

Changing Trajectories

Building Paths for Careers

and

Institutionalizing Collaborations

March 2009

Public Affairs Research Council of Alabama

EXECUTIVE SUMMARY

This report addresses some of the initial findings from *Lost in Space: The Challenge of Deploying Vocational Education in the Huntsville Area*, with recommendations for engaging schools in creating educational opportunities for students to use what they have learned in relevant, hands-on applications, in engaging, rigorous academic curricula that lead to careers. Mastery of core academic skills is central to the success of any vocational program and should be considered part of an academic program, not as a distinct and separate educational path.

An analysis of the school performance and enrollment patterns is provided in Appendix A and B.¹ The best available indicator of readiness for either postsecondary education or employment is the percent of students scoring at Level IV on the Alabama High School Graduation Examination (AHSGE). Performance by high school is reported in Appendix A. Unfortunately, not all students reach Level IV performance on those tests, and many others do not complete their education. Vocational education can help address that problem.

Although the area schools have increased by more than 6,000 new students over the past ten years, Huntsville area public schools also lose approximately 500 students each year between 6th grade and 12th grade. While we do not know whether students move or drop out, we can see patterns that indicate that the systems are producing fewer completers than enrollment trends would naturally predict. Research indicates that engaging students at the middle school level should decrease the number of students who do not complete high school.

Vocational course offerings produce an estimated 900 to 1,000 students each year. About the same number achieve level IV on the Alabama High School Graduation Exam, which would indicate that the students are prepared for college or employment. Meanwhile, the demand for employees among the top 40 high demand occupations, with an associate's degree or lower tops 4,000 each year in Workforce Region 2. In areas where high schools provide vocational education, overall demand in those major occupational groups exceeds 16,000. While other school systems in the region may provide some employees, the largest sources for the region are the three school systems in the Huntsville area.

Additionally, this report provides an analysis of the vocational offerings and the demand occupations, differences in supply and demand, and a plan for increasing the participation and quality of career related education. The plan provides an aggressive, integrated approach that will lay the groundwork for current and future students.

¹ Presently, there is no integrated system, at the federal, state, or local levels, for directly and systematically tracking vocational placement for high school students. It is unlikely that a fully integrated system will be available for use in the foreseeable future, as changes in federal privacy laws would be needed to accommodate accurate tracking. As a result, evidence for the success or failure of specific vocational programs in Huntsville, and most other places, is anecdotal and unsystematic. The recommendations provided herein are based on the best available literature.

RECOMMENDATIONS

RECOMMENDATION 1: Replicate the pattern of engagement found in Allied Health in every industrial/occupational field. Where necessary, utilize industry associations or educational foundations to coordinate participation in vocational education efforts.

RECOMMENDATION 2: Build career information into the curriculum at every level so that students know what jobs are available and what those jobs pay.

RECOMMENDATION 3: Start with the Middle Schools first.

RECOMMENDATION 4: Implement a Plan of Engagement for All Industries.

(A Model Plan is Included)

RECOMMENDATION 5: Implement a performance tracking system.

RECOMMENDATION 6: Identify students at-risk of dropping out and provide them with intensive services to get them back on track.

EVIDENCE BASED PRACTICE

The Southern Regional Education Board's (SREB) *High Schools That Work* (HSTW) provides the best research on what works in vocational education. The patterns of successful vocational programs that emerge from the SREB and related research can be characterized as follows:

- Vocational programs improve educational performance most when they are integrated with and embedded in rigorous academic curricula.
- Deep learning, with long retention, occurs when students have the opportunity to apply what they have learned academically in a relevant, hands-on, practical way.
- The best vocational programs reinforce rigorous academic standards.
- Developing good communication, about educational goals, expectations, and frequent feedback regarding performance.

The SREB found that where vocational education is academically well-integrated, rigorous, relevant, and encourages relationships with adults in a workplace environment, basic academic test scores are generally higher. The SREB model has also received high marks from the Clemson Center for Dropout Prevention. See Appendix D for an overview of that model.

A MODEL CONCEPT: ASSOCIATED GENERAL CONTRACTORS OF EAST TENNESSEE

The Associated General Contractors (AGC) of East Tennessee has engaged high schools, colleges, and universities in developing curriculum, scholarships, and career path educational opportunities for students. According to Roger Tudor, president and CEO of AGC in East Tennessee, members of the association approached area teachers with assistance providing vocationally related exercises in the classroom so that the students could improve their scores on statewide tests of academic performance.

In coordination with other ongoing reforms in the Hamilton County School System, AGC provided business professionals from its membership to work with teachers during the summer to develop classroom exercises that enabled students to apply their academic skills in solving practical problems. Tudor explained that, "The English class would write the specifications for a road project and the Math class would implement the instructions, starting on opposite ends of the room." Everyone would participate, Math class would get upset with the English class for not being clear or careless and the two classes would get together to work out the problems they encountered. Other contributions to coursework included introducing change orders, in the middle of building a wall – a very common, real-world scenario.

In addition to working with East Ridge High School, the AGC worked with area community colleges and the University of Tennessee at Chattanooga to develop a 2+2 career pathway to a Bachelor's degree in Construction Management.

When asked about how the collaboration started, Tudor explained that members of the AGC, the contractors themselves, initiated conversations with teachers, inviting them to dinner, and the association even sent them to Las Vegas and Orlando to various conferences so that they could see how the industry was evolving. Contractors met with the teachers in groups of no more than eight, every week (sometimes more, sometimes less), in the evenings to work on classroom materials and teaching exercises over the course of the summer. In the fall, they began implementing the exercises they had devised together and started using the curriculum. Test scores shot up and, according to Tudor, attendance increased as well. As Tudor explained, it was the personal relationships that made this possible.

As Table 1 illustrates, the changes have been dramatic. Increases in test scores demonstrate the effectiveness of the reforms there, which included the development of a construction trades academy.

TABLE 1

Improvements at East Ridge High School			
Subject Area		2003	2008
English	Advanced	84%	96%
	Proficient or Advanced	39%	67%
Algebra	Advanced	9%	28%
	Proficient or Advanced	42%	69%
Graduation Rate		58%	79%

* Source: Public Education Foundation: Partners for Strong Schools

Transformations of this kind are not without controversy. Tudor worked with Jesse Register, the superintendent at the time, and they occasionally disagreed. Both men noted that there were disagreements among stakeholders, some involving allocation decisions, reorganizations, and limitations on enrollments among schools. Among the issues Tudor mentioned, was that the rules of the state athletic association interfered in enrollment plans, threatening sanctions if some

student transfers from one school to another in certain instances. This became an obstacle in fully developing the construction academy at East Ridge High School. Such is the nature of deep, highly effective school reform. It requires negotiating with many stakeholders.

Nevertheless, the change in the performance of students at East Ridge High School is dramatic and well documented. Verifiable improvements of this magnitude are ***extremely rare!***

ANALYSIS OF STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS

STRENGTH #1: Allied Health Provides a Great Local Model of Engagement

Of all the vocational programs offered by schools in the Huntsville area, by far the strongest is the area of Allied Health. Participation by area businesses (hospitals) is very well established and firmly embedded.

Like the AGC in East Tennessee, the experience of Allied Health in the Huntsville area demonstrates how involvement from business professionals can assist in supporting and highly structured, career focused educational sequence. Elise Taylor, Director of Huntsville Hospital's Corporate University described her institution's support:

"Huntsville Hospital's Corporate University team supports the vocational schools with a healthcare emphasis, by providing clinical experiences and lectures. The schools we currently have contracts with and work with directly include:

- Sparkman High School
Students rotate 3 hours a week in clinical areas throughout the school year
- New Century High School
Students rotate 3 hours a week in clinical areas throughout the school year
- Bob Jones High School
Students rotate 3 hours a week in clinical areas throughout the school year
- Madison County Career Academy
5 hours a week in the fall, 10 hours a week in the spring
- Huntsville Center for Technology
Students rotate 12 hours a week in clinical areas throughout the school year

The hospital also invites all high school students in the area to participate in our more inclusive programs:

- **Medical Venturing** – which meets once a month, for 9 months a year
- **Job Shadowing** – which provides job shadowing experiences for individual students interested in healthcare careers
- **Ground Hog Shadowing** – which is in conjunction with the Chamber of Commerce and Junior Achievement; and provides a concentrated job shadowing experiences for students.

We currently have a contract with Bob Jones, Sparkman High School, New Century High School, Madison County Career Academy, and Huntsville Center for Technology to augment their vocational programs with exposure in the healthcare field.”

Involvement in developing educational materials and curriculum is also evident in the hospital's relationship with the schools:

“[W]e have made recommendation on materials that will be helpful to youth interested in the healthcare field, and provided lectures when needed. . . Due to the advisory role we have in our relationship with the schools we serve, we . . . provide feedback on improvements. These programs provide invaluable exposure for students going into health care fields.”

These efforts provide a pipeline for future employees in the healthcare field in the Huntsville by providing exposure for students, helping them understanding of the breadth of career possibilities. Many go to local colleges and universities for additional training, taking jobs in the Huntsville area when they complete those programs.

The active involvement of business professionals in advising and providing feedback is critical to the success of vocational program. That truth resonates in almost every effective vocational educational program, regardless of field. Real-world experts make vocational programs stronger.

STRENGTH #2: The Huntsville Area has a Strong Labor Market

TABLE 2
Employment & Annual Average Job Openings by Occupation
Workforce Development Region 2

Soc Code	Occupation	Est. 2004	Proj. 2014	Growth Rate	Openings
410000	Sales and Related Occupations	41,800	48,990	1.6	2,020
430000	Office and Administrative Support Occupations	54,410	61,960	1.31	1,960
510000	Production Occupations	60,190	63,540	0.54	1,940
350000	Food Preparation and Serving Related Occupations	28,020	35,510	2.4	1,590
530000	Transportation and Material Moving Occupations	28,310	31,190	0.97	955
290000	Healthcare Practitioners and Technical Occupations	18,610	24,040	2.59	905
250000	Education, Training, and Library Occupations	19,690	23,690	1.87	775
170000	Architecture and Engineering Occupations	18,880	22,320	1.69	740
110000	Management Occupations	25,030	27,150	0.82	725
150000	Computer and Mathematical Occupations	13,520	17,690	2.72	715
130000	Business and Financial Operations Occupations	17,290	21,160	2.04	685
470000	Construction and Extraction Occupations	18,210	21,050	1.46	610
490000	Installation, Maintenance, and Repair Occupations	17,580	20,160	1.38	550
370000	Building and Grounds Cleaning and Maintenance Occu	12,940	15,610	1.89	490
390000	Personal Care and Service Occupations	9,110	11,360	2.23	445
310000	Healthcare Support Occupations	8,030	10,850	3.06	370
330000	Protective Service Occupations	7,110	8,350	1.62	325
210000	Community and Social Services Occupations	4,610	5,950	2.58	215
270000	Arts, Design, Entertainment, Sports, and Media Occ	4,690	5,390	1.4	185
450000	Farming, Fishing, and Forestry Occupations	4,490	4,240	-0.57	105
190000	Life, Physical, and Social Science Occupations	2,410	2,800	1.51	95

Source: Alabama Department of Industrial Relations, downloaded from <http://www2.dir.state.al.us/projections/Occupational/Proj2016/Region02/Summary.aspx>

WEAKNESS #1: Diffuse Industries Face Obstacles in Coordinating Engagement

A number of industry sectors do not have strong connections with the schools. While this is a general weakness, projected growth is strong for employment and the challenge will be finding qualified employees.

Restaurant businesses are less concentrated than health care, where large hospitals provide convenient hubs for interaction between institutions. According to the online Yellow Pages, Huntsville is home to 58 Chinese Restaurants, 75 Fast Food Restaurants, 14 Italian Restaurants, 2 Japanese Restaurants, 42 Mexican Restaurants, 84 Pizza places, 1,011 general Restaurants (others may be included), 5 Seafood Restaurants, 1 Steak House, and 348 restaurants that offer take out. The key for these entities is a restaurant association or similar vehicle for coordination.

Restaurants are typically much smaller scale than healthcare organizations and managers have few resources to provide administrative support and coordination for educational activities on their own. Some general contractors in the construction industry face similar problems, as do many other small businesses. For these kinds of employers, engagement with schools needs to be coordinated through an intermediary who can facilitate participation with vocational education advisory councils and other related activities.

Such an intermediary could also provide publicity and advertising for vocational education without appearing to favor one employer over another, which could be a stumbling block to investment in some cases.

RECOMMENDATION 1: Replicate the pattern of engagement found in Allied Health in every industrial/occupational field. Where necessary, utilize industry associations or educational foundations to coordinate participation in vocational education efforts.

WEAKNESS #2: Labor Market Demand Exceeds Production of Graduates

Table 1 below identifies the available course offerings in the Huntsville area. Detailed course enrollment figures for Bob Jones High School were provided by Madison County Schools.

Administrators at Huntsville City Schools' Huntsville Center for Technology (HCT) noted that it provides services for middle and high school students, totaling approximately 8,000 students. No specific enrollment figures were provided for vocational education courses and estimates had to be made based on the percentages found in the other two school systems.

Likewise, Madison County serves approximately 4,500 students, with some attending courses within their local high school and others at the Madison County Career Technical Center. Enrollment figures for vocational education programs; however, are much lower than suggested by the enrollment totals for the high schools.

TABLE 3

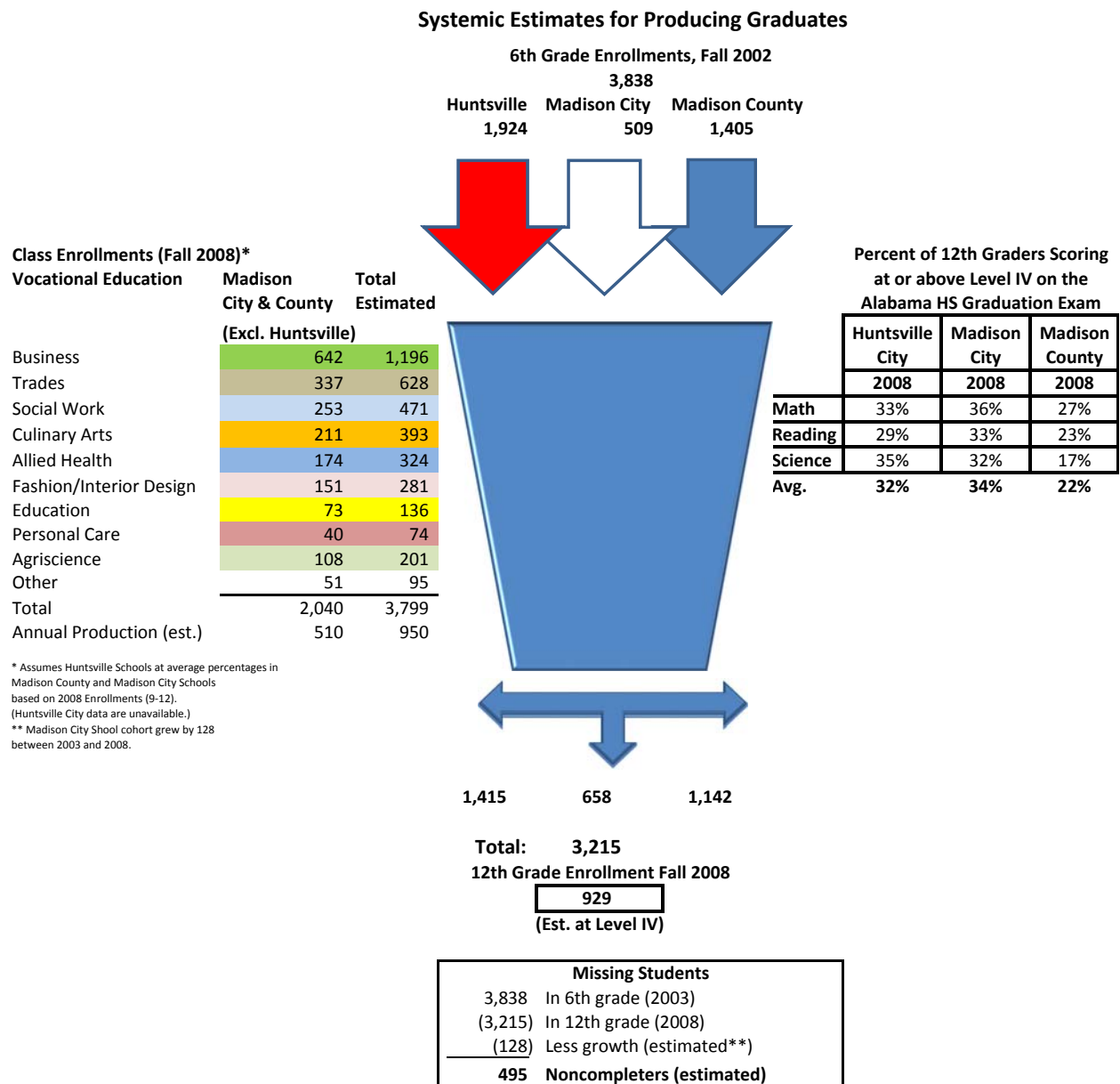
SUMMARY OF VOCATIONAL EDUCATION COURSE OFFERINGS						
	Bob Jones High School (Madison City System)		Huntsville Center for Technology		Madison Co. (CTC)* <i>(Offered at all Madison County H.S.'s in ital.)</i>	
Occupational/Instrustrial Area	Course Name/Description	Enrollment	Course Name/Description	Enrollment	Course Name/Description	*Enrollment
Business/Marketing Education	Computer Applications*	200	(Middle Sch.: Career Discovery/Teen	NA	Business Education	NA
	Business Technology*	143				
	Integrated Computer Tech					
	Interactive Multimedia Design					
	Accounting 1	16				
	Accounting 2	4				
	Entrepreneurship & Mgmt.*	24				
	Administrative Principles					
	Financial Mangement	225				
	Marketing Dynamics					Marketing
Internet Publishing						
Occupational/Instrustrial Area	Course Name/Description	Enrollment	Course Name/Description	Enrollment	Course Name/Description	Enrollment
Family and Consumer Sciences	Family Dynamics	99			Family Life	NA
	Food Dynamics	154			Family & Consumer Science	NA
	Housing Decisions					
	Interior Design	52	Early Childhood/Older Adult Svcs. Ed.	NA		
	Child Development	53	(Early Childhood Technology)		Teach Alabama/Child Care*	20
Occupational/Instrustrial Area	Course Name/Description	Enrollment	Course Name/Description	Enrollment	Course Name/Description	Enrollment
Culinary Arts	Culinary/Hospitality 1	143	Culinary Arts	NA	Culinary Arts*	16
	Adv Culinary/Hospitality 2	40				
	Culinary/Hospitality 3	12				
Occupational/Instrustrial Area	Course Name/Description	Enrollment	Course Name/Description	Enrollment	Course Name/Description	Enrollment
Fashion Design	Fashion Design 1	76				
	Fashion Design 2	20				
	Fashion Design 3	3				
Occupational/Instrustrial Area	Course Name/Description	Enrollment	Course Name/Description	Enrollment	Course Name/Description	Enrollment
Healthcare Science/ Allied Health	Kaleidoscope of Health Careers	49			Healthcare Science*	14
	Health Science 1	76	Healthcare Science Technology	NA		
	Health Science 2	35				
Occupational/Instrustrial Area	Course Name/Description	Enrollment	Course Name/Description	Enrollment	Course Name/Description	Enrollment
Industrial & Agriscience Tech.					Engineering Academy	NA
					(Only at Sparkman & Buckhorn)	NA
	Welding	50	Welding	NA	Welding	14
	Auto Mechanics	100	Automotive Technology	NA	Auto Service Technology	25
			Collision Repair Technology	NA	Auto Collision Technology	22
			Power Equip. Tech. (Small Engine)	NA		
	Woodworking	98	Computer Electronics Technology	NA		
			Drafting Design Technology	NA	CADD I	5
			Precision Machine Technology	NA	Precision Machinging	19
			Electrical Technology	NA	Electrical Technology	4
Occupational/Instrustrial Area	Course Name/Description	Enrollment	Course Name/Description	Enrollment	Course Name/Description	Enrollment
Agriscience	Floral Design/Interiorscaping	26			Agriscience	NA
	Horticulture	23			Horticulture	17
	Landscape Design/Management	42	Landscape and Turf Management	NA		
	Sports/Recreation Turf					
Occupational/Instrustrial Area	Course Name/Description	Enrollment	Course Name/Description	Enrollment	Course Name/Description	Enrollment
Personal Care			Barbering	NA		
			Cosmetology		Cosmetology	40
Occupational/Instrustrial Area	Course Name/Description	Enrollment	Course Name/Description	Enrollment	Course Name/Description	Enrollment
Cooperative Education	**Coop Education Work Exp.				Cooperative Education	21
	**Coop Education Related Study					
General Vocational Education					ESL	8
					World of Work	22
Total Enrolled/Served		1,763		NA		277

For the sake of comparison with labor market projections, Table 3 was color-coded. The same colors were used to identify demand occupations in Labor Market Information (LMI) data.

CURRENT PRODUCTION OF VOCATIONAL AND LEVEL IV STUDENTS

Figure 1 below outlines the main overall production of vocational education students and the performance of the most recent 12th graders on the Alabama High School Graduation Exam (AHSGE).

FIGURE 1



Based on enrollment figures, area schools will produce approximately 3,215 graduates in 2009, assuming full retention. Using last year's 12th grade scores on the Alabama High School Graduation Examination (AHSGE) for each school system, there will be approximately 929 students scoring at Level IV. Conversely, there should be approximately 950 students who will

exit the system having taken some vocational education class (assuming one quarter of high school enrollment, and non-duplication of enrollment). One should not assume that the students scoring at or above Level IV are one and the same students who were enrolled in vocational education classes. That individual-level matching is not available without matching the data at the level of individual student records.

TABLE 4

Course Offerings and Demand Occupations					
Occupational Area	Area Enrolled	Area Graduates*	Annual Openings Region 2**	High Demand Occupations***	Over/ (Under) Demand
Business	1,196	299	5,390	1,520	(1,221)
Trades	628	157	6,000	825	(668)
Social Work	471	118	310	25	93
Culinary Arts	393	98	1,590	585	(487)
Allied Health	324	81	905	1,025	(944)
Fashion/Interior Design	281	70	185	NA	NA
Education	136	34	775	30	4
Personal Appearance Care	74	19	445	NA	NA
Protective Service Occupations	NA	NA	325	50	NA
Farming, Fishing, and Forestry	201	50	105	NA	NA
Other	95	24			
Total	3,799	950	16,030	4,060	(3,223)

* Estimated based on course enrollment patterns divided by 4 (Assuming 1/4 of high school students exit each year).
 ** Major Occupations
 Source: Alabama Department of Industrial Relations, downloaded from <http://www2.dir.state.al.us/projections/Occupational/Proj2016/Region02/Summary.aspx>
 *** Associate Degree and Under
 Source: 2006-2016 Occupational Projections were developed by the Alabama Department of Industrial Relations, Labor Market Information Division, Research & WIA Units, MicroMatrix System, August 2008 (downloaded from http://www2.dir.state.al.us/projections/Occupational/Proj2016/Region02/High_Demand_Assoc.aspx)

Based on LMI data, area schools would under-produce graduates in high demand occupations by approximately more than 3,200 individuals per year. Overproduction in the areas of social work and Agriscience, may be the result of a liberal interpretation of the course offerings (See Table 3 for details).

The gap in production for Allied Health is not surprising, though it is likely to be larger than estimated here, where Huntsville City Schools may be lower than estimated. The economic impact of that shortage, given the average wage, is quite large (See Appendix C for details).

While Personal Appearance Care (Cosmetology and Barber) occupations are not high demand occupations, there are still a high number of annual openings and there is little danger that employment would not be available for those individuals.

Specific enrollments for the Huntsville City Schools are not available for Agriscience courses (Horticulture, Flower Arranging, etc.), so the apparent over production in that area is not likely

to be more than an artifact of the calculation method, which allocated enrollments based on the patterns in Madison City and Madison County.

It is worth noting that there are no programs offered for protective service occupations in the high schools, though ROTC is loosely associated with that field and is not included in these calculations.

Career information, along with wages and benefits for demand occupations needs to be shared with students at every level, starting in the middle schools, and continuing through the high school years. Student knowledge should help align programs with the market in the long term.

RECOMMENDATION 2: Build career information into the curriculum at every level so that students know what jobs are available and what those jobs pay.

OPPORTUNITIES

TABLE 5

**Opportunity Structure
(Enrollment by Grade)**

Huntsville City	K	1	2	3	4	5	6	7	8	9	10	11	12
1999	1810	1920	2019	1981	1878	1827	1871	1803	1800	2113	1690	1317	1530
2000	1714	1852	1919	1990	1933	1808	1845	1774	1735	2208	1642	1327	1353
2001	1661	1760	1822	1907	1952	1926	1827	1770	1723	2087	1605	1345	1447
2002	1615	1763	1767	1821	1904	1984	1924	1764	1769	2103	1532	1361	1455
2003	1735	1700	1728	1757	1810	1901	2031	1838	1721	2205	1557	1360	1300
2004	1715	1807	1659	1749	1773	1835	1912	1987	1782	2192	1605	1345	1247
2005	1754	1774	1803	1651	1730	1766	1815	1889	1907	2187	1666	1348	1254
2006	1737	1829	1778	1852	1665	1771	1787	1825	1847	2275	1765	1457	1282
2007	1728	1774	1827	1793	1850	1668	1786	1796	1799	2239	1770	1482	1378
2008	1625	1787	1791	1832	1843	1837	1669	1728	1780	2210	1798	1470	1415

Madison City	K	1	2	3	4	5	6	7	8	9	10	11	12
1999	386	459	467	454	448	448	405	408	473	497	437	402	331
2000	395	427	447	483	470	476	474	425	437	530	461	414	377
2001	395	489	442	464	511	480	499	478	440	481	498	434	378
2002	440	473	474	482	478	518	509	524	503	524	479	490	434
2003	449	505	503	516	520	495	551	543	547	599	497	453	479
2004	473	503	533	518	531	536	520	597	554	620	569	497	440
2005	501	522	544	574	541	563	555	583	615	628	611	573	466
2006	538	541	558	557	601	593	621	622	631	739	614	568	545
2007	512	618	573	582	568	630	632	652	654	671	692	640	605
2008	527	567	637	591	588	589	658	660	701	684	719	679	658

Madison County	K	1	2	3	4	5	6	7	8	9	10	11	12
1999	1205	1242	1243	1332	1278	1153	1138	1216	1127	1234	1048	893	797
2000	1191	1298	1210	1274	1360	1303	1218	1203	1214	1268	1092	995	840
2001	1141	1314	1245	1231	1299	1351	1341	1258	1199	1357	1091	946	902
2002	1187	1296	1311	1278	1260	1340	1405	1378	1239	1353	1138	988	902
2003	1246	1318	1295	1367	1278	1304	1384	1432	1385	1388	1148	1078	941
2004	1333	1307	1295	1325	1401	1302	1341	1451	1416	1560	1203	1132	957
2005	1323	1434	1341	1341	1383	1405	1383	1384	1473	1741	1243	1124	1045
2006	1344	1443	1442	1398	1383	1423	1468	1451	1424	1884	1325	1134	1032
2007	1373	1497	1468	1467	1451	1433	1483	1527	1497	1829	1424	1196	1109
2008	1349	1457	1484	1508	1526	1510	1506	1556	1567	1819	1533	1189	1142

Table 5 shows enrollments by year, by grade since 1999. Enrollment cohorts are marked by color. The opportunities in this pattern run from red to green, with green having the greatest potential for being impacted positively by improved vocational education and the red being the least. The highest return on investment would logically occur in the green area.

The gray-shaded area indicates classes or cohorts of students who have exited the systems. The red area is the current graduating cohort, which will be exiting the system this year. The orange shaded area indicates students who are the rising high school cohort for next year.

Yellow indicates the middle school students, which mark an important transitional age (to be discussed below), and the light and dark green colors indicate the elementary school students who will benefit the most from any changes made in the next couple years.

Unfortunately, no current plans could realistically benefit the exiting cohort.

These figures can provide a basis for comparison in the coming years, as plans are implemented. Some details may need to be refined, because missing data requires some estimation, but results can be measured against these estimates, looking at Level IV performance, and basic outputs (See page 9).

RECOMMENDATION 3: Start with the Middle Schools First.

A review of SREB literature indicates that middle school is where vocational education experiences can have the greatest immediate impact on subsequent academic and job preparedness. By starting at the middle school, change can be achieved and sustained, provided several subsequent events are managed properly. There are several reasons why the middle school is the ideal target for vocationally oriented programming.

First, it is a pivotal period in childhood development for boys and girls. Two strands of research intersect at the middle school. The first, dealing with vocational education, emphasizes that the middle school is where students have a marked developmental opportunity to demonstrate applied academic skills, having acquired math and reading skills in elementary schools. Students at this age, often referred to as tweens (ages 10 -12), are ready for challenges and eager to show competence in areas. Psychologically, they are beginning to develop realistic career expectations (nurse as opposed to a fairy god mother). The literature indicates that as a pre-adolescent's imagination develops and becomes more concrete, they are more likely to have interests in the practical side of a potential career. While individual students vary, this general developmental moment is the most opportune time to interest them in using academic skills in relevant, practical applications related to careers.

Another thread of research indicates that the problem with high school dropouts begins much earlier than high school, where it becomes visible. As one researcher puts it, dropping out is a long process. That process often begins in middle school, if not earlier. Vocational exercises are

known to help students building competence, engagement with school, relationships with adults, improve attendance and academic performance. All of these factors reduce dropout behavior.

A second overarching reason for targeting middle school is that it allows for the development of a sequential progression of programmatic enhancements. While interventions are being implemented in middle school, work can be done on preparing linkages and activities in the junior high school so that as the students move from one environment to the other, there is a continuity of integrated activity related to vocational education at the next level. These next steps should be planned and implemented with recognition of what the student have already been doing and learning in their middle school classes. Continuity in the partnership is also a key concern in developing the next step in the process as institutional memory is critical in designing a progressively more rigorous continuum of learning (which itself is essential in maintaining engagement with both faculty and students).

The same professional connections between business specialists and teachers can be forged in the students' progression to high school, where groundwork can be laid for the student's arrival the following year. The Committee and its partners should use the experience of the middle and junior high schools as a learning opportunity and model for continuing to engage the high school community, students, teachers, and parents.

RECOMMENDATION 4: Implement a Plan of Engagement for All Industries.

PARCA recommends that the Committee of 100 facilitate collaboration among school administrators, education foundation, teachers, parents, the local education foundation, and relevant members of trade associations to provide advice, expertise, and professional development opportunities to help teachers improve student performance in the Huntsville area. Information about career opportunities and related educational opportunities in the local colleges and universities should be integrated into the core curriculum, providing ongoing marketing of career opportunities.

The following plan of activities should encourage class discussion, including references to how academic skills are related to career opportunities. Part of those discussions should be information about how students can get funding, scholarships and loans, to pursue careers in their chosen fields.

The following timeline provides an overview of the activities that should be implemented to improve vocational education in the area. The step-by-step process outlined below builds on itself. Through the successful implementation of each step, the groundwork for the next step is laid. Target dates provide the best windows of opportunity given the school year cycle.

- **Immediately: Contact each school for information on their vocational education advisory committees, meeting schedules, and how members can participate and**

contribute. Attend the next scheduled meeting and request information regarding the current curriculum.

- Business professionals should study each course's curriculum to identify any portions where they could provide relevant additional instruction, resources, or provide a demonstration of worksite expertise at a job site, or combination thereof.
 - Meet the instructors one-on-one in an informal setting provided by the business professional. Business professionals should solicit invitations to attend classes, and to offer assistance in providing at least one activity related to their area of expertise. Every teacher should receive at least one offer from a business professional.
- **2009-2010: Target middle school students (5th and 6th Grades) for enhanced educational opportunities by engaging their teachers in professional development:**
 - **Spring 2009 – Engage Faculty, Administrators, and Counselors:** The Committee should sponsor social events, private dinners, or other events that will allow teachers and administrators an opportunity to get to know business people individually. Invitations should include administrators and school counselors and nurses.
 - **Spring/Summer 2009 – Sponsor Professional Development:** Each industrial association should identify and sponsor at least one professional development opportunity for a math fifth- or sixth-grade math teacher to attend that includes sessions related to educational needs in that industry.
 - **Summer 2009 – Develop Classroom Exercises:** Professionals in each of the industries should meet with teachers in small groups of no more than eight to develop classroom exercises or field experiences that allow students to demonstrate their academic skills by applying them in hands-on, practical ways. ***Developing the plan together is essential. It cannot be developed outside and brought in.*** Business professionals must provide ample assistance and support for the classroom exercises to be successful.
 - **Fall 2009 – Unveil Program and Begin Practice:** Implement the classroom exercises as designed, with participation of the occupational and business professionals.
 - **Begin collecting baseline performance data (See page 18).**
 - **2010-2011 – Engage/Expand Faculty Involvement:** Target junior high school students (Grades 7 & 8) for enhanced educational opportunities by engaging their teachers in professional development:
 - **Repeat as above for the junior high school teachers and administrators.**
 - Review and continue to enhance the 5th and 6th grade exercises with the teachers; modify as needed based on feedback and data.
 - Engage all postsecondary educational institutions in North Alabama in developing curricula, scholarships, and career-path

- Contact community colleges for assistance in providing technical information and career pathway opportunities for students entering high school; provide information on Dual Enrollment and other enhanced educational opportunities.
 - **Review data collection; compare first cohort performance with that of the previous cohorts.**
- **2011-2012:** Target high school students (**Grades 9 & 10**) for enhanced educational opportunities:
 - **Repeat as above for the middle school and junior high school teachers and administrators.**
 - Review and continue to enhance the 5th to 8th- grade exercises with the teachers; modify as needed based on feedback and data. Compare baseline math, science, and reading scores.
 - Begin meeting with teachers for grades 11 & 12.
 - Start planning meetings that integrate colleges and universities; seek input from them on the performance of entering freshmen.
 - **Review data collection and compare first and second cohort performance with that of the previous cohorts.**
- **2012-2013:** Target students in **Grades 11 & 12** for enhanced educational opportunities:
 - **Repeat as above for the school teachers and administrators.**
 - Evaluate and assess curriculum changes and modify as needed based on improvements from baseline test scores.
 - Provide scholarships for students progressing to postsecondary education.
 - Solicit suggestions on improvements from all participants and
 - **Review data collection; compare performance of all new cohorts' performance with that of the previous cohorts.**
- **2014 And Beyond**
 - Evaluate, modify, and expand engagement with schools based on performance on test scores, attendance, and graduation statistics.
 - Identify root causes for nonperformance and solicit input on improvement strategies from educators, administrators, students, and parents.
 - Work with colleges and universities to encourage scholarships, internships, co-operative education, and placement services for graduates.
 - **Review data collection to identify holes, compare performance of all new cohorts' performance with that of the previous cohorts.**
 - **Assess root causes for low performing areas and assign people to work on solutions.**

DEFINITIONS OF KEY ACTIVITIES

- **Engaging Faculty:** Business professionals need to become personally familiar with the educators. One-on-one, face-to-face interactions are required. Ideally, initial interactions would be facilitated at social gatherings such as dinners or banquets as many businesses may do with retreats. Getting to know one another and developing trust is not an optional activity. Failure to do this will doom the enterprise.
- **Sponsor Professional Development:** Almost every occupation provides opportunities for members to obtain additional skills, knowledge, and training. Often, these opportunities are offered at annual association meetings or conferences. Some conventions offer opportunities to display work, or have vendors with the latest technology. Attending these gatherings would be important way for an educator to become familiar with the state-of-the-art in a given occupation. Such opportunities need not be specific to a specific academic discipline. Interdisciplinary groupings of educators can foster the cross-talk that is essential in developing effective educational teams.
- **Unveiling and Beginning the Practice:** Business professionals and educators should have a public announcement and initiation of the new vocationally related activities. Such an event serves several purposes. First, it provides a chance to market the ideas to parents and administrators (the product needs to be constantly marketed and resold over and over). Second, such an event provides a time scale for measuring progress and assessing the impact. There should be a clear demarcation, where there is a “before and after” for determining whether the results intended are the results achieved. Finally, a formal announcement and unveiling provides the teachers and business professionals an opportunity to show their work and model the behaviors that foster successful programs.
- **Implementation of Classroom Activities & Field Experiences:** These activities should have clear learning objectives that the students understand and can relate to both academic and career goals. The key features of a good classroom activity include relevance to real-world problems, students engaged in applying skills, and long-term learning retention. It is recommended that everyone who helped develop the activity or experience participate in the initial delivery and be part of the ongoing evaluation.
- **Collect Statistical Benchmarks:** Evidence-based practice requires that a performance baseline is established, sometimes called a benchmark, against which subsequent activity is evaluated. A consistent review cycle for collecting and analyzing performance information on student test scores, attendance, and academic completion rates needs to be instituted. Results need to be regularly published and disseminated to the community. This activity provides an opportunity to market career education and an opportunity to recognize achievement on the part of educators and students.

TABLE 6
Projected Impact of Implementation Plan
(Enrollment by Grade)

Huntsville City	K	1	2	3	4	5	6	7	8	9	10	11	12
Class of 1999													1530
Class of 2000												1317	1353
Class of 2001											1690	1327	1447
Class of 2002										2113	1642	1345	1455
Class of 2003									1800	2208	1605	1361	1300
Class of 2004								1803	1735	2087	1532	1360	1247
Class of 2005							1871	1774	1723	2103	1557	1345	1254
Class of 2006						1827	1845	1770	1769	2205	1605	1348	1282
Class of 2007				1878	1808	1827	1764	1721	2192	1666	1457	1378	
Class of 2008			1981	1933	1926	1924	1838	1782	2187	1765	1482	1415	
Class of 2009			2019	1990	1952	1984	2031	1987	1907	2275	1770	1470	
Class of 2010		1920	1919	1907	1904	1901	1912	1889	1847	2239	1798		
Class of 2011	1810	1852	1822	1821	1810	1835	1815	1825	1799	2210			
Class of 2012	1714	1760	1767	1757	1773	1766	1787	1796	1780				
Class of 2013	1661	1763	1728	1749	1730	1771	1786	1728					
Class of 2014	1615	1700	1659	1651	1665	1668	1669						
Class of 2015	1735	1807	1803	1852	1850	1837							
Class of 2016	1715	1774	1778	1793	1843								
Class of 2017	1754	1829	1827	1832									
Class of 2018	1737	1774	1791										
Class of 2019	1728	1787											
Class of 2020	1625												

Madison City	K	1	2	3	4	5	6	7	8	9	10	11	12
Class of 1999													331
Class of 2000												402	377
Class of 2001											437	414	378
Class of 2002										497	461	434	434
Class of 2003									473	530	498	490	479
Class of 2004							408	437	481	479	453	440	
Class of 2005						448	474	503	599	569	573	545	
Class of 2006					448	474	503	599	569	573	545		
Class of 2007				448	476	499	524	547	620	611	568	605	
Class of 2008			454	470	480	509	543	554	628	614	640	658	
Class of 2009			467	483	511	518	551	597	615	739	692	679	
Class of 2010		459	447	464	478	495	520	583	631	671	719		
Class of 2011	386	427	442	482	520	536	555	622	654	684			
Class of 2012	395	489	474	516	531	563	621	652	701				
Class of 2013	395	473	503	518	541	593	632	660					
Class of 2014	440	505	533	574	601	630	658						
Class of 2015	449	503	544	557	568	589							
Class of 2016	473	522	558	582	588								
Class of 2017	501	541	573	591									
Class of 2018	538	618	637										
Class of 2019	512	567											
Class of 2020	527												

Madison County	K	1	2	3	4	5	6	7	8	9	10	11	12
Class of 1999													797
Class of 2000												893	840
Class of 2001											1048	995	902
Class of 2002										1234	1092	946	902
Class of 2003									1127	1268	1091	988	941
Class of 2004							1216	1214	1357	1138	1078	957	
Class of 2005						1138	1203	1199	1353	1148	1132	1045	
Class of 2006					1153	1218	1258	1239	1388	1203	1124	1032	
Class of 2007				1278	1303	1341	1378	1385	1560	1243	1134	1109	
Class of 2008			1332	1360	1351	1405	1432	1416	1741	1325	1196	1142	
Class of 2009			1243	1274	1299	1340	1384	1451	1473	1884	1424	1189	
Class of 2010		1242	1210	1231	1260	1304	1341	1384	1424	1829	1533		
Class of 2011	1205	1298	1245	1278	1278	1302	1383	1451	1497	1819			
Class of 2012	1191	1314	1311	1367	1401	1405	1468	1527	1567				
Class of 2013	1141	1296	1295	1325	1383	1423	1483	1556					
Class of 2014	1187	1318	1295	1341	1383	1433	1506						
Class of 2015	1246	1307	1341	1398	1451	1510							
Class of 2016	1333	1434	1442	1467	1526								
Class of 2017	1323	1443	1468	1508									
Class of 2018	1344	1497	1484										
Class of 2019	1373	1457											
Class of 2020	1349												

RECOMMENDATION 5: Implement a performance tracking system.

KEY METRICS FOR MEASURING RESULTS

Three key metrics are essential for measuring results. Results should improve as student cohorts progress into the green areas shown in Table 6.

Outcomes/Results:

1. ***Changes in*** average scores on the ARMT and AHSGE: The percent of students achieving scores at **Level IV** should increase in each succeeding year in all participating schools (i.e. exceed prior year percentage at Level IV).
2. ***Changes in*** attendance, using the state's accountability reporting system.
3. ***Changes in*** graduation rates, using the state's accountability reporting system.

Strategic Operations Measures: (Operational Metrics to Monitor)

- a. Number of business professionals participating on advisory boards.
- b. Number of business professionals providing on-site or classroom visits.
- c. Number of vocational courses offered by system, by school.
- d. Enrollment in vocational education courses.
- e. Number of parents attending open houses, career education events, etc.
- f. Dollar amount of career-related scholarships offered for area students.

All of the operational metrics collected should be used in developing promotional materials to distribute to students, parents, and prospective business professionals.

USE DATA TO MAKE DECISIONS

Businesses that use ISO 9000 standards are familiar with corrective action plans. Contingencies for adverse performance should be defined and actions planned in advance. Declining performance in two subsequent reporting periods should trigger an action on the part of the business professionals. Depending on the severity of the decline and related environmental factors, any of the following actions, or combinations of actions, might be appropriate:

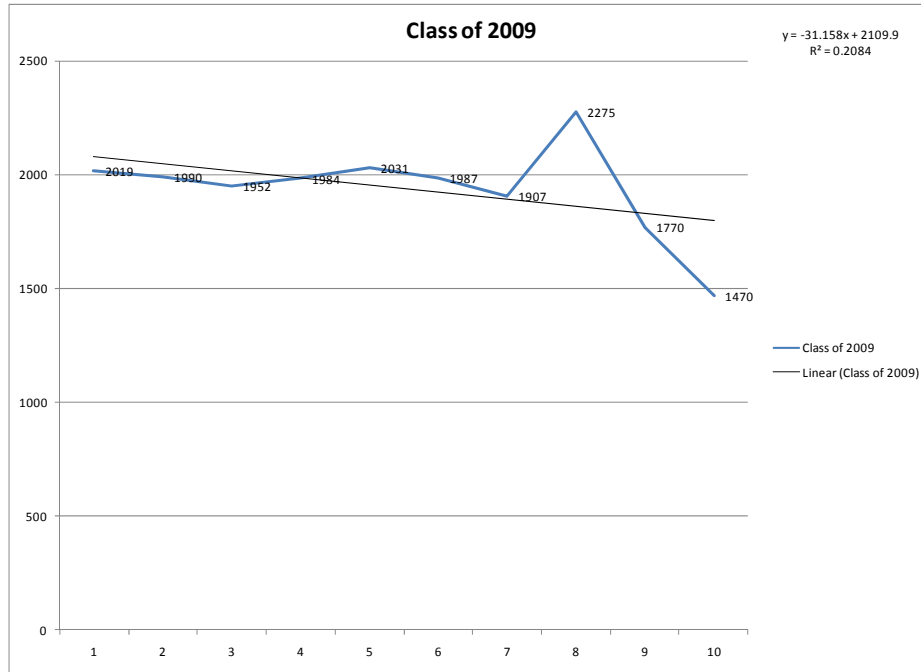
- Offer assistance in supplying materials, communication, or site visits.
- Support for additional professional development for teachers.
- Support for students: co-ops, scholarships, post-employment jobs, etc.
- Promotional work in the community, with associations, churches, etc.
- Meetings with parents and students (if possible) to determine problems/solutions.

The Committee may want to develop its own set of remedies, based on experience, but these obvious attempts to engage students and teachers in positive activities may provide a starting point for future discussions. Having a remedial plan in place avoids negative reactive loops.

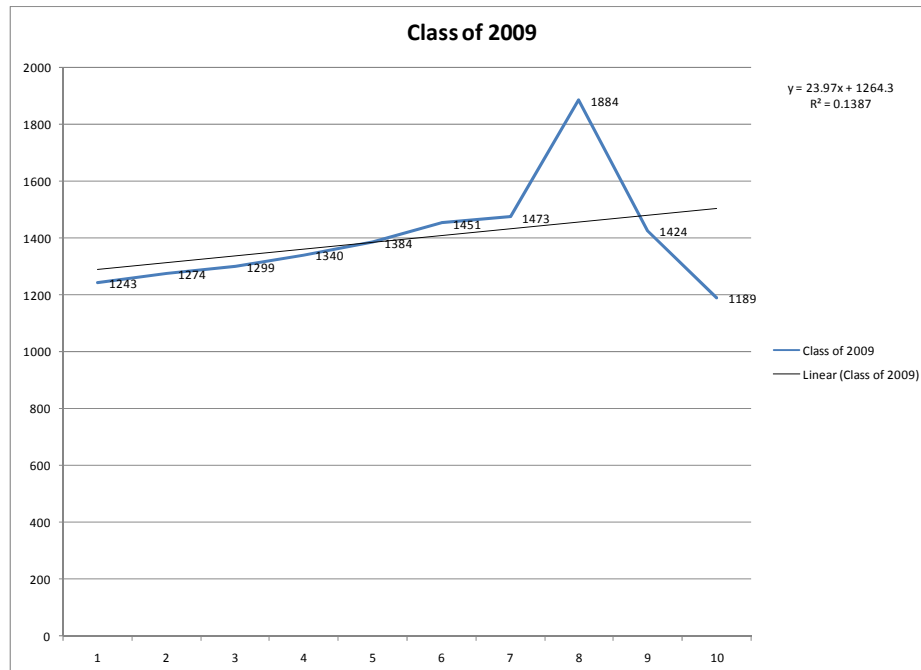
THREATS: THE MISSING STUDENTS

FIGURE 2

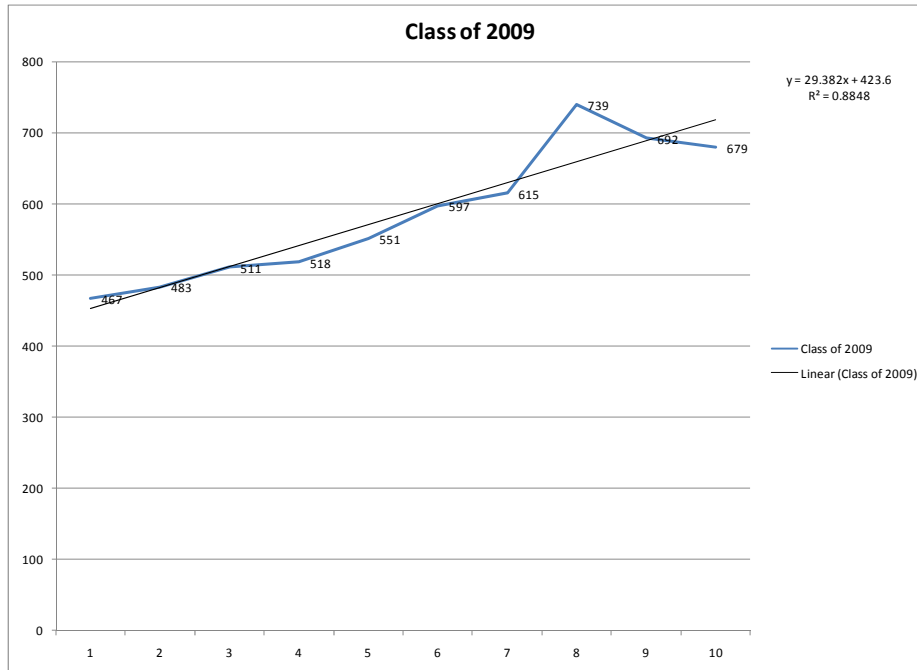
Huntsville City Schools



Madison County Schools



Madison City Schools



The ninth grade hump is a common feature in almost every public school enrollment pattern. Students “pile up” in ninth grade. As a result, using the freshman year as a denominator in estimating dropouts exaggerates the figures. Nevertheless, the overall enrollment trend is informative. The placement of the regression line assists in seeing where the trajectory of enrollment would naturally be, absent a dropout problem.

While the challenges in the Huntsville and Madison County schools is clearly evident in the graphs above, there is also a less pronounced, but existing under performance in Madison City Schools as well. Based on the forgoing analyses, approximately 500 students per year are lost to systems in the area.

RECOMMENDATION 6: Identify students at-risk of dropping out and provide them with intensive services to get them back on track.

Recent studies of dropouts indicate that there are several early warning signs for potential dropouts. These include absenteeism, academic difficulty, behavioral issues and mental health, as well as sheer boredom. A recent study in California found that being bored with school was the number one reason students dropped out. A surprising number of students who at some point had been designated as talented and gifted drop out as well (over 20 percent in Mobile).

What is important to understand is that there are warning signs well before students drop out. As researchers at the Center for Dropout Prevention put it, “dropping out is a process.” (Hammond, et al, 2008). Some indicators can identify students who will likely drop out as early as third

grade. PARCA's study of dropouts in Mobile County found strong indicators starting in sixth grade, the first year of available data. For one small subgroup of the 6th grade cohort that started in 2000, those who moved more than three times in one year (in 6th grade), not one graduated by 2008. Obviously, a chaotic home environment does not produce good student performance.

Each indicator will vary from system to system due to environmental factors. In Mobile, the threshold defining a greater than fifty percent chance of dropping out was two failed core classes, or two out-of-school suspensions, or 8 to 17 days of absence.

An important discovery in the analysis of the Mobile data was that the three early indicators of dropping out did not overlap. Put differently, each indicator was not related to the other, either statistically or in the individual records. Students with problem absences were not the same students with academic problems, nor did they have suspensions for behavioral issues. Likewise, the students with behavioral and absentee issues were not the ones with academic issues, which runs counter to popular intuition. The reasons that these students are dropping out are quite varied. As a result, no one-size-fits-all solution will work.

Until students can be identified, and the root causes of their problems diagnosed, relevant interventions and services cannot be provided. In Mobile, for many students there were no early warning signs, but financial pressures, or conflicts with teachers or other students led to dropping out. Sadly, many students dropped out for completely unknown reasons and many of those exhibited none of the early warning indicators.

A detailed analysis, with individual-level student data is necessary to identify the pathways that dropouts are coming from in a school system. As students go from elementary to middle school, paths sometimes cross, but identifying clusters of high-risk students as early as possible is the best way to provide meaningful and effective interventions. By the time students are in high school, the effectiveness of dropout prevention programs declines dramatically. The idea is to prevent the student from reaching the tipping point in the first place, not to rescue them later.

Clemson University's Center for Dropout Prevention provides an excellent comparison of dropout prevention programs, rating programs on evidence-based evaluations. Tailoring a successful program in the Huntsville area will require a deeper understanding of the patterns in the area, as Mobile is discovering.

RECAPTURE MISSING STUDENTS? Credit Recovery and Adult Education

Although it is important to remember that there is no single silver bullet, two major movements are showing great promise with dropouts and will be worth watching over the next couple years as data accumulate on performance. The first is credit recovery, which involves helping students who have dropped out recover credits that they did not receive while previously enrolled. New York City schools have one of the most recognized programs.

These programs require great flexibility because the circumstances vary from student to student. Some may require more remediation than others, while some have transportation or financial issues that need to be overcome to participate. In New York that problem was easily solved because of the availability of the subway and providing passes. Having those specific resources to address these issues goes hand-in-hand with getting the students the skills needed to pass state required test in order to receive their credentials.

Citing the National Dropout Prevention Center at Clemson, a New York Times article reports indicates that nearly a third of all states have either adopted or endorsed some kind of dropout recovery program (Gootman & Coutts, April 11, 2008). Practices vary widely, but include flexible hours, childcare, and employment services.

In Massachusetts a program called Communities and Schools for Success (CS²) has received high ratings from Clemson. The database entry reads as follows:

“ It is a Massachusetts-based educational initiative that seeks to transform the educational experience for those young people who are most under-served and disconnected from traditional educational and career paths. Started in 1993, CS² is managed by Commonwealth Corporation. CS² develops innovative collaborations between communities and school districts through small teams of change agents at CS² sites, known as "CS² Entrepreneurs." Twice designated by the U.S. Department of Labor as a national model, CS²'s activities are grounded in research and promising practices from the education, workforce development, and youth development fields. In response to alarming graduation rate and teen labor market data, CS² Entrepreneurs develop dynamic educational and career-focused programming and systemic initiatives. These supports and services engage the specific needs and assets of young people most "placed at risk," so they emerge as inspired learners and skillful innovators in their vocations and the civic arena.

.....

47 schools participated across the nine CS² communities. 1,761 teachers partnered with CS² in programs and activities for their students. Over 40,000 students were active in or impacted by CS² initiatives, many of whom were previously disengaged from their school communities. In three of four communities, CS² Entrepreneurs secured state grants for and managed MCAS work/learning programs but received no salary under those grants. More than 1,000 businesses across the Commonwealth were involved in CS² projects during 2006-07. Over 650 students took part in career-related internships. More than 600 community organizations partnered with CS² on career and youth development initiatives, academic support programs, and community service learning opportunities. CS² Entrepreneur teams raised over \$2.7 million in public and private grants and cash contributions - a more than 3:1 ratio of funds raised for each dollar invested by the state. In addition, funds invested by local communities to support their CS² teams brought the total results to over \$3 million leveraged by the state budget earmark - a ratio of 4:1. Amounts raised by or invested in CS² reflect our continuing ability to successfully leverage the Massachusetts State Legislature's dollar investment.”

Clearly, credit recovery is only a part of that program. The main idea is to reach out to the students who have “disengaged from their school communities.” The cost of the program is estimated at \$500 to \$1,000 per student.

Critics argue that these programs do not have enough supervision and do not tend to abide by the normal rules (Ed in the Apple, November 24, 2008). The issue of fairness is often clouded by the notion that students should not be able to get credentials without spending a lot of time in class. Any historian can provide a long list of academics who received doctorates before their 21st birthday. Still, there is a question of standards and how these graduates will perform in the workplace. A review of Clemson’s database of programs indicated that it does not contain assessments of that nature at the present time.

ADULT EDUCATION

In Alabama, the Department of Postsecondary Education administers the Adult Education program through a grant process, primarily using federal funding. Providers are generally community colleges, but may include some faith-based entities. Performance among providers varies greatly. Major improvements in performance in that area are needed badly. Officials at the department would encourage strategies to improve performance. One such strategy would be to use Adult Education to target recent dropouts, before their academic skills deteriorate.

In working with the Department of Postsecondary Education, PARCA found that programs that had non-instructional expenses in excess of 25 percent of budget were generally poor performers on most of the WIA performance measures. Directing students to a high performing Adult Education program to receive a GED can open a door to higher education or a job. It is an avenue that is frequently overlooked and it is an underdeveloped resource.

CONCLUSION

None of the recommendations provided are a guarantee of success. Execution, perseverance, and tenacity are the keys to making changes in education. Some strategies will work, others will not. What worked somewhere else, with other people, might not have the same impact in Huntsville. What this report has done is emphasize the persistent pattern of what has worked and why. There is no “one thing.” It’s not that simple.

Unfortunately, there are not many success stories to tell. Some that pretend to be successful do not pan out on closer inspection. There are many frogs to kiss in this business. Hard data helps.

There’s no denying that the environment matters to implementation, but that does not negate very strong general findings about what has worked in most places that improve. Getting the stakeholders together to work together is perhaps the hardest part. Breaking down barriers, misperceptions, and mistrust will be the most difficult task. School performance in the Huntsville area displays wide variation and teachers and administrators are likely to be defensive when it is pointed out. Finding a way around that issue will be the hardest task before the Committee, not the curriculum. It will take strong leadership and respect for teaching. Teaching is hard work, which may come as a surprise to those who have not done it. As the Rafe Esquith, a former National Teacher of the Year puts it, “There are no shortcuts.”

APPENDIX A

For comparisons of test scores for the largest school systems in Alabama, see Jim Williams

[Performance Information for Public Education in Alabama \(Performance Comparisons\)](#)

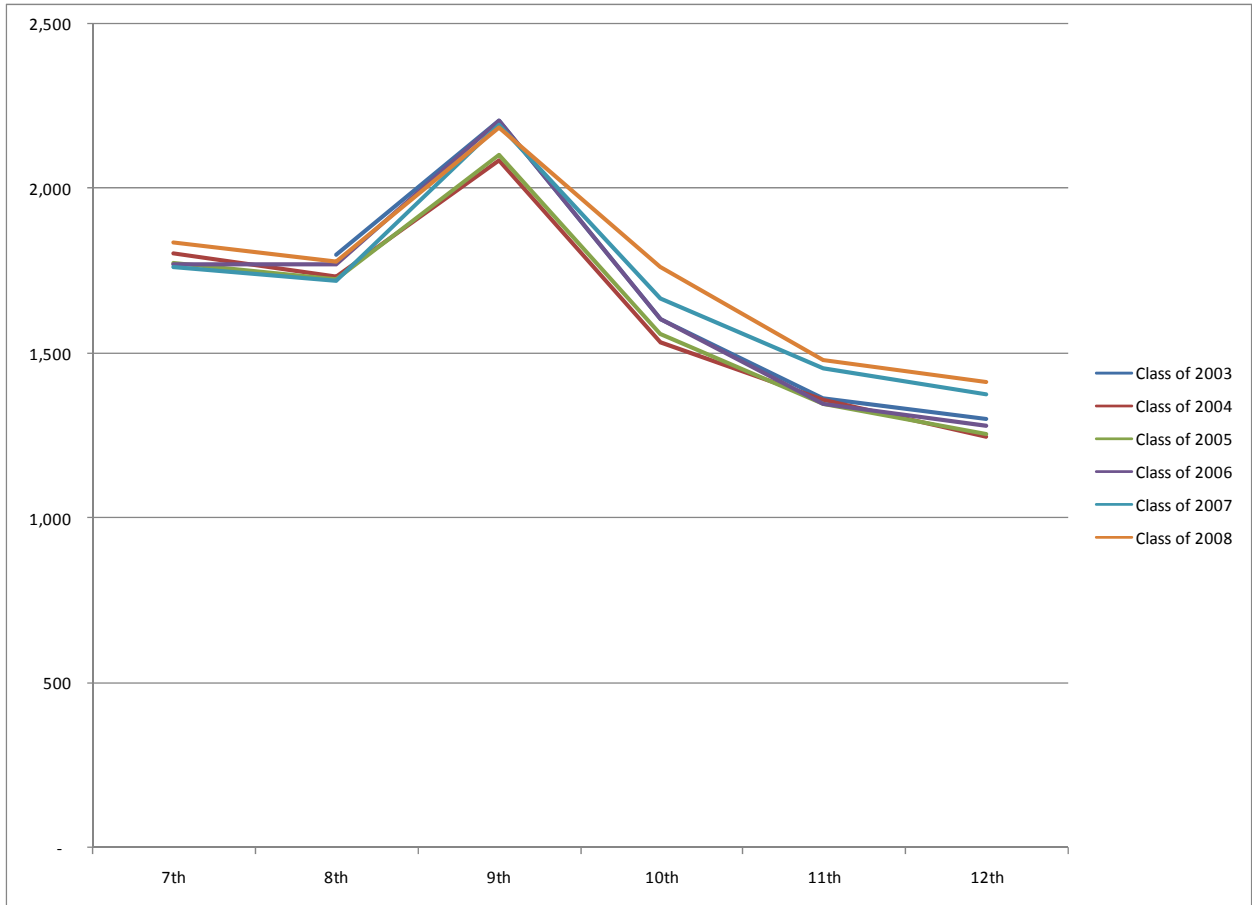
Presented to the Alabama Leadership Initiative, April 21, 2009

Available at <http://parca.samford.edu/presentations.html>

APPENDIX B

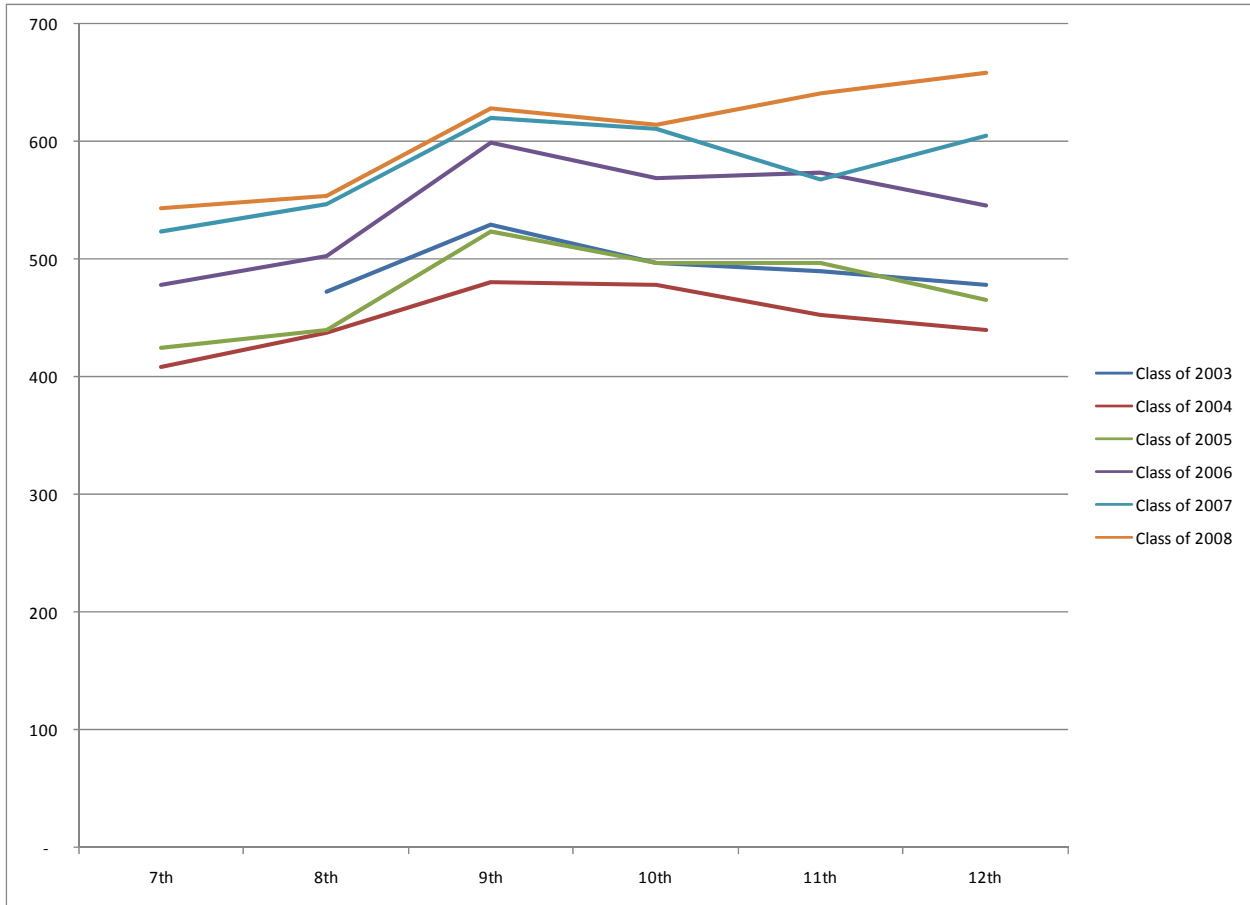
Enrollment Trends

Huntsville City Schools



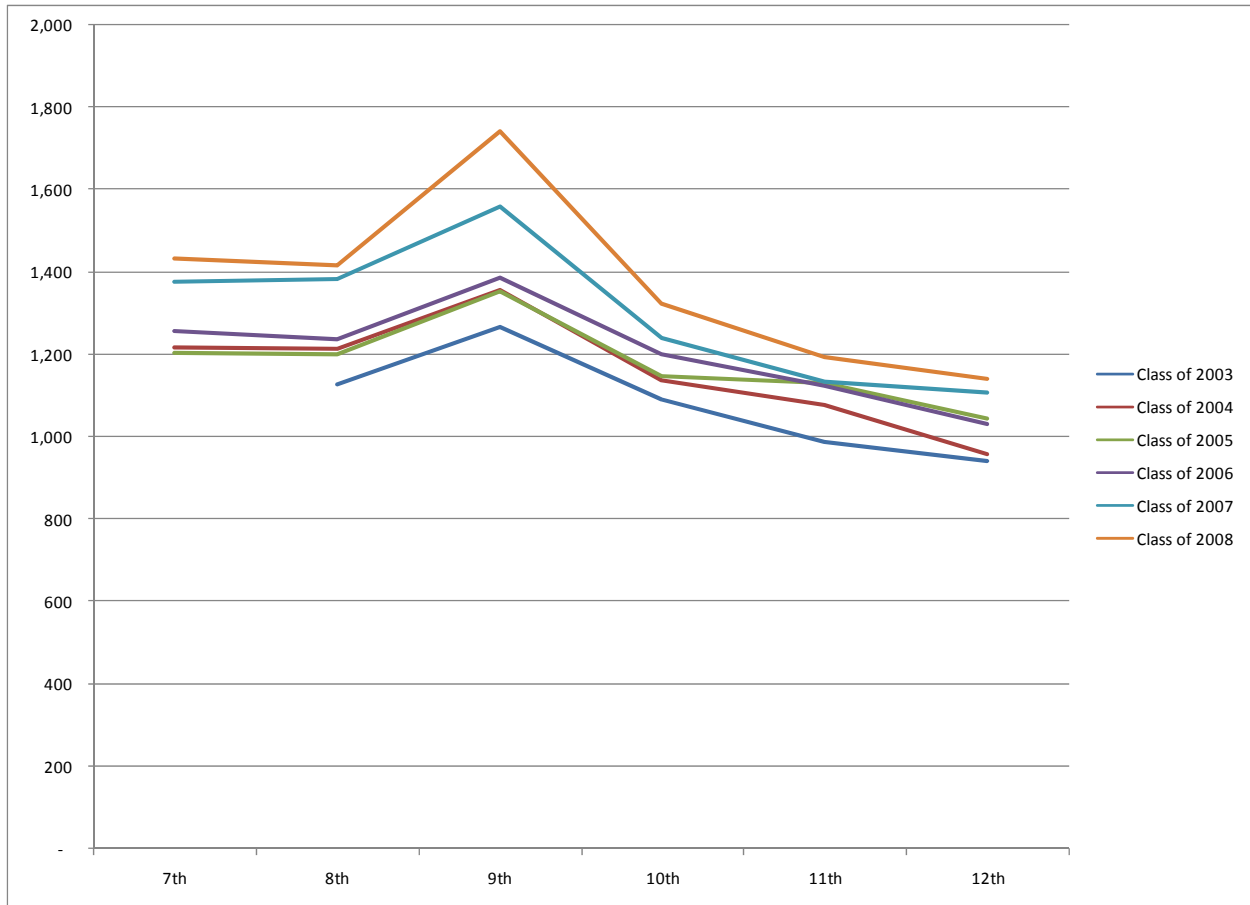
The pattern in Huntsville is quite consistent, despite modest growth in enrollment.

Enrollment Trends Madison City Schools



By comparison, Madison City Schools have a rather erratic pattern, partly resulting from growth and a fluid population. The 2008 enrollment cohort appears to have the lowest loss of students, lower in fact than the 2009 cohort will likely have.

Enrollment Trends Madison County Schools



Madison County Schools, like Huntsville, display a fairly consistent pattern of enrollments, with significant losses.

An effective vocational education plan should change the direction of these patterns. If nothing is done, these patterns will continue to be the same as they have been, year after year, and the number of dropouts in the Huntsville area will increase by about 500 or more per year.

APPENDIX C

High Demand Occupations Associate Degree and Under Workforce Development Region 2

Soc Code	Rank Growth	Rank Impact	Occupation	Avg Annual Openings	Avg Annual Salary(\$)	Economic Impact
311011	1	19	Home Health Aides	90	16,833	\$ 1,514,970
319092	2	16	Medical Assistants	70	22,322	\$ 1,562,540
292056	3	37	Veterinary Technologists and Technicians	10	28,424	\$ 284,240
399031	4	26	Fitness Trainers and Aerobics Instructors	35	23,256	\$ 813,960
292021	5	20	Dental Hygienists	35	39,300	\$ 1,375,500
312021	6	39	Physical Therapist Assistants	5	36,522	\$ 182,610
319091	7	22	Dental Assistants	40	28,991	\$ 1,159,640
292041	8	31	Emergency Medical Technicians and Paramedics	25	27,049	\$ 676,225
232011	9	33	Paralegals and Legal Assistants	15	36,634	\$ 549,510
173024	10	38	Electro-Mechanical Technicians	5	37,735	\$ 188,675
353021	11	5	Combined Food Preparation and Serving Workers	505	14,058	\$ 7,099,290
433011	12	21	Bill and Account Collectors	45	26,399	\$ 1,187,955
499052	13	25	Telecommunications Line Installers and Repairers	20	41,833	\$ 836,660
493093	14	34	Tire Repairers and Changers	25	21,612	\$ 540,300
291111	15	1	Registered Nurses	330	53,486	\$ 17,650,380
434051	16	7	Customer Service Representatives	180	27,743	\$ 4,993,740
292052	17	15	Pharmacy Technicians	65	24,670	\$ 1,603,550
292055	18	23	Surgical Technologists	30	33,666	\$ 1,009,980
412021	19	14	Counter and Rental Clerks	95	21,669	\$ 2,058,555
436013	20	30	Medical Secretaries	30	24,055	\$ 721,650
211093	21	29	Social and Human Service Assistants	25	29,078	\$ 726,950
393091	22	32	Amusement and Recreation Attendants	40	16,378	\$ 655,120
252011	23	27	Preschool Teachers, Except Special Education	30	25,422	\$ 762,660
436012	24	35	Legal Secretaries	15	29,013	\$ 435,195
291126	25	36	Respiratory Therapists	10	43,166	\$ 431,660
434171	26	11	Receptionists and Information Clerks	130	21,321	\$ 2,771,730
292071	27	28	Medical Records and Health Information Technicians	30	25,139	\$ 754,170
512092	28	4	Team Assemblers	345	24,641	\$ 8,501,145
352014	29	17	Cooks, Restaurant	80	19,503	\$ 1,560,240
436011	30	10	Executive Secretaries and Administrative Assistant	80	40,689	\$ 3,255,120
311012	31	13	Nursing Aides, Orderlies, and Attendants	115	19,089	\$ 2,195,235
412031	32	2	Retail Salespersons	705	21,589	\$ 15,220,245
292061	33	9	Licensed Practical and Licensed Vocational Nurses	105	31,806	\$ 3,339,630
514122	34	8	Welding, Soldering, and Brazing Machine Setters, O	85	51,568	\$ 4,383,280
131051	35	24	Cost Estimators	20	47,923	\$ 958,460
151041	36	12	Computer Support Specialists	60	38,103	\$ 2,286,180
333012	37	18	Correctional Officers and Jailers	50	30,549	\$ 1,527,450
433031	38	6	Bookkeeping, Accounting, and Auditing Clerks	195	27,718	\$ 5,405,010
533032	39	3	Truck Drivers, Heavy and Tractor-Trailer	285	34,421	\$ 9,809,985

Source: 2006-2016 Occupational Projections were developed by the Alabama Department of Industrial Relations, Labor Market Information Division, Research & WIA Units, MicroMatrix System, August 2008 (downloaded from http://www2.dir.state.al.us/projections/Occupational/Proj2016/Region02/High_Demand_Assoc.aspx)

Note: Occupations were selected based on the descending order of average rankings based on three variables; growth, openings, and wages. The annual average growth rate is compounded. Wages estimates are based on the May 2007 release from the

Employment data is rounded to the nearest 10 and Openings data is rounded to the nearest 5.

*** The data for these occupations are confidential using Bureau of Labor Statistics standards.

APPENDIX D

THE SREB MODEL: *HIGH SCHOOLS THAT WORK (HSTW)*

The Southern Regional Education Board has identified a set of well-established, empirically-based practices for quality vocational education programs as outlined below.

HSTW Key Practices

High expectations — setting higher expectations and getting more students to meet them.

Vocational studies — increasing access to intellectually challenging vocational and technical studies, with a major emphasis on using high-level mathematics, science, language arts and problem-solving skills in the modern workplace and in preparation for continued learning.

Academic studies — increasing access to academic studies that teach the essential concepts from the college preparatory curriculum by encouraging students to use academic content and skills to address real-world projects and problems.

Program of study — having students complete a challenging program of study with an upgraded academic core and a major.

Work-based learning — giving students and their parents the choice of a system that integrates school-based and work-based learning. The system should span high school and postsecondary studies and should be planned by educators, employers and employees.

Teachers working together — having an organization, structure and schedule giving academic and vocational teachers the time to plan and deliver integrated instruction aimed at teaching high-level academic and technical content.

Students actively engaged — getting every student involved in rigorous and challenging learning.

Guidance — involving each student and his or her parents in a guidance and advising system that ensures the completion of an accelerated program of study with an in-depth academic or vocational-technical major.

Extra help — providing a structured system of extra help to enable students who may lack adequate preparation to complete an accelerated program of study that includes high-level academic and technical content.

Keeping score — using student assessment and program evaluation data to improve continuously the school climate, organization, management, curricula and instruction to advance student learning and to recognize students who meet both curriculum and performance goals.

From *Finishing the Job: Improving the Achievement of Vocational Students* (2000), by Gene Bottoms and Alice Presson.

APPENDIX E

The Six A's of Project-based Learning

Authenticity

Is the project based on a problem or question that is meaningful to the student? Is the problem or question one that an adult might tackle at work or in the community? Does the project provide the student with opportunities to produce something that has personal and/or social value beyond the school?

Academic rigor

Does the project cause the student to acquire and apply knowledge related to one or more disciplines or content areas? Does the project challenge the student to use research methods from one or more disciplines? (For example, does it cause him or her to think like a scientist?)

Applied learning

Does the student develop higher-order thinking skills? (For example, does he or she search for evidence or seek a different perspective?)

Active exploration

Does the student solve (e.g., design a product, improve a system or organize an event) a problem that is grounded in life and work? Does the project require organizational skills and self-management? Does the project cause the student to learn and use skills (such as problem solving, communications, technology and teamwork) that are expected in the work? Does the student spend a significant amount of time doing field-based work? Does the project require the student to use various methods, media and sources to conduct an investigation? Is the student expected to make a presentation to explain what he or she has learned? Does the student meet and observe an adult who has relevant expertise and experience?

Adult relationships

Does the student work closely with -and get to know -at least one adult? Do adults collaborate with each other and with students on the design and assessment of projects?

Assessment

Does the student use project criteria (that he or she helped establish) to gauge what he or she is learning? Do adults from outside the classroom help the student develop a sense of real-world standards? Is the student's work assessed regularly through methods such as exhibitions and portfolios?

Source: The Six N's of project-based learning are taken from the 1997 book *Real Learning, Real Work: School-to-Work as High School Reform*, by Adria Steinberg, cited by SREB.

Sources Consulted

ACCESS (2008), Web -Based Course Offerings 2008/2009.

Addy, Samuel (2008), Alabama Workforce Report III: Progress Report, State Workforce Planning Council Meeting, June 26, 2008.

Alabama Department of Education (2008), Career Technical Education, downloaded from <http://www.alcareertech.org/index.php>.

Alabama Department of Education, Alabama High School Graduation Exam (data), downloaded from <http://www.alsde.edu/html/home.asp>.

Appalachian Regional Commission (2008), Best Practices in Education, downloaded from <http://www.arc.gov/index.do?nodeId=974#voced>.

Association for Career and Technical Education (2006), *Reinventing the American High School for the 21st Century*.

Auburn University at Montgomery, (2008), Workforce Development Study: Report to the State Workforce Planning Council.

Bottoms, Gene (1992), Making High Schools Work Through Integration of Academic and Vocational Education.

_____ (1997), The 1996 High Schools That Work Assessment for Family and Consumer Sciences: Good News and Bad News.

_____ (1997), Keeping the Future Alive for Youth in High School Vocational Studies.

_____ (2000), Putting Lessons Learned to Work: Improving the Achievement of Vocational Students.

_____ (2006), 10 Strategies for Improving High School Graduation Rates and Student Achievement.

Bottoms, Gene, and Alice Presson (1997), Work-based Learning: Good News, Bad News and Hope.

Bottoms, Gene, and Allison Timberlake (2007), Giving Students a Chance to Achieve: Getting Off to a Fast and Successful Start in Grade Nine.

Bottoms, Gene, and Marna Young (2008), Lost in Transition: Building a Better Path from School to College and Careers.

Bottoms, Gene, and Richard Makin (1998), A Look at Accountability for Secondary Vocational Education.

Bottoms, Gene, and Tom Feagin (1998), The 1998 High Schools That Work Assessment: Appalachian Regional Commission (ARC), Sites are Improving.

Bottoms, Gene, Alice Presson and Lingling Han (2004), Research Brief - Linking Career/Technical Studies to Broader High School Reform: What can school districts, states and the nation do to get more high schools to implement comprehensive high school reform?

_____ (2004), High School Reform Works -- When Implemented: A Comparative Study of High- and Low-implementation Schools.

Bottoms, Gene, and Alice Presson (2000), Finishing the Job: Improving the Achievement of Vocational Students. Southern Region Educational Board.

Bottoms, Gene, and Caro Feagin (2003), Improving Achievement is About Focus and Completing the Right Courses, Southern Regional Education Board.

Bottoms, Gene, Betty Creech and Mary Johnson (1997), Academic and Vocational Teachers Can Improve the Reading Achievement of Male Career-bound Students.

Bottoms, Gene, David J. Pucel and Ione Phillips (1997), Designing Challenging Vocational Courses: A Guide to Preparing a Syllabus. Southern Regional Educational Board.

Bottoms, Gene, and Marna Young (2008), Crafting A New Vision for High School: How States Can Join Academic and Technical Studies to Promote More Powerful Learning.

Center for Dropout Prevention, Clemson University <http://www.dropoutprevention.org/>

DeVol, Ross, Armen Bedroussian, and Soojung Kim (2007), Best Performing Cities: Where America's Jobs Are Created and Sustained, Milken Institute.

Ed in the Apple, "Don't Ask, Don't Tell:" Why Are Small High School Graduations Rates Rising in NYC and Falling Elsewhere? downloaded from <http://mets2006.wordpress.com/2008/11/24/dont-ask-dont-tell-why-are-small-high-school-graduations-rates-rising-in-nyc-and-falling-elsewhere/>

Gootman, Elissa, and Sharona Coutts. "Lacking Credits, Some Students Learn a Shortcut," *The New York Times*, April 11, 2008 downloaded from <http://www.nytimes.com/2008/04/11/education/11graduation.html>

Hamilton County Department of Education (2008), downloaded from <http://www.hcde.org/site/reports/hcdenews.aspx>.

Hamilton County Schools <http://www.hcde.org/site/>

Hammond, C., Linton, D., Smink, J., & Drew, S. (2007), Dropout Risk Factors and Exemplary Programs. Clemson, SC: National Dropout Prevention Center, Communities In Schools, Inc.

Harris, Linda and Evelyn Ganzglass (2008), Creating Postsecondary Pathways to Good Jobs for High School Dropouts: The Possibilities and Challenges, Center for American Progress.

Help Parenting Tweens, Preteens and Young Adolescents ages 10-14, downloaded from <http://www.parenting.org/tween/index.asp>

Hoachlander, Martha Arlt, and Renee Beltranena (2001), Funding Career/Technical Education: An Analysis of State Approaches and Funding Levels for Career/Technical Education in High Schools That Work States. MPR Associates Inc., Berkeley, California.

Hoachlander, Martha Arlt, and Renee Beltranena (2001), Leading School Improvement: What Research Says, Southern Regional Education Board.

Kaufman, Phillip, Denise Brady, and Peter Teitelbaum (2000), High Schools That Work and Whole School Reform: Raising Academic Achievement of Vocational Completers Through the Reform of School Practice, MPR Associates, Center for Research in Vocational Education. Sponsored by the Office of Vocational and Adult Education, U.S. Department of Education.

National Commission on Adult Literacy (2008), Reach Higher, America: Overcoming the Crisis in the U.S. Workforce.

National Governors Association (2007), Issue Brief: Retooling Career Technical Education, NGA Center for Best Practices.

Naylor, Michele (1987), Reducing the Dropout Rate through Career and Vocational Education (Overview), ERIC Digest No. 63.

“New Construction Management degree announced,” University of Tennessee Chattanooga, downloaded from <http://www.utc.edu/Administration/UniversityRelations/news/2008/04/07/new-construction-management-degree-announced/>

Opening Doors: East Ridge High School Career Academy Looks to the Future., downloaded from http://www.constructmyfuture.com/Students/PDF/mar04_ConstructorMagazine_article01.pdf

Pensacola High School http://www.pensacolahighschool.org/phs_main.htm .

- Register, Jesse (2006), The Chattanooga Story (PowerPoint).
- Southern Growth Policies Board (2005), The Southern Workforce Index.
- Southern Regional Education Board (2000), #1 Where Do You Begin?
- _____ (1993), #3 Needs Assessment.
- _____ (1996), #7 Business and Education.
- _____ (1997), Loganville High School, Loganville, Georgia.
- _____ (1997), North Laurel High School, London, Kentucky (Case Study).
- _____ (1997), Walhalla High School, Walhalla, South Carolina.
- _____ (1998), #8 Teachers in the Workplace: A Staff Development Approach That Benefits Faculty and Students.
- _____ (1998), #9 Networking and Support Services for Comprehensive School Improvement.
- _____ (1998), Lee County High School and Lee County Area Technology Center, Beattyville, Kentucky.
- _____ (1999), #10 Advancing Students' Academic and Technical Achievement by Improving Classroom Assessment.
- _____ (1999), Orangeburg-Wilkinson High School and Orangeburg Consolidated Five Technology Center, Orangeburg, South Carolina.
- _____ (1999), Swansea High School, Swansea, South Carolina downloaded from http://www.sreb.org/programs/hstw/publications/case_studies/Swansea.asp.
- _____ (2000), #11 Using Real-world Projects to Help Students Meet High Standards in Education and the Workplace.
- _____ (2000), Educational Benchmarks 2000.
- _____ (2000), Gilmer County High School, Glenville, West Virginia.
- _____ (2000), Los Fresnos High School, Los Fresnos, Texas.
- _____ (2001), Job Shadowing for Teachers - Helping Students See That School Learning Counts.
- _____ (2003), #12 Literacy Across the Curriculum: Setting and Implementing Goals for Grades Six through 12.

- _____ (2003), Academies in the Lead: Redesigning Leadership Academies for Student Achievement, downloaded from http://www.sreb.org/main/Leadership/pubs/03V59_Leadership_newsletter.pdf.
- _____ (2004), #13 Ten Strategies for Creating a Classroom Culture of High Expectations.
- _____ (2004), EHOVE Career Center, Milan, Ohio.
- _____ (2004), Getting the Mission Right in the Middle Grades.
- _____ (2004), Linking Career/Technical Studies to Broader High School Reform.
- _____ (2004), Swain County High School, Bryson City, North Carolina.
- _____ (2004), Using Rigor, Relevance and Relationships to Improve Student Achievement: How Some Schools Do It (2004), Outstanding Practices.
- _____ (2005), #2 Developing Effective Leadership Teams — Implementing the High Schools That Work School Improvement Design.
- _____ (2005), Building Transitions from High School to College and Careers For Kentucky's Youth.
- _____ (2005), Building Transitions from High School to College and Careers For South Carolina's Youth.
- _____ (2005), Building Transitions from High School to College and Careers For West Virginia's Youth.
- _____ (2005), Case Study: Waynesville High School, Wayne Local Schools, Waynesville, Ohio.
- _____ (2005), Engaging Students by Using Engineering and Technology in Mathematics, Science and Career/Technical Classrooms.
- _____ (2005), Focusing on Student Performance Through Accountability.
- _____ (2005), Garden City High School, Garden City, Kansas.
- _____ (2005), Getting Serious About High School Graduation.
- _____ (2005), Henry W. Grady High School.
- _____ (2005), Waynesville High School, Wayne Local Schools, Waynesville, Ohio.
- _____ (2005), High Schools That Work Selected Publications 2004-2005.

- _____ (2006), Building Transitions from High School to College and Careers For Oklahoma's Youth.
- _____ (2006), Building Transitions from High School to College and Careers For Louisiana's Youth.
- _____ (2006), Building Transitions from High School to College and Careers For New Jersey's Youth.
- _____ (2006), Building Transitions from High School to College and Careers For North Carolina's Youth.
- _____ (2006), Building Transitions from High School to College and Careers For Tennessee's Youth.
- _____ (2006), High Schools That Work Follow-up Study of 2004 High School Graduates: Transitioning to College and Careers from a High Schools That Work High School.
- _____ (2006), High Schools That Work Selected Publications 2005-2006.
- _____ (2007), Building Transitions from High School to College and Careers For Alabama's Youth.
- _____ (2007), Building Transitions from High School to College and Careers For Georgia's Youth.
- _____ (2007), Building Transitions from High School to College and Careers For Hawaii's Youth
- _____ (2007), Building Transitions from High School to College and Careers For Montana's Youth.
- _____ (2007), Building Transitions from High School to College and Careers For Nebraska's Youth.
- _____ (2007), Building Transitions from High School to College and Careers For New Mexico's Youth.
- _____ (2007), Building Transitions from High School to College and Careers For Texas' Youth.
- _____ (2007), Career/Technology Centers That Work: An Enhanced High Schools That Work Design For Technology Centers.
- _____ (2007), High School to College and Careers: Aligning State Policies 2007.

_____ (2007), High Schools That Work Selected Publications 2006-2007.

_____ (2008), Getting Students Ready for College and Careers.

_____ (2008), Using the 2008 HSTW Assessment Report to More Deeply Implement School Reform. Southern Regional Education Board.

Standard & Poors, School Matters.com (data), downloaded from
<http://www.schoolmatters.com/schools.aspx/q/page=sp/sid=53450>.

The School District of Escambia County (Pensacola High School), downloaded from
<http://www.escambia.k12.fl.us/Master/Index.asp>.

Wolf, Alison (2002), Does Education Matter: Myths About Education and Economic Growth.
Penguin Books.