

**A CASE STUDY
OF
PASQUOTANK (NC) COUNTY HIGH SCHOOL
AND ITS ROLE AS A PARTNER IN THE NSF-SUPPORTED
COASTAL RURAL SYSTEMIC INITIATIVE**

**Prepared for the
NSF Rural Systemic Initiatives Evaluation Study**

**Submitted by
The Evaluation Center
Western Michigan University
Kalamazoo, MI 49008-5237**

February 2003

**A CASE STUDY
OF
PASQUOTANK (NC) COUNTY HIGH SCHOOL
AND ITS ROLE AS A PARTNER IN THE NSF-SUPPORTED
COASTAL RURAL SYSTEMIC INITIATIVE**

Prepared

for

The NSF Rural Systemic Initiatives Evaluation Study

by

Brian Lotven and Jerry G. Horn

**The Evaluation Center
Western Michigan University
Kalamazoo, MI 49008-5237**

Other Visitation Team Members

**J. S. Oliver
Adeana Sallee
E. Robert Stephens**

February 2003

This material is based upon work supported by the National Science Foundation (NSF) under Grant REC-9819347. Any opinions, findings, conclusions, or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the NSF.

Foreword

On behalf of The Evaluation Center at Western Michigan University, I want to thank the administrators, faculty, and staff of Pasquotank County High School for their willingness to be a part of the Rural Systemic Initiatives Evaluation Study for the National Science Foundation. Especially, I want to thank Mr. James Pohl, Mrs. Carolyn Jennings, and Mrs. Patti Hamler for their willingness to serve as hosts for the visitation team.

It was a pleasure to serve as the leader of the visitation team, and I thank the other members of the team (Drs. Jerry Horn, Adeana Sallee, and E. Robert Stephens) for their dedication and commitment to the study. Their efforts will enable NSF and other decision makers to understand the strengths, barriers, and progress that is being made in the local school districts that take part in the Rural Systemic Initiatives. Finally, I want to thank members of The Evaluation Center staff for their assistance in editing and preparing the final version of the case study report.

Brian Lotven

A Case Study of the Pasquotank County High School and Its Role as a Partner in the NSF-Supported Coastal Rural Systemic Initiative

The Evaluation Center at Western Michigan University (WMU) is engaged in a study of the Rural Systemic Initiatives (RSI) with support from the National Science Foundation (NSF). The RSI program is intended to improve science, mathematics, and technology education in rural and economically disadvantaged regions through collaborative efforts involving K-12 school districts, four-year colleges and universities, community colleges, community organizations and other stakeholders.

The project began in 1999 and was designed around a plan to examine selected RSI collaboratives: the Appalachian, Delta, and UCAN. The Evaluation Center (EC) staff decided to conduct case studies in two communities in each of the three chosen collaboratives as the core of the project. Because these collaboratives had been operational for two or more years a “post hole” type case study (one that was unique, not a preconceived model) was conducted. A site visit team of two to four professionals conducted on-site visits with interviews and focus group meetings with teachers, administrators, students, and selected members of the community. The team also reviewed documents and observed classrooms and facilities over a period of three to five days. As available RSI project personnel were included in the interview process in an effort to gain their perspectives of the work of the collaborative as well as the implementation process at the local level. The team “lived” in the community during the time of the visits in an attempt to more fully understand the context of the school and the environment/community in which the RSI was engaged. The case study reports were completed, reviewed at the local level for accuracy, and submitted to the NSF. Summaries of the evaluative procedures and the findings and reports were also disseminated at meetings of professional groups of science, math, and rural educators as well as to other researchers as requested and deemed appropriate.

In 2000, the NSF asked the EC to expand the study to include three new RSI collaboratives and to extend the project through May 2003. The new collaboratives included the Texas RSI, the Michigan RSI, and the Coastal RSI. The same overall objectives for the evaluative study were applicable to the new RSIs, with four additional questions introduced. The additional questions related to new or alternative forms of student assessment, the contextual factors of the communities that support educational reform, the processes and conditions that facilitate effective operation, and the use and value of technology.

The Texas RSI became operational in 1999 and later divided into southern and northern groups with additional funding from NSF in 2001. The Coastal and Michigan RSIs became operational in 2001. The “post hole” type case study approach, initially part of the overall WMU study with the more mature collaboratives, was judged as inappropriate and unfair for those that were in their early stages of development and operation. Instead, the decision was reached to employ a longitudinal case study approach consisting of three visits to three sites in each of the new collaboratives over a two-year period. Even then, the time frame is relatively short, which is a limitation of the overall study and particularly the study of individual collaboratives.

Site visit teams were formed and began gathering data during the 2001-2002 school year. The final visit of a study team to each case study community was conducted in Fall 2002.

Each case study team was composed of at least one project staff member and at least one member of the Research Advisory Team (RAT). The RAT member was selected for a visit on the basis of his/her special expertise or experience with an issue or condition determined to be a relevant factor in the case study. In the case of the Pasquotank County High School, J. S. Oliver, Adeana Sallee, and E. Robert Stephens, two of whom are members of the Research Advisory

Team and all longtime leaders in rural school research, served on the site visit team. A case study visitor's guidebook was used to provide direction and format for the interviews in addition to specific and general questions to be addressed.

The case studies were designed to reflect an understanding of the variables within a school community that either support or serve as a barrier to education reform. The role of the RSI in the reform effort was the primary focus. The RSI may be one of several independent initiatives for school improvement, but should be a major source of input with regard to math and science education. Clear evidence of impact, including consideration of different types of evidence reflecting student learning, is important. Evidence sources of positive effects of the RSI included traditional forms of student assessment; enrollment in advanced science, math, or technology courses; pursuit of careers requiring strong science, math, or technology backgrounds; and student work samples from independent investigation.

A plethora of social, economic, geographic, cultural, and other factors make comparisons of rural schools with suburban and urban schools problematic. These case studies focused upon the communities involved without preconceptions related to consolidation; depth/breadth of science, math, and technology offerings; qualifications of teachers; or other site-situational factors. Rather, the focus was on the schools as an integral part of the community and the effects of the community values of education and schooling. Social research speaks to the significance of the community power structure with regard to schools and schooling. Decision making, power brokering, written and unwritten understandings are all part of "doing business" in rural communities. Clearly, the RSI project was an external intervention. One reason for making the study longitudinal was to allow more opportunities for interaction within the school and the community.

Although all of the case study sites are rural and poor (by definition and as criteria for participation), each is quite unique in terms of history, racial and ethnic makeup, property values, governmental jurisdiction, and site situation. All of these factors play a part in the lineage of public education in each community. Attention was paid to identifying significant events that have contributed to the shaping of public education in these areas. In essence, what evolves is a story about the community from the eyes and ears of outsiders, but with a strong sense of understanding about rural schools and communities.

The Coastal RSI case studies focused on the school districts of Charles City, Virginia (Charles City Middle School); Elizabeth City, North Carolina (Pasquotank High School); and Marion, South Carolina (Marion Intermediate School). In Michigan the evaluation project looked at two traditional public school communities—Baldwin and Whittemore-Prescott—and one state-approved and -funded charter school that serves a Native American community—Nah Tah Wahsh Public School Academy. The case study school communities in the Texas RSI collaborative were Carrizo Springs, Clarendon, and Pittsburg.

Elizabeth City/Pasquotank County History

The U.S. Department of the Interior's National Register of Historic Places sponsored a comprehensive history of Elizabeth City/Pasquotank County. The following section is based upon excerpts of their work. Situated at the narrows of the Pasquotank River, Elizabeth City has been the leading town in the Albemarle region since the 1820s. Even though the Albemarle region claims the earliest settlement in North Carolina—dating from the mid-seventeenth century—Elizabeth City is not a particularly old town, having been incorporated in 1793. Its history as a town dates from the early republic years when North Carolina was growing in its statehood.

The small community at the narrows that became Elizabeth City consisted of a ferry, a mill, an inspection station, a nearby school and church, and an unknown (though certainly modest) number of dwellings and stores and was just a local transportation and trading crossroads until 1793. In that year the site was chosen for a town at the southern terminus of the Dismal Swamp Canal, the largest internal improvement project undertaken in North Carolina to that point. The canal was designed to unite the fertile but isolated areas surrounding Albemarle Sound with the bustling port of Norfolk, Virginia. The marriage of canal and town would prove strong for more than a century.

Such a canal had been proposed as early as 1728 by William Byrd II of Virginia. A primary reason for Byrd's—and later George Washington's—interest in such a canal was to provide better access to vast stands of marketable timber (primarily cedar and juniper) that heretofore had been largely inaccessible due to the forbidding nature of the Great Dismal Swamp. The Virginia Assembly passed an “Act for cutting a navigable canal through the swamp” in 1787, stipulating that the act was not to take effect until the passing of a similar act by the North Carolina General Assembly. North Carolina did not reciprocate until November 1790. Even then, it was three years before construction would begin.

Growth and development were slow but steady in the fledgling town. In 1799 Elizabeth City became the government seat for Pasquotank County; and a courthouse, prison, pillory, and stocks were built. The courthouse was not completely finished until June 1806 and, while no description of that building survives, it is known to have stood at the site of the present structure. The designation of Elizabeth City as the county seat had an immediate effect on the town's activity and business. It brought large numbers of Pasquotank's population to town for the quarterly sessions of the court in order to transact all the official and semiofficial business of the county. The little town was beginning to assume its eventual position as the center of activity for northeastern North Carolina.

The Dismal Swamp Canal met with marginal success during its early years of operation, largely because of its narrow size and shallow draft. Because of these deficiencies, the canal was ineffective in alleviating the British coastal blockade during the War of 1812. A subsequent federal investigation emphasized the canal's potential by reporting that during the few weeks it was open in 1815, more than 6.5 million shingles and over 1 million staves had been sent through. Yet, no attempt was made to improve the canal until 1819 when a lottery “for the Improvement of Internal Navigation between the States of Virginia and North Carolina” was held in Norfolk; subsequent lotteries were held in 1820 and 1829.

The four decades preceding the Civil War were a period of considerable growth and change in Elizabeth City. Most of this growth came as improvements to the Dismal Swamp Canal finally made the endeavor a financial and commercial success.

In 1826 the federal government purchased 600 shares of stock in the Dismal Swamp Canal and acquired an additional 200 shares in 1829. This infusion of federal funds enabled the canal company to enlarge the locks and deepen the channel so that larger, more profitable schooners and sloops could be admitted. A lottery in Norfolk on February 4, 1829, raised additional funds. Two years earlier, in 1827, the growing importance of Elizabeth City had been recognized with the relocation of the customs house of the port of Camden to the city. Because this customs district exercised jurisdiction over shipments arriving at and departing from eastern Albemarle Sound, its location necessitated captains and merchants to come to Elizabeth City to obtain clearance papers. These events furthered Elizabeth City's position as the area's commercial and administrative center and foretold a bright future for the growing city.

The improvements to the canal during the late 1820s resulted in such an increase in traffic that the tolls collected more than doubled during the first three years after the canal was reopened, from \$13,040 in 1829 to \$33,290 in 1832. The Dismal Swamp Canal was so successful in attracting commerce to Elizabeth City that in 1830 the editor of the Edenton Gazette complained that, while the canal “may be of incalculable benefit . . . to Virginia, . . . to North Carolina [it was] a blood-sucker at her very vitals.” In the early 1840s improvements were made that greatly increased the efficiency of the canal. These included new locks at the canal’s northern end (at Deep Creek, now part of Chesapeake, Virginia) and a new channel at the southern end south of South Mills. The new channel, which cut in half the time required for a trip from Elizabeth City to Norfolk, greatly improved the profitability of merchants and shippers in both cities, thus encouraging even greater commercial investments.

In 1829 the Virginia and North Carolina Transportation Company, which had been formed as a logical offshoot of the Dismal Swamp Canal Company, acquired several canal boats for use on the region's waterways. The ambitions of the company, and the seemingly unlimited prospects of the canal itself, were reflected by naming these barges and schooners after the North Carolina and Virginia rivers that emptied into Albemarle Sound, the very regions the company intended to serve: the *Meherrin*, the *Elizabeth*, the *Staunton*, the *Roanoke*, the *Dan*, the *Chowan*, the *Pasquotank*, and the *Halifax*. During the antebellum period, steamboats played an increasingly important role in transportation through the canal. The steamboat *Petersburg*, purchased in March 1829, met the company's barges in the Pasquotank River and towed them to various ports on the sound and rivers. The successful transport of a barge of cotton from Weldon in May 1829—a journey that took it down the Roanoke River, across Albemarle Sound, up the Pasquotank River to Elizabeth City, and through the canal to Norfolk—illustrated the canal's immense potential in bringing eastern North Carolina produce to Norfolk. The fact that all this traffic passed through Elizabeth City and the Dismal Swamp Canal meant considerable activity and business for the town's merchants, brokers, and laborers.

In addition to the canal, other modes of transportation added to Elizabeth City's growth and importance. Overland travel during the antebellum period, while far from good and often difficult, nonetheless underwent gradual improvements, making the markets and services of Elizabeth City increasingly accessible to farmers in Pasquotank and Camden Counties. Both the Lamb's and Narrows ferries continued to provide access across the Pasquotank River to Camden County. Various lines of stagecoaches provided passenger service to Norfolk, Hertford, and Edenton, connecting with vessels in either Elizabeth City or Edenton for continuation to North Carolina towns south and west of Albemarle Sound.

Elizabeth City's role as the transfer point for regional commerce, however, was lessened in the 1830s with the completion of the Portsmouth and Weldon Railroad between those two cities in Virginia and North Carolina, respectively. Not only was produce from the upper Roanoke River (known as the Dan River in Virginia) diverted to the railroad at Weldon, but much of the produce from western Albemarle Sound (the lower Roanoke, the Meherrin, and Chowan Rivers) was subsequently shipped up the Chowan River for transfer to the railroad station at what is now Franklin, Virginia. Thus, the products of both these regions no longer came through Elizabeth City and the Dismal Swamp Canal. The lure of the railroad as an advanced means of transportation led to the incorporation of the Norfolk and Edenton Railroad in 1836. This road was to run through Elizabeth City and would most likely have ushered in an era of unbridled economic development. However, for reasons not understood, it was too ambitious a scheme for the troubled 1830s economy.

An even greater challenge to Elizabeth City's position as the region's transportation hub was the construction between 1855 and 1859 of the Albemarle-Chesapeake Canal 25 miles northeast of

the city. The new canal, wholly within Virginia, connected a tributary of Currituck Sound to the same branch of the Elizabeth River to which the Dismal Swamp Canal was connected. This canal was only 6 miles long, and its single lock was twice as long as the largest lock on the Dismal Swamp Canal. The Albemarle-Chesapeake Canal, which opened in January 1859, was able to attract not only traffic that had been too large for the older route, but also vessels interested in a shorter route from the eastern end of Albemarle Sound to Norfolk. Commerce from Pamlico Sound, New Bern, and Washington bypassed Elizabeth City for the newer and shorter canal. The editor of the *Democratic Pioneer*, a newspaper published in Elizabeth City from 1850 through 1859, warned that, with this new rival, "The large trade that now centers in Elizabeth City from the hundreds of vessels that yearly pass through the Dismal Swamp Canal, will be, in large measure, carried to other places."

However, traffic through the Dismal Swamp Canal was still reported as being heavy in October 1860, and before the new canal could become established as a serious competitor, the nation was plunged into war. Nonetheless, the economic competitiveness of the older canal and Elizabeth City's vitality were threatened. Indeed, in an 1878 report to Congress it was stated that the financial difficulties of the Dismal Swamp Canal began with the completion of the rival canal after the Civil War.

The antebellum years from 1830 to 1861 were ones of unprecedented growth and prosperity for industry in Elizabeth City. Leading the way were those industries directly related to shipping and transportation. The prosperity of the antebellum period came to a halt, however, with the economic, social, and political upheaval of the Civil War. While the Union blockade of the North Carolina and Virginia coasts did much to hinder oceanic shipping, during the early stages of the war transportation between the sounds and Virginia suffered little because of the effectiveness of both the Dismal Swamp and Albemarle-Chesapeake Canals. Great quantities of supplies for the Confederacy passed through these waterways in both directions, and Elizabeth City prospered for a short time.

This advantage, however, did not last. Two days after the fall of Roanoke Island on February 8, 1862, a Union fleet sailed to Elizabeth City and quickly overwhelmed an outnumbered Confederate "mosquito fleet" in a brief battle a few miles downriver from Elizabeth City. This skirmish left Elizabeth City unprotected, and the panicked residents then set fire to several of the principal buildings, including the courthouse and the largest hotel. Since Union control of Elizabeth City effectively choked access to the Dismal Swamp Canal, no attempt was made to seize the canal for two months. In mid-April, a force of about three thousand Union soldiers marched from near Elizabeth City to the locks and bridge near South Mills and took control of the canal after the brief Battle of South Mills. With the surrender of Norfolk on May 10, 1862, the canal was rendered useless to the Confederate cause. For the duration of the war, the town and canal remained under Union control even though a majority of citizens continued to support the Confederate cause.

Elizabeth City, like the rest of North Carolina, has undergone tremendous change during the twentieth century. In no area has this change been greater or more significant than in the area of transportation. With improved highways reaching throughout the Albemarle region and the proliferation of the private automobile, the region was no longer dependent on the canal, marine, and railroad transportation systems that had formed the basis for Elizabeth City's growth and prosperity for over 150 years. The city's once bustling shipyards and riverfront were quieted by a rapidly diminishing level of activity. Likewise, the twentieth century dependence on the railroad for the movement of goods was replaced by expanding fleets of trucks and vans.

Correspondingly, the riverfront declined as a center of industrial activity and was replaced by industrial sectors along Hughes and Halstead Boulevards. Following national trends made possible by the increased personal mobility afforded by the automobile, much of the commercial activity moved to outlying strip zones and shopping centers. Casualties of commercial strip zones included more than a dozen important residences—some dating from the 1830s—along Rum Quarter Road, later known as Lawrence Street and now named Ehringhaus Street. The construction of Southgate Mall in 1967, the first enclosed mall in the Albemarle region, made a permanent change in the shopping habits of residents in five regional counties. The old commercial center downtown began to rely increasingly on its role as a governmental, professional, and financial center. As retail businesses left or closed, some buildings stood vacant and eventually deteriorated. As the vacant buildings along Water Street were demolished, however, the city rediscovered its beautiful waterfront. With development of this area as open space, boat slips and access ramps were constructed, attracting private pleasure boating activity.

By the 1950s, much of the area's prime forest land had been cut, and the city's numerous but aging saw and lumber mills were forced from a market in which they had once been so powerful. The mills were replaced by a greater variety of industrial concerns and an expansion of the service sector. Increasingly, however, some local residents began to look to the Virginia cities of Norfolk, Portsmouth, Virginia Beach, and Chesapeake for employment. This trend began during the wartime years when acute labor shortages at the Virginia shipyards and military industries meant jobs for hundreds of workers from a city and county still recovering from the Great Depression; hundreds more from adjoining North Carolina counties left for employment in Virginia. After the war, the continued military and industrial expansion in neighboring Virginia provided stable and well-paying employment for workers from throughout northeastern North Carolina.

Educational opportunities and facilities expanded greatly during the second half of the twentieth century. Roanoke Bible College was organized in 1948 to train ministers in the Church of Christ and Christian Church denominations in North Carolina and Virginia. The school purchased and remodeled several old houses along North Poindexter Street and in the early 1970s bought the former railroad property along the river. In 1960 the College of the Albemarle was chartered to offer college and vocational courses to students in a multicounty area. The school first occupied the vacant Elizabeth City Hospital, later known as Albemarle Hospital, on Carolina Avenue; in 1973 it moved to a modern campus north of the city. The public schools were integrated in 1964-1965, and with countywide consolidation in the late 1960s, a large high school for the city and county was built west of the city limits. The white high school then became the junior high while the black high school (demolished 1988) became an elementary school. Also during this period, Elizabeth City State Teachers College became the region's major university, being admitted into the University of North Carolina System in 1963 as Elizabeth City State College. Another name change in 1969 to Elizabeth City State University reflected its increased role in regional education.

Elizabeth City/Pasquotank County Current Status

The current population of Pasquotank County is approximately 35,000. Elizabeth City, site of Pasquotank High School, with a population of more than 17,000 is the largest community in the county. It is virtually surrounded by water and provides a very attractive and pleasant ambiance. It was recently named one of the 100 most livable small towns in America and is home to a university, two colleges, and the largest U.S. Coast Guard command complex in the nation. Because of its proximity to Norfolk/Virginia Beach (about 45 minutes), Elizabeth City cannot be

considered isolated or remote.

Despite the attractiveness, ambiance, waterfront, and proximity to a large metropolitan area, Elizabeth City faces a number of daunting problems. Selected demographic information illustrates the social, economic, and demographic realities that confront the County today.

County Profile for Pasquotank County

Population

Population 2000	34,897
White	56.9 percent
Black	40.0 percent
All others	3.1 percent
Population 1990	31,298
Median Age	35.9
Land Area	227 square miles
Population Density 2000	153 per square mile
Percentage Population Change 1990-2000	11.5 percent
Percentage of Population 0-17	24.9 percent
Percentage of Population 65 and over	14.1 percent

Income and Poverty

Median Household Income 2000	\$30,444
Per Capita Income 2000	\$14,815
Population in Poverty 2000	5,981
Poverty Rate 2000	18.4 percent
Child Poverty Rate	25.5 percent
Elderly Poverty Rate	17.9 percent
Percentage Receiving Food Stamps	10.1 percent

Education

Students Passing End of Grade Exams	67.9 percent
White Students	83.2 percent
Black Students	51.5 percent
Per-Student Expenditures K-12	\$6,994

Dropout Rate	7.2 percent
Percentage With Less Than High School Education	23.2 percent
Percentage With High School Diploma	30.3 percent
Percentage With Bachelor's Degree or Higher	16.4 percent

Statistics Related to Child Well-Being—Pasquotank County
(As reported in *Kids Count in North Carolina*)

The following data are cited by Kids Count as being the key indicators of child well-being:

	<u>Number</u>	<u>Percent</u>
Population under age 18 below poverty	2,173	25.6
Population under age 18 below 50 percent of poverty	1,020	12.0
Population under age 18 below 200 percent of poverty	4,586	54.0
Ages 16-19 who are high school dropouts	87	4.0
Ages 16-19 not in school and not working	95	4.3
Children ages 5-15 with one or more disabilities	391	7.1
Children living in high-poverty neighborhoods (where 20% or more of the population is below poverty)	3,479	40.1

Elizabeth City-Pasquotank Public Schools

The Elizabeth City-Pasquotank Public School District is comprised of seven elementary schools, two middle schools, two high schools and one alternative school that serve students in grades 6-12. There are a number of private academies as well as homeschooled children in the county. The College of the Albemarle, a community college in Elizabeth City, reportedly granted the largest number of high school diplomas in the county.

Pasquotank County High School

Pasquotank County High School is currently in its third year of existence. It is located on the northern edge of Elizabeth City and is a very attractive building situated on a large campus. The physical facilities are excellent and include outstanding media services, well-planned laboratories, an inviting learning resources center, and spacious classrooms. Although the school is new, the principal has years of experience in the district.

The student body of Pasquotank County High School (PCHS) in 2001-2002 was made up of 768 students, of which 50.5 percent were female and 49.5 percent male. The population was 1.2 percent Asian, 1.3 percent Hispanic, 47.7 percent black, 49.2 percent white, and 0.7 percent multiracial.

PCHS is a comprehensive high school and works to meet student needs through a number of curricular, cocurricular and extracurricular activities. In addition to the broad curricular offerings designed to meet diverse student needs, the school fields athletic teams in all competitive sports and has a large music program. Many student government and special interest programs are offered.

The Coastal Rural Systemic Initiative

The Coastal Rural Systemic Initiative (CRSI) is a collaborative effort among 35 impoverished counties along the Interstate 95 corridor of North Carolina, South Carolina, and Virginia. Its goal is to stimulate sustainable systemic improvements in science and mathematics education for K-12 students in a region noted for its persistent poverty and isolation from opportunities. CRSI plans to achieve this goal in the 47 school districts that exist in the 35 counties by creating effective teaching and learning environments, strategically linking schools with other partners in an enhanced community infrastructure, and creating the local capacity and commitment to engage in an ongoing process of renewal. The long-term goals are improved student performance in mathematics and science, better preparation of a competitive workforce, community commitment to sustain reform efforts, and enhanced capacity for economic development.

The CRSI implementation plan reflects broad stakeholder participation and strong commitments from both the state and local levels. The outcomes of the development period include a shared vision of science and mathematics education, an initial collection of baseline data, strengthened statewide and regional partnerships, identification of standards-based practices for dissemination, and identification of critical opportunities and strategies to include in the implementation plan.

The CRSI plan contains four primary strands: (1) near-term strategies to create the local readiness and commitment to implement standards-based mathematics and science; (2) long-term strategies to build local leadership vision and capacity to engage in “renewal,” an ongoing process of program review and improvement; (3) community-based strategies to consolidate support for high-quality mathematics and science, principally through establishment of local community education foundations; and (4) state/regional-level strategies to maximize CRSI’s influence by embedding it within the broad context of mathematics and science reform. These four strands function together to create the conditions necessary for participating local systems to achieve and sustain their long-term goal: improved student performance in mathematics and science.

Through an articulated system of regional institutes, on-site support, and ongoing access to technical assistance, the CRSI supports development of a local vision for mathematics and science reform; builds capacities for local leadership, planning, and implementation; and facilitates access to resources critical to achieving the vision. Working as an advocate on behalf of its participating districts, CRSI will create collaborations that align vital processes and resources; develop partnerships between schools and other agencies and groups in the community, state, and region; and provide linkages to existing science, mathematics, and technology initiatives, leveraging their efforts in support of systemic improvements throughout the region. As a result, students will experience high-quality science and mathematics in classes with teachers who use research-based strategies and whose efforts are supported by an aligned local system engaged in a continual process of renewal.

Goals of the Coastal Rural Systemic Initiative

The principal long-term outcome of the Coastal Rural Systemic Initiative is accelerated performance in science and mathematics for all students in its participating counties. Achieving this outcome entails reaching two long-term goals:

1. All science and mathematics teachers create effective learning environments in which all students learn mathematics and science and use technology.
2. Local schools and school districts have an appropriate infrastructure to support and sustain implementation of standards-based mathematics and science in all classrooms.

Because these goals are long term, extending beyond the five years of NSF support, CRSI staff identified intermediate, strategic goals that lay critical groundwork for achieving the long-term results. CRSI uses the following strategic goals as its basis for evaluating its progress and performance during the funding period.

Strategic Goal 1: Develop a critical mass of mathematics and science teachers with the knowledge and skills to implement high-quality, standards-based instruction in their classrooms.

Strategic Goal 2: Institutionalize an ongoing cycle of mathematics and science program review and improvement in participating schools as the basis for sustaining reform.

Strategic Goal 3: Enhance existing school district and community infrastructures to provide increased articulation and support for school-based reforms in mathematics and science.

The CRSI regional coordinator for Pasquotank County High School is Mrs. Dianne Meiggs, and the project director is Dr. Chuck Blanton. Members of the evaluation team who participated in site visits to the district included Drs. J. S. Oliver, Adeana Sallee, E. Robert Stephens, and Brian Lotven.

Activity to initiate the longitudinal case studies in the Coastal Rural Systemic Initiative (CRSI) began in November 2000. The following representatives from The Evaluation Center at Western Michigan University (contractor with the National Science Foundation) and the CRSI met in Fayetteville, North Carolina.

CRSI Representatives

Dr. Chuck Blanton, Principal Investigator
Mr. Manley Midgett, Associate Director for District Programs
Ms. Kimberly Smith, Associate Director for Regional Programs

Evaluation Center Representatives

Dr. Jerry Horn, Principal Research Associate
Dr. Brian Lotven, Project Consultant and CRSI Project Manager

In January 2001, Dr. Blanton suggested three sites for CRSI case studies:

Marion Intermediate School, Marion, South Carolina
Charles City Middle School, Charles City, Virginia
Pasquotank County High School (PCHS), Elizabeth City, North Carolina

In April 2001, Brian Lotven visited each of the aforementioned schools to explain the nature and purpose of the longitudinal study. School district involvement in terms of personnel time,

information, and resources was discussed prior to receiving district commitments. After receiving the districts' commitments, it was agreed that a site visit would occur on an agreed-upon date during the fall of 2001. Visits to Pasquotank County High School occurred in September 2001, April 2002, and October 2002. Additional contacts were conducted via e-mail.

The North Carolina Standard Course of Study

The high stakes testing associated with the North Carolina Testing Program is having a strong impact on schools across North Carolina, and PCHS is certainly no exception. The testing program measures each ninth grader's performance in English I, Algebra I, Social Studies, and Physical Science. Sophomores are tested in Geometry, Biology, and English II. Juniors are tested in Algebra II, U.S. History, and Chemistry. Seniors are tested in Physics. Consequences of low performance on the tests are indicative of what a high stakes testing program would suggest:

1. Graduation from high school is contingent upon graduation examination results.
2. Grade promotion is contingent upon examination results. A grade promotion "gateway" exists at grades 3, 5, and 8.
3. The state issues a report card that disseminates school test results to the public.
4. The state identifies low performing schools according to whether they meet state standards or improve each year.
5. The state has the authority to close, reconstitute, revoke a school's accreditation, or take over low performing schools.
6. Monetary awards may be given to high performing or improving schools.
7. Monetary awards can be used for staff bonuses.
8. The state has the authority to replace school personnel due to low test scores. Teachers in schools that perform poorly and are identified as low performing by the state face the possibility of having to take a teacher competency test.

The North Carolina Standard Course of Study (the name for the high stakes testing program in that state) outlines the content standards by describing the knowledge and skills that students should acquire in the various content areas. When the end-of-course tests were initially developed, educators in North Carolina thought that performance standards, which identify levels of competency expected in each of the content areas, should be developed. Performance standards, called achievement levels, are one way that scores on the North Carolina end-of-course tests are reported. Unlike percentiles, which yield only relative comparisons, the achievement levels give common meaning throughout the state as to what is expected at various levels of competence in each course. These categories are used to better describe test scores and are based on external evidence about the relative performance of students.

The achievement levels or performance standards for the multiple-choice North Carolina end-of-course tests were set using the contrasting groups method of standard setting. This method involves having students categorized into the various achievement levels by expert judges (North Carolina teachers) who are knowledgeable about the students' achievement. Teachers are able to make informed judgments about students' achievement because they have observed the breadth and depth of the work each student has accomplished during the school year.

During the initial field-testing for each end-of-course test, teachers were asked to categorize each of their students on the basis of “absolute” achievement (comparison with an external standard). Each student was categorized into one of four achievement levels based on the teacher’s experiences with the student throughout the school year. Teachers were also given the option of categorizing the student as “Not a clear example of any of these achievement levels.”

In all, the judgments of more than 1,800 teachers about the performance of approximately 67,000 students were involved in the standard-setting process statewide. About 80 percent of the students involved in the field test were categorized into one of the four achievement levels, with the remainder categorized as not a clear example of any of the achievement levels or not categorized at all.

The North Carolina Standard Course of Study achievement levels:

- Level I Students performing at this level do not have sufficient mastery of knowledge and skills of the course to be successful at a more advanced level in the content area.
- Level II Students performing at this level demonstrate inconsistent mastery of knowledge and skills of the course and are minimally prepared to be successful at a more advanced level in the content area.
- Level III Students performing at this level consistently demonstrate mastery of the course subject matter and skills and are well prepared for a more advanced level in the content area.
- Level IV Students performing at this level consistently perform in a superior manner clearly beyond that required to be proficient in the course subject matter and skills and are very well prepared for a more advanced level in the content area.

Pasquotank County High School Scores on the North Carolina Standard Course of Study compared with statewide results:

The following table represents the percentage of student scores at or above grade level:

	English	Algebra	Algebra	Geometry	Biology	Chemistry	Physics	Physics	ELPS	State History
PCHS	62.1	58.7	77.9	48.0	53.4	50.7	N/A	66.7	54.9	33.5
District	60.9	63.9	64.1	47.3	56.0	57.2	17.8	66.7	59.2	34.1
State	69.7	79.0	77.2	66.5	69.2	70.6	61.4	84.4	69.5	50.3

The following table represents the percentage of passing scores grouped by gender, ethnicity, and other factors:

	Male	Female	White	Black	Disability
PCHS	53.9	54.5	67.7	38.1	26.1
District	54.5	55.2	69.4	37.6	28.4
State	69.5	68.4	78.3	47.6	38.0

The following table represents the percentage of students who were considered proficient (level III or IV).

Pasquotank County High School Scores on the North Carolina Standard Course of Study

TEST	1998-1999 NHS *	1999-2000 NHS *	2000-2001	2001-2002	Change from 2000-2001 to 2001-2002
English I	51.6	67.9	62.4	61.6	-0.8%
Algebra I	23.7	33.5	47.3	58.7	+11.4%
Algebra II	47.2	49.4	66.7	77.9	+11.2%
Geometry	38.8	40.8	56.0	48.0	-8.0%
Biology	32.8	41.4	66.7	53.2	-13.5%
Chemistry	58.4	57.5	63.0	50.7	-12.3%
Physics	78.8	75.0	N/A	66.7	N/A
ELP (economic/legal/political)	63.3	60.3	61.3	54.8	-6.5%
U.S. History	32.2	31.2	37.7	32.3	-5.4%

* NHS—Prior to the opening of PCHS in the 2000-2001 school year, there was only one high school. The inaugural class of the second high school, PCHS, attended Northeast High School prior to the opening of PCHS.

Percentage Rated Proficient by Sex and Race

The following table represents the percentage of students who were considered proficient, broken down by sex. The males were more proficient in 7 out of the 9 tests, with large differences in Geometry, Physics, and U.S. History. The females were more proficient in English I and Algebra I, with large differences in both.

TEST	All	Female	Male	More Proficient	Difference
English I	61.6	70.4	51.5	Females	18.9
Algebra I	58.7	72.2	43.9	Females	28.3
Algebra II	77.9	77.0	78.8	Males	1.8
Geometry	48.0	41.0	58.6	Males	17.6
Biology	53.2	50.4	56.1	Males	5.7
Chemistry	50.7	47.4	54.3	Males	6.9
Physics	66.7	57.1	72.7	Males	15.6
ELP	54.8	54.2	55.5	Males	1.3
U.S. History	32.3	26.5	38.0	Males	11.5

The following table shows the percentage of students who were considered proficient, broken down by race. Between the two largest groups of students, the white students were more proficient in all of the tests.

TEST	All	Asian	Hispanic	Black	White	Multi-Racial
English 1	61.6	100	50.0	47.0	74.8	0
Algebra 1	58.7	N/A	100	48.9	69.3	50.0
Algebra II	77.0	50.0	N/A	75.0	81.4	0
Geometry	48.0	100	100	29.3	62.1	0
Biology	53.2	80.0	66.7	31.7	70.2	50.0
Chemistry	50.7	100	0	21.4	71.4	N/A
Physics	66.7	100	N/A	50.0	69.2	N/A
ELP	54.8	80.0	66.7	36.5	69.1	50.0
U.S. History	32.3	0	33.3	19.8	45.4	0

The following table shows the percentage of students who were considered proficient, broken down into the four largest groups. The white females and white males were the most proficient in the same number of tests. The black females and black males were the least proficient in the same number of tests.

TEST	Black Female	White Female	Black Male	White Male
English I	55.8	82.2	37.5	65.3
Algebra I	63.8	80.9	33.3	54.5
Algebra II	83.3	78.0	68.2	86.2
Geometry	25.9	59.2	38.1	65.2
Biology	26.3	75.0	38.3	65.6
Chemistry	18.8	71.4	25.0	71.4
Physics	50.0	60.0	50.0	75.0
ELP	37.0	70.5	36.0	67.5
U.S. History	16.7	38.3	22.9	52.0

The aforementioned test results are from test administrations that preceded major involvement or possibly any involvement of the CRSI in this school. It is, therefore, not appropriate to assign responsibility for either positive or negative impact on achievement test results to this project.

The test data show that test results in Algebra I and Algebra II improved (11.4 percent and 11.2 percent increases). Unfortunately, the other tests indicated a decrease in performance. Of course, many factors affect student achievement, including social, economic, and demographic realities. Statistics cited earlier describe the realities regarding poverty, education level, and other related factors in Pasquotank County. At Pasquotank County High School, for example, 43 percent of the students receive free or reduced cost lunch. The results, when reported by race and sex, indicate large disparities that might indicate the need for interventions (in terms of curriculum and instruction) geared to meet the needs of the lower performing students.

Overall, the test performance at PCHS was not unlike that of the other high school in the district. When compared with the state scores, however, Pasquotank falls short. On all tests and in all groupings of gender and ethnicity, the state scored higher. As a result, PCHS has been designated by the North Carolina Department of Public Instruction as a “Priority School.” This rating indicates that “50 to 60 percent of students are at grade level, OR less than 50 percent of students are at grade level.” The state report card also states that at PCHS, “expected growth not achieved.” Within this category the ratings are, “high growth,” “expected growth,” and the rating that was assigned to PCHS.

Although CRSI cannot be held accountable for prior student test scores, the project has contributed to the effort to improve. Some CRSI-sponsored activities, while not demonstrably related to improvements in student performance, have been viewed by faculty at PCHS as helpful:

1. A consultant for an extended workshop on the teaching of Earth Science

2. Stipends for both math and science teachers to attend a two-week workshop during the summer. Teachers, working in small groups, were directly engaged in curriculum planning.
3. A consultant for a workshop on “continuous improvement” that included all teachers
4. Some individual one-on-one teacher training voluntarily undertaken by the CRSI regional coordinator

Progress and/or Presence of the Drivers of Educational System Reform

Evidence of the presence or progress toward fulfilling the intent of the Six Drivers for Educational System Reform, as disseminated by the National Science Foundation, was a major focal point of the site visit team’s work. In the following section, these findings are summarized.

Driver #1: Implementation of a comprehensive, standards-based curricula and/or instructional materials that are aligned with instruction and assessment available to every student served by the system and its partners.

There is evidence that the curriculum at PCHS is based upon efforts to offer a standards-based curriculum. Several promising strategies have been instituted to address alignment:

1. State-produced curricular frameworks have been implemented, and the staff is developing pacing guides. The pacing guide for biology has been completed.
2. Continuous Improvement Teams meet monthly to provide oversight for alignment and other issues. The Continuous Improvement Team is a CRSI initiative. Some faculty, however, expressed a lack of knowledge about the team and were vague as to whether the team was meeting and what was to be expected. In part, this may be due to heavy staff turnover.
3. The district requires development of an annual School Improvement Plan that reflects input from faculty, parents, and students. Alignment issues are prominently discussed in the plan.
4. A full-time instructional specialist was assigned to PCHS to provide technical assistance to leadership personnel and staff. The specialist meets monthly with counterparts assigned to other district schools to address districtwide alignment issues.
5. A substantial stipend (25 percent of base salary) was provided to one math teacher to serve as the data analyst for the school.
6. The need to give special attention to what is referred to as “cross-curriculum integration” was recently included in the lesson plan checklist used by the administration in classroom observations.

Driver #2: Development of a coherent, consistent set of policies that supports provision of high-quality mathematics and science education for each student; excellent preparation, continuing education, and support for each mathematics and science teacher (including all elementary teachers); and administrative support for all persons who work to dramatically improve achievement among all students served by the system.

A comprehensive report on student performance on tests in a range of content areas for the past four years is given prominence in the 2002-03 version of the PCHS School Improvement Plan. The report is developed by staff, with representation from students and parents. The school has also provided one staff member a 25 percent stipend to serve as a data analyst.

The aforementioned suggests that the school staff value data and have demonstrated a commitment to make use of student performance data. It was also reported that student performance data on state tests are used to assign students to various advanced classes in all content areas.

Several teachers and the assistant principal reported that the faculty and administration consistently addressed the “achievement gap” issue.

Driver #3: Convergence of the usage of all resources that are designed for or that reasonably could be used to support science and mathematics education—fiscal, intellectual, materials, curricular, and extracurricular—into a focused and unitary program to constantly upgrade, renew, and improve the educational program in mathematics and science for all students.

According to the Education First School Report Card issued by the North Carolina Department of Public Instruction, PCHS possesses one computer for every three students, which is better than the district and statewide data that indicated one computer for every four students. One science teacher reported that each science classroom has four computers for use by students and teachers. The laboratory facilities were well designed and well supplied.

The school district has a full-time technology specialist who works with the PCHS instructional specialist and the CRSI regional facilitator to sponsor staff development activities.

There is no computer lab at PCHS. It was not clear whether this was a deliberate policy decision or due to limited resources of the district.

Math teachers indicated that the curriculum was expanded with a new course in discrete mathematics. They also reported that student enrollment is increasing in both honors/AP and college prep/college tech. prep courses.

Science teachers reported that enrollment is increasing in both honors/AP and college prep/college tech. prep courses. It was also reported that there was strong support for establishing an annual science fair as another way to promote interest in science.

There was no direct evidence of any shifting of funds or resources in support of math and science. It was reported that the district has no funds to purchase software. The PCHS budget requests for the 2002-03 school year appear to be rather modest:

Science (supplies, equipment, specimens)	\$6,000
Math (textbooks, competitions, batteries, calculators)	\$4,000

Driver #4: Broad-based support from parents, policymakers, institutions of higher education, business and industry, foundations, and other segments of the community for the goals and collective value of the program, based on rich presentations of the ideas behind the program, the evidence gathered about its success and its failures, and critical discussions of its efforts.

As previously reported, the School Improvement Plan for PCHS contains input from faculty and administrators, with input from parents and students. This document contains critical self-analysis and discussion of needs and priorities. The first paragraph of the Executive Summary of the 2002-03 School Improvement Plan states the following:

Pasquotank County High School members realize the need to close the achievement gap. Although some groups of students are performing well, student achievement should be high for all students at all levels. We also recognize the need for teacher collaboration. Teachers need time to work together during various staff development opportunities so that they may continue to grow professionally.

The document concludes with this final paragraph:

As an educational institution, we are committed to improving education for all of our students at PCHS. Parents, teachers and staff, who have taken an active role in the development of our School Improvement Plan, will actively promote our plan within the community.

Though not related to the formal parent advisory committee, PCHS makes efforts to open lines of communication with parents and the community through efforts such as these:

1. an annual freshman-parent orientation
2. an annual open house
3. periodically scheduled parent conferences

Although there do not appear to be any formal linkages with proximate postsecondary institutions, there is some interaction:

1. Last summer three teachers participated in an extended technology workshop sponsored by an East Carolina University Eisenhower grant. The university plans a follow-up program during the current academic year.
2. An instructor for the North Carolina School of Math and Science participates in the new AP course in biology each Wednesday through distance learning. The PCHS instructor holds a conference call with the science instructor on the Sunday prior to the Wednesday session.
3. The College of the Albemarle offers dual enrollment classes in nursing on the PCHS campus.

Driver #5: Accumulation of a broad and deep array of evidence that the program is enhancing student achievement through a set of indices that might include achievement test scores, higher level courses passed, college admission rates, college majors, Advanced Placement Tests taken, portfolio assessment, and ratings from summer employers, and that demonstrate that students are generally achieving at a higher level in science and mathematics.

In North Carolina, the high stakes testing program is the single most powerful and broadly visible factor for assessing student achievement. The test scores reported earlier indicate that, with the exception of algebra, improvement at PCHS has not occurred. In all of the tests, PCHS was below the state average. As a result, the North Carolina Department of Public Instruction has designated PCHS as a “Priority School” indicating “Expected Growth Not Achieved” with regard to student test performance.

Many factors affect student test performance. These include social, economic, and demographic factors that are often predictors of student success on standardized tests. In addition, many of the initiatives designed to meet the needs of all students—alignment activities, in-service activities, initiatives referenced in the School Improvement Plan—are recent activities whose effects likely would not appear in current testing results.

Driver #6: Improvement in the achievement of all students, including those historically underserved.

The results published in the North Carolina School Report Card clearly indicate that the PCHS students are not improving in their achievement as measured by the high stakes testing program. In addition, students who would be seen as historically underserved are performing at a much lower level than their fellow students on all tests.

Staff and administrators are committed to continuously address the acknowledged achievement gap within the student body. The current School Improvement Plan gives visibility to this issue in the disaggregation of student performance on the state required tests. The school staff development plan for 2002-03 indicates that the topic will be given prominence throughout the entire school year. Clearly, the achievement gap is of great concern to the faculty and staff at PCHS. They have been very public in addressing the issue and have in no way attempted to ignore it or sweep it under the rug.

Concluding Statement

Pasquotank County High School is located in a small community. It serves a population with a high minority concentration and a high poverty rate. As such, it matches the Rural Systemic Initiatives' profile regarding poverty. Whether Elizabeth City, the home of PCHS, is rural could certainly be debated. Elizabeth City has two high schools and is located approximately 50 miles from the Norfolk/Virginia Beach metropolitan area. It was reported that because Elizabeth City is in a different state from the nearby metropolitan center, the connections are less than they might be were they in the same state. It is currently less than a 1 hour drive between Elizabeth City and Norfolk. Plans are under way to replace the current 2-lane road with a 4-lane highway. When completed, the new road might well lead to a greater linkage.

The CRSI's role in helping PCHS better meet the needs of its students is difficult to assess. On the positive side, the project was directly or indirectly involved in a number of activities designed to help the school. These activities included a program improvement review, establishment of a continuous improvement committee, consultants for an extended workshop on earth science, continuous improvement workshops, and ad hoc consulting. In addition, the project provided stipends that enabled teachers to attend summer workshops. However, there has been confusion regarding CRSI's role. Classroom teachers, especially during our first two visits, expressed a lack of knowledge about or understanding of CRSI. Many expressed frustration that they had not received information regarding the activities of committees that were supposed to be affecting their work. The responses of the teachers involved were not hostile, but reflected puzzlement. If the individuals who are on the front line of the work to improve the performance of students are unclear regarding the actions of the project designed to be helping with process, there is a problem. A contributor to the problem is the turnover of math and science faculty. At the final visit, however, it appeared that this problem, thanks to cooperation between the assistant principal and the CRSI regional facilitator, had been somewhat ameliorated. Teachers evidenced a greater understanding of the project than they had during earlier visits.

Rating of Educational System Reform Drivers

Driver	Rating
1. Implementation of standards-based curriculum	2
2. Policies supportive of quality math and science programs	2
3. Convergence and usage of resources to support math and science programs	1
4. Broad-based support and involvement of parents and others	2
5. Accumulation of broad and deep array of evidence that the program is enhancing	1
6. Improvement in the achievement of all students, including the historically	0

Rating Scale:

0 = Not present/no evidence

1 = Weak evidence/beginning but sporadic

2 = Moderate evidence/developing but visible success

3 = Strong evidence/operationally consistent and widespread