a similar incentive mechanism could allow details of effective partnerships to be disseminated.

Conclusion

Nearly 40 years ago, the American writer Eric Hoffer wrote that "in a time of drastic change it is the learners who inherit the future. The learned usually find themselves equipped to live in a world that no longer exists" (1973, section 32). It is evident that in the midst of constant societal and global change, we must create a community of life-long learners, not just one of well-educated individuals. Encouraging life-long learning involves engaging all students in learning, while ensuring that what and how they learn is relevant to their lives, interests, and abilities, and helps them maintain their enthusiasm for continued study and contribution.

While North Carolina has many education "firsts" to be proud of, including the first state-supported, residential math and science high school (School of Science and Math), the summer residential program for intellectually gifted high school students (Governor's School) and the residential School of the Arts, we must continue to be innovative and lead the way in educational excellence. Our future leaders, innovators, and problem-solvers must be appropriately nurtured and stimulated, so that our state continues to prosper across all areas of endeavor. As President Obama, in his 2011 State of the Union address said, "If we want to win the future – if we want innovation to produce jobs in America – then we also have to win the race to educate our kids." We must also encourage and support students as they venture beyond the content they are presented in schools into the realms of critical and creative thinking and reflection. The processes of engagement, intensive study, and rumination will serve as the foundation for an evolving and forward-looking society. Memorization of facts (those things already known) and proficiency on multiple-choice tests alone will not guarantee advancement in any human endeavor. It is the revelation of the presently unknown and the application of this new knowledge to authentic situations that will advance our world. These are the skills that will keep North Carolina's economy strong through the 21st century.



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Appendix

Table 1.AIG Headcount Data by Race/Ethnicity for 2010 and 2011 School Years (April Counts)

Race or Ethnicity	NC Total 2010	NC AIG 2010	Percentage AIG 2010	NC Total 2011	NC AIG 2011	Percentage AIG 2011
Asian	34,292	7,844	22.87	33,137	7,892	23.8
Black	373,922	18,412	4.93	371,020	18,716	5.04
Hispanic	153,695	6,659	4.33	178,709	9,468	5.30
Native American	20,226	1,362	6.75	20,674	1,418	6.86
Multiracial	55,401	5,525	9.97	_a	_a	_a
White	752,394	129,285	17.2	746,373	129,586	17.36
Total	1,389,930	169,087	12.18	1,349,913	167,080 ^b	12.38

Note. Percentages in this table indicate the relative proportion of each AIG group relative to the total statewide population of the same group. Note that the percentages used in the pie chart on page 4 of this report show the proportion of students in each racial/ethnic group within the overall population of students identified as AIG, whereas this table indicates the percentage identified as gifted within each racial/ethnic category.

^a Multiracial was not listed as a separate category in the 2011 report.

^b Table totals do not include 5,867 AIG students whose ethnicity was Other or was not reported.