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## **Mathematics Education in Rural Georgia: Social, Political, and Economic Factors**

Margaret Hall Sloan  
Clarke Central High School  
Athens, GA

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ACCLAIM's mission is the cultivation of *indigenous leadership capacity* for the improvement of school mathematics in rural places. The project aims to (1) understand the rural context as it pertains to learning and teaching mathematics; (2) articulate in scholarly works, including empirical research, the meaning and utility of that learning and teaching among, for, and by rural people; and (3) improve the professional development of mathematics teachers and leaders in and for rural communities..



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ACCLAIM Research Initiative  
Address: 314F McCracken Hall  
Ohio University  
Athens, OH 45701-2979

Office: 740-593-9869  
Fax: 740-593-0477

E-mail: [howleyc@ohio.edu](mailto:howleyc@ohio.edu)  
Web: <http://www.acclaim-math.org/researchPublications.aspx>

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## Abstract

The purpose of this study was to explore the ways in which social, political, and economic factors impact the teaching and learning of mathematics in a small rural school in Georgia. Focusing on a charter school that seeks to educate approximately 275 pre-K through 12<sup>th</sup> grade students, the study was intended to give voice to the residents of the county, with an emphasis on those who are most closely associated with the school: students, parents, teachers, and administrators. Additionally, county officials, employers, and other members of the community shared their thoughts about the school and the ways in which students are being prepared for the future. The data suggest that small rural communities can establish and maintain effective and, by most definitions, successful schools.

**KEY WORDS:** Rural, Mathematics, African American students, Black students, Critical Ethnographic Theory, Qualitative Ethnographic Research, Civil Rights, Mathematics Curriculum

Mathematics Education in Rural Georgia:  
Social, Political, and Economic Factors

Margaret Hall Sloan  
mhsloan@alltel.net

Multicultural issues are the focus of many recent research studies in education, but it seems we frequently have a somewhat myopic vision of the world in regards to issues of equity, with our attention directed almost exclusively to racial issues — specifically racial issues in urban school settings — and, to a lesser degree, gender issues. Our attention to those issues is both necessary and commendable; but 43% of the nation’s public schools are in rural communities, and 31% of the nation’s children attend rural schools (Beeson & Strange, 2003). These are children of all races, both genders, and every socioeconomic level. Clearly, rural issues affect a large segment of America’s student population and deserve our attention. In Georgia, more than a fourth of minority students and almost a third of all students live in rural areas, oftentimes in poverty, and the state’s rural population ranks seventh in the nation (Beeson & Strange, 2003).

When we casually observe rural schools and communities, we make assumptions, valid and otherwise, that may impair our ability to judiciously interpret what we think we see. I have spent most of my adult life in rural Georgia, and during a seminar in 2003, I took exception to Dr. Larry Hatfield’s claim that there was a “culture of failure” in rural schools and communities. Up until that time, my

observations of rural life were most definitely of a casual and personal nature, but I refused to believe that rural norms and values should be considered those of a culture of failure. Dr. Hatfield and I clearly had a difference of opinion — perhaps grounded in our perceptions of rural life, perhaps grounded in alternative definitions of success and failure; but I believed then, as I do now, that once an observer understands the rural community's definitions of success and failure, there can be little doubt that “failure” is an inaccurate descriptor of rural culture.

*Success* and *failure* are relative and subjective terms, but in most rural Southern communities it seems that someone is generally considered successful if he (and occasionally these days, she) has some degree of influence in the community. Success does not require wealth or a fancy title or a diploma of any sort. While you will almost never hear anyone say an honest and hard-working member of the community is a failure, being successful implies that the members of the community, after having reviewed an individual's life, his work, how he treats his friends and family, and how he treats his enemies, has decided that the individual has earned their trust and respect.

In rural communities, some of the most successful people may not be able to read or write and some of their computational methods might be a bit strange, but they have figured out a way to do what they need to do. Whether or not they can relate their skills to the mathematics being taught in the schools and whether or not they believe there is value in school mathematics often affects the ways in which they support their children's educational experiences. Some of these people believe that education is the key to their children's future success, that the world has changed, and

that a diploma is a necessary thing nowadays even though they did well without one. Some believe education is a social, but not an economic, necessity. Others believe school is a waste of time, serving primarily to keep children off the streets. There are, of course, people in every community who have received a formal education (or who wish they had been able to receive a formal education), who value intellectual growth and academic success, and who support wholeheartedly their children, the teachers, and the schools. Being supportive of the schools does not, however, necessarily mean being supportive of every academic theory, curricular overhaul, or instructional fad that comes along — especially when changes in school policy are mandated by state or federal law.

### Rural Schools in the Literature

There is not an overwhelming amount of research literature specifically about mathematics education in rural schools; but to some extent general articles about rural education which focus on the interplay between rural communities and their schools shed light on how that interplay might affect the teaching and learning of mathematics. As previously stated, some researchers believe there is a “culture of failure” not only in rural schools but also in rural homes and communities, lowering standards and expectations, and effectively preventing students from experiencing future success (Hatfield, 2002). In Hatfield’s paper, the rural districts he cites are overwhelmingly minority, unemployment is high, and poverty is rampant. Such demographics are not representative of all rural districts in Georgia, and not all of Georgia’s rural children are in such extreme situations. In some parts of the state,

rural schools tend to have extremely low percentages of minority students while in other areas, minorities are over-represented.

Nationally, the percentage of minority students enrolled in rural schools is only 8%, and the percentage of students living in poverty tends to be lower in rural areas than it is in non-rural areas (Loveless, 2003). In Georgia, however, 26.4% of rural students are minorities, and rural school districts have high levels of poverty (Beeson & Strange, 2003). Most educational research indicates that such demographic and socioeconomic factors are critical issues regardless of locale. Human capital issues such as illiteracy, high drop-out rates, and lower percentages of college educated adults affect economic stability; and, in turn, these factors are critical in explaining educational outcomes as the family's perception of the child's future opportunities will have a direct bearing on academic expectations (Mulkey, 1993), and the collective expectations of the families of students in a rural district will largely determine the expectations of the community.

In *Why Rural Matters 2003*, Beeson looks at demographics as well as school size, teacher salaries, numbers of students receiving free and reduced lunch, student-to-teacher ratios, access to technology, expenditures for administrative and transportation needs, and per capita income. These factors, along with percentages of teachers reporting parental support, expenditures for instruction, the average number of students per grade, the percentage of the state's population that is rural, and enrollment levels, are used to rank states on an "urgency gauge." The urgency gauge measures the conditions that are faced by students, teachers, and others in rural schools.

Beeson's report also includes an "importance gauge," measuring the scale and scope of rural education in each state. Factors considered to be important include the percentage of the state's population that is rural, the number of people in rural areas, the percentage of schools and students in rural areas, the percentage of minority students who are enrolled in rural schools, and the percentage of rural children in poverty. Beeson's urgency and importance scales confirm that Georgia's rural schools are in need of attention. The state has the largest rural schools in the nation, with an average of 131 students per grade; high levels of poverty, with more than 15% of rural children living in poverty; and rural educators who often feel that parents are not supportive of their efforts (Beeson & Strange, 2003).

These statistics are unsettling, and while many rural scholars believe there is a crisis in rural education (Hatfield, 2002), over the past twenty years, on a national scale, rural students have been on par with non-rural students on standardized mathematics tests, frequently surpassing the non-rural students in tasks that involved problem-solving skills (Howley, 2003); and rural schools outperformed non-rural students on the National Assessment of Educational Progress (NAEP) in 1996 (Lee, 2003). Many educators are unaware that, in general, the achievement gap has closed (Seely, 2003) and continue to operate under false assumptions about rural students' achievement, especially in mathematics.

There is, however, considerable variation at the regional and state level (Howley, 2003) — rural students perform significantly better in some states, and significantly worse in others; and, unfortunately, the mathematics achievement scores for Georgia's rural students are among the lowest in the nation (Lee & McIntire,



2000); Georgia is among the states in which the gap between rural and non-rural students is greatest. Georgia's rural students showed no significant gain on the NAEP from 1992 to 1996 when other states posted gains for rural eighth graders at or above the proficient level from 17% to 25% (Lee, 2003).

Lee and McIntire looked into interstate variations in mathematics achievement, comparing achievement by rural and non-rural students across the country in an effort to identify state-level factors (Lee & McIntire, 2000). Not surprisingly, Lee and McIntire found that most rural schools lack the facilities, course materials, and educational programs found in larger school districts. The American Association of School Administrators has observed that one of the main problems for rural districts is the recruitment and retention of quality teachers and that often the problem is finding qualified individuals who will fit in with the school and the community (Collins, 1999).

In a study of two Kentucky high schools for the Appalachian Collaborative Center (ACCLAIM), DeYoung (2003) found that, overall, the mathematics teachers were improvement-oriented and well qualified. Lee and McIntire, however, identified at least two factors responsible for rural teachers' having less professional preparation than their non-rural counterparts: rural teachers are generally younger and because of geographic isolation, many of them have fewer opportunities for advanced study and professional development.

On the other hand, rural schools generally enjoy low student-teacher ratios, individualized instruction, and cooperative learning opportunities; and such student-centered instruction, which is believed to foster higher-order thinking skills, is in line

with NCTM's recommendations for reform practices. Although Lee and McIntire found that rural teachers exercise considerable control over the instructional processes in their classrooms, it is not clear from the report whether or not these progressive practices are simply a result of the rural school environment or the result of conscious reform-mindedness on the part of the teachers. Lee and McIntire found that professional training, algebra course offerings, and progressive instruction were not significant factors in mathematical achievement for rural students. Eight-four percent of the variation in achievement across thirty-five states was explained by instructional resources, safe climate, and collective support (Lee & McIntire, 2000).

DeYoung (2003) wades through the muddle of definitions applied to *rural*, focusing more on economic realities than population numbers. In most cases, schools in Appalachia, the site of DeYoung's research, are in communities that are, and have been, struggling economically. Several of Georgia's rural counties have economic challenges similar to those that DeYoung describes. In rural locales, local economies and demographics affect school resources as well as organizational and curricular policies and often influence the academic decisions that are made for and by students. DeYoung examined the curricular war between academic and vocational/technical forces and the underlying assumptions that were often made concerning student abilities. He sought to analyze such matters with respect to accountability mandates and the current emphasis on mathematics achievement.

DeYoung found that although there were differences in the economies of the two communities and the realistic probabilities of students' finding employment nearby, the historical debate raged on in both schools about whether the aim of

education is to help students prepare to leave the community, for college and career opportunities, or to provide them with a technical/vocational foundation of locally useful skills, encouraging them to stay in the community. Perhaps as a result of the conflict between academic and vocational interests, the mathematics emphasis at both schools in the DeYoung study was changing away from the abstract to a more immediately useful and practical concentration, geared to the bulk of the students and not to the needs of future mathematicians (DeYoung, 2003).

DeYoung defines the focus of his work as describing and interpreting cultural themes found in classrooms in which mathematics is taught and constructed. Using interviews and focus groups, he questioned students, administrators, and teachers about mathematics instruction and the importance of mathematics in the two high schools (DeYoung, 2003).

### The Research Question

Researchers continue to investigate the ways in which teacher beliefs determine instructional practices, but it is important to realize that it is not only the teacher's belief system that is critical in the rural mathematics classroom (Perry, 2003). Expectations of mathematics education, and education in general, that are brought from the community — administrators, parents, teachers, students, and others — into the school building will often determine what can be taught there and how it will be taught. I believe that administrative policies, state and federal mandates, fiscal limitations, expectations about students, economic opportunities in the community, and other forces contribute to the structure of the academic environment in general,

and the mathematical environment in particular, affecting the students and the work they are *able* to do as well as that which they are *willing* to do.

Such issues facing rural mathematics educators might be summed up by posing the following question: How do the social, political, and economic factors of the rural circumstance influence the teaching and learning of mathematics? My objective was to identify and describe those factors that influence the mathematics program in a rural Georgia school; to describe that program, including but not limited to the curriculum, resources, teacher quality, and instructional methods; and to describe the mathematical environment as structured in the community.

### Theoretical Framework

My epistemological perspective is one of social constructivism, an epistemological framework that supports the theory that individuals construct knowledge through interactions with their environment. A fundamental tenet of social constructivism is that collaborative interaction, rather than purely individual investigations, leads to cognitive growth. These interactions include social, political, and economic events as well as communication, verbal and otherwise, among individuals.

I think it is reasonable to assume that the social norms within each classroom are, in fact, a part of the larger community construct; and if such is the case, then the social forces from beyond the walls of the school are vitally important in the construction of an academic environment. Viewing the world through such a lens, case studies and qualitative ethnographic research methods are often used to gain

understanding about the ways in which individuals and specific groups go about the business of teaching and learning mathematics.

This was a qualitative, descriptive study, using ethnographic and case study research methods — there are few facts or figures to examine, and those facts and figures that are included in the report are presented primarily to help the reader get a sense of those community attributes that can be reduced to a numerical representation.

Ethnographic research focuses on the identification of common cultural understandings, and such subjective, but collective, understandings are often interpreted to be more significant than objective data (Garson, 2005). I believe that “rural” constitutes a unique culture, distinct from “suburban” or “urban,” and although some issues seem to permeate virtually all mathematics classrooms, other concerns have distinctly rural manifestations.

We become so accustomed to the way things are in education that we often fail to think about the evolution of that state of being and how it might serve our purposes in the future. In failing to examine historical and current social, political, and economic factors, we are often blind to the oppression and injustice that are inherent in the system, and we frequently miss opportunities to reconstruct it in a meaningful manner. Because rural schools are often believed to be at a disadvantage, or oppressed in some way, the study took a critical ethnographic approach in that there was an effort to identify the ways in which these disadvantages might evolve and be perpetuated through some kind of systemic dysfunction.

Critical theory assumes that the oppressed share, to a greater or lesser extent, the blame for the circumstances in which they find themselves. Because of this shared responsibility, neither the oppressors nor the oppressed can, independently, create change — only a cooperative process can be successful.

As case study research, the study emphasizes holistic descriptions and contextual analysis of a limited number of people, events, and situations; and data for that analysis were gathered through observations, conversations with informants, and the analysis of historical documents. Case studies are designed to bring out details from the viewpoint of the participants by gathering and analyzing data from multiple sources (Tellis, 1997).

An important concern in any research is establishing validity, and case study researchers can address this concern in a variety of ways, many of which involve a process known as triangulation. Triangulation is not a specific process — Carspecken (1996) defines it as the use of multiple recording devices and multiple observers. Others use the term to refer to repetitive data gathering and procedural challenges to explanations, using multiple sources to clarify meanings by identifying the different ways in which a phenomenon is interpreted (Stake, 1994). Tellis (1997) lists six sources of data, important in case study research and identified by Yin (1994), all of which were used in this study: documentation, archival records, interviews, direct observation, participant observation, and physical artifacts.

Wainwright (1997) points out that the goal of the qualitative researcher is not to produce an unbiased account but to deepen the researcher's understanding of a social phenomenon and that the techniques employed by the researcher to establish

validity serve primarily to reduce the risk of the researcher's self-deception. The validity dilemma is often resolved when issues emerging from the data are placed in an historical context and issues previously identified in the academic literature are used to influence the direction of the study (Wainwright, 1997). Analysis of the statements made by the informants entails looking at the social, cultural, and political processes that shaped their views, and it is essential to examine the historical development of the academic program, specifically the ways in which mathematics is taught and learned, to reveal changes in the way it has been conceptualized over time.

Often used in ethnographic research, the case study is an interpretive research method in that the researcher will discover more than can be reported, and although the data represents the participants' story, the case study report is the researcher's version of the participants' story (Stake, 1994).

### Participants

A rural county, Mayfair<sup>1</sup> was selected for this study after consideration of several factors, primarily rural status and socio-economic demographics. There is not much apparent economic activity in the area, but the county straddles an interstate highway, which provides access to jobs in several large cities. Mayfair County School is a Title I school with a minority population of about 84%, and although the National Center for Education Statistics reports that the number of county residents living below the official poverty level is 25%, large numbers of students in the school are in low SES brackets, as evidenced by the high number of children who qualify for the

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<sup>1</sup> All names of people and places are pseudonyms except where given in historical context.

free and reduced lunch program. People who live just a little above the poverty level are still very poor.

The county has one school for all children, pre-K through twelfth grade – fewer than 300 students. The school had provided sixth through twelfth grades for just the previous four years; prior to that time, under a consolidation plan, students were sent to a middle and high school in an adjacent county. Mayfair was undoubtedly still trying to figure out how to “do” middle and high school during this study, the school’s fifth year.

Data was gathered from interviews with twenty-three informants, each of whom discussed his or her individual experiences with the school and/or the community. They shared not only their general impressions of the school and the community but also their hopes for the future; their educational philosophies; their feelings of pride and accomplishment; and, occasionally, their frustrations and disappointments with the situation. Three of the informants were graduating seniors who participated in a focus group in which conversation centered on school experiences, particularly in regards to mathematics courses, and their future plans and aspirations.

### Methods

Research for this study followed a recursive path, with virtually every issue subject to document analysis, observation, and conversation. Historical and other public documents were available that confirmed the state of affairs, past and current, the relationship between community input and the development of current policy, the level of support given to the academic program in general and the mathematics



program in particular, and community expectations for Mayfair County School. Observations provided information about the extent to which those official policies were actually implemented in the classroom and what kind of mathematical environment existed at the school. Conversations with administrators, teachers, students, and other informants served to confirm and explain what they believed was supposed to happen, what was happening, and the relationship between teachers, students, and mathematical goals that were generated as a result of those events.

The first order of business was the review of the minutes of the Board of Education (BOE) from 1996 until 2006, providing documentation about the political, financial, and academic issues that affected the school's creation and subsequent operations. Entries in the BOE minutes were often brief, and occasionally it was necessary to search for other documents to explain some events. For the most part, however, the BOE records provided a solid foundation from which to work.

Classroom observations were conducted during each of 27 visits to the school. I observed the mathematics teachers' regular classes, sometimes more than once; a mathematics enrichment class; and several of the school's vocational classes. Because the classes were small and instruction was individualized, I found it more useful to generate and refer to standard field notes than to rely on observation protocols.

According to Genzuk (2003), observations and relatively informal conversations are often the main sources of data in an ethnographic study, and situational responsiveness is required in order to get the best data possible. In addition to the classroom observations described previously, I conducted sixteen audio-taped interviews and had follow-up conversations and email correspondence with those

informants. I conducted four interviews (not audio-taped) with other informants and an audio-taped focus group with three members of the senior class.

In each of the interviews, I asked about issues and events that had been mentioned in the document analysis, behaviors that had been observed in the classrooms, and/or topics that had come up in other conversations; however, I allowed the informants the freedom and opportunity to address the things which they felt were most important, listening to what they had to say, using their information and insights to formulate follow-up questions or to generate additional historical document analysis to expand my understanding of various issues. Questions were always open-ended, and informants were allowed to express their understandings in their own terms. Transcripts were sent to all informants, and they were asked to verify that I had accurately recorded what they had said, and where necessary, clarifications were made.

Analysis is the process of bringing order to the data, organizing the data into categories, and identifying themes that emerge. Using an Excel spreadsheet, I created a table in which topics, such as student socio-economic factors, racial issues, academic expectations, mathematics curriculum, and mathematics instruction, were cross-referenced to each speaker, observation, or historical document. Transcripts had been generated from the audio-taped interviews; and those transcripts, along with field notes about observations and historical documents, were coded, cut and pasted into the appropriate cells of the table, sub-coded, and cut and pasted into more refined cells.

By repeating this refinement process several times, I was able to compare and contrast the interview responses of some two dozen informants, multiple classroom observations, and related historical documents to create a rough outline within which I could describe the social, cultural, political, and economic factors that are, and have been, at play in the mathematics classroom and how those factors affect the teaching and learning of mathematics at Mayfair County School. Many researchers feel that the analysis of the data continues throughout the writing process (Stake, 1994; Wainwright, 1997) as the researcher turned author will be forced to make choices about the content of the final report. I suspect the analysis of the data actually continues indefinitely, but as someone said, “You’re never finished, but eventually you are willing to share your work.”

### Mayfair County School

This is the story of a rural community whose residents came to believe that they were being shortchanged socially and economically, and their children were being shortchanged academically, as the result of the consolidation of their middle and secondary grades with those of an adjacent county. It is the story of the creation of a charter school for children pre-K through grade 12, a school that thrives as the result of realistic expectations, hard work, patience, progressive thinking, resilience, and a fair amount of old-fashioned stubbornness.

Mayfair<sup>2</sup> is a small rural county which had a population of fewer than 1900 people in 2000, according to the U.S. Census for that year. It is one of the few

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<sup>2</sup> All names, including those of persons and places, are pseudonyms except where given as historical reference.

Georgia counties that had a population decline during the last decade of the twentieth century (Bachtel, 2001), but it shares that status with many rural areas in other parts of the country. As is true for many small rural communities, there is, as one informant described it, not much to do: "...but there was nothing to do here — there's still nothing to do, for kids. There are not any playgrounds, no baseball fields, or any anything...."

Another characteristic Mayfair shares with many other rural communities is a stagnant economy. As Dr. Walton, the principal of Mayfair County School, described it: "...drive through downtown — it looks like a ghost town except for a post office and bank." Actually, there is a hardware store, too, but the town does look deserted; and in 2001, the county had just 20 non-farm establishments with paid employees (U.S. Census Bureau, 2006).

Approximately 60% of the citizens are black, 38% are white, and the remaining 2% are of other or mixed heritage. About 20% of the population is 65 or older, and 18% of the people in Mayfair County are of school age. There is an unemployment rate of approximately 9.5%, compared to the state figure of 5.5% (U.S. Census Bureau, 2000b). The median household income is \$23,750, in contrast to a median household income of \$42,433 for the state. Interestingly, although 23.4% of the residents live below the poverty level established by the federal government, and 94% of the students qualify for free or reduced lunch, fewer than 4% of the county's residences are multi-unit structures, most of which appear to be rent-subsidized, and almost 77% of the residents own their own homes. The median value of these homes, however, is just \$40,300, compared to a statewide median value of

\$111,200 (U.S. Census Bureau, 2006). The manufactured housing industry is well represented in Mayfair County.

Although the county has a 60% black population, the school registrar reports that the school has an approximately 84% black student population. Is this disparity the result of white flight? An aging white population? A growing black population? According to Jackie Wise, the school superintendent:

For some of them – it's a racial issue. Some of them just don't want to go to school in a predominately black school, and we are a predominately black school.... I think the idea of the kids being sent to a neighboring county, I think there is an underlying racial aspect to it. There's no question in my mind. Of course, nobody will acknowledge that — well, the whites won't acknowledge that. But that's what happened. We had white flight.

To gain an understanding of the white flight that may have occurred in the county, a brief review of the county's history is in order. Integration was late in coming to the area — until the 1970s, there was a school for the black students, and there was a school for the white students. When desegregation finally came to Mayfair this changed: one public school was established, but it soon became a school for the black students because a new private school, The Institute, provided educational services for the white children of the county. Mr. Owens, a retired mathematics teacher who had been teaching in an adjacent county at the time, explained that white parents who could not afford to send their children to the private

school would home-school or arrange to send their children to schools in the surrounding counties:

After the idea of integration, they were just going to let this be the high school, but then the academies started to pop up. All of the white students in Mayfair County were successful in withdrawing from the school....The whites were commuting out of Mayfair County, and they still are. I guess I could name a lot of them .... I substitute [in the surrounding counties], and I recognize their last names, and I see some of them...

One problem with trying to determine just how much white flight has actually occurred is in the way demographic numbers are generated. According to one of the system's employees:

In the city, maybe it's happening, too, but it's so large you're just not aware.... There's a family that lives off my street. She's got a mixed family...But on her form she filled out — you know, you have mixed, Caucasian, African American —she put down white. *You can put whatever you want to put* [italics added].

Regardless of the accuracy of such self-selected racial demographics, when census figures are compared with enrollment, about 60 of the county's school age children are "missing" from the school's roster. Most informants estimate that of these, not more than 30 are white children who attend school out of the county or are home-schooled. Even if these white children enrolled in the county school, the

student body would still be predominately African-American, about 72% of the student enrollment.. Dr. Walton, the school principal, discussed these demographics and the changes he expects to see in the future.

I think over time, [students who currently go to school outside of the county] will come to school here. Over the last couple of years, I've seen an increase in the number of kids coming back to our school...When I came here, we had some problems with perceptions—about what was going on at the school. We have overcome many of those perceptions and I feel that in the years to come, the school will continue to gain acceptance, and in the future, white parents will start sending their children to this school... Parents will begin to look at the academic record of the school without looking at ethnicity or race.

### The Social

The school provides music concerts, sporting events, and other activities that might help create a sense of community; and in many rural communities, the local school, especially the high school, is the venue for almost every cultural, social, or athletic event in the area as well as a source of enormous pride. As of yet, that has not happened in Mayfair. The lack of public participation at school-sponsored events has also been a hallmark of Board of Education meetings, and according to the superintendent:

We frequently call town meetings and have no one show....We put public participation on every board meeting agenda. We probably have public

participation at one out of three board meetings. It's usually because a parent has an issue about something that has happened with his or her child...It's usually about issues that I would consider minor in education, and usually personal, and usually discipline...Rarely does it have anything to do with academics — in fact, I can't think of any time it had anything to do with academics at all.

Indeed, it may be easy to dismiss what seems to be a lack of parental and public concern about academics as the result of apathy, but Mr. Owens had a different interpretation, a perspective that provides a glimpse into some of the challenges that the faculty and staff of this school face:

And most people you talk to, they don't comment on [academics] because the parents don't care. Really and truly, they don't care. Oh, they're happy with [their children's personal experiences at school]....They feel pretty good about that. But I think if you were to ask if they want their children to take a year of German or French, I think they would say they don't care which one, or none of them. That's what I meant when I said they don't care...I'm not saying that they don't want the best for their children, they don't know what's out there. If you are not familiar with it, then it just doesn't cross your mind. You know, if you didn't know college exists, then that couldn't be a concern of yours. So you wouldn't care because you don't know it exists. How can they care about something they don't know about?



Mr. Owens believes that a parent who has never taken high school mathematics would have little reason to attend or participate in a meeting about the mathematics curriculum, but that failure to participate should not necessarily be interpreted as a lack of concern about what is best for that parent's child or children. Still, virtually everyone at the school believes that one of the greatest challenges they face is overcoming parental apathy, whether borne of true disinterest or simply a lack of experience and understanding about the academic process.

Although the census bureau estimates that 56% of the county residents over the age of 25 are high school graduates (U.S. Census Bureau, 2006), according to the superintendent, when the school opened in 2001, 65% of the parents of Mayfair's students had not completed eighth grade. Perhaps those parents do not have any substantial understanding of the issues and concerns that may affect mathematics, or any other, instruction, and they are forced to trust that the school's administrators and faculty do know what they are doing. Of course, it could be the case that the parents understand more than they are given credit for, trust school officials to make prudent choices, and only express concern when they sense a disconnect between what is happening and what they expected. The principal recalled that when the mathematics curriculum was changed to include Learning Logic, parents were concerned, and they did not hesitate to express their concerns:

I remember when we started Learning Logic. There was a lot of apprehension about the program because it was new. Parents seem to have a lot of questions when the curriculum changes or when a new program is being implemented...

In any case, the lack of strong positive parental influence makes the teachers' jobs much more difficult. Ms. Wise, the superintendent, well aware of the demands placed on these teachers to provide not only academic instruction but also support and encouragement, discussed some of the ongoing efforts to make parents, especially the younger parents, more comfortable about coming to the school and participating in the education of their children:

We've been very successful with our pre-K program because when we changed to the federally funded program, it paid for a pre-K coordinator .... She goes to every house of every one of those children. She includes the parents on field trips with the kids, so they do a lot of traveling with their children ....She has dinners for the parents before the PTA meetings and gets them involved at that early stage. Even if they were not successful in school; even if they dropped out – here's an opportunity to be part of it... going on field trips, they like that, and if they're young — we have some very young parents — it gives them an opportunity. It's important...The Leadership Committee is an ongoing thing. I think it's been good for the school....

The academic achievement of children is often influenced by their parents' expectations (Patrikakou, 2004), and when the majority of parents did not finish high school, or did not attend high school at all, it may seem that the community, in general, has not put much value on education through the years. Another look at the history of the county proves that such an assumption may be faulty. Informants consistently reported that Mayfair County had provided a solid educational

foundation for its black citizens before desegregation, and the all-black school could boast among its alumni many successful black citizens. Mr. Owens had similar recollections about the educational opportunities that pre-dated integration:

Well, I was born in 1943 and finished college in 1964. I got my Master's in Baltimore....I had an aunt who received — I guess she was born in 1907 — and she earned her Master's from NYU. She was the curriculum director here ...I don't know exactly [how she knew about NYU]. It was an interesting thing. You know, the state of Georgia, before integration, before about 1974 — when I first started teaching, if I wanted to go to summer school, they would pay me to go to a black school. So that's how my aunt got to go to NYU. *The state of Georgia would pay you not to go to the white university* [italics added].

So it seems that throughout the 1950s and 1960s at least some blacks in and around Mayfair were able to take advantage of the educational opportunities provided by not only the black schools but also the state of Georgia, even if the circumstances now seem, at best, peculiar. Eventually, the civil rights movement did arrive, and with it the “integration” of the schools; but, as previously reported, the schools in Mayfair did not combine to create an integrated school, and the only remaining public high school in Mayfair became an all-black school.

One might think that there had been no change at all — there was still a school for the black students and a school for the white students — but the exodus of the white children from the county's public school system was accompanied by the

near complete withdrawal of the white residents' support, financial and otherwise, of the county schools. As the county's high school struggled to survive, the idea of consolidating with an adjacent county became more and more attractive. In 1978, the Mayfair and Leeson Boards of Education combined their efforts to provide a comprehensive school for the students from both counties, grades six through twelve, at a site in Leeson County.

For twenty years, middle and high school students from Mayfair traveled to Leeson County to go to school. As time went on, some of the citizens of Mayfair came to the realization that the consolidation was not working to the academic advantage of the Mayfair students and that the county was shouldering an unfair financial burden.

The realities of the situation were startling. Not only had Leeson County built the new school on the far side of the county, necessitating lengthy bus rides for the Mayfair students, but the parents of the Mayfair students were generally excluded from any decision-making processes at the consolidated school. Because of the distance, Mayfair students could rarely take advantage of any extracurricular activities or programs and parent involvement was limited; but worst of all, there was virtually no academic advisement in place for the Mayfair students, many of whom spent their high school careers amassing credits for non-academic courses and learning, too late, that they would not have the credits required for a high school diploma. The drop-out rate was in excess of 58%, and virtually none of the Mayfair students were going to college. Mayfair was paying a fee for each student and providing transportation while Leeson County was receiving funding from the state

along with credits which were used for construction and improvements at the consolidated school site. The superintendent described the financial arrangements:

We were also paying Leeson County, in addition to their taking the FTE money from the state, and we provided transportation, and we were paying \$3000 tuition per child, and when I started looking into this, I called every system that was in a combined high school. We paid more than anyone in the state of Georgia. I actually took a class at the University of Georgia — a budget class — in which the professor used Mayfair County as an example of one of the worst deals in the state. Leeson County got the best deal... They got a beautiful, brand new high school... I don't think anyone really realized how much it was going to add up to. And all the credit you get, per child, because you earn money for building improvements and all of these other things based on enrollment...

When Ms. Wise was hired in 1998 to be the new superintendent, she spearheaded the movement to build a school and bring the county's middle and secondary grade children back to Mayfair. At first, it seemed the county could not possibly do the things required by the state — the number of students was too small, the county was too poor, and there was no building in which to establish a school for middle and secondary students. Part of the solution lay in establishing a charter school, an arrangement that allowed the Board of Education to negotiate some leeway in the state requirements related to the physical plant of the school.

In Georgia, a charter school is a public school that operates according to the terms of a charter, which is simply a contract between the local Board of Education and the State Board of Education. The charter school receives waivers from various rules, regulations, policies, or procedures in exchange for addressing and meeting the performance-based objectives specified in the charter. In the case of Mayfair County School, the guiding principles for the establishment of the charter school specified that the school would:

- Create a learning environment for all of its children,
- Improve the climate for children to become hungry for knowledge,
- Enhance both academic and vocational achievement levels to better meet state and national goals, and
- Allow a climate of inclusion for stakeholders (parents, citizens, retired professionals, etc.) to participate in the improvement of the school through collective efforts.

The remainder of the challenge, the financial obstacles that resulted from the limited tax base of the county, was met by a Herculean effort, primarily on the part of Ms. Wise, to find and secure every possible source of funding. As she recalled the effort: “We begged, borrowed, and worked hard — I won’t say we stole! I recognized the need for an immediate grant writer, so I became one.”

The Mayfair Board of Education purchased twenty acres of land, built the building, and in 2001, they brought their children back to Mayfair to attend school in a beautiful new facility. Beyond the financial considerations and the challenges of helping students catch up academically, school officials were faced with a wide array

of social concerns, all of which affected the children and their ability to be successful in school. Even before the new school was open, administrators, faculty, and staff knew there was a lot of work to be done — their students were behind, academically, and for some of them, there would be no way to complete graduation requirements before they would be too old to attend public school. Dr. Walton described the experience:

[Leeson County] had some program for kids they thought would not be successful — without testing or anything ... The kids informed me that they made them feel like outsiders. When the students first came from Leeson, they did not have a lot of self confidence; their self-concept was that they could not finish school, that they could not pass a core class. They were not given the opportunity to take core classes — they had some kind of curriculum where they just gave them all electives.

The school initiated block scheduling and an after-school program of classes to enable students to get caught up on their credits. There were tenth and eleventh grade students who had just one or two academic credits, and it would be impossible for them to graduate without the school's providing additional opportunities for them to earn those missing credits. Having to take academic courses and complete the core curriculum were novel ideas for many of these students, and many of them had never heard of the Georgia High School Graduation Test. The new Mayfair County School made every effort to accommodate the needs of those students. According to the superintendent, the drop-out rate has been reduced to 33%; 11% if those students who

could not graduate before their twentieth birthday are excluded. Scores have improved, the Southern Association of Colleges and Schools [SACS] committee has given the school accolades, naming Mayfair County School as a 2005-2006 Super System for Quality Schools; but, still, AYP (Adequate Yearly Progress) and NCLB (the requirements of the *No Child Left Behind* Act) hover over the building like a shroud.

One of the most challenging social problems in the county is the number of single mothers — representing approximately 12% of households in the county (the state average is 8.6%). While 12% may not sound like an overwhelming percentage, Mr. Roberts, a member of the local Board of Education, pointed out that those single-parent households represent a disproportionate number of school families, with approximately 75% of the students living in one-parent households.

In many rural communities, there is a tension between staying in the community and pursuing post-secondary educational or career opportunities, a course of action that often means children of the community will not return but settle in places with more economic and career opportunities. One of the verses of a country song describes that situation well:

*Bobby told Lucy, "The world ain't round...*

*Drops off sharp at the edge of town.*

*Lucy, you know the world must be flat*

*'Cause when people leave town, they never come back."*



*They go ninety miles an hour to the city limits sign,*

*Put the pedal to the metal 'fore they change their mind.*

*Small Town Saturday Night, lyrics by Hal Ketchum*

Mayfair County does not have that particular tension due to an interstate highway that bisects the county and provides access to abundant educational and career opportunities, and students are beginning to see beyond the city limits. Mr. Drew, one of the mathematics teachers, said of his students, “I think most of them want to get out. I think these kids [perceive education as the ticket out]. Technical school is an option... several are probably planning to go to college... I think they all have options.”

They do not have to travel far to find better opportunities, but leaving the county is not always so simple for young adults who have had limited contact with the “outside world.” Mr. Restor, who teaches mathematics and coaches one of the sports teams, worries that instead of being a nurturing and supportive environment, attending a small school in a small community may actually turn out to be something of a handicap:

Some times I don't think [the situation here] is realistic. When they get to college, it's not going to be three or four in a classroom. When you have to compete, you know, in the world, it ain't gonna' be small. And once they leave this small setting, they get intimidated. That's why, what I try to do, I try to schedule a lot of field trips. Take them places, you know, and get them

in the sports program so they can be exposed to competition, to life outside of Mayfair. You can get intimidated if you're not used to it...you know, these kids, from this rural area, they can't see themselves outside of here, outside of their small town...when I take them to basketball games or a track meet, they just clam up...They have no social skills, they don't have them. They're intimidated. It's almost like they don't know how to communicate with the outside world, so they're just stuck right here in their comfort zone.

Concerns over the students' lack of experience in the outside world were expressed by many of the informants, and several recognized that bringing the students back to Mayfair might have exacerbated that problem. Without that exposure, without seeing what the world has to offer, students are often at a disadvantage when they try to visualize career and educational opportunities.

According to Ms. Hancock, the school's assistant principal, many of the students are pressured by their parents to go to work immediately upon graduating high school, and a common parental expectation is that the high school graduates will provide financial support for their families. Because Ms. Hancock's personal history parallels very closely the experiences of many of the school's families, she has been able to persuade many of these students and parents that a better course of action is to have the children continue their academic careers into post-secondary study, with an emphasis on students' going to a 4-year college or university.

Redirecting the school community's focus from attaining immediate job skills to attaining college admission has been no easy task, nor has the idea been without controversy. Not everyone believes that the current student population is, overall,

suiting to that endeavor. The college issue surfaced in many conversations, and with few exceptions, informants did not embrace the idea of having everyone on a college bound program. The school stresses excellence and perseverance and promotes the idea of self-sufficiency, responsibility, and pride, but, as the superintendent noted:

Not everybody wants to go to college, but, unfortunately, we are trying to promote that. We need to give the kids opportunities to do what they can succeed in, and I certainly have high expectations for my students. I want all of them to do the most they can do. But when you have students with an IQ of 75 to 95 or 100. When you think about it, those people are not necessarily college material, and even if they were, they are not necessarily interested. We can't force everyone to fit in one mold.

### The Political

With such a large minority population, one might assume that racial issues affect decisions made by county officials and school administrators, the procurement of funding and grants, and the choice of instructional programs in the school. Indirectly, perhaps, they do; but none of the informants in Mayfair County suggested that the racial make-up of the community or the school had any direct bearing on any official policy or actions. The community has come a long way since the time when the good ol' (white) boy system prevailed. Black and white citizens are found at every level of county government and throughout the school's administrative offices.

For the large number of residents over the age of 65, the idea of building and operating a new school translated into a concern about property taxes, the primary

source of funding for education in Georgia. The superintendent confirmed that property taxes did, in fact, go up, but "...we lowered the millage, but the tax amount was increased because of the property reassessments the county had done." Although taxpayers had been concerned that the establishment of a county school would increase their property taxes, and despite the fact that property taxes did increase, public support has been strong for SPLOST [Special Purpose Local Option Sales Tax] initiatives that provide additional funds for the school

Many of the informants who are connected with the school believe there is a tension between the school and the community, especially between the school and the county government, and many in the school community view the county officials warily. Mr. Roberts of the BOE described the situation:

I know that other schools have it worse than we do... when they mention county government on the Internet, they never mention the Board of Education...they never acknowledge us...to the outside world we're not a part of the government of the county. When we were building the school, I went to the city council — we were trying to cut every corner that we could — and I went to them because they were going to charge us something like \$3000 for a water meter. And I went to them and asked them if they could give us a break on the water meter... I couldn't get it. We also went to the county, you know, and asked them for different favors, and we never got nothing from nobody. Matter of fact, once the school was open, they went up \$50 on our trash haul-off. Little things like that kind of put a bad taste in your mouth.

At the time this study was conducted, the system was searching for a new superintendent because Ms. Wise had announced her plans to retire, and the Southern Association of Colleges and Schools (SACS) accreditation committee had not yet issued its report on the school. It was a stressful time, the school had not met all of its AYP goals in any year, and the charter was up for renewal. Many people were more focused on the charter renewal, especially in conjunction with the aforementioned conflicts with the county government. In a conversation about the charter renewal and the future of the school, one teacher said, “I don’t see any reason why we wouldn’t get [the charter renewal]... the community perception if we lost the charter — that would be bad.”

#### The Economic

There is no doubt that the feeling persists that there is a relationship between the racial identity of the community and the socio-economic status of the county’s citizens, but when asked about racial biases in grants and funding, the principal and the superintendent, both of whom have been active in procuring grants and funding, stated that the issues they address are socio-economic, not racial, and similar to those affecting most rural school systems. In particular, the principal stated:

RESA [the Regional Educational Services Agency] has regional meetings...I really don’t see a lot of difference in the small districts. We all have similar issues and similar problems...The absence of local businesses causes the school system to have an insufficient tax-base to fund additional teaching positions... I think the socio-economic status of the county may be more of a

factor than the ethnic population. Most of the grants have a certain standard of income level...

Job opportunities are scarce in the community. Occasionally, offices in the courthouse need part-time help, and Ms. Brown, a county employee, described the jobs as generally involving basic computer skills, such as those taught in the business education courses at the school, and math skills which, she believes, are not.

Employment numbers provided by the U.S. Census Bureau indicate that a large part of the labor force is working in low-paying jobs, and although many of the ills of the community are blamed on the availability of welfare and other public assistance programs, 68% of the households do have at least one wage-earner (U.S. Census Bureau, 2000a). What is difficult to determine from the numbers provided by the Census Bureau and other data reporting services is what proportion of the households with school children have a wage-earner. Several informants expressed their view that the twenty-plus years of consolidation took a toll on the job skills of the residents in the 20 to 40 year age bracket, the generation that includes the parents of most of the school's students. These adults would include the 65% of parents that the superintendent believes never made it to high school.

Some of these young adults may have never been employed, and some of their children may not be familiar with what is required to get and keep a job. There are only a handful of non-farm private businesses in the county, and inquiries revealed that they have little turn-over and most of their employees live outside the county. Conversations with informants revealed that there is a widely held opinion that welfare has created a multitude of problems, but whether government entitlement

programs have actually created the problems or not, the problems persist. Ms. Edwards, the manager of one of the county's largest employers, revealed the depth to which these problems have permeated the county's labor force:

One time we did a little project with Family Connections. They called and asked us to work with them under some grant to employ these people to try to teach them job skills. It was a very short time, not even a month. Very basic job skills, and we didn't mind doing it. [The director] is trying to motivate them. The state is trying to train them. It's just not there. I don't think they have role models in their lives.

Informants often expressed their belief that many of the county's citizens are not able to provide role models for the children, especially in terms of careers, work ethic, and persevering when things get difficult. Mr. Glover, one of the school's mathematics teachers, explained his perception of the problem:

But as far as I can see, a lot of the parents don't take their children's education as seriously as they should...We have some kids — I went to school with their parents. I see some of the kids following the same trends that I saw their parents follow, and to be honest, a lot of them really didn't take a lot of stuff into consideration. They would come to school, but, I mean, you know, when you come to school or you're going to college or something like that, you've got to figure out, what am I doing here? What is it that I'm trying to accomplish? How can I go about doing it? But that sense of direction wasn't

there. It was like, okay, *I'm coming to school because I woke up* [italics added]...

The school, ever cognizant of its students' academic and social needs, tries to establish enrichment programs that extend beyond traditional academic fare in accordance with the principles outlined in their Charter Assurances. Dr. Walton described one of the programs offered in the vocational department that enabled students to earn credentials that could lead to immediate employment after graduation:

We look for programs that benefit our kids when they get out of high school. Many of our students come from households below the poverty level. We try very diligently to encourage our students to attend post-secondary schools, colleges, and universities. We realize that teaching them technical skills will enable them to find meaningful jobs immediately after graduating from high school.

### Mathematics at Mayfair County School

Providing a rich academic experience for all students in all subjects at all grade levels is a challenge for every school district, regardless of size or the socio-economic demographics of the community. For small school districts, funding a full-time curriculum director is difficult, and hiring someone as a mathematics coordinator or coach is probably a financial impossibility. Mayfair's curriculum director wears



many hats, including full-time teacher, and she handles the responsibility of choosing instructional programs with considerable skill.

A self-described “reading person,” Ms. Masters works with the mathematics teachers to ferret out mathematics curricula for the different grade levels. The school is still searching for a mathematics curriculum that will work for its students. Ms. Masters, the curriculum director, explained that the curriculum for mathematics is different for different age groups. The kindergarten uses Direct Instruction, but that program did not work for the older children because, as she put it, the language of instruction was not the same as the language on the CRCT, and the students were faced with problems on the tests which they often could not relate to what they had been doing in class.

Originally, the school used the Direct Instruction curriculum<sup>3</sup> for reading and mathematics. Ms. Wise described how that curriculum was chosen and why it has been changed, and in explaining what is involved in choosing a particular program, she gives us a glimpse into the difficulties that a small school faces whenever changes occur in the curriculum:

But, the meeting that the state department had was, you went to different people who were selling these different programs. We were small, and I was

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<sup>3</sup> Direct Instruction is a commercially produced program available from Macmillan/McGraw-Hill. For information, contact Direct Instruction Project, University of Oregon, College of Education, 170 Education, Eugene, Oregon 98195, or Association for Direct Instruction, P.O. Box 10252, Eugene, Oregon 98195. Phone: 800/995-2464. E-mail: ADIhome@aol.com Internet: <http://darkwing.uoregon.edu/~adiiep/>. Or <http://people.uncw.edu/kozloffm/aftdi.html>

the only one there. They would have hour-long meetings, but I would pop in one for five minutes and then go to the next one to see what they were talking about. If it was similar to what we were already doing, I didn't see any benefit in that,...

The superintendent provided more details about the school's elementary and middle grades mathematics curricula:

We tried the Direct Instruction in math, but we didn't feel it was as effective [as it was in reading] because it didn't comply with the state-required testing; it wasn't set up in the same format and the students were not testing well, so we had to change math programs. Saxon math was, I think, there before.

We're not using that now. Well, we are using it as a supplement. Saxon math is just flat out drills. The "I CAN Learn®," math lab<sup>4</sup> is a grant. It's basically, almost totally, a computer application. It's – each child is working, supposedly, at his own speed. It is like Learning Logic at a lower level, I think.

"I CAN Learn" is an acronym for "Interactive Computer Aided Natural Learning." This is a computer-based instructional package developed by JRL Enterprises for delivering standards-based Algebra and Pre-Algebra, and the system delivers instruction on a one-on-one basis to every student, providing feedback to the student and the teacher through assessments. The school received a large grant for this technology, which is used primarily at Mayfair School for supplementary

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<sup>4</sup> For information about I CAN Learn® contact JRL Enterprises, Inc., 912 Constantinople St., New Orleans, LA 70115 or see [http://www.ed.gov/offices/OERI/ORAD/KAD/expert\\_panel/new\\_mathprogs.html](http://www.ed.gov/offices/OERI/ORAD/KAD/expert_panel/new_mathprogs.html)

instruction. Learning Logic, once the cornerstone of the Algebra I program, is also currently used for supplementary instruction.

The school has adequate staff to provide a variety of courses in each department, but scheduling difficulties arise, especially in the mathematics department, and most fingers point to the block schedule, which came under fire from several informants, as the problem. Several informants felt that if the school would utilize a traditional seven-period day, then each teacher could teach six mathematics classes, and most students' needs could be accommodated.

There are three mathematics teachers who provide mathematics instruction for grades 5 through 12, and each of the mathematics teachers at Mayfair has more than ten years experience in the mathematics classroom. Additionally, two of the mathematics teachers are certified in more than one subject area. Mr. Drew is certified in mathematics, having received his degree in Mathematics Education and a Master's in Educational Leadership and is currently enrolled in an L-6 Educational Leadership program. He is also certified to teach English, and during the semester of this study, he was teaching three mathematics classes and a journalism class. Mr. Glover attended college on an athletic scholarship, majoring in elementary education, and is certified in mathematics, language arts, and social studies for elementary and middle grades. Mr. Restor majored in Mathematics, with an emphasis in Computer Science, and is certified to teach secondary mathematics.

During my classroom observations, each of the mathematics teachers displayed considerable understanding of their students' mathematical thinking and were able to formulate questions that engaged and challenged their students. Classes

were small — most of the classes during the semester of this study had fewer than a dozen students, and some classes had fewer than six students. In such a situation, the instructional method used most often by these teachers could, perhaps, best be described as conversational. Although each of them might spend a few minutes giving a lecture or providing an explanation about the topic at hand, most of the class periods were spent questioning students, prompting them to explain their thinking about concepts, answering questions from students, giving brief demonstrations, circulating about the room, and having students present their work, verbally or at the board. During my observations, the mathematics students at Mayfair were almost always on task and fully engaged in the activity of the moment.

Test scores for the mathematics CRCT and the mathematics portion of the GHSGT are given in the table below, showing the percentage of students who have met state-mandated standards. For eighth graders, a passing score on the Mathematics CRCT is now required for promotion to ninth grade. High school students take the Georgia High School Graduation Test (GHSGT) during the spring of their junior year. Note that the fifth grade has always been under the instructional control of the Mayfair County school system, and the results for that grade level are included here to give a more complete picture of the work of the three mathematics teachers who participated in this study. The 2005-2006 CRCT scores include the first CRCT administration following the implementation for the new Georgia Performance Standards (GPS) at the sixth grade level, a process that proved to be difficult for the lone middle-grades mathematics teacher. Under the previous Quality Core Curriculum (QCC) standards for the state of Georgia, Mayfair's sixth graders had

scored well on the CRCT each spring, improving their passing rate from 26% to 60%; and the middle-grades mathematics teacher believed that his instructional methods would continue to serve his students well under the new state program. Unfortunately, this did not turn out to be the case, and the percentage of sixth graders passing the CRCT, which had been revamped to reflect changes in the standards, plummeted.

*Mayfair County School Test Results for Mathematics – Percent Passing*

	2005-2006	2004-2005	2003-2004	2002-2003	2001-2002	Overall % Change
5 <sup>th</sup> CRCT	62	38	73		37	68
6 <sup>th</sup> CRCT	8	60	60	59	26	(70)
7 <sup>th</sup> CRCT	62	81	62		48	30
8 <sup>th</sup> CRCT	68	41	60	53	35	95
GHS GT	100	89	62	65	67	50

Although teachers are using technology in their mathematics classrooms, they do not seem to be using it for any purpose other than as a source for supplemental algorithmic practice. Except for an enrichment class offered during the spring intersession, mathematics classes seem to be taught in a traditional manner; and instruction based on discovery methods does not seem to be a part of the normal scenario in any of the mathematics classrooms.

None of the classes I observed included any exploratory activities for the students — most instruction focused on algorithms — but the students were encouraged to discuss different strategies they might use for solving problems. For example, in one of the lessons on linear equations, students used a variety of charts, tables, and graphs to establish the relationships between variables, and they discussed the advantages and disadvantages of each representation.

Mr. Drew said that whenever possible, he would try to relate the mathematics to events or things with which the students might be familiar, and in one lesson, he used several different scenarios to generate “data” — recording contracts, sporting event ticket sales, and the cost of running a small store. Students were comfortable with such interaction — willing to engage in mathematical discourse by asking and answering questions and explaining their work. As is always the case, some were more actively engaged than others, but all of them were willing to discuss their thinking, suggest solutions, and talk about connections from one concept or representation to another. Mr. Drew was unerring in his ability to find some kernel of validity in anything they said and value in any questions they asked, and his positive feedback helped the students maintain their interest.

Mr. Drew’s students do not take the graduation test or the CRCT during the year; and, therefore, Mr. Drew is not directly affected by the requirements of NCLB. However, the End of Course Test [EOCT], while not an official part of AYP and the accountability system, is an item of interest for the administration, and the aggregate results are readily available to the public and would seem to give a picture of the overall effectiveness of the Algebra I program at the school. When asked about the

ways in which that may have affected his teaching practice, Mr. Drew expressed his view:

I'm not happy with it. We are year-round and go through June, so the EOCT tests come very early for us. We haven't covered factoring like we should have, but.... I definitely teach to the test more than I used to.

*Mr. Glover*

Mr. Glover teaches courses that are directly affected by NCLB as all of his students have to take the CRCT. The test results through eighth grade are included in the AYP calculations, and the CRCT given in 3<sup>rd</sup>, 5<sup>th</sup>, and 8<sup>th</sup> grade determine promotion to the next grade level. The school does not offer Algebra I to the eighth graders.

The new Georgia Performance Standards (GPS) were implemented in sixth grade during the year of this study and, according to the Georgia Department of Education web site, will extend to seventh grade at the beginning of the next school year and to eighth grade in 2007-2008. Because he teaches all of those levels, Mr. Glover was the first of Mayfair's teachers to attend a GPS workshop in anticipation of the change from the Quality Core Curriculum (QCC) to the GPS for mathematics. Mr. Glover is on his own — responsible for the changing curriculum at four grade levels — and he described his experience at a workshop he attended in anticipation of the GPS roll-out:

I went to a workshop in Augusta, and what we were doing, I was like, what's going on? The way they presented it made it so complicated... A lot of that

stuff was new to me...here in Mayfair, we don't have schools where you have maybe six middle school math teachers. See what I'm saying? There's only one person. So if I'm at a school with six math teachers and one of us doesn't catch onto something, somebody else might have caught onto it. So I don't have that pleasure, and I'm trying to learn all of this stuff at one time. And they're saying, tomorrow or the next time we meet, bring a sample of this and a sample of that, and I'm like, hold on, hold on because I'm there by myself. It became overwhelming.

Mr. Glover occasionally uses nonstandard problems, defined as those for which the students have not previously developed algorithmic methods to find solutions or those for which there may be more than one reasonable solution, "as extra credit, or maybe for motivation, maybe give a little prize whether they get it right or wrong — just for attempting to do the problem," but he believes in traditional instruction that includes a lot of repetition and algorithmic competence and in which teachers concentrate solely on the skills and concepts required of the students at each grade level.

*Mr. Restor*

Mr. Restor's classes, which include the higher level secondary courses, were conducted in that same conversational format that I had observed in the other teachers' classrooms, and Mr. Restor's students were comfortable discussing their work, their errors, and their uncertainties about new material — although none of the mathematical discussion strayed far from clarification of algorithmic procedures. Mr.



Restor stated that he does not use nonstandard problems or exploratory lessons or activities, and his students did not seem particularly interested in investigating mathematical concepts — most of their questions were “how” as opposed to “why” questions — but he said, “I do everything, whatever it takes — pairs, cooperative pairs, groups, all of that” to encourage his students to be actively engaged in learning mathematics together, and there was an indisputable feeling of group support in his classroom.

Mr. Restor stated that he rarely made any attempt to connect school mathematics to the mathematics that his students might use outside of school because he did not feel that they had much experience with real world mathematical tasks. With no part-time or summer jobs available to them, and no shopping malls nearby, they did not have many opportunities to learn about commercial financial matters, including concepts related to travel, revenue, loss, profit, and breakeven points — concepts that are routinely used to explain rates of change and systems of equations. Few of them had cell phones, and most were unfamiliar with the idea of base charges and variable cost for minutes. In fact, he said, the demise of food stamps (replaced by the EBT electronic benefit card) had essentially eliminated the only mathematical activity that many poor children have:

You’d get to go to the grocery store and count out the food stamps. It was a big deal to be in charge of that. When you got a little older, you could walk to the store by yourself, and you’d have to figure out which items you could buy with the food stamps that you had. That’s how I learned about mathematics

I realized that there were no students taking any mathematics classes that were not traditionally considered to be college prep track courses. The Charter documents stated that college and vocational tracks would be available for students, but Mr. Restor explained that the mathematics curriculum is evolving into one track, except in rare circumstances:

If they pass Algebra I, we'll try to keep them college track. Well, we're not giving them that choice. We just tell them what they're going to take. If they pass it, they're going on to Geometry... If they fail Algebra I, then we'll deal with it. Like I had some to fail it, and they were put back in that college track class again. If they continue to fail it, then we'll give them the applied classes. But, my understanding is that the double track is going to get weeded out anyway. Once we get into the GPS and all that, it's going to be just one curriculum. That's 2008. Math, it's going to be a challenge to do that — that's going to be a challenge, for them to get that one track thing and get a quality education for all kids taking that same class...I think we're going to see it, the fruits of our labor, with this year's GHSGT [note: 100% of the juniors passed the 2006 test]. There are some tenth graders taking Algebra, but most of them are taking Geometry. That's what the hopes are, that most of them will be taking Geometry. Well even with them, I incorporate the Informal Geometry. They don't have to deal with the proofs, but they struggle with it. They struggle, especially when they have to start applying it.

All of the mathematics teachers, and others, expressed some dissatisfaction with the scheduling difficulties encountered by a small school with just a handful of mathematics teachers and a block schedule. As stated in the Charter School guiding principles, the school was to “establish a technology based curriculum, designed to facilitate the intellectual, emotional, physical, and employability needs of our students,” and one solution to the scheduling problems might be to provide distance learning courses in mathematics and/or other core areas.

Overall, there is an impressive amount of technology available to the teachers and students at Mayfair County School, and they do not have to go down the hall to a computer lab to access the equipment. Mr. Glover was also impressed with the technology available for his students: “The kids here, they can come in, they log on...” It does not seem, however, that students log onto any mathematics sites that engage them in anything other than traditional computer-based practice and review, and there were no students taking distance learning courses, in mathematics or in any other area.

The school is very progressive, technologically, but there are no plans to use extensive distance learning programs in the near future. In discussions about the technology at the school, faculty and staff are clearly pleased with the capabilities that do exist and have not ruled out the possibility of an interactive distance learning program. Dr. Walton provided detailed information about an online physics course and the steps the media specialist had taken to investigate online distance learning courses for the school.

In some of the core areas, especially in science and math, there is a need [for distance learning classes]. We looked closely at the Virtual School for the state of Georgia... eventually decided to put that on hold. We did go with a physics program from PBS because we had, at the time, a teacher who was not certified in physics. We were very successful with that program...

The School Improvement Plan for Mayfair's charter stated that "Virtual High School will be essential to our program..." The Georgia Virtual School is an online program developed by the Georgia Department of Education to provide opportunities for Georgia students to engage in Advanced Placement, College Preparatory, Career, Technical, and elective courses to enhance their learning experiences. Students must have the school's approval for registration, and they can take classes during the regular school day at no cost to them—but enrollment in those courses is limited for each school. Enrollment for a supplemental, tuition-based program (\$300 per ½ unit course or \$600 per 1 unit course.) is not limited per school<sup>5</sup>.

The media specialist, Mr. Whitehead, expressed reservations about distance learning courses, especially in terms of the costs and benefits to the school as well as the rigor required of the students:

We had probably two students who could qualify. It's very rigorous. You hear a lot of different things from different people, but I know from my own experience that the students are usually first rate – it's almost like an advanced

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<sup>5</sup> For information about the Georgia Virtual School, see <http://www.gavirtualschool.org/>

placement opportunity...It requires a certain amount of self discipline that not every student has because you have to do a lot of it on your own.

### *Mathematics in Other Classes*

Some of the most interesting mathematics was not being addressed in the mathematics classrooms but in other classrooms. Although the resources for vocational education are limited, there were still business education classes in which students were learning about spreadsheets and a health occupations class in which students were working with quantities of medications and conversions from standard to metric systems of measurement.

The music director, Ms. Cass, despite her avowed mathematical limitations, used quite a bit of mathematics in her music theory classes:

I'm terrible at fractions! I'm terrible at math. The only thing I say about fractions, is that I say this is four-four time. It is not a fraction; it is a time signature. In math, it will look like a fraction, but in music it's a time signature...Sometimes they'll ask if the top number ever changes, and I'll say yes –  $\frac{2}{4}$ ,  $\frac{3}{4}$ ,  $\frac{6}{4}$  and so on. Does the bottom number ever change? Yes, but we're not going to talk about that, but, yes, it does change, when it changes, it changes the whole value system. It's high-level thinking, but getting some people to understand that...and they're having to do ten other things at the same time. They're multi-tasking: reading, playing, listening, counting, watching me, hopefully, sitting up — all of those things just to play one note

Of course, the time signature not only looks a little like a fraction, when music students learn what a time signature means, what they are doing is very much like finding equivalent fractions. As the music director said, in  $4/4$  time, there are four beats in each measure and a quarter note gets one beat — four quarter notes would fill up one measure, or maybe we could say that four quarter notes equals one measure. But so would many other combinations of notes: one whole, two halves, one half plus two quarters, and so on. In  $3/4$  time, a quarter note gets 1 beat, a half note 2 beats and the dot after a half note adds half of the value to the count, so a dotted half note gets  $2+1$  or 3 beats. It takes 2 eighth notes to make a beat. It *is* mathematics.

In the shop class, students were charged with building a gazebo for the senior prom. The gazebo was to be octagonal, about ten feet across and eight feet tall, and it had to be moved into the gym, through a set of double doors of standard height and width. The students built a model, determining angles, the saw cuts required, and how the gazebo could be constructed in such a way that it could be moved into the gym and assembled there. They constructed both the model and the prom gazebo, and both were flawless.

The shop teacher, Mr. Hammer, was the instructor for the drafting class, too. Drafting requires utmost precision, and each of the students was equipped with a mechanical pencil, a compass, two drafting triangles, and a triangular scale ruler. One of the drafting triangles was a 30-60-90 triangle, and the other was a right isosceles triangle. Using just these two triangles, the compass, and the scale ruler, students were expected to draw all sorts of things, from telephone dials to engine parts, with precise angles, proportions, and distances.

In another class with Mr. Hammer, students were introduced to technology presented as a smorgasbord of real-world applications. There were several modules for the students to explore: alternative energy production, digital video production, digital sound technology, forensic science, computer-aided publishing, construction technology, electronics technology and communication, and biomedical technology. Mayfair also participates in the Cisco Network Academy,<sup>6</sup> and Mr. Hammer is also the on-site facilitator for those courses. Mathematics is all over the Mayfair curriculum, but not all of it is owned by the mathematics teachers.

### Summary, Conclusions, and Discussion

Because critical ethnographic theory supposes that both the “oppressed” and the “oppressors” have a hand in the construction of events, it is important to consider both players in the analysis of any historical or current context. Particularly, if it is valid to view state and federal mandates as instruments for imposing the will of the oppressors on rural educational institutions without regard to cultural circumstances, the oppressed — the rural school community — cannot be viewed as a blameless victim of some elitist conspiracy to maintain an underclass. There is abundant research showing that oppressed people often create situations that ensure their continued oppression (Carspecken, 1996). The data gathered in this study suggests that Mayfair County School, while struggling to meet governmental requirements and contend with various social, political, and factors, still has considerable control over

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<sup>6</sup> Cisco Network Academy is a four course certification program offered through the vocational department in collaboration with Cisco Systems, Inc. For more information, see <http://www.cisco.com/web/learning/netacad/index.html>

its educational priorities, and some opportunities have been gained while others have been lost as a result of local policies and practices.

In this case study of the Mayfair County School, a small, rural, predominately black school in Georgia, I have described historical events and shared the participants' views about social, political, and economic factors that may explain how the school has come to its current configuration. Analyzing key historical events and accounts, which were centered primarily on issues of race, and informants' current perspectives, which are centered primarily on socio-economic issues, enable us to see how the educational environment in this small, rural school may be affected by state and federal mandates, which are primarily the result of political factors; local policies and attitudes, which are the result of social, political, and economic factors; and informants' attitudes and actions, which represent their social, political, and economic perspectives.

Informants acknowledged that the racial make-up of the county has been a factor in the social, political, and economic evolution of the community and the school, but they are keenly aware that the issues with which they contend extend far beyond racial concerns. Although I agree with their view that most of the challenges faced by the citizens of Mayfair County in educating their children arise from their rural and economic circumstances and not their racial demographics, Mayfair County School is predominately black, and it seems appropriate to review the historical backdrop of the civil rights movement when assessing the current situation. By all accounts, the integration of the schools in Mayfair spelled the end of an era of academic achievement for the black citizens of the county; and for the ensuing twenty



years, they were essentially deprived of the opportunity to control, improve, change, or influence the educational opportunities for their children.

Mayfair's black school, reportedly an effective provider of academic opportunity, was shut down; excellent teachers lost their jobs; the community was splintered; and black children became pawns in what turned out to be an expensive and unsuccessful academic misadventure. The minority underclass of Mayfair County, previously enjoying, at the least, some degree of self-determination and community identity in their school and, at best, excellent educational opportunities, remained the minority underclass; and it took more than two decades for them to regain even a fragment of what they had lost when they agreed to join with a neighboring county in a middle and secondary school consolidation plan.

Privilege refers to any advantage that one group has over another, whether that advantage is derived from social, political, or economic considerations, and that advantage is increased when those with less influence are unable or unwilling to object. When the Civil Rights Act was passed in 1964, federal government officials exercised their political privilege in dictating not only new rules for governmental activities and properties, specifically voting booths and publicly-funded schools, but also for private enterprise. This did not sit well with the "subordinates," private citizens and local and state officials, many of whom did not find their new status as enablers of federal government policy to be "natural, necessary, or inevitable." It was a privileged view, a white middle-class concept, of education that was applied to publicly-funded schools.

In Mayfair County, white privilege manifested itself when, as Mr. Owens stated, “All of the white students in Mayfair were successful in withdrawing from the school,” and, presumably, the black students were unable to do so. The exodus left the public school system in a precarious financial position as none of the white officials or landowners had any incentive to support the school with tax dollars. The black parents did not have the political experience or the financial ability — the privilege — to combat this withdrawal of support, whether or not they accepted it as natural or inevitable.

The consolidation plan, however, turned white privilege on its head as Mayfair County agreed to what turned out to be an outrageously one-sided financial plan, the school closed, and the local economy began to stagnate. From any social, political, or economic perspective, all privilege seemed to have been lost in Mayfair County. Fast forward twenty years, and privilege once again became the impetus for change. This time, however, that privilege belonged to a very small and diverse group who gained their privilege not so much by their political or social status as by their vision and dedication: the group included black and white teachers, attorneys, mechanics, bankers, truck drivers, parents, property owners, and welfare recipients. Their mission was to restore social integrity to the community, eliminate an unproductive financial drain on the taxpayers, and to confer upon the traditionally subordinate segment of the county’s population the privilege that comes with education.

They used their privilege, much of it an amalgamation of educational, political, and social contacts available to support their vision and dedication, to create

privilege in another group. Ironically, the group's privilege was strengthened by their target group's acceptance that it was normal, natural, and inevitable that someone would "take care of them." Little did they realize that with privilege comes responsibility, and, initially, there was some resistance when that became evident, as chronicled by those who had to explain graduation requirements to students who had been at the consolidated school and who did not see anything normal or natural about taking difficult academic subjects. The jury is still out, but the data gathered in this study suggests that many of the students at Mayfair County School already enjoy one of the most important benefits of privilege — the freedom to choose the paths they will take in the future.

Eventually, the decision was made to create a charter school, and considerable effort was put into the development of the Charter Petition Assurances. These are requirements contained in the Charter Schools Act of 1998 (O.C.G.A 20-2-2060 through 20-2-2071), and include a plan for collaboration, guiding principles, governance of the school, an improvement plan, an accountability plan, and a financial plan. The Assurances are contained in a 26-page document with general provisions and plans for such things as parental and community involvement, the school calendar, and school safety. Additionally, there are specific provisions that address curriculum, technology, and accountability.

The school has been able to fulfill most of its obligations under the terms of its charter, but some provisions became problematic with the passage of NCLB and its accountability requirements. For example, under the provisions of the charter, Mayfair agreed to use the Iowa Test of Basic Skills (ITBS) for accountability and

selected mathematics curricula they felt would align with that assessment instrument at different grade levels. The Mayfair Charter was signed in 1999, Georgia developed the CRCT in 2000, Mayfair County School opened in the fall of 2001, and when NCLB was enacted in January 2002, the state of Georgia designated the CRCT for AYP accountability requirements. Officials at Mayfair County School recognized that their mathematics curricula, chosen to align with the ITBS, did not prepare their students for the CRCT and began, almost immediately, to search for better programs. Within five years they tried several different commercially produced mathematics curricular programs: Direct Instruction, Saxon Math, Mountain Math, Learning Logic, and I CAN Learn as well as textbooks from Houghton-Mifflin.

The school superintendent managed to recruit some outstanding teachers, including the mathematics faculty, who set out to improve not only the educational opportunities of the students but also their awareness of the “outside world,” and to help their young charges develop the social skills necessary to succeed there. Certainly, the mathematics teachers at Mayfair County School believed that their mission was more than just the teaching of mathematics, and they seemingly expected more from their students than can be measured on any mathematics test. These were allegedly children who started school “not knowing about forks,” as the superintendent described their social awareness; and within a few years, they were eagerly sharing, discussing, and debating their mathematical knowledge with their peers, and they were open to the prospect of learning more. They were learning to be students, and none of them could have achieved that transformation without collaborative social interaction.

Teachers were creating a new culture for their students — a culture based on social and academic classroom norms, mathematical thinking, and elementary mathematical discourse. This culture is apparently quite different from the one in which the students lived when they were away from the Mayfair school in Leeson County, and in all of the Mayfair mathematics classrooms, the goal in building this culture was to generate openness, exploration, and a shared commitment to learning, all of which are goals of constructivist teachers, and all of which I saw in virtually every classroom observation.

The data gathered in this study indicate that social, political, and economic factors in the community have had an enormous impact on the culture of the school, demanding that teachers and administrators give considerable attention to the social skills their students will need to be successful in post-secondary study and careers. These are critical skills, and without them, students will be denied access to many opportunities. The school has been remarkably successful in this regard.

Students are becoming aware that there is a world beyond the county line, and that regardless of their individual abilities and interests, there are opportunities to be explored. Two of the three mathematics teachers spend considerable time discussing with their students the ways in which mathematics connects to the “real world,” using the students’ experiences to make those connections, and all of the mathematics teachers stress that excelling in mathematics can open doors to future opportunities.

None of the participants, except Mr. Owens, the retired mathematics teacher, seemed concerned that the depth and breadth of the mathematics program at the school were limited. For most, the primary concern was that students would

successfully complete high school and continue into college or technical school, and the teachers and other school staff were intent on developing in their students the basic social and academic skills that might be required for success in the kinds of educational or career pursuits that the teachers and administrators envision as most likely to occur.

I had expected to find a mathematics program that would include courses somewhat custom-tailored to the needs of the community — courses that would include elementary arithmetic, measurement, operations on fractions, proportions, ratios, percents, basic geometry, and data analysis. These are mathematical skills that all people should have, but they are commonly used by workers in agriculture, forestry, and construction — the industries that form the local economy. Each of these industries requires workers that have solid, but not necessarily advanced, mathematical skills.

I found those mathematical skills being taught — not in the mathematics department but in the vocational department, embedded in the drafting and construction courses. That is an excellent venue in which students can explore some fairly advanced mathematical concepts; unfortunately, there were no girls in any of those classes. The girls seemed to be enrolled more often in the business education courses; and although they worked with spreadsheets and basic accounting techniques, they really did not have the mathematical opportunities the boys enjoyed.

The mathematics program had essentially evolved into a college track program, and the traditional Algebra I, Geometry, Algebra II, Pre-Calculus sequence was the only option for the secondary students, with “vocational” students not

required to take Pre-Calculus. There was an ongoing debate about what to do for the students who were unable to succeed in those courses, despite repeated attempts, but at the time of this study, there had been no decision made about that. There seemed to be some confusion about the new Georgia Performance Standards and a belief that the new state program was a one-track curriculum, which it avowedly is not. Additionally, implementation of the GPS in the sixth grade had been more problematic than expected, resulting in disastrous test scores and continued problems with AYP.

The faculty and administrators at Mayfair County School were concerned about state and federal accountability, the implementation of the new Georgia Performance Standards, the renewal of the charter, and the selection of a new superintendent. None of the participants believed that any of these politically driven “realities” would enhance the educational opportunities for the students of Mayfair County; however, there was widespread agreement that these political activities affect all of the members of the school community — but it was the future of the school itself, not the academic performance of the children, that was most often cited as a concern. In fact, participants rarely discussed the academic performance of the students except in relation to the system of accountability.

The incessant search for curricula that align with the state tests, as opposed to the kinds of culturally-sensitive curricula that might be more effective in meeting the needs of this student population and which are more in keeping with the original intent of the school’s founders, is an example of the ways in which priorities have

been rearranged in response to political pressures. It could be argued that this is a harmful distortion or a serious unintended policy consequence.

The school is technology rich, with broadband and wireless capabilities, and computer stations in every classroom can accommodate computer-based instruction on-site and online. In the mathematics classrooms, computer-based instruction is of a supplemental nature for algorithmic drill and practice, and there is little, if any, use of the available technology to enhance instruction with the use of exploration or discovery lessons.

The mathematics curriculum for the school has been in an almost constant state of change as different programs, technologies, and courses have been investigated, with the result that the mathematics teachers are not in a position to give any kind of meaningful advice to their students about what courses will be available from year to year. The teachers simply do not know which courses are being offered or which teachers are teaching which subjects. There is clearly a lack of communication in regards to the mathematics program among the mathematics teachers, between the mathematics teachers and the curriculum director, and probably between the school and parents and students. Interestingly, there seems to be little concern over this uncertainty and lack of communication — perhaps because with such small class sizes, the teachers can, and sometimes do, individualize their instruction to such an extent that each student in a class could be, essentially, taking a unique course.

Even if Mayfair County School had been able to dedicate the resources and personnel necessary to research, implement, and establish a comprehensive secondary



mathematics program at Mayfair, the new Georgia Performance Standards represent a changeover to an integrated curriculum that would negate whatever program the school's faculty and administration might have constructed. The Georgia Department of Education provides training for mathematics teachers with respect to the GPS curriculum — during the 2006-2007 school year there are six workshops scheduled at each of nine different sites around the state — but no comprehensive plan seems to be in place to help schools manage the process. For teachers throughout the state, the change is expected to be difficult; and in some districts, especially large districts, individual schools are hiring mathematics specialists, or “coaches,” who will, among other things, facilitate the implementation process for the new curriculum (Obara, 2006).

When teachers and administrators at Mayfair County School talked about their focus on the QCC standards, restricting what is being taught to the concepts prescribed for each grade level, it became clear that for them, the high stakes of the accountability system meant that there was little room for discovery lessons or discourse that might stray into concepts from the “wrong” list of mathematical concepts. Their students' test scores have improved, overall, and there is little incentive for the mathematics teachers to incorporate reform methods into their mathematics instruction. There was no reason to believe that would change with the implementation of the GPS; however, the sixth grade CRCT results may generate some reconsideration of that position as the school faces the implementation of GPS at every level over the next few years.

There were other situations in which personal opinion and influence seemed to dictate the curriculum. The Charter Assurances specified that both academic and vocational tracks would be offered. It was never clear to me under what authority the mathematics program was evolving into a single college track, or exactly how the new GPS should be interpreted as an exclusively college preparatory curriculum, as Mr. Restor believed, or who was pushing the school toward having an exclusive emphasis on college preparation, as Ms. Wise suggested. These ideas were not reflected in the minutes of the Board of Education, and it seems that such departures from the original intent of the school, as evidenced in their Charter petition, would warrant the Board's approval. In fact, the Charter Renewal Application, filed in November of 2005, reiterates the availability and importance of the vocational track. There seems to be a serious breakdown in communication and/or understanding of the school's policy, if one exists, about curricular matters, at least in the area of mathematics.

The media specialist has not stayed informed about the current state of distance learning technology, its cost, or its potential value to the school's students. Rural areas need inventive options such as those afforded by learning technologies that can mitigate the geographical constraints under which rural schools operate (Hess & Finn, 2004). The Virtual School (GVS), sponsored by the state of Georgia, allows students to take online courses at a very reasonable cost per student, and each student in the school is eligible for one of the regular courses, per year. The cost of the regular courses is based on the FTE funding formulas and varies from year to year, but during the 2005-2006 school year the cost would have been a reduction of about

\$400 in FTE funding for each student enrolled in one of the regular online courses (e-mail correspondence with Kristie Clements, Georgia Virtual School).

The courses offered by the Georgia Virtual School do not seem to be just for the best and brightest students, although such courses are offered, but the Virtual School web site does suggest that students need certain personal attributes (motivation, self discipline, etc.) to be successful in this independent learning environment. Over 75 courses can be taken online through the GVS. The list includes academic as well as vocational studies, and the target audience for these courses would seem to be students at any school that has limited scheduling flexibility or personnel. Although the state has dedicated substantial resources to the Virtual School program, information about the program is apparently not getting into the hands of administrators, faculty, parents, or students at Mayfair County School.

Despite its successes, of which there are many, this small rural community and its school remain vulnerable to the whims of state and federal policy makers who may or may not have the wisdom and experience to recognize and appreciate those successes and give this community school the time it needs to establish itself as a model of academic excellence. Preparing students for future success involves more than academic instruction — Mayfair's students need to develop an awareness of opportunities outside their relatively cloistered environment, and the social skills and self-confidence that will enable them to successfully avail themselves of those opportunities. Teachers and administrators are justifiably proud of their progress toward achieving those goals. In addressing what they have accomplished, Dr. Walton had this to say:

I think what we have done here is help build that self-confidence — that they can finish school, that they can take and pass core classes. That's major. If you can't perceive it, then you're lost. So we've changed that. We've shown them that — our graduation rate has increased; our teachers are doing a fine job working with our students on a one-on-one basis, teaching the content area, and assessing students to prove that they are learning. We've had more than a 200 point increase in our scores on the SAT over the past 3 years. They see their friends graduating. When they first came back, if they didn't pass part of the GHSGT — half of them didn't even know what it was. They didn't realize they had to pass the five areas of that test to graduate. Now when the juniors don't pass the first time through, we see them crying in the hallway. That realization, that concern, that they actually care, is major. Going to college — prior to their coming back, over the last twenty years, if we had five students graduate from college, that would be a surprise to me. Now we have, in the past three years, we have about eleven in college right now. Half of the graduating class this year has already been accepted to college and are ready to go right now. That's major. We are literally changing lives here. We have increased their confidence to a point — it is our goal to not ask them, “are you going to a post-secondary institution” but, “which one are you going to?” That's what we're working on, and I think it's major. We don't get a lot of support from some of the parents because a lot of the parents don't even have high school diplomas. So we have to kind of push that and follow up with our graduates. They tend to give up if they don't get that push from the

school. Students don't always get support and encouragement from home. Their parents can't always see the significance of a good education— they say, "Okay, you need a job," or, "You don't need to go to college," or, "You only need to learn a trade." It's creating that mind-set, self-confidence; I feel that is the most important thing we have accomplished.

### Limitations of the Study

A case study can only claim to be a portrait of a particular situation at a particular time. Case studies are often enormously interesting, perhaps even entertaining, but, just as often, seemingly irrelevant to the reader's circumstances. This study focused on an extremely small, Southern, rural community that is predominately black, and there are those who may feel that the challenges facing the Mayfair County School are unique to extremely small, predominately black, Southern, rural schools.

The typical rural school serves a much larger proportion of white students than do urban and suburban schools — only 8% of rural students, nationwide, are black (Loveless, 2003) — and approximately 84% of Mayfair's students are black; and researchers or educators in other areas may feel that racial considerations outweigh other factors. Although race is certainly a part of Mayfair's cultural identity, this study focused on socio-economic circumstances and geographic isolation as the primary factors that defined the community's ethnographic identity.

This was critical ethnographic research, focusing not on racial matters but on the social, political, and economic factors that exist in the community and the ways in

which the educational system in this community has been constructed within a dominant culture that differs considerably from that which the members of this community know. And it is that community, with its residents and its school, which is the culture of interest. It is a rural culture. In that respect, even the “rural” in this case study may not seem familiar to a mathematics educator in some other rural area — rural culture is not a catch-all phrase for something that exists where there are cows and corn fields. Differences abound – there are agricultural and nonagricultural rural communities as well as farming communities that consider their agriculture to be different than that of other farming communities. Rural is not a down-home basic concept.

A single case study may have limited value beyond the impetus it can create for developing educational theory or its implications for further research, but creating interest in educational issues and encouraging further research in rural education, particularly the mathematics education in rural schools, seems to be a worthy goal.

#### Implications for Further Research

Further research that compares and contrasts the social, political, and economic factors in predominately white, predominately black, and racially diverse schools would be enlightening. Along these same lines, the power structure in Mayfair County, where black and white residents are found at every level of both the county government and the school’s administration, might be unique among rural counties; and there may be other issues for predominately black schools in rural locales in which most of the higher ranking officials are white. Or vice versa.

This school opened just a few months prior to President Bush's signing into law the NCLB Act of 2001. As a result, the school's policies and programs have been influenced by NCLB and Georgia AYP requirements almost from the outset.

Although there is an abundance of anecdotal evidence about the effects of NCLB on teaching and learning mathematics, further research would be needed to determine how and to what extent NCLB has affected mathematics instruction in rural schools.

The mathematics teachers at Mayfair use traditional instructional methods, albeit altered considerably due to the unusually small class sizes they have for most courses, and only one of them confessed to ever doing "nontraditional things." None of them indicated that concerns about AYP goals had influenced his instructional style. I think it would be of interest to know, for those teachers who may have embraced the NCTM standards and reform teaching, whether or not NCLB has affected their practice, and if so, how.

Block scheduling was often cited as a problem, in general, and, in particular, as a hindrance to fully utilizing the teaching staff to provide a wide range of mathematics courses. Additionally, Mayfair did not encourage students to take online courses except where necessary to meet basic graduation requirements. Although a focus on necessary course credits was given as the primary determinant for course offerings, the block schedule and the lack of distance learning are also contributors to the very narrowly structured mathematics curriculum. Further research would be necessary to determine whether or not students of small rural schools would take advantage of a wider range of courses, and also whether or not, for students who would like to take courses that are not offered at their schools, their needs could be

met by distance learning coursework. A related area of inquiry could address the media specialist's claim that distance learning courses are only suitable for high-achieving students with unusually high levels of self discipline.

Mayfair has considerable technological infrastructure, but it seems that much of it is used for remediation rather than the enhancement of mathematics instruction. Further research could explore the extent to which other rural schools have embraced technology and how that technology is used to benefit the students.

Despite an uncertain future — a new superintendent, charter renewal, AYP status, GPS, and other developments — the people at Mayfair County School can look at the past five years, see how far they have come, and face whatever comes their way with optimism and the determination to do what needs to be done. They have already done what many thought would be impossible. A visitor cannot help but feel optimistic about the future of this school and its students. The place is filled with a kind of joy — the kind that comes from doing a job well; knowing that improvements, however small, are being made; and witnessing the awakening of a community to the promise that is its children.



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