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ABSTRACT

In September 1990, the Commission on Work Force Excellence was established to increase Mississippi's economic competitiveness and improve worker opportunities. The commission sponsored an evaluation of the diverse enterprise of the state's secondary and postsecondary vocational education system. Eight findings resulted from the study. First, the [illegible] conceptual structure for organizing and delivery seems s[illegible] the infrastructure has the potential to make the technical/academic curriculum available to most students. Second, stereotyping by gender and race pervades many of the offerings. Third, there are both positive and negative outcomes for participants. Fourth, the quality of programs is mixed. Fifth, few secondary schools and community colleges have articulated vocational education programs. Sixth, there is little evidence that state-generated labor market data significantly influences program planning. Seventh, the state has made significant progress in developing systems of accountability that measure student and programmatic performance. Finally, at the state level, the governance structure of secondary and postsecondary vocational education needs serious reconsideration, within and between each level. (An appendix detailing the study methodology is included.) (NLA)

SECONDARY AND POSTSECONDARY VOCATIONAL EDUCATION IN MISSISSIPPI: AN EVALUATION

Final Report Prepared for The Mississippi Commission on Work Force Excellence

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The Office of Vocational-Technical and Adult Education provided statewide data on vocational education enrollment and follow-up and also assisted with identifying sites for the case studies. Many other state personnel graciously participated in interviews and assisted with various aspects of the study. We especially thank the administrators and faculty at the high schools, area vocational schools, and community colleges we visited. This study would not have been possible without their cooperation and expertise.

EXECUTIVE SUMMARY

In September, 1990, Governor Mabus established the Commission on Work Force Excellence to help increase the state's economic competitiveness and improve opportunities for workers. The Commission was charged with examining the prospects for Mississippi's economy in the coming decade, assessing the status of the state's systems for preparing a well-educated and well-trained work force, and developing strategies for improving the state's national and international competitiveness.

As a major part of its work, the Commission undertook an evaluation of Mississippi's secondary and postsecondary vocational education system. To conduct this evaluation, the Commission sought the assistance of the National Center for Research in Vocational Education (NCRVE) at the University of California at Berkeley. Beginning in October, 1990, the NCRVE conducted a yearlong study of the condition of vocational education in Mississippi.

To summarize the study's findings, it should first be said that vocational education in Mississippi is a diverse enterprise. During the course of the site visits, study staff observed several outstanding schools and programs. They also saw some that warrant significant improvement. Some classrooms had achieved a good balance by race and gender; others had not. In some schools, there was good local accountability with strong employer involvement, successful assessment of local labor market needs, strong follow-up, and appropriate modification of programs. In others, connections with employers were perfunctory, at best. Some sites reported good support from state offices; others cited serious problems. In short, not one of the study's findings, positive or negative, applies to all programs or all schools in Mississippi.

Nevertheless, with the understanding that there were often many exceptions, some generalizations can be made. These main findings are briefly stated here and elaborated in the sections that follow. First, the basic conceptual structure for organizing and delivering vocational education in Mississippi seems sound. The state has made considerable progress in building an infrastructure that has the *potential* to make a technically rich and academically rigorous curriculum available to most students. This potential, however, is as yet largely unrealized. The vast majority of students in secondary and postsecondary vocational education were enrolled in programs with a relatively small amount of technical

and academic content. Generally, both vocational and academic educators expected too little of students enrolled in vocational education and did not sufficiently challenge them.

Second, stereotyping by gender and race pervaded many of the vocational education offerings. In this regard, Mississippi is by no means unique. In many other states, minorities and women are disproportionately overrepresented in some vocational programs and underrepresented in others. Nevertheless, in Mississippi, the problem is extensive and severe. For example, in high school cooperative programs—which, by and large, appeared to be quite effective—African American students made up only twenty-four percent of the enrollment, compared with fifty percent in other vocational education programs.

Third, there are both positive and negative outcomes for participants in vocational education. On the one hand, more than one-half of high school seniors enrolled in vocational education went on to pursue some form of postsecondary education, most often in community colleges. Unemployment rates among graduates of high school cooperative programs averaged only five percent, and many regular vocational education programs turned out high proportions of students who were able to find work. On the other hand, unemployment rates for graduates of many secondary programs exceeded twenty percent. Even at the postsecondary level, where unemployment rates averaged half those of programs at the secondary level, programs with rates in excess of fifteen to twenty percent were not uncommon. At both levels, high unemployment rates were more typical of programs with high concentrations of African American students.

Fourth, the quality of vocational education programs was quite mixed. Generally, the quality of facilities and equipment was average to above average. However, with a few notable exceptions, in most all the high schools and colleges visited, vocational education operated in isolation from academic education. There was little communication between vocational and academic faculty and no coordination of curriculum. Many of the vocational offerings at both the secondary and postsecondary levels lacked strong mathematical or scientific content. Typically, the academic courses taken by vocational students were also short on advanced math and science.

Fifth, while some secondary schools and community colleges have begun efforts to articulate vocational education programs more effectively through creating 2+2 or Tech Prep programs, these efforts were the exception rather than the rule. In general,

communication and coordination between secondary and postsecondary institutions left much to be desired, at both the state and local levels.

Sixth, there was little evidence that state-generated labor market data significantly influenced program planning. For the most part, this data was neither timely enough nor sufficiently specific geographically to be of much use in program planning. Sites that seemed especially good at addressing local labor market needs accomplished this feat through aggressive contact with local employers rather than with state data.

Seventh, the state has made significant progress in developing systems of accountability that measure student and programmatic performance. In many respects, Mississippi is well ahead of most other states in this area. However, the system has some flaws that need attention.

Finally, at the state level, the governance structure for secondary and postsecondary vocational education needs serious reconsideration, not only between the two levels but also within each level. At the time of the study, there was considerable tension between the secondary and postsecondary state agencies. Compared with arrangements in other states, the State Department of Education, which is responsible for K-12 education, wielded undue influence over the mission and curriculum of postsecondary vocational education. Moreover, at the secondary level, there were effectively two state departments of education, one for vocational education and one for everything else. The Division of Vocational and Technical Education enjoyed autonomy that might be appropriate were it under a completely separate state board for vocational education (which it once was). However, the Division's continued isolation from the rest of the State Department, as well as the antagonism between the secondary and postsecondary agencies, significantly impedes two important strategies for improving student achievement and employment opportunities: (1) developing a curriculum that integrates the vocational and academic in offerings that are technically rigorous; and (2) articulating secondary and postsecondary offerings to provide a coherent sequence of vocational and academic courses for students during the last two years of secondary and first two years of postsecondary education.

RECOMMENDATIONS

Recommendation 1: The mission of vocational education, especially at the secondary level, should be redirected toward using the opportunities for applied learning afforded by vocational education to increase students' knowledge and competencies in reading, writing, mathematics, and science. The secondary curriculum should seek to give students broader knowledge and skills suited for broad clusters of industries rather than narrow vocational skills limited to a single occupation.

Recommendation 2: Participation in vocational education should preserve students' options to pursue a wide variety of postsecondary options through curriculum redesign, the re-education of teachers and counselors, and better articulation with postsecondary education at all levels.

Recommendation 3: The State Department of Education should appoint a Task Force on Area Vocational Schools to make recommendations on improving the interaction between area schools and sending high schools. Where feasible, especially in larger cities, the state should consider converting some of its area vocational centers into full-time vocational high schools, broadly organized around specific industries (e.g., transportation, health, or the built environment) or around clusters of occupations and should consider using a fully integrated vocational and academic curriculum.

Recommendation 4: The State Department of Education should undertake an assessment of Diversified Technology to determine how best to make the curriculum accessible to significantly greater numbers of students and how best to link the program to other secondary and postsecondary vocational education offerings.

Recommendation 5: The Community and Junior College Board should review the rationale for distinguishing technical from vocational programs and consider developing a unified system with uniform standards and funding.

Recommendation 6: The State Department of Education and the State Board of Community and Junior Colleges should establish measurable objectives for increasing participation of African American students in cooperative vocational education, for reducing the racial imbalances that exist within regular vocational education programs, and for reducing imbalances by gender. Staff of both agencies should annually prepare a report analyzing participation in vocational education by race and gender and describing progress toward the established objectives. The report should be submitted to each agency's Board, the Governor, and the State Advisory Council on Vocational Education.

Recommendation 7: The State Board of Education and the State Board of Community and Junior Colleges should prepare an annual report on the outcomes of vocational education programs including unemployment rates. This report should be aimed at students, parents, and counselors.

Recommendation 8: Programs with unemployment rates that for three consecutive years exceed by more than twenty-five percent the state averages for all secondary and postsecondary programs should be evaluated to determine the causes and actions needed to reduce the unemployment rates.

Recommendation 9: State policy should emphasize the development and refinement of performance measures and standards, holding local secondary and postsecondary educators accountable for obtaining desired results; while policy can encourage adoption of certain methods and curricula, it should remain permissive and nonintrusive with respect to the means.

Recommendation 10: For secondary students completing vocational education programs, the State Department of Education, in consultation with employers, should develop a system of certification based on mastery of occupational and academic competencies necessary for success in the labor market.

Recommendation 11: Over four years, beginning with the ninth grade, Mississippi should phase out the general curriculum in secondary schools. The state should require that all students participating in vocational education develop—with parents, teachers, and counselors—a planned sequence of rigorous vocational and academic education studies that will prepare the student for further postsecondary education and success in the labor force.

Recommendation 12: The State Department of Education and the State Board of Community and Junior Colleges should articulate more clearly and more forcefully the objectives of integrating vocational and academic education and the different models of integration schools can employ. Integration should be a major topic in state efforts at staff development and curriculum support.

Recommendation 13: The existing weighting system used for program evaluation should be reviewed and redesigned to include clearly justified weights and measures of student gains over time.

Recommendation 14: The state should explore supplementing existing follow-up activities with the use of state unemployment insurance data to monitor labor market outcomes more accurately and for longer periods of time.

Recommendation 15: State law should be modified to give responsibility for secondary vocational education to the State Department of Education and responsibility for postsecondary vocational education to the Community and Junior College State Board. A joint committee of the State Department and Community College Board should be established to address issues of

articulation and the administration of federal funds for vocational education and employment training.

Recommendation 16: To improve postsecondary programs and their articulation with secondary offerings, the Community and Junior College Board should be adequately staffed to permit it to administer state policy on community colleges including the development of performance measures and standards, curriculum support, staff development efforts, student services, and planning and evaluation.

Recommendation 17: State law should be changed to give the State Superintendent of Public Instruction complete and direct authority over all divisions of the State Department of Education including the appointment of personnel.

Recommendation 18: The State Superintendent should undertake a reorganization of the State Department of Education to end the isolation of the Division of Vocational and Technical Education from the rest of the State Department. Such reorganization should seek a structure that promotes the integration of vocational and academic education and recognizes that all teachers, vocational and academic, share responsibility for ensuring that students have the necessary job-specific and academic skills to succeed in the work world.

INTRODUCTION

In September, 1990, Governor Mabus established the Commission on Work Force Excellence to help increase the state's economic competitiveness and improve opportunities for workers. The Commission was charged with examining the prospects for Mississippi's economy in the coming decade, assessing the status of the state's systems for preparing a well-educated and well-trained work force, and developing strategies for improving the state's national and international competitiveness.

As a major part of its work, the Commission undertook an evaluation of Mississippi's secondary and postsecondary vocational education system. To conduct this evaluation, the Commission sought the assistance of the National Center for Research in Vocational Education (NCRVE) at the University of California at Berkeley. Beginning in October, 1990, the NCRVE conducted a yearlong study of the condition of vocational education in Mississippi. The study sought answers to the following questions:

- What is the mission of vocational education in Mississippi?
- Who participates in vocational education programs?
- What happens to students who participate in vocational education?
- What is the quality of vocational education programs offered?
- What kind of articulation exists between secondary and postsecondary programs?
- What is the condition of labor market information, and what role does it play in program planning?
- In what ways are vocational education programs accountable?
- How well do existing governance and administrative structures serve the delivery of vocational education programs?

This report presents the study's findings. The question of mission is addressed in this introduction. To answer the remaining questions, the report is organized into two major sections. The first section, based on analyses of statewide data on enrollment and

follow-up, examines who participates in vocational education and what happens to them. The second section reports findings from a series of state and local site visits which took place to interview administrators, teachers, and students; to examine equipment and facilities; and to observe classrooms. These site visits are the source of findings with respect to the last five questions the study sought to answer.

In addition to interviews with state officials, study staff conducted thirty-six site visits to high schools, area vocational schools, and community colleges. Study staff chose sites that were representative of the state as a whole, and each visit lasted from a half a day to one day.[1] Altogether, staff conducted semistructured interviews with more than two-hundred individuals including superintendents, principals, college presidents, deans, counselors, and faculty. At each site, they conducted a comprehensive tour of the facility. Study staff observed more than three-hundred different classrooms (at least twenty intensively) and spoke informally with many students. Everyone was most cooperative, and the dedication and hard work of the administrators and faculty interviewed were evident in many facilities. Study staff assured everyone that their remarks would be held in strict confidence, and the interviews were frank and candid.

In summarizing the study's findings at the outset, it should first be said that vocational education in Mississippi is a diverse enterprise. During the course of the site visits, study staff observed several outstanding schools and programs. They also saw some that warrant significant improvement. Some classrooms had achieved a good balance by race and gender; others had not. In some schools, there was good local accountability with strong employer involvement, successful assessment of local labor market needs, strong follow-up, and appropriate modification of programs. In others, connections with employers were perfunctory, at best. Some sites reported good support from state offices; others cited serious problems. In short, not one of the study's findings, positive or negative, applies to all programs or all schools in Mississippi.

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[1] Appendix A describes the methodology of the study.

progress in building an infrastructure that has the *potential* to make a technically rich and academically rigorous curriculum available to most students. This potential, however, is as yet largely unrealized. The vast majority of students in secondary and postsecondary vocational education were enrolled in programs with a relatively small amount of technical and academic content. Generally, both vocational and academic educators expected too little of students enrolled in vocational education and did not sufficiently challenge them.

Second, stereotyping by gender and race pervaded many of the vocational education offerings. In this regard, Mississippi is by no means unique. In many other states, minorities and women are disproportionately overrepresented in some vocational programs and underrepresented in others. Nevertheless, in Mississippi, the problem is extensive and severe. For example, in high school cooperative programs—which, by and large, appeared to be quite effective—African American students made up only twenty-four percent of the enrollment, compared with fifty percent in other vocational education programs.

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a coherent sequence of vocational and academic courses for students during the last two years of secondary and first two years of postsecondary education.

The sections that follow elaborate on these findings in much more detail. Before proceeding, however, this report first addresses the issue of mission for secondary and postsecondary vocational education. An understanding of the mission of vocational education will provide a context for interpreting many of the findings that will follow in the subsequent sections.

The Mission of Vocational Education

The *Strategic Plan for Vocational and Technical Education in Mississippi 1986-90* states the mission of vocational education quite clearly: "to train for gainful employment in paid or unpaid available occupations; to provide initial training, assistance, and selection for advanced skill and technical programs; and to provide occupational orientation/exploration and consumer programs and activities" (Mississippi Board for Vocational and Technical Education, 1985). The Plan goes on to describe a number of important objectives:

- To fund prior to the eleventh-grade basic skill programs designed to provide an employer-identified "common core" of basic employability skills;
- To increase in the eleventh and twelfth grades the number of "advanced" skill training programs;
- To implement in the eleventh and twelfth grades a new type of program, "Diversified Technology," which equips students with basic knowledge and competencies in applied science, math, and technology for entering postsecondary technical programs;[2] and
- To intensify at the postsecondary level an emphasis on technical programs, well-articulated with secondary programs in Diversified Technology.

[2]The Plan uses the term "Principles of Technology," probably referring to the curriculum developed by the Center for Occupational Research and Development in Waco, Texas. Subsequently, Mississippi developed its own version of this curriculum and called it "Diversified Technology."

The basic mission set forth by the Plan is well-conceived. The Plan emphasizes basic skills, vocational and academic, in the early grades; however, it does not seek to immediately track students into any particular occupation. In the eleventh and twelfth grades, the Plan seeks to stress broad understanding of scientific and mathematical principles taught in the context of the requirements of modern technology. It anticipates that most students will need additional postsecondary education and encourages articulation between secondary and postsecondary offerings.

There is, however, a large gulf between what is called for by the Plan and what has been actually implemented. At the secondary level, vocational education was widely viewed as the curriculum for students who are not college bound; teachers generally had low expectations of students, especially with respect to their abilities to master academic material. Diversified Technology, while stressing more advanced math and science skills, enrolled only 1,063 students in 1988-1989. Although there were exceptions, most vocational and academic high school teachers were not very demanding of students enrolled in vocational education.

At the postsecondary level, emphasis was placed on preparing students for jobs; there was little emphasis on encouraging students to transfer to four-year institutions or to pursue further training. Furthermore, the distinction at the postsecondary level between vocational and technical courses created a *de facto* tracking system, with much lower expectations for students enrolled in the vocational courses.

At both levels, mastery of job-specific skills was seen as the primary objective of secondary and postsecondary vocational education. This emphasis on mastery of occupational skills conflicts with a growing body of research indicating that potentially the greatest contribution of vocational education is its ability to provide an occupational context for the mastery of academic skills and concepts. While teaching job-specific skills is appropriate, imparting these skills is not the primary objective, but rather the means for making academic knowledge and skills more accessible to more students. Using vocational education to promote academic mastery becomes the primary objective, especially at the secondary level.

In short, there is a major disjuncture between the mission of vocational education as conceived in this plan and the mission being implemented by the majority of policymakers

and state and local educators. Eliminating this disjuncture will require strong leadership, speaking with a unified voice—not only within vocational and technical education, but also in secondary and postsecondary education generally and in the larger policy arena.

Recommendation 1:	The mission of vocational education, especially at the secondary level, should be redirected toward using the opportunities for applied learning afforded by vocational education to increase students' knowledge and competencies in reading, writing, mathematics, and science. The secondary curriculum should seek to give students broader knowledge and skills suited for broad clusters of industries rather than narrow vocational skills limited to a single occupation.
Recommendation 2:	Participation in vocational education should preserve students' options to pursue a wide variety of postsecondary options through curriculum redesign, the re-education of teachers and counselors, and better articulation with postsecondary education at all levels.

PROGRAM PARTICIPATION AND PROGRAM OUTCOMES

Mississippi maintains rather extensive data on secondary and postsecondary enrollment in vocational education programs and on student follow-up of program outcomes. It is worth noting that this information, while not perfect, is considerably better than that maintained by most states. In this study, the data analysis was confined to one point in time, 1988-1989, but the state's data provides a powerful tool for assessing not only the current condition of vocational education in the state, but also trends over time.

This section begins with a review of the overall system for delivering vocational education in Mississippi. It then examines patterns of program participation in regular secondary and postsecondary programs, paying particular attention to participation by race/ethnicity and gender. Subsequently, the section turns to issues of program follow-up. What can be said about the percentages of students in vocational education who pursue further education, obtain work, enlist in the military, are unemployed, or are otherwise engaged? Both analyses report findings separately for regular vocational education

programs, which enroll most of the students, and cooperative programs, which enroll a much smaller fraction.

Mississippi's Delivery System

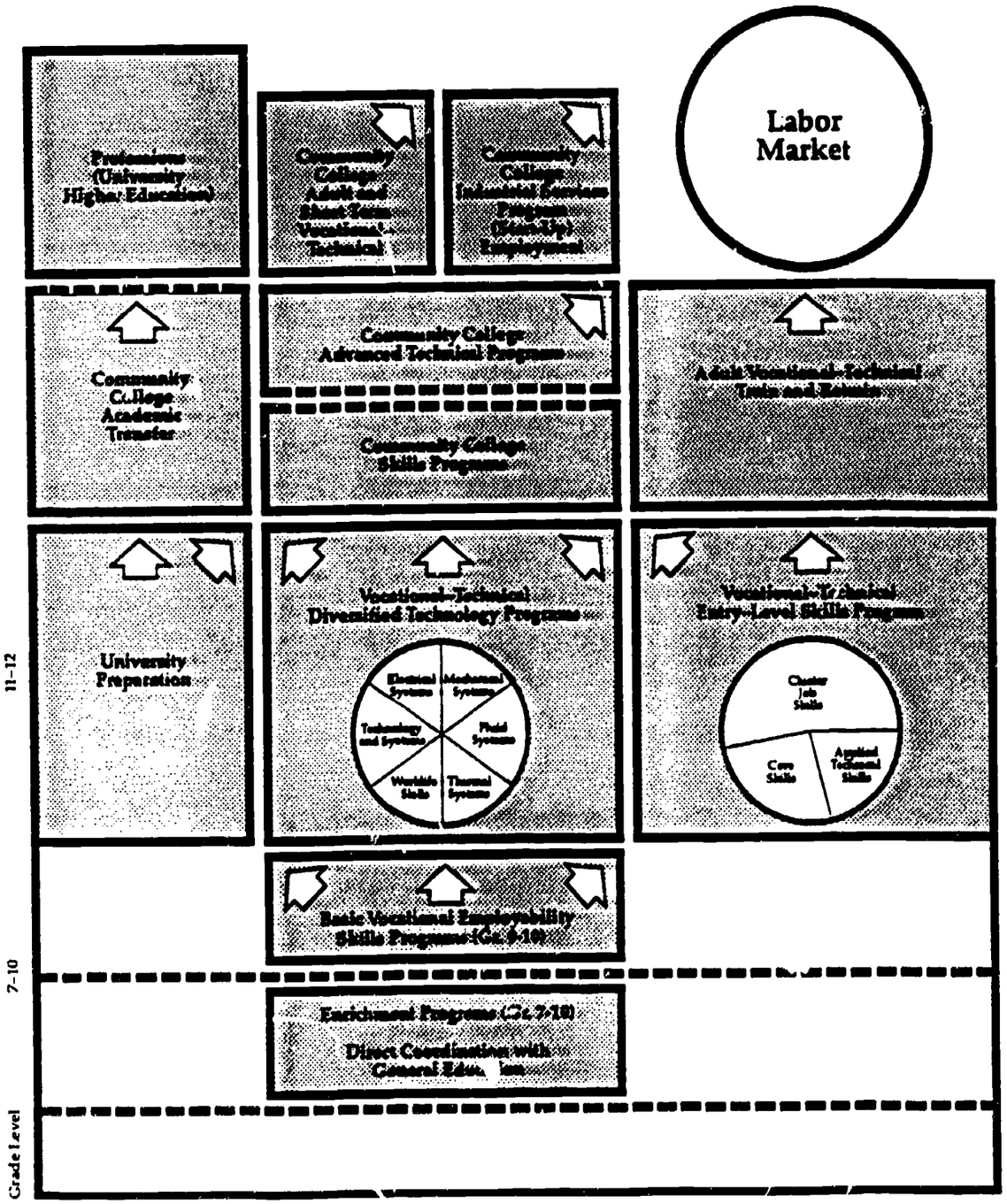
Figure 1 displays the general organizational framework for delivering vocational education in Mississippi. In theory, at least, this framework provides many features for improving this delivery. Vocational education begins in grades seven through ten by emphasizing enrichment programs and basic vocational employability skills. In grades eleven and twelve, programs aim to build on this base by developing technological competence and entry-level skills that can lead to success in the labor market or in further education, whether in colleges, universities, or community colleges. The community colleges continue to develop more advanced academic, technical, and job-specific skills leading to successful employment or to transfer to four-year postsecondary institutions.

Although this approach seems conceptually sound, in practice it presents several problems. First, while comprehensive high schools have primary responsibility for the seventh- through tenth-grade programs, area vocational schools have primary responsibility for the eleventh- and twelfth-grade programs including Diversified Technology. Although in most cases the area vocational schools were located close to at least one sending high school, they operated in relative isolation from the high school. There was little or no communication between faculty of the two types of schools and no integration of curriculum. The high schools tended to use area schools as a way to rid themselves of problem students, while the area schools pleaded for additional better prepared students. There was not a strong sense of shared responsibility for *all* students.

States have had mixed results with area vocational schools. Some, like Oklahoma, have developed outstanding systems of area schools that provide superior technical training to high school students and adults. Others have used area schools as a way to cope with expanding secondary enrollment in the 1960s and early 1970s and are now closing down area schools or converting them to adult facilities. Still other states, like Delaware, have decided to convert area schools to full-time vocational high schools. Successfully

Figure 1

Mississippi Delivery System for Vocational, Technical, and Adult Education



Source: Mississippi State Board for Education/Vocational, Technical, and Adult Education, *Vocational, Technical, and Adult Education Reform: In Support of Economic Development*, 1987.

integrating area schools with the high schools and creating a comprehensive, rigorous program of technical and academic education is one of Mississippi's major challenges.

Recommendation 3:	The State Department of Education should appoint a Task Force on Area Vocational Schools to make recommendations on improving the interaction between area schools and sending high schools. Where feasible, especially in larger cities, the state should consider converting some of its area vocational centers into full-time vocational high schools, broadly organized around specific industries (e.g., transportation, health, or the built environment) or around clusters of occupations and should consider using a fully integrated vocational and academic curriculum.

Second, while Figure 1 shows an equal balance between enrollment in Diversified Technology and advanced skill programs (which may be the ultimate goal), in fact, Diversified Technology made up a relatively small part of the eleventh- and twelfth-grade vocational education curriculum. As will be further documented, enrollment in Diversified Technology represented less than five percent of enrollments in eleventh- and twelfth-grade vocational education programs. Moreover, participation in Diversified Technology was an alternative, rather than a supplement, to participation in other vocational education programs in the eleventh and twelfth grades.

Recommendation 4:	The State Department of Education should undertake an assessment of Diversified Technology to determine how best to make the curriculum accessible to significantly greater numbers of students and how best to link the program to other secondary and postsecondary vocational education offerings.

Third, there was no clear rationale for the distinction at the postsecondary level between vocational and technical programs. On the contrary, the distinction appeared to promote *de facto* tracking, with the presumption that students in the vocational programs were less able than those in the technical programs. Moreover, the distinction between vocational and technical programs varied substantially among the colleges. Programs defined as "vocational" at one college were designated as "technical" at others. Such

inconsistencies resulted not only in disparities in the quality of postsecondary offerings but also in fiscal inequities that had no justification.

Recommendation 5:	The Community and Junior College Board should review the rationale for distinguishing technical from vocational programs and consider developing a unified system with uniform standards and funding.

What Is Offered and Who Participates?

Vocational education is a major part of secondary and postsecondary education in Mississippi. In the 1988-1989 school year, about ninety-four thousand secondary school students were enrolled in vocational education programs. At the postsecondary level, about sixteen thousand students were enrolled in certificate and technical programs, with another five thousand adults taking vocational classes at both secondary vocational-technical complexes and community colleges.[3] Federal and state spending for vocational education in Mississippi was about $60 million.

At the secondary level, eighty vocational-technical area schools served about thirty-three thousand students, who were enrolled for three hours each day in programs aimed at preparing students for work. Additionally, in regular high schools, about sixteen thousand students were enrolled in basic skills courses in agriculture, business, industrial, and personal services; another forty-four thousand students were enrolled in consumer home economics and industrial arts. Enrollment in Mississippi's thirty-eight postsecondary vocational facilities was virtually all in "skill/technical" programs intended to prepare students for employment.

Trade and industrial programs enrolled the largest number of students at both the secondary and postsecondary levels. Agriculture, marketing, business, and home economics enrolled large numbers of secondary students, while business and health were the next most popular programs at the postsecondary level (Figures 2 and 3).

[3]An additional sixty-eight thousand adults were enrolled in adult literacy, adult short-term courses, and industrial training classes.

Figure 2

Percentage Distribution of Secondary Vocational Education Enrollment by Program: 1988-1989

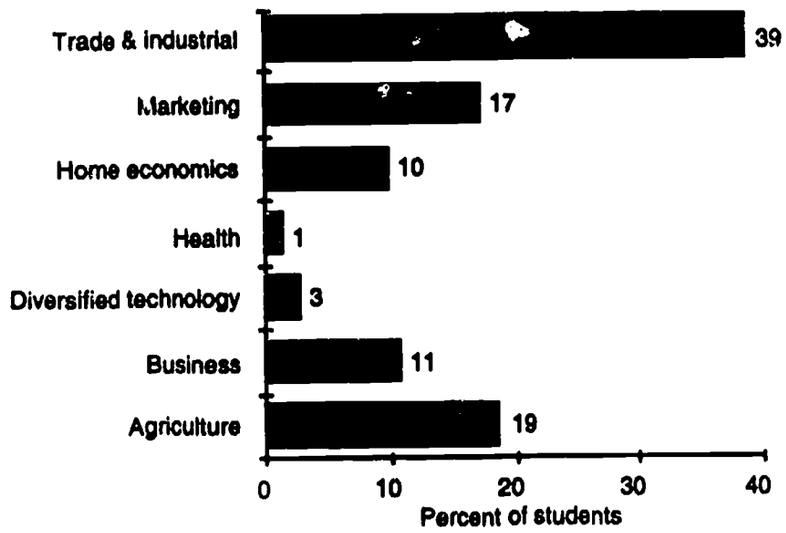
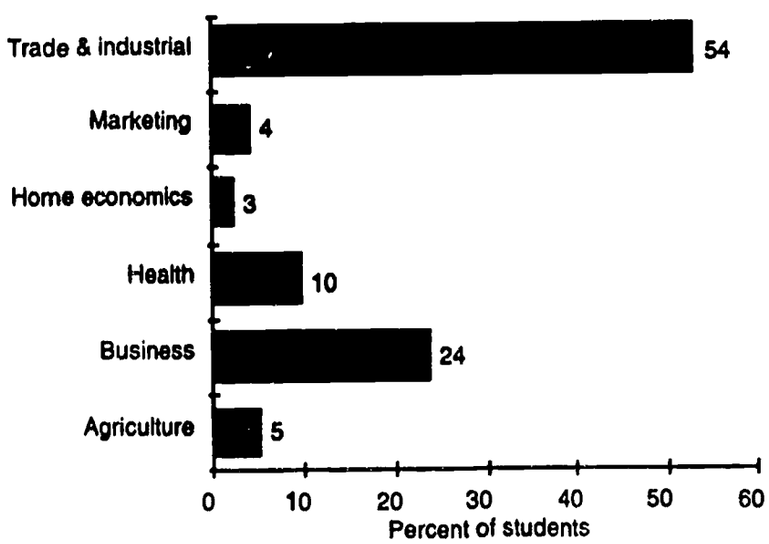


Figure 3

Percentage Distribution of Postsecondary Vocational Education Enrollment by Program: 1988-1989



A better understanding of the range and kinds of offerings can be achieved by examining participation in greater programmatic detail. Using data for 1988-1989 from the Division of Vocational and Technical Education, study staff analyzed program enrollments at the level of the so-called six-digit CIP code.[4] Study staff limited the analysis to offerings at regular secondary and postsecondary institutions and excluded various special institutions such as schools for the deaf and blind, the Department of Youth Services, and the Department of Corrections. Furthermore, the analysis organized programs by the level at which they were offered rather than the level of student served. Thus, secondary students served by postsecondary institutions were counted with postsecondary enrollments. The rationale for this is that because the data is aggregated by program, it is not possible to extract secondary students in postsecondary institutions and to include them with secondary students for purposes of analysis. For these reasons, the figures reported by this study may not exactly match those published elsewhere in state documents. The differences, however, are not great and do not affect any of the findings.

Secondary Enrollments by Program

Table 1 lists regular secondary vocational offerings (excluding cooperative programs) in 1988-1989 by size of program and displays the percentages of students enrolled in each program by race/ethnicity and gender. The two largest programs, consumer and homemaking and industrial arts, were taught mainly in the seventh and eighth grades and, strictly speaking, were not secondary programs. Note that Diversified Technology enrolled 1,063 students, or about 3.5% of the students enrolled in occupationally specific programs typically offered in the eleventh and twelfth grades.[5] There were only 356 students enrolled in electricity/electronics programs.

Overall, 0.2% of the students enrolled in regular vocational education programs were Native American, 0.4% were Asian, 50.1% were African American, 1.1% were Hispanic, and 48.3% were white. There was, however, substantial variation in the distribution of white and African American students among programs. As displayed in

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[4]The CIP code is a six-digit code developed by the National Center for Education Statistics (NCES) for the Classification of Instructional Programs (CIP), a taxonomy of all vocational and academic education. Typically, a vocational education program consists of several courses.

[5]Occupationally specific programs exclude consumer and homemaking, industrial arts, enrichment programs, and basic skills programs.

Table 2, in nine programs, African American students represented more than seventy percent of the students enrolled. These programs with high concentrations of African American students were generally programs requiring relatively low levels of academic or technical skill. Two of these programs—building trades (general) and clothing/ apparel/textiles—were among the five largest occupationally specific programs in the state.

At the other extreme, thirteen programs had less than thirty percent of African American students enrolled. These programs included drafting, machine tool operation, and electrical and electronic equipment repair. Additionally, African Americans were less than forty percent of the students enrolled in such programs as agricultural business and management, agricultural mechanics, business data processing, and diversified technology.

With respect to gender, total enrollment in vocational education programs was more or less evenly split, with forty-eight percent of the students male and fifty-two percent female. Within programs, however, the variation was substantial. As shown in Table 3, in twenty programs, females represented less than ten percent of the students enrolled. In five programs, they constituted more than ninety percent. Females were twenty-six percent of the students enrolled in diversified technology.

There were a few signs of progress toward eliminating sex stereotyping. In consumer and homemaking, which traditionally was all female, males made up twenty-nine percent of the enrollment. Similarly, in industrial arts—for a long time the exclusive province of males—females were twenty-six percent of all students enrolled. Nevertheless, well-balanced programs with respect to gender were the exception, limited to supermarket marketing, food marketing (general), custodial services, and agricultural services and supplies.[6]

Secondary Cooperative Programs

Table 4 displays enrollment in secondary cooperative (co-op) vocational education programs. Co-op programs combine supervised, related work experience with classroom instruction. They involve a cooperative agreement between the school and the employer as to what the student will do on the job and learn in the classroom. Co-op programs have

[6]For purposes of this report, a "well-balanced" program is one in which males or females represented at least forty percent of the total enrollment.

Table 1
Percentage of Secondary Enrollment Vocational Education Programs (Excluding Co-op), by Race/Ethnicity by Program: 1988-1989

CIP Code	Program	Unduplicated Enrollment	Percentage of Students						
			Native American	Asian	African American	Hispanic	White	Male	Female
200101	CONSUMER AND HOMEMAKING	25,085	0.1	0.5	49.3	1.4	48.8	29.2	70.8
210101	INDUSTRIAL ARTS, GENERAL	16,724	0.1	0.6	51.2	0.9	47.3	73.6	26.4
264	BASIC PERSONAL SERVICES	8,196	0.8	0.3	54.4	1.3	43.1	28.2	71.8
261	BASIC VOCATIONAL AGRICULTURE	,084	0.2	0.0	41.6	1.3	56.9	85.4	14.6
70701	TYPING, GENERAL OFFICE	3,102		0.5	48.3	0.2	51.0	13.3	86.7
10301	AGRICULTURAL PRODUCTION	2,663	0.4	0.1	39.3	1.2	59.0	87.1	12.9
262	BASIC SKILLS VOCATIONAL	2,412	0.3	0.2	56.1	2.8	40.4	83.0	17.0
460490	BUILDING TRADES, GENERAL	2,327	0.0	0.2	70.6	1.3	27.9	89.5	10.5
470604	AUTOMOTIVE MECHANICS	2,172		0.3	56.4	1.7	41.6	94.8	5.2
200301	CLOTHING/APPAREL/TEXTILES	1,481		0.2	78.3	1.4	20.1	6.6	93.4
10391	AGRICULTURE ENRICHMENT	1,392			31.9		68.1	83.4	16.6
200201	CHILD CARE AND GUID MGT AND SERV	1,277	0.6	0.2	45.7	2.7	50.7	10.0	90.0
200401	FOOD PRODUCTION, MGT AND SERV	1,277	0.2	0.4	73.7	0.1	25.7	27.0	73.0
480590	METAL TRADES	1,222	0.1	0.2	43.5	1.0	55.2	97.6	2.4
80705	MARKETING AND RETAILING	1,186	0.1		49.7	0.2	50.0	30.7	69.3
10201	AGRICULTURAL MECHANICS	1,156	0.2	0.1	38.3		61.4	97.3	2.7
150991	DIVERSIFIED TECHNOLOGY	1,063	0.0	0.8	38.8	0.1	60.4	73.6	26.4
10101	AGRIC BUSINESS AND MANAGEMENT	950	0.1		36.0	0.8	63.1	90.3	9.7
10601	HORTICULTURE, GENERAL	730			47.5	2.7	49.7	60.3	39.7
480101	DRAFTING, GENERAL	710		1.7	28.7	0.7	68.9	73.8	26.2
470603	AUTOMOTIVE BODY REPAIR	581		0.2	60.8		39.1	97.4	2.6
170690	HEALTH CLUSTER	535	0.2	0.9	47.3	0.2	51.4	11.6	88.4
460201	CARPENTRY	431			62.4		37.6	95.0	5.0
460302	ELECTRICIAN	422			50.2	0.5	49.3	93.2	6.8
480508	WELDING, BRAZING AND SOLDER	389	0.5	0.3	47.3		51.9	96.7	3.3
460390	ELECTRICITY/ELECTRONICS	356		0.3	47.5		52.2	93.3	6.7
80604	SUPERMARKET MARKETING	300		0.3	34.0		65.7	53.3	46.7
470601	VEHICLE AND MOBILE EQUIP MECH	288			38.9		61.1	99.0	1.0
460102	BRICK, BLOCK, AND STONEMASONR	276			92.0		8.0	96.4	3.6
80905	WAITER/WAITRESS	222			49.1	0.9	50.0	33.4	66.6
30401	FORESTRY PRODUCTION	219			13.2	0.5	86.3	92.7	7.3
263	BASIC VOC BUSINESS	209		2.4	47.4		50.2	53.6	46.4
80601	FOOD MARKETING, GENERAL	175			49.7		50.3	51.4	48.6
80706	SALES	166			15.1		84.9	35.5	64.5
470606	SMALL ENGINE REPAIR	145			80.0		20.0	78.6	21.4
70705	GENERAL OFFICE CLERK	136			36.0		64.0	14.7	85.3
200604	CUSTODIAL SERVICES	131			51.1		48.9	50.5	49.5
470203	HEATING AND AIR CONDITIONING	129			47.3		52.7	86.0	14.0
470103	COMMUNICATION ELECTRONICS	115		0.9	45.2		53.9	94.8	5.2
480201	GRAPHIC AND PRINT COMMUN	104			64.4		35.6	51.9	48.1
470605	DIESEL ENGINE MECHANICS	100			65.0		35.0	93.0	7.0
70390	BUSINESS COMPUTER APPLIC	91			62.6	1.1	35.2	18.7	81.3

Table 1
Percentage of Secondary Enrollment Vocational Education Programs (Excluding Co-op), by Race/Ethnicity by Program: 1988-1989 (continued)

CIP Code	Program	Unduplicated Enrollment	Percentage of Students						
			Native American	Asian	African American	Hispanic	White	Male	Female
200303	COMMERCIAL GARMENT AND APPAREL	81			84.0		16.0	7.4	92.6
470390	INDUSTRIAL MAINTENANCE	77			54.5		45.5	100.0	0.0
10204	AGRICULTURAL POWER MACHINE	76			89.5		10.5	98.7	1.3
80101	APPAREL AND ACCESSORIES MKTG	74			27.0		73.0	24.3	75.7
204	DIVERSIFIED COOPERATIVE	72			30.6		69.4	58.3	41.7
200602	COMPANION TO THE AGED	72			27.8		72.2	19.4	80.6
480503	MACHINE TOOL OPERATION/MACH	71	1.4		19.7		78.9	98.6	1.4
203	BUSINESS AND OFFICE COOPER	68			11.8		88.2	14.7	85.3
10501	AGRIC SERVICES AND SUPPLIES	68			10.3		89.7	54.4	45.6
70301	BUSINESS DATA PROCESSING	60			33.3	1.7	65.0	80.0	20.0
470692	MARINE ENGINE MECHANICS	56			10.7		89.3	100.0	0.0
120403	COSMETOLOGY	50			82.0		18.0	4.0	96.0
70601	SECRETARIAL AND RELATED	44			18.2		81.8	2.3	97.7
480303	UPHOLSTERING	44			45.5	0.0	54.5	70.5	29.5
200490	FAST FOODS	43			62.8		37.2	34.9	65.1
80708	MARKETING, GENERAL	42			9.5		90.5	38.1	61.9
80603	SPECIALTY FOODS MARKETING	40			35.0		65.0	40.0	60.0
200406	FOOD SERVICE	40			47.5		52.5	40.0	60.0
80201	BUSINESS/PERSONAL SERVICES	39	0.0		20.5		79.5	46.2	53.8
70608	WORD PROCESSING	38			47.4		52.6	21.1	78.9
10402	FOOD PRODUCTS (MEAT)	37					100.0	91.9	8.1
470101	ELECTRICAL AND ELECTRONIC	37			10.8		89.2	94.6	5.4
470301	IND EQUIPMENT MAINT AND REPAIR	36			88.9		11.1	100.0	0.0
	OTHER*	570	0.4	0.0	36.3	0.2	63.0	63.0	37.0
	TOTALS	86,564	0.2	0.4	50.1	1.1	48.3	48.3	51.7

*Includes all programs with fewer than thirty students enrolled.

Table 2
Secondary Programs (Excluding Co-op) with Thirty or More Students Enrolled, by Percentage of African American Students Enrolled

State average = 50% African American

≥ 70% African American	≤ 30% African American
1. MASONRY (92%)	1. DRAFTING, GENERAL (29%)
2. AGRICULTURAL POWER MACHINE (89%)	2. COMPANION TO THE AGED (28%)
3. INDUSTRIAL EQUIPMENT MAINTENANCE (89%)	3. APPAREL AND ACCESSORIES MKTG (27%)
4. COMMERCIAL GARMENT AND APPAREL (84%)	4. BUSINESS PERSONAL SERVICES (21%)
5. COSMETOLOGY (82%)	5. MACHINE TOOL OPERATION (20%)
6. SMALL ENGINE REPAIR (80%)	6. SECRETARIAL AND RELATED PROGRAMS (18%)
7. CLOTHING/APPAREL/TEXTILES (78%)	7. SALES (15%)
8. FOOD PRODUCTION MGT AND SERVICES (74%)	8. FORESTRY PRODUCTION (13%)
9. BUILDING TRADES, GENERAL (71%)	9. ELECTRICAL AND ELECTRONIC EQUIPMENT REPAIR (11%)
	10. MARINE ENGINE MECH (11%)
	11. AGRIC SERVICES AND SUPPLIES (10%)
	12. MARKETING, GENERAL (10%)
	13. FOOD PRODUCTS (MEAT) (0%)

Table 3
Secondary Programs (Excluding Co-op) with Thirty or More Students Enrolled, by Percentage of Females Enrolled

State average = 52% female

≤ 10%	≥ 90%
1. INDUSTRIAL MAINTENANCE (0%)	1. CHILD CARE (90%)
2. MARINE ENGINE MECHANICS (0%)	2. COMMERCIAL GARMENT/APPAREL (93%)
3. INDUSTRIAL EQUIP MTNC (0%)	3. CLOTHING/APPAREL/TEXTILES (93%)
4. VEHICLE AND MOBILE EQUIP REPAIR (1%)	4. COSMETOLOGY (96%)
5. AGRICULTURAL POWER MACHINE (1%)	5. SECRETARIAL AND RELATED (98%)
6. MACHINE TOOL OPERATION (1%)	
7. METAL TRADES (2%)	
8. AUTOMOTIVE BODY REPAIR (2%)	
9. AGRICULTURAL MECHANICS (3%)	
10. WELDING (3%)	
11. MASONRY (3%)	
12. CARPENTRY (5%)	
13. COMMUNICATION ELECTRONICS (5%)	
14. AUTOMOTIVE MECHANICS (5%)	
15. ELECTRICAL AND ELECTRONIC EQUIP REPAIR (7%)	
16. ELECTRICITY AND ELECTRONICS (7%)	
17. ELECTRICIAN (7%)	
18. DIESEL ENGINE MECHANICS (7%)	
19. FORESTRY PRODUCTION (7%)	
20. FOOD PRODUCTS (MEAT) (8%)	

always enjoyed a good reputation, and there is growing evidence that they are particularly effective at reducing youth unemployment and increasing academic achievement.

In 1988-1989, there were about two thousand students enrolled in co-op programs in Mississippi's high schools. Assuming that one-half of the students enrolled in occupationally specific programs were in the twelfth grade (the point at which most students become eligible for co-op), then about one in six seniors enrolled in vocational education was in a co-op program.

Although African Americans represented fifty percent of students enrolled in regular secondary vocational education programs, only twenty-four percent of students in co-op programs were African American. Moreover, African Americans were concentrated overwhelmingly in such relatively low-skill programs as waiter/waitress, supermarket marketing, and consumer and homemaking. Interestingly, while sex stereotyping persisted in co-op programs, these programs tended to exhibit somewhat more balance by gender, compared with the regular vocational education programs.

Postsecondary Enrollments by Program

Table 5 lists postsecondary offerings (excluding co-op) at the Mississippi community colleges in 1988-1989 by size of program and by race/ethnicity and gender. As one might expect, technical programs figure more prominently in the list of postsecondary offerings. Business data processing, electronic technology, drafting and design technology, respiratory therapy, medical laboratory technology, radiograph medical technology, and aircraft mechanics are all relatively large postsecondary programs.[7]

In the aggregate, 0.3% of students enrolled in postsecondary vocational education programs were Native American, 0.5% were Asian, 35.7% were African American, 0.5% were Hispanic, and 62.9% were white. Thus, overall, postsecondary programs enrolled much lower percentages of African American students in vocational education than did high schools.

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[7]We recognize that many other programs can contain substantial technical content. Auto mechanics, practical nursing, and heating and air conditioning, to name a few, can and probably should include substantial mathematical and scientific content. However, often they do not.

As with the secondary programs, there was substantial variation among postsecondary programs in the percentages of African American students enrolled (Table 6). While on the average, African Americans were thirty-six percent of all students enrolled in vocational education, in thirteen programs they represented more than fifty percent of enrollments. The extremes were masonry and clothing/apparel/textiles, where African Americans represented eighty-seven percent and ninety-one percent, respectively, of program enrollments. In fourteen postsecondary programs, African Americans represented less than fifteen percent of the students enrolled. These tended to be more technical programs such as drafting, civil technology, accounting and computing, aircraft mechanics, radiograph medical technology, and manufacturing technology.

In some respects, sex stereotyping was more severe in postsecondary programs than in secondary (Table 7). In twenty-three postsecondary programs, women made up less than ten percent of the enrollment. In another fourteen programs, they represented more than ninety percent of students enrolled. Programs balanced with respect to gender were limited to food production (management and services), hotel management, commercial art, specialty foods marketing, food service, and business personal services.

Postsecondary Cooperative Programs

The postsecondary cooperative program was relatively small and included a substantial number of secondary students.[8] Table 8 lists postsecondary cooperative offerings by size of enrollment and by race/ethnicity and gender. About five hundred and fifty students participated in postsecondary co-op programs.[9] Once again, compared with regular postsecondary programs, African American students appeared to be underrepresented in postsecondary co-op programs. While African Americans made up thirty-six percent of students in regular postsecondary vocational programs, they were only twenty-four percent of co-op students.

What accounts for the underrepresentation of African Americans in co-op programs or their overrepresentation in many of the less skilled, less technical regular vocational

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[8]For some high schools, community colleges have assumed responsibility for delivering vocational education to secondary school students.

[9]We are a bit uncertain about this figure. The unduplicated count for postsecondary follow-up was lower—about three hundred and fifty—but the follow-up count was higher. There appeared to be a few reporting errors in the data.

Table 4
Percentage of Secondary Enrollment in Cooperative Vocational Education Programs, by Race/Ethnicity by Program: 1988-1989

CIP Code	Program	Unduplicated Enrollment	Percentage of Students						
			Native American	Asian	African American	Hispanic	White	Male	Female
080604	SUPERMARKET MARKETING	219	0.0	0.0	33.8	0.0	66.2	59.4	40.6
080705	MARKETING AND RETAILING	167	0.0	0.0	16.2	0.0	83.8	52.1	47.9
080706	SALES	134	0.0	0.0	16.4	0.7	82.8	33.6	66.4
080905	WAITER/WAITRESS	128	0.0	0.0	44.5	2.3	53.1	43.7	56.3
200101	CONSUMER AND HOMEMAKING	90	0.0	0.0	46.7	0.0	53.3	27.8	72.2
080601	FOOD MARKETING, GENERAL	79	0.0	1.3	26.6	0.0	72.2	53.2	46.8
200490	FAST FOODS	60	0.0	0.0	45.0	1.7	53.3	26.7	73.3
070705	GENERAL OFFICE CLERK	58	0.0	0.0	15.5	0.0	84.5	37.9	62.1
200202	CHILD CARE AIDE/ASSISTING	54	0.0	0.0	24.1	0.0	75.9	7.4	92.6
070701	TYPING, GENERAL OFFICE	39	0.0	0.0	12.8	0.0	87.2	7.7	92.3
200406	FOOD SERVICE	39	0.0	2.6	23.1	0.0	74.4	61.5	38.5
200604	CUSTODIAL SERVICES	34	0.0	0.0	47.1	0.0	52.9	85.3	14.7
490203	MATERIAL HANDLING	30	0.0	0.0	0.0	3.3	96.7	100.0	0.0
080603	SPECIALTY FOODS MARKETING	26	0.0	0.0	53.8	0.0	46.2	34.6	65.4
081206	SERVICE STATION RETAILING	23	0.0	0.0	21.7	0.0	78.3	73.9	26.1
200403	CHEF/COOK	22	0.0	0.0	50.0	9.1	40.9	54.5	45.5
460201	CARPENTRY	21	0.0	0.0	0.0	0.0	100.0	100.0	0.0
080602	CONVENIENCE STORE MARKETING	20	0.0	0.0	35.0	0.0	65.0	45.0	55.0
470604	AUTOMOTIVE MECHANICS	20	0.0	0.0	25.0	0.0	75.0	100.0	0.0
060705	TRANSPORTATION MANAGEMENT	18	0.0	0.0	11.1	0.0	88.9	0.0	100.0
080101	APPAREL AND ACCESSORIES MKTG	18	0.0	0.0	16.7	0.0	83.3	16.7	83.3
081203	MKTG AUTOMOTIVE VEHICLES	18	0.0	0.0	0.0	0.0	100.0	100.0	0.0
070601	SECRETARIAL AND RELATED	17	0.0	0.0	5.9	0.0	94.1	0.0	100.0
080708	MARKETING, GENERAL	17	0.0	0.0	29.4	11.8	58.8	35.3	64.7
080201	BUSINESS/PERSONAL SERVICES	16	0.0	0.0	25.0	0.0	75.0	50.0	50.0
200408	SCHOOL FOOD SERVICE	16	0.0	0.0	68.8	0.0	31.3	37.5	62.5
470603	AUTOMOTIVE BODY REPAIR	16	0.0	0.0	6.3	0.0	93.8	100.0	0.0
080799	GENERAL MARKETING, OTHER	15	0.0	0.0	6.7	0.0	93.3	20.0	80.0
200401	FOOD PRODUCTION, MGT AND SERV	15	0.0	0.0	33.3	0.0	66.7	53.3	46.7
070708	SHIPPING, RECEIVING AND STOCK	14	0.0	0.0	14.3	0.0	85.7	85.7	14.3
081201	VEHICLES AND PETROLEUM MKTG	14	0.0	0.0	14.3	0.0	85.7	71.4	28.6
480702	FURNITURE MAKING	14	0.0	0.0	7.1	0.0	92.9	100.0	0.0
080803	BUILDING MATERIALS MARKETING	11	0.0	0.0	36.4	9.1	54.5	81.8	18.2
080901	HOSPITALITY AND RECREATION MKTG	11	0.0	0.0	0.0	0.0	100.0	72.7	27.3
081106	WAREHOUSE SERVICES MARKETING	9	0.0	0.0	0.0	0.0	100.0	100.0	0.0
170602	NURSING ASSISTING	9	0.0	0.0	33.3	0.0	66.7	0.0	100.0
070602	COURT REPORTING	8	0.0	0.0	0.0	0.0	100.0	0.0	100.0
070606	SECRETARIAL	8	0.0	0.0	12.5	0.0	87.5	12.5	87.5
070799	TYPING, GEN OFFICE	8	0.0	0.0	62.5	0.0	37.5	25.0	75.0
080402	BANKING MARKETING	8	0.0	0.0	0.0	0.0	100.0	0.0	100.0
080806	HARDWARE MARKETING	8	0.0	0.0	0.0	0.0	100.0	100.0	0.0
120101	DRYCLEANING AND LAUNDERING	8	0.0	0.0	12.5	0.0	87.5	12.5	87.5

Table 4
Percentage of Secondary Enrollment in Cooperative Vocational Education Programs, by Race/Ethnicity by Program: 1988-1989 (continued)

CIP Code	Program	Unduplicated Enrollment	Percentage of Students						
			Native American	Asian	African American	Hispanic	White	Male	Female
070101	ACCOUNTING AND BOOKKEEPING	7	0.0	0.0	0.0	0.0	100.0	0.0	100.0
080904	RECREATIONAL PRODUCTS MKTG	7	0.0	0.0	14.3	0.0	85.7	85.7	14.3
170507	PHARMACY ASSISTING	7	0.0	0.0	0.0	0.0	100.0	42.9	57.1
200301	CLOTHING/APPAREL/TEXTILES	7	0.0	0.0	28.6	0.0	71.4	42.9	57.1
460401	BUILDING MAINTENANCE	7	0.0	0.0	28.6	0.0	71.4	100.0	0.0
480501	PRECISION METAL WORK	7	0.0	0.0	0.0	0.0	100.0	100.0	0.0
080805	FURNITURE MARKETING	6	0.0	0.0	0.0	0.0	100.0	83.3	16.7
080903	MARKETING OF RECREATIONAL	6	0.0	0.0	0.0	0.0	100.0	16.7	83.3
089999	MARKETING AND DISTRIBUTION	6	0.0	0.0	0.0	0.0	100.0	33.3	66.7
129999	CONSUMER, PERSONAL AND MISC	6	0.0	0.0	0.0	0.0	100.0	33.3	66.7
170101	DENTAL ASSISTING	6	0.0	0.0	0.0	0.0	100.0	16.7	83.3
460499	MISC CONSTRUCTION TRADES	6	0.0	0.0	50.0	0.0	50.0	100.0	0.0
470601	VEHICLE AND MOBILE EQUIP MECH	6	0.0	0.0	0.0	0.0	100.0	83.3	16.7
480504	METAL FABRICATION	6	0.0	0.0	16.7	0.0	83.3	100.0	0.0
070699	SECRETARIAL AND RELATED	5	0.0	0.0	0.0	0.0	100.0	0.0	100.0
170512	VETERINARIAN ASSISTING	5	0.0	0.0	0.0	0.0	100.0	100.0	0.0
200201	CHILD CARE AND GUID MGT AND SERV	5	0.0	0.0	0.0	0.0	100.0	0.0	100.0
200601	INST. HOME MGT AND SUPPORT SERV	5	0.0	0.0	0.0	0.0	100.0	80.0	20.0
480703	MILLWORK AND CABINET MAKING	5	0.0	0.0	0.0	20.0	80.0	100.0	0.0
	OTHER*	310	0.0	0.0	22.3	1.0	134.5	88.4	11.6
	TOTALS	1,984	0.1	0.2	23.9	0.7	75.2	50.2	49.8

*Includes all programs with fewer than five students enrolled.

Table 5
Percentage of Postsecondary Enrollment Vocational Education Programs (Excluding Co-op), by Race/Ethnicity by Program: 1988-1989

CIP Code	Program	Unduplicated Enrollment	Percentage of Students						
			Native American	Asian	African American	Hispanic	White	Male	Female
70601	SECRETARIAL AND RELATED	2,358	0.6	0.7	43.3	1.3	54.1	5.0	95.0
170605	PRACTICAL NURSING	1,123	0.4	0.1	34.2	0.3	65.1	9.0	91.0
70301	BUSINESS DATA PROCESSING	1,043	0.3	0.3	30.2		69.2	28.1	71.9
150303	ELECTRONIC TECHNOLOGY	684	0.1	0.6	19.9	0.3	79.1	93.1	6.9
470604	AUTOMOTIVE MECHANICS	671	1.0	1.0	37.1	0.6	60.2	95.7	4.3
150202	DRAFTING AND DESIGN TECHNOLOGY	662	0.5	0.3	17.2	0.5	81.6	77.2	22.8
480508	WELDING, BRAZING AND SOLDER	636		0.3	49.2	0.2	50.3	92.8	7.2
61401	MARKETING MANAGEMENT	468			22.0	0.4	77.6	40.0	60.0
70701	TYPING, GENERAL OFFICE	458	0.4		25.1		74.5	9.4	90.6
120403	COSMETOLOGY	444		0.2	50.0		49.8	3.4	96.6
460302	ELECTRICIAN	440	0.5	0.5	39.1		60.0	94.3	5.7
200201	CHILD CARE AND GUID MGT AND SERV	427	1.2	0.2	58.8	1.6	38.2	3.3	96.7
470603	AUTOMOTIVE BODY REPAIR	377	0.3	1.1	50.1		48.5	90.7	9.3
480503	MACHINE TOOL OPERATION/MACH	368	0.3	1.1	35.3	0.3	63.0	91.6	8.4
460201	CARPENTRY	303	0.7		62.7	0.3	36.3	90.8	9.2
470203	HEATING AND AIR CONDITIONING	292	0.3	1.0	40.8		57.9	96.2	3.8
170818	RESPIRATORY THERAPY	274			21.9	0.7	77.4	26.3	73.7
200401	FOOD PRODUCTION, MGT AND SERV	254		2.0	70.9	0.4	26.8	46.9	53.1
470605	DIESEL ENGINE MECHANICS	210		1.9	47.1		51.0	94.3	5.7
170309	MEDICAL LABORATORY	200		0.5	28.0	0.5	71.0	13.0	87.0
30401	FORESTRY PRODUCTION	186			4.3		95.7	87.6	12.4
80705	MARKETING AND RETAILING	180			36.7	0.6	52.8	19.4	80.6
70604	LEGAL SECRETARIAL	172			19.2	1.2	79.7	6.4	93.6
480101	DRAFTING, GENERAL	171	0.6		14.0		85.4	78.9	21.1
460490	BUILDING TRADES, GENERAL	155			51.0	1.3	47.7	96.1	3.9
120402	BARBERING	153			49.7	0.7	49.7	24.8	75.2
170209	RADIOGRAPH MEDICAL	148	0.7	0.7	8.8	1.4	88.5	31.1	68.9
60701	HOTEL AND MOTEL MANAGEMENT	147		0.7	29.3	2.0	68.0	46.9	53.1
490205	TRUCK AND BUS DRIVING	145			26.9		73.1	89.7	10.3
480590	METAL TRADES	142	1.4		19.7		78.9	99.3	0.7
460102	BRICK, BLOCK AND STONE MASONRY	127	0.8		87.4	0.8	11.0	81.9	18.1
470390	INDUSTRIAL MAINTENANCE	103		1.0	48.5		50.5	98.1	1.9
80102	FASHION MERCHANDISING	98		1.0	14.3	1.0	83.7	2.0	98.0
261	BASIC VOCATIONAL AGRICULTURE	96			44.8		55.2	85.4	14.6
10201	AGRICULTURAL MECHANICS	93			50.5		49.5	91.4	8.6
470103	COMMUNICATION ELECTRONICS	90		2.2	32.2		65.6	95.6	4.4
470602	AIRCRAFT MECHANICS	90		1.1	10.0		88.9	95.6	4.4
170690	HEALTH CLUSTER	89		2.2	40.4	1.1	56.2	14.6	85.4
460390	ELECTRICITY/ELECTRONICS	82			17.1		82.9	96.3	3.7
150991	DIVERSIFIED TECHNOLOGY	78	1.3	2.6	17.9	1.3	76.9	61.5	38.5
480507	TOOL AND DIE MAKING	76			10.5		89.5	100.0	0.0
480203	COMMERCIAL ART	75		1.3	8.0		90.7	56.0	44.0

Table 5
Percentage of Postsecondary Enrollment Vocational Education Programs (Excluding Co-op), by Race/Ethnicity by Program: 1988-1989 (continued)

CIP Code	Program	Unduplicated Enrollment	Percentage of Students						
			Native American	Asian	African American	Hispanic	White	Male	Female
460501	PLUMBER/PIPEFITTER/STEAMFIT	70			24.3		75.7	95.7	4.3
70201	BANKING AND REL FINANCIAL	64			42.2		57.8	25.0	75.0
480208	PRINTING PRESS OPERATIONS	62			59.7		40.3	66.1	33.9
120301	FUNERAL SERVICES	61			41.0		59.0	67.2	32.8
150201	CIVIL TECHNOLOGY	61			11.5		88.5	88.5	11.5
170101	DENTAL ASSISTING	59			16.9		83.1	0.0	100.0
470690	AUTO MACHINIST	57		1.8	49.1		49.1	98.2	1.8
170506	MEDICAL RECORDS TECHNOLOGY	55			34.5		65.5	0.0	100.0
10104	FARM AND RANCH MANAGEMENT	54			42.6		57.4	96.3	3.7
200301	CLOTHING/APPAREL/TEXTILES	54		1.9	90.7		7.4	3.7	96.3
170211	SURGICAL TECHNOLOGY	51			39.2		60.8	3.9	96.1
10601	HORTICULTURE, GENERAL	49			4.1		95.9	38.8	61.2
150604	MANUFACTURING TECHNOLOGY	47			4.3		95.7	76.6	23.4
100104	RADIO AND TV PROD AND BROADCAST	46			43.5		56.5	60.9	39.1
70705	GENERAL OFFICE CLERK	45			55.6		44.4	2.2	97.8
10402	FOOD PRODUCTS (MEAT)	44			54.5		45.5	75.0	25.0
10302	ANIMAL PRODUCTION	43			11.6		88.4	90.7	9.3
150402	COMPUTER SERVICING TECHNOLOGY	41			48.8		51.2	90.2	9.8
150101	ARCHITECTURAL DESIGN AND CONS	39			28.2		71.8	82.1	17.9
10605	LANDSCAPING	37			8.1		91.9	[illegible].0	27.0
170503	MEDICAL ASSISTING	37			10.8		89.2	0.0	100.0
70102	ACCOUNTING AND COMPUTING	35			11.4		88.6	8.6	91.4
10301	AGRICULTURAL PRODUCTION	33		3.0	18.2		78.8	97.0	3.0
10501	AGRIC SERVICES AND SUPPLIES	31			29.0	3.2	67.7	83.9	16.1
470102	BUSINESS MACHINE REPAIR	30			53.3		46.7	100.0	0.0
470502	CONVENTIONAL ELEC POWER	30			16.7		83.3	100.0	0.0
	OTHER*	551	0.2	1.6	28.1	0.0	70.1	65.2	34.8
	TOTALS	16,174	0.3	0.5	35.7	0.5	62.9	49.5	50.5

*Includes all programs with fewer than thirty students enrolled.

Table 6
Postsecondary Programs (excluding Co-op) with Thirty or More Students Enrolled, by Percentage of African American Students Enrolled

State average = 36% African American

≥ 50% African American	≤ 15% African American
1. CLOTHING/APPAREL/TEXTILES (91%)	1. FASHION MERCHANDISING (14%)
2. MASONRY (87%)	2. DRAFTING (14%)
3. FOOD PRODUCTION MGT AND SERVICES (71%)	3. ANIMAL PRODUCTION (12%)
4. CARPENTRY (63%)	4. CIVIL TECHNOLOGY (12%)
5. PRINTING PRESS OPERATIONS (60%)	5. ACCOUNTING AND COMPUTING (11%)
6. CHILD CARE (59%)	6. MEDICAL ASSISTING (11%)
7. GENERAL OFFICE CLERK (56%)	7. TOOL AND DIE MAKING (11%)
8. FOOD PRODUCTS (MEAT) (54%)	8. AIRCRAFT MECHANICS (10%)
9. BUSINESS MACHINE REPAIR (53%)	9. RADIOGRAPH MEDICAL TECH (9%)
10. BUILDING TRADES, GENERAL (51%)	10. LANDSCAPING (8%)
11. AGRICULTURAL MECHANICS (51%)	11. COMMERCIAL ART (8%)
12. AUTOMOTIVE BODY REPAIR (50%)	12. FORESTRY PRODUCTION (4%)
13. COSMETOLOGY (50%)	13. MANUFACTURING TECH (4%)
	14. HORTICULTURE, GENERAL (4%)

education programs? There are several possible explanations including racial stereotyping and discrimination on the part of some employers and school personnel. A primary reason, however, appears to be that larger proportions of African American than white students have not acquired the academic skills in reading, writing, math, and science that would enable them to succeed in more advanced, more technical vocational education. Improving the educational and employment opportunities of many African American students, as well as many other students, will require more effective educational strategies for ensuring that students master the necessary academic knowledge to allow them to use advanced occupational skills in technical occupations. What form such strategies might take in Mississippi will be addressed later in this report.

Recommendation 6:	The State Department of Education and the State Board of Community and Junior Colleges should establish measurable objectives for increasing participation of African American students in cooperative vocational education, for reducing the racial imbalances that exist within regular vocational education programs, and for reducing imbalances by gender. Staff of both agencies should annually prepare a report analyzing participation in vocational education by race and gender and describing progress toward the established objectives. The report should be submitted to each agency's Board, the Governor, and the State Advisory Council on Vocational Education.

What Happens to Participants in Vocational Education?

Compared with other states, Mississippi does an excellent job of following vocational education students and keeping track of their status in further education, the labor force, and the military. The state monitors whether students continue education in related vocational and academic fields and whether they are employed in the field for which they were trained, a related field, or an unrelated field. Thus, it is possible to do some detailed analysis of the state's follow-up data.

For simplicity, this analysis has not disaggregated the type of further education a student pursued or the type of employment. Rather, the study simply reports what

percentages of students were pursuing further education, were working, were in the military, were unemployed, or were engaged in other activities.[10]

Secondary Follow-up

At the secondary level, the analysis of follow-up data has been limited to occupationally specific programs. Table 9 displays by program the percentage of students in each of the six possible follow-up categories. The programs are listed by size in descending order.

In 1988-1989, of the approximately twenty-eight thousand students enrolled in occupationally specific secondary programs, six months later seventy-seven percent were continuing their education either at the secondary or postsecondary level. About fifteen percent were working; three percent had entered the military; three percent were unemployed; and one percent were doing other things.

The percentage of all students unemployed is not an unemployment rate. A true unemployment rate is obtained by dividing the number of students unemployed by the total number of students either working or seeking work. Table 10 displays the unemployment rate for each program. Overall, of those secondary students working or seeking work, 16.3% were unemployed.

There is a wide range of unemployment rates among programs, ranging from zero percent in thirteen programs to one hundred percent in business computer applications. One must use care in examining these unemployment rates. The reason the rate for business computer applications is so high is that of the seventy-six students included in the follow-up, sixty-six were still in school; none were working; six were in the military; one was unemployed; and three were engaged in other activities. Hence, of those working or seeking work—in this case one person—one hundred percent were unemployed. The rate is an artifact of the data and probably not cause for concern.

In other programs, however, the high rates have much more meaning. For example, in clothing/apparel/textiles, about eight percent of the 1,260 students who were

[10]The "other" category includes those not in any of the other categories and not looking for work. It is probably mostly made up of homemakers.

Table 7

Postsecondary Programs (Excluding Co-op) with Thirty or More Students Enrolled, by Percentage of Females Enrolled

State average = 50% female

≤ 10%	≥ 90%
1. TOOLS/DIE MAKING (0%)	1. TYPING AND GENERAL OFFICE (91%)
2. BUSINESS MACHINE REPAIR (0%)	2. PRACTICAL NURSING (91%)
3. CONVENTIONAL ELECT POWER GEN (0%)	3. ACCOUNTING AND COMPUTING (91%)
4. METAL TRADES (1%)	4. LEGAL SECRETARIAL (94%)
5. AUTO MACHINIST (2%)	5. SECRETARIAL AND RELATED (95%)
6. INDUSTRIAL MANUFACTURING (2%)	6. SURGICAL TECHNOLOGY (96%)
7. AGRICULTURAL PRODUCTION (3%)	7. CLOTHING/APPAREL/TEXTILES (96%)
8. ELECTRICITY/ELECTRONICS (4%)	8. COSMETOLOGY (97%)
9. FARM AND RANCH MGT (4%)	9. CHILD CARE (97%)
10. HEATING AND AIR CONDITIONING (4%)	10. GENERAL OFFICE CLERK (98%)
11. BUILDING TRADES, GENERAL (4%)	11. FASHION MERCHANDISING (98%)
12. PLUMBING (4%)	12. MEDICAL RECORDS, TECHNOLOGY (100%)
13. AUTO MECHANICS (4%)	13. DENTAL ASSISTING (100%)
14. COMMUNICATIONS ELECTRONICS (4%)	14. MEDICAL ASSISTING (100%)
15. AIRCRAFT MECHANICS (4%)	
16. ELECTRICIAN (6%)	
17. DIESEL ENGINE MECHANICS (6%)	
18. ELECTRONIC TECHNOLOGY (7%)	
19. WELDING (7%)	
20. MACHINE TOOL OPERATION (8%)	
21. AGRICULTURAL MECHANICS (9%)	
22. CARPENTRY (9%)	
23. AUTOMOTIVE BODY REPAIR (9%)	
24. ANIMAL PRODUCTION (9%)	
25. COMPUTER SERVICING TECH (10%)	

Table 8
Percentage of Postsecondary Enrollment in Cooperative Vocational Education Programs, by Race/Ethnicity and Gender by Program: 1988-1989

CIP Code	Program	Unduplicated Enrollment	Percentage of Students						
			Native American	Asian	African American	Hispanic	White	Male	Female
170605	PRACTICAL NURSING	104	0.0	0.0	18.6	0.0	81.4	2.3	97.7
070601	SECRETARIAL AND RELATED	68	0.0	0.0	23.9	0.0	76.1	4.5	95.5
470408	WATCH REPAIR	39	0.0	0.0	56.4	0.0	43.6	56.4	43.6
120403	COSMETOLOGY	37	0.0	0.0	23.8	0.0	76.2	0.0	100.0
470604	AUTOMOTIVE MECHANICS	36	0.0	3.6	35.7	0.0	60.7	100.0	0.0
170209	RADIOGRAPH MEDICAL TECHNOLOGY	34	0.0	4.5	4.5	0.0	90.9	18.2	81.8
480503	MACHINE TOOL OPERATION/MACH	27	0.0	0.0	10.5	0.0	89.5	100.0	0.0
470103	COMMUNICATION ELECTRONICS	26	0.0	0.0	43.8	0.0	56.3	93.8	6.2
470203	HEATING AND AIR CONDITIONING	26	0.0	0.0	14.3	0.0	85.7	100.0	0.0
070301	BUSINESS DATA PROCESSING	17	0.0	0.0	18.2	0.0	81.8	9.1	90.9
470603	AUTOMOTIVE BODY REPAIR	17	0.0	0.0	50.0	0.0	50.0	100.0	0.0
470690	AUTO MACHINIST	15	0.0	0.0	0.0	0.0	100.0	100.0	0.0
080604	SUPERMARKET MARKETING	14	0.0	0.0	21.4	0.0	78.6	42.9	57.1
080601	FOOD MARKETING, GENERAL	10	0.0	0.0	10.0	30.0	60.0	50.0	50.0
080101	APPAREL AND ACCESSORIES MKTG	8	0.0	0.0	25.0	0.0	75.0	12.5	87.5
080905	WAITER/WAITRESS	8	0.0	0.0	37.5	0.0	62.5	12.5	87.5
170309	MEDICAL LABORATORY TECHNOLOGY	8	0.0	0.0	25.0	0.0	75.0	0.0	100.0
170818	RESPIRATORY THERAPY	8	0.0	0.0	0.0	0.0	100.0	66.7	33.3
200202	CHILD CARE AIDE/ASSISTING	7	0.0	0.0	0.0	0.0	100.0	0.0	100.0
200406	FOOD SERVICE	6	0.0	0.0	0.0	0.0	100.0	50.0	50.0
080803	BUILDING MATERIALS MARKETING	5	0.0	0.0	0.0	0.0	100.0	80.0	20.0
480101	DRAFTING, GENERAL	5	0.0	0.0	50.0	0.0	50.0	100.0	0.0
	OTHER*	28	0.0	0.0	7.1	0.0	92.9	32.1	67.9
	TOTALS	553	0.0	0.5	22.8	0.5	76.2	39.8	60.2

*Includes all programs with fewer than five students enrolled.

Table 9
Percentage of Secondary Enrollment in Occupationally Specific Vocational Education Programs (Excluding Co-op), by Follow-up Outcome by Program: 1988-1989

CIP Code	Program	Unduplicated Enrollment	Percentage of Students: In Further Education	Working	In Military	Unemployed	Other
70701	TYPING, GENERAL OFFICE	3,102	81.4	11.8	1.8	0.0	1.5
10301	AGRICULTURAL PRODUCTION	2,663	81.3	12.2	2.2	2.0	1.5
460490	BUILDING TRADES, GENERAL	2,327	74.9	16.2	3.6	3.7	1.6
470604	AUTOMOTIVE MECHANICS	2,172	79.9	13.3	3.7	2.4	0.6
200301	CLOTHING/APPAREL/TEXTILES	1,481	75.3	13.3	0.7	7.8	2.9
200201	CHILD CARE AND GUID MGT AND SERV	1,277	79.6	13.0	1.1	4.5	1.9
200401	FOOD PRODUCTION, MGT AND SERV	1,277	70.6	17.8	1.9	6.6	3.2
480590	METAL TRADES	1,222	74.9	16.9	3.6	3.5	1.0
80705	MARKETING AND RETAILING	1,186	73.8	18.1	1.7	3.7	1.8
10201	AGRICULTURAL MECHANICS	1,156	75.7	16.0	4.3	2.6	1.4
150991	DIVERSIFIED TECHNOLOGY	1,063	82.4	5.5	4.4	2.4	0.6
10101	AGRIC BUSINESS AND MANAGEMENT	950	80.9	13.7	2.6	2.3	0.5
10601	HORTICULTURE, GENERAL	730	76.7	14.0	2.8	5.8	0.7
480101	DRAFTING, GENERAL	710	87.6	7.2	3.6	0.7	1.0
470603	AUTOMOTIVE BODY REPAIR	581	74.3	18.6	4.0	2.3	0.8
170690	HEALTH CLUSTER	535	84.8	8.8	1.3	3.6	1.5
460201	CARPENTRY	431	80.4	10.8	2.9	5.8	0.0
460302	ELECTRICIAN	422	72.3	17.8	7.8	1.2	0.9
480508	WELDING, BRAZING AND SOLDER	389	75.1	17.1	3.9	2.1	1.8
460390	ELECTRICITY/ELECTRONICS	356	84.1	9.3	4.1	1.7	0.7
80604	SUPERMARKET MARKETING	300	55.3	33.7	5.7	2.3	1.5
470601	VEHICLE AND MOBILE EQUIP MECH	288	68.5	24.4	3.8	2.9	0.4
460102	BRICK, BLOCK AND STONE MASONRY	276	72.5	20.3	2.2	3.8	1.1
80905	WAITER/WAITRESS	222	57.2	33.8	4.0	2.0	3.0
30401	FORESTRY PRODUCTION	219	70.3	21.5	4.6	3.1	0.5
80601	FOOD MARKETING, GENERAL	175	53.3	40.9	5.1	0.0	0.7
80706	SALES	166	56.1	38.9	2.5	0.6	1.3
470606	SMALL ENGINE REPAIR	145	79.5	11.6	5.4	3.6	0.0
70705	GENERAL OFFICE CLERK	136	53.1	42.3	2.3	0.8	1.5
200604	CUSTODIAL SERVICES	131	93.1	5.9	1.0	0.0	0.0
470203	HEATING AND AIR CONDITIONING	129	66.0	27.0	3.0	3.0	1.0
470103	COMMUNICATION ELECTRONICS	115	85.0	10.0	5.0	0.0	0.0
480201	GRAPHIC AND PRINT COMMUN	104	78.5	15.1	0.0	4.3	2.2
470605	DIESEL ENGINE MECHANICS	100	75.7	8.6	14.3	1.4	0.0
70390	BUSINESS COMPUTER APPLIC	91	86.8	0.0	7.9	1.3	3.9
200303	COMMERCIAL GARMENT AND APPAREL	81	80.0	4.3	2.9	12.9	0.0
470390	INDUSTRIAL MAINTENANCE	77	81.2	11.6	2.9	4.3	0.0
10204	AGRICULTURAL POWER MACHINE	76	82.6	11.6	2.9	1.4	1.4
80101	APPAREL AND ACCESSORIES MKTG	74	67.6	30.9	1.5	0.0	0.0
204	DIVERSIFIED COOPERATIVE	72	67.2	22.4	3.0	4.5	3.0
200602	COMPANION TO THE AGED	72	80.3	7.6	1.5	10.6	0.0

Table 9
Percentage of Secondary Enrollment in Occupationally Specific Vocational Education Programs (Excluding Co-op), by Follow-up Outcome by Program: 1988-1989 (continued)

CIP Code	Program	Unduplicated Enrollment	Percentage of Students: In Further Education	Working	In Military	Unemployed	Other
480503	MACHINE TOOL OPERATION/MACH	71	74.5	3.9	2.0	0.0	0.0
203	BUSINESS AND OFFICE	68	32.3	62.9	1.6	1.6	1.6
10501	AGRIC SERVICES AND SUPPLIES	68	47.5	39.0	3.4	8.5	1.7
70301	BUSINESS DATA PROCESSING	60	88.1	3.4	6.8	0.0	1.7
470692	MARINE ENGINE MECHANICS	56	86.7	6.7	6.7	0.0	0.0
120403	COSMETOLOGY	50	85.7	10.2	2.0	2.0	0.0
70601	SECRETARIAL AND RELATED	44	56.1	26.8	2.4	7.3	0.0
480303	UPHOLSTERING	44	57.7	26.9	3.8	0.0	11.5
200490	FAST FOODS	43	66.7	23.1	5.1	5.1	0.0
80708	MARKETING, GENERAL	42	67.6	29.7	2.7	0.0	0.0
80603	SPECIALTY FOODS MARKETING	40	60.7	32.1	3.6	0.0	3.6
200406	FOOD SERVICE	40	55.9	35.3	2.9	5.9	0.0
80201	BUSINESS/PERSONAL SERVICES	39	52.8	47.2	0.0	0.0	0.0
70608	WORD PROCESSING	38	86.8	5.3	5.3	2.6	0.0
10402	FOOD PRODUCTS (MEAT)	37	82.9	14.3	2.9	0.0	0.0
470101	ELECTRICAL AND ELECTRONIC EQUIP	37	80.6	16.1	3.2	0.0	0.0
470301	IND EQUIPMENT MAINT AND REPAIR	36	84.8	3.0	6.1	6.1	0.0
	OTHER*	570	64.9	28.5	3.4	1.8	1.0
	TOTALS	28,462	76.8	15.2	2.9	3.0	1.4

*Includes all programs with fewer than thirty-six students enrolled.

followed up were unemployed, or a total of ninety-eight students, while thirteen percent, or 168 students, were working. Consequently, of those working or seeking work, thirty-seven percent were unemployed. In this case, the absolute numbers of students are large enough to have real meaning. Similarly, the relatively high rates of unemployment in food production (27%), carpentry (35%), horticulture (29%), health cluster (29%), child care (26%), and diversified technology (30%) should be of special note. These may be one-time aberrations or statistical anomalies, but they should be further investigated.

It is not possible to analyze follow-up data by race/ethnicity because the data cannot be disaggregated to the student level. It is possible, however, to examine the program outcomes by the percentage of African American students enrolled in each program. Thus, Table 10 rank-orders programs by the percentage of African American students enrolled, with the highest concentrations listed first. It appears that programs with the highest concentrations of African American students also were the most likely to have had the highest unemployment rates. However, the reader is reminded about the need to interpret these rates carefully. Moreover, there were exceptions. Masonry, for example, in which ninety-two percent of the students enrolled were African American, had a relatively low unemployment rate of sixteen percent. Similarly, diesel mechanics, a program in which sixty-five percent of the students were African American, had an unemployment rate of fourteen percent.

Finally, of the twenty-eight thousand students enrolled in occupationally specific vocational education, twenty-nine percent were in some form of postsecondary education six months later. Assuming that about one-half of the twenty-eight thousand students were in the twelfth grade, this means that about sixty percent of seniors in occupationally specific programs went on to postsecondary education. Most of these students, eighty-two percent, were pursuing postsecondary vocational education; the remaining eighteen percent were enrolled in postsecondary academic programs. In short, the widespread perception that students who participate in secondary vocational education are not likely to be going on to postsecondary education is inaccurate. Therefore, secondary vocational education programs must be rigorous enough to ensure that the large percentage of students who do pursue postsecondary education are well prepared to do so.

Secondary Cooperative Programs

Table 11 displays follow-up information for secondary co-op programs. As co-op students are mostly twelfth graders, one would expect higher proportions to be working six months after graduation. This, in fact, was the case. Compared with fifteen percent of students in regular vocational programs, thirty-eight percent of co-op students were working. About fifty-one percent were pursuing further education, mostly at the postsecondary level; three percent were in the military; two percent were unemployed; and two percent were doing other things.

Table 12 lists co-op programs by unemployment rate by race/ethnicity. A striking feature of co-op programs was an average unemployment rate of only 5.1%—less than one-third the rate of 16.3% for regular secondary programs. The unemployment rate in the vast majority of programs was zero. High rates occurred only in small programs and may well have been statistical anomalies. One must be careful in interpreting this result. On the one hand, it appears that co-op programs are especially effective in securing employment for students. On the other hand, there are probably some selectivity effects, with some of the more highly motivated and better skilled students opting for co-op. In short, at the secondary level, Mississippi's co-op programs have been very effective in improving students' employment opportunities. African American students, however, have not enjoyed these benefits to the same degree as white students.

Postsecondary Follow-up

Table 13 displays follow-up outcomes for students enrolled in regular postsecondary vocational education programs. Of the sixteen thousand students enrolled in 1988-1989, six months later fifty-six percent were continuing their education; thirty-five percent were working; one percent were in the military; 3.5% were unemployed; and four percent were engaged in other activities.

Unemployment rates are shown in Table 14. Of those working or seeking work, nine percent were unemployed, compared with sixteen percent for secondary programs. As with secondary programs, there is much variation in the unemployment rate among programs, ranging from zero percent in sixteen programs to one hundred percent in food products (meat). Again, the same caveats about the effects of small numbers apply, but there were some high unemployment rates that should be cause for concern. For example,

Table 10
Percentage of Secondary Enrollment in Occupationally Specific Vocational Education Programs (Excluding Co-op), by Unemployment Status by Program: 1988-1989

CIP Code	Program	Unduplicated Enrollment	Percent African American	Unemployed	Unemployment Rate
460102	BRICK, BLOCK AND STONE MASONRY	276	92.0	3.8	15.9
10204	AGRICULTURAL POWER MACHINE	76	89.5	1.4	11.1
470301	IND EQUIPMENT MAINT AND REPAIR	36	88.9	6.1	66.7
200303	COMMERCIAL GARMENT AND APPAREL	81	84.0	12.9	75.0
120403	COSMETOLOGY	50	82.0	2.0	16.7
470606	SMALL ENGINE REPAIR	145	80.0	3.6	23.5
200301	CLOTHING/APPAREL/TEXTILES	1,481	78.3	7.8	36.8
200401	FOOD PRODUCTION, MGT AND SERV	1,277	73.7	6.6	26.9
460490	BUILDING TRADES, GENERAL	2,327	70.6	3.7	18.8
470605	DIESEL ENGINE MECHANICS	100	65.0	1.4	14.3
480201	GRAPHIC AND PRINT COMMUN	104	64.4	4.3	22.2
200490	FAST FOODS	43	62.8	5.1	18.2
70390	BUSINESS COMPUTER APPLIC	91	62.6	1.3	100.0
460201	CARPENTRY	431	62.4	5.8	35.1
470603	AUTOMOTIVE BODY REPAIR	581	60.8	2.3	11.1
470604	AUTOMOTIVE MECHANICS	2,172	56.4	2.4	15.5
470390	INDUSTRIAL MAINTENANCE	77	54.5	4.3	27.3
200604	CUSTODIAL SERVICES	131	51.1	0.0	0.0
460302	ELECTRICIAN	422	50.2	1.2	6.6
80705	MARKETING AND RETAILING	1,186	49.7	3.7	17.0
80601	FOOD MARKETING, GENERAL	175	49.7	0.0	0.0
80905	WAITER/WAITRESS	222	49.1	2.0	5.6
70701	TYPING, GENERAL OFFICE	3,102	48.3	0.0	0.0
10601	HORTICULTURE, GENERAL	730	47.5	5.8	29.4
200406	FOOD SERVICE	40	47.5	5.9	14.3
460390	ELECTRICITY/ELECTRONICS	356	47.5	1.7	15.6
70608	WORD PROCESSING	38	47.4	2.6	33.3
480508	WELDING, BRAZING AND SOLDER	389	47.3	2.1	11.1
170690	HEALTH CLUSTER	535	47.3	3.6	29.3
470203	HEATING AND AIR CONDITIONING	129	47.3	3.0	10.0
200201	CHILD CARE AND GUID MGT AND SERV	1,277	45.7	4.5	25.9
480303	UPHOLSTERING	44	45.5	0.0	0.0
470103	COMMUNICATION ELECTRONICS	115	45.2	0.0	0.0
480590	METAL TRADES	1,222	43.5	3.5	17.2
10301	AGRICULTURAL PRODUCTION	2,663	39.3	2.0	13.9
470601	VEHICLE AND MOBILE EQUIP MECH	288	38.9	2.9	10.8
150991	DIVERSIFIED TECHNOLOGY	1,063	38.8	2.4	29.9
10201	AGRICULTURAL MECHANICS	1,156	38.3	2.6	14.0
70705	GENERAL OFFICE CLERK	136	36.0	0.8	1.8
10101	AGRIC BUSINESS AND MANAGEMENT	950	36.0	2.3	14.1
80603	SPECIALTY FOODS MARKETING	40	35.0	0.0	0.0

Table 10
Percentage of Secondary Enrollment in Occupationally Specific Vocational Education Programs (Excluding Co-op), by Unemployment Status by Program: 1988-1989
(continued)

CIP Code	Program	Unduplicated Enrollment	Percent African American	Unemployed	Unemployment Rate
80604	SUPERMARKET MARKETING	300	34.0	2.3	6.3
70301	BUSINESS DATA PROCESSING	60	33.3	0.0	0.0
204	DIVERSIFIED COOPERATIVE	72	30.6	4.5	16.7
480101	DRAFTING, GENERAL	710	28.7	0.7	8.3
200602	COMPANION TO THE AGED	72	27.8	10.6	58.3
80101	APPAREL AND ACCESSORIES MKTG	74	27.0	0.0	0.0
80201	BUSINESS/PERSONAL SERVICES	39	20.5	0.0	0.0
480503	MACHINE TOOL OPERATION/MACH	71	19.7	0.0	0.0
70601	SECRETARIAL AND RELATED	44	18.2	7.3	21.4
80706	SALES	166	15.1	0.6	1.6
30401	FORESTRY PRODUCTION	219	13.2	3.1	12.5
203	BUSINESS AND OFFICE	68	11.8	1.6	2.5
470101	ELECTRICAL AND ELECTRONIC EQUIP	37	10.8	0.0	0.0
470692	MARINE ENGINE MECHANICS	56	10.7	0.0	0.0
10501	AGRIC SERVICES AND SUPPLIES	68	10.3	8.5	17.9
80708	MARKETING, GENERAL	42	9.5	0.0	0.0
10402	FOOD PRODUCTS (MEAT)	37	0.0	0.0	0.0
	OTHER*	570	36.3	1.8	6.0
	TOTALS	28,462	50.4	3.0	16.3

*Includes all programs with fewer than thirty-six students enrolled.

Table 11
Percentage of Secondary Enrollment in Cooperative Vocational Education Programs, by Follow-up Outcome by Program: 1988-1989

CIP Code	Program	Unduplicated Enrollment	Percentage of Students: In Further Education	Working	In Military	Unemployed	Other
080604	SUPERMARKET MARKETING	219	50.8	42.2	2.7	1.6	0.0
080705	MARKETING AND RETAILING	167	50.0	42.9	3.2	2.6	1.3
080706	SALES	134	49.2	46.0	2.4	1.6	0.0
080905	WAITER/WAITRESS	128	37.4	47.5	6.1	1.0	0.0
200101	CONSUMER AND HOMEMAKING	90	97.4	0.0	0.0	0.0	2.6
080601	FOOD MARKETING, GENERAL	79	46.6	42.5	2.7	2.7	2.7
200490	FAST FOODS	60	42.0	44.0	2.0	6.0	6.0
070705	GENERAL OFFICE CLERK	58	41.5	37.7	0.0	1.9	1.9
200202	CHILD CARE AIDE/ASSISTING	54	44.0	40.0	0.0	2.0	2.0
070701	TYPING, GENERAL OFFICE	39	55.3	31.6	0.0	10.5	2.6
200406	FOOD SERVICE	39	36.1	55.6	2.8	0.0	0.0
200604	CUSTODIAL SERVICES	34	46.7	30.0	3.3	6.7	0.0
490203	MATERIAL HANDLING	30	65.5	34.5	0.0	0.0	0.0
080603	SPECIALTY FOODS MARKETING	26	48.0	40.0	8.0	0.0	0.0
081206	SERVICE STATION RETAILING	23	52.6	36.8	5.3	0.0	0.0
200403	CHEF/COOK	22	50.0	44.4	0.0	0.0	0.0
460201	CARPENTRY	21	41.2	35.3	5.9	0.0	5.9
080602	CONVENIENCE STORE MARKETING	20	57.1	35.7	0.0	0.0	7.1
470604	AUTOMOTIVE MECHANICS	20	45.0	45.0	0.0	0.0	0.0
060705	TRANSPORTATION MANAGEMENT	18	100.0	0.0	0.0	0.0	0.0
080101	APPAREL AND ACCESSORIES MKTG	18	53.3	40.0	6.7	0.0	0.0
081203	MKTG AUTOMOTIVE VEHICLES	18	50.0	37.5	6.3	0.0	0.0
070601	SECRETARIAL AND RELATED PROGR	17	50.0	37.5	0.0	0.0	12.5
080708	MARKETING, GENERAL	17	37.5	62.5	0.0	0.0	0.0
080201	BUSINESS/PERSONAL SERVICES	16	42.9	57.1	0.0	0.0	0.0
200408	SCHOOL FOOD SERVICE	16	61.5	23.1	7.7	0.0	7.7
470603	AUTOMOTIVE BODY REPAIR	16	46.2	46.2	7.7	0.0	0.0
080799	GENERAL MARKETING, OTHER	15	53.8	46.2	0.0	0.0	0.0
200401	FOOD PRODUCTION, MGT AND SERV	15	25.0	75.0	0.0	0.0	0.0
070708	SHIPPING, RECEIVING AND STOCK	14	75.0	16.7	8.3	0.0	0.0
081201	VEHICLES AND PETROLEUM MKTG	14	64.3	14.3	0.0	0.0	7.1
480702	FURNITURE MAKING	14	61.5	23.1	0.0	7.7	0.0
080803	BUILDING MATERIALS MARKETING	11	30.0	30.0	0.0	10.0	0.0
080901	HOSPITALITY AND RECREATION MKTG	11	63.6	18.2	9.1	0.0	9.1
081106	WAREHOUSE SERVICES MARKETING	9	88.9	11.1	0.0	0.0	0.0
170602	NURSING ASSISTING	9	85.7	14.3	0.0	0.0	0.0
070602	COURT REPORTING	8	25.0	37.5	0.0	0.0	37.5
070606	SECRETARIAL	8	87.5	0.0	0.0	12.5	0.0
070799	TYPING, GENERAL OFFICE	8	14.3	71.4	0.0	14.3	0.0
080402	BANKING MARKETING	8	100.0	0.0	0.0	0.0	0.0
080806	HARDWARE MARKETING	8	71.4	14.3	14.3	0.0	0.0
120101	DRYCLEANING AND LAUNDERING	8	12.5	37.5	0.0	0.0	0.0

Table 11
Percentage of Secondary Enrollment in Cooperative Vocational Education Programs, by Follow-up Outcome by Program: 1988-1989
(continued)

CIP Code	Program	Unduplicated Enrollment	Percentage of Students: In Further Education	Working	In Military	Unemployed	Other
070101	ACCOUNTING, BOOKKEEPING	7	28.6	71.4	0.0	0.0	0.0
080904	RECREATIONAL PRODUCTS MARKET	7	100.0	0.0	0.0	0.0	0.0
170507	PHARMACY ASSISTING	7	28.6	42.9	0.0	0.0	0.0
200301	CLOTHING/APPAREL/TEXTILES	7	71.4	14.3	0.0	14.3	0.0
460401	BUILDING MAINTENANCE	7	57.1	0.0	28.6	0.0	0.0
480501	PRECISION METAL WORK, GENERAL	7	60.0	40.0	0.0	0.0	0.0
080805	FURNITURE MARKETING	6	50.0	33.3	0.0	0.0	16.7
080903	MARKETING OF RECREATIONAL	6	66.7	33.3	0.0	0.0	0.0
089999	MARKETING AND DISTRIBUTION	6	60.0	40.0	0.0	0.0	0.0
129999	CONSUMER, PERSONAL AND MISC	6	80.0	20.0	0.0	0.0	0.0
170101	DENTAL ASSISTING	6	33.3	16.7	0.0	16.7	16.7
460499	MISC CONSTRUCTION TRADES	6	50.0	50.0	0.0	0.0	0.0
470601	VEHICLE AND MOBILE EQUIP MECH	6	40.0	60.0	0.0	0.0	0.0
480504	METAL FABRICATION	6	16.7	66.7	16.7	0.0	0.0
070699	SECRETARIAL AND RELATED	5	75.0	0.0	0.0	0.0	0.0
170512	VETERINARIAN ASSISTING	5	80.0	0.0	20.0	0.0	0.0
200201	CHILD CARE AND GUID MGT AND SERV	5	60.0	40.0	0.0	0.0	0.0
200601	INST. HOME MGT AND SUPPORT SERV	5	25.0	75.0	0.0	0.0	0.0
480703	MILLWORK AND CABINET MAKING	5	80.0	20.0	0.0	0.0	0.0
	OTHER*	310	43.2	41.1	2.1	2.5	2.1
	TOTAL	1,984	50.6	38.3	2.6	2.0	1.7

*Includes all programs with fewer than five students enrolled.

Table 12
Percentage of Secondary Enrollment in Cooperative Vocational Education Programs, by Unemployment Status by Program: 1988-1989

CIP Code	Program	Unduplicated Enrollment	Percent African American	Unemployed	Unemployment Rate
200408	SCHOOL FOOD SERVICE	16	68.8	0.0	0.0
070799	TYPING, GENERAL OFFICE	8	62.5	14.3	16.7
080603	SPECIALTY FOODS MARKETING	26	53.8	0.0	0.0
200403	CHEF/COOK	22	50.0	0.0	0.0
460499	MISC CONSTRUCTION TRADES	6	50.0	0.0	0.0
200604	CUSTODIAL SERVICES	34	47.1	6.7	18.2
200101	COMPREHENSIVE CONSUMER	90	46.7	0.0	0.0
200490	FAST FOODS	60	45.0	6.0	12.0
080905	WAITER/WAITRESS	128	44.5	1.0	2.1
080803	BUILDING MATERIALS MARKETING	11	36.4	10.0	25.0
080602	CONVENIENCE STORE MARKETING	20	35.0	0.0	0.0
080604	SUPERMARKET MARKETING	219	33.8	1.6	3.7
200401	FOOD PRODUCTION, MGT AND SERV	15	33.3	0.0	0.0
170602	NURSING ASSISTING	9	33.3	0.0	0.0
080708	MARKETING, GENERAL	17	29.4	0.0	0.0
200301	CLOTHING/APPAREL/TEXTILES	7	28.6	14.3	50.0
460401	BUILDING MAINTENANCE	7	28.6	0.0	0.0
080601	FOOD MARKETING, GENERAL	79	26.6	2.7	6.1
470604	AUTOMOTIVE MECHANICS	20	25.0	0.0	0.0
080[illegible]01	BUSINESS/PERSONAL SERVICES	16	25.0	0.0	0.0
2[illegible] 2	CHILD CARE AIDE/ASSISTING	54	24.1	2.0	4.8
[illegible] 6	FOOD SERVICE	39	23.1	0.0	0.0
081206	SERVICE STATION RETAILING	23	21.7	0.0	0.0
080101	APPAREL AND ACCESSORIES MKTG	18	16.7	0.0	0.0
480504	METAL FABRICATION	6	16.7	0.0	0.0
080706	SALES	134	16.4	1.6	3.4
080705	MARKETING AND RETAILING	167	16.2	2.6	5.6
070705	GENERAL OFFICE CLERK	58	15.5	1.9	4.8
070708	SHIPPING, RECEIVING AND STOCK	14	14.3	0.0	0.0
081201	VEHICLES AND PETROLEUM MKTG	14	14.3	0.0	0.0
080904	RECREATIONAL PRODUCTS MARKET	7	14.3	0.0	0.0
070701	TYPING, GENERAL OFFICE	39	12.8	10.5	25.0
070606	SECRETARIAL	8	12.5	12.5	100.0
120101	DRYCLEANING AND LAUNDERING	8	12.5	0.0	0.0
060705	TRANSPORTATION MANAGEMENT	18	11.1	0.0	0.0
480702	FURNITURE MAKING	14	7.1	7.7	25.0
080799	GENERAL MARKETING, OTHER	15	6.7	0.0	0.0
470603	AUTOMOTIVE BODY REPAIR	16	6.3	0.0	0.0
070601	SECRETARIAL AND RELATED	17	5.9	0.0	0.0
490203	MATERIAL HANDLING	30	0.0	0.0	0.0
460201	CARPENTRY	21	0.0	0.0	0.0
081203	MKTG AUTOMOTIVE VEHICLES	18	0.0	0.0	0.0

Table 12
Percentage of Secondary Enrollment in Cooperative Vocational Education Programs, by Unemployment Status by Program: 1988-1989
(continued)

CIP Code	Program	Unduplicated Enrollment	Percent African American	Unemployed	Unemployment Rate
080901	HOSPITALITY AND RECREATION MKTG	11	0.0	0.0	0.0
081106	WAREHOUSE SERVICES MARKETING	9	0.0	0.0	0.0
070602	COURT REPORTING	8	0.0	0.0	0.0
080402	BANKING MARKETING	8	0.0	0.0	0.0
080806	HARDWARE MARKETING	8	0.0	0.0	0.0
070101	ACCOUNTING, BOOKKEEPING	7	0.0	0.0	0.0
170507	PHARMACY ASSISTING	7	0.0	0.0	0.0
480501	PRECISION METAL WORK, GENERAL	7	0.0	0.0	0.0
080805	FURNITURE MARKETING	6	0.0	0.0	0.0
080903	MARKETING OF RECREATIONAL	6	0.0	0.0	0.0
089999	MARKETING AND DISTRIBUTION	6	0.0	0.0	0.0
129999	CONSUMER, PERSONAL AND MISC	6	0.0	0.0	0.0
170101	DENTAL ASSISTING	6	0.0	16.7	50.0
470601	VEHICLE AND MOBILE EQUIP MECH	6	0.0	0.0	0.0
070699	SECRETARIAL AND RELATED PROG	5	0.0	0.0	0.0
170512	VETERINARIAN ASSISTING	5	0.0	0.0	0.0
200201	CHILD CARE AND GUID MGT AND SERV	5	0.0	0.0	0.0
200601	INST. HOME MGT AND SUPPORT SERV	5	0.0	0.0	0.0
480703	MILLWORK AND CABINET MAKING	5	0.0	0.0	0.0
	OTHER*	310	22.3	2.5	5.7
	TOTAL	1,984	23.9	2.0	5.1

*Includes all programs with fewer than five students enrolled.

Table 13
Percentage of Postsecondary Enrollment in Occupationally Specific Vocational Education Programs (Excluding Co-op), by Follow-up Outcome by Program: 1988-1989

CIP Code	Program	Unduplicated Enrollment	Percentage of Students: In Further Education	Working	In Military	Unemployed	Other
70601	SECRETARIAL	2,358	51.7	36.2	0.7	5.1	6.3
170605	PRACTICAL NURSING	1,123	47.5	48.7	0.1	1.5	2.0
70301	BUSINESS DATA PROC	1,043	60.7	28.6	0.8	6.7	3.2
150303	ELECTROMECH TECH	684	71.0	25.5	1.6	1.0	1.2
470604	AUTO MECHANICS	671	57.0	32.7	3.6	4.2	2.5
150202	DRAFTING AND DESIGN TECH	662	63.0	29.1	1.4	3.2	3.4
480508	WELDING	636	39.1	50.5	0.9	3.5	5.9
61401	MARKETING MGT	468	57.8	35.0	0.5	2.7	3.8
70701	TYPING GENERAL OFFICE	458	68.6	20.0	0.3	6.4	4.7
120403	COSMETOLOGY	414	40.1	45.4	0.6	8.8	5.1
460302	ELECTRICIAN	440	56.0	36.1	2.5	3.4	2.2
200201	CHILD CARE	427	64.8	27.8	0.0	2.4	5.0
470603	AUTO BODY REPAIR	377	58.5	28.9	0.8	5.1	6.8
480503	MACHINE TOOL OPERAT	368	59.0	33.9	0.4	3.5	3.1
460201	CARPENTRY	303	63.8	26.6	2.9	2.9	3.8
470203	HEATING AND AIR CONDIT	292	55.1	38.5	1.1	2.6	2.6
170818	RESPIRATORY THERAPY	274	60.4	37.4	0.4	0.0	1.8
200401	FOOD PRODUCTION	254	44.2	34.5	2.4	4.8	13.9
470605	DIESEL ENGINE MECH	210	54.7	37.4	2.9	1.4	3.6
170309	MED LABORATORY TECH	200	61.6	34.4	0.0	1.3	2.6
30401	FORESTRY PRODUCTION	186	67.8	29.0	0.8	0.8	1.6
80705	MARKETING AND RETAILING	180	63.5	30.5	1.9	1.3	2.6
70604	LEGAL SECRETARIAL	172	63.7	27.5	1.6	1.6	5.6
480101	DRAFTING, GENERAL	171	75.0	18.0	3.1	2.3	1.6
460490	BUILD TRADES, GENERAL	155	55.0	31.9	0.0	4.4	8.8
120402	BARBERING	153	49.2	35.5	0.8	9.7	4.8
170209	RADIOGRAPH MED TECH	148	62.1	37.9	0.0	0.0	0.0
60701	HOTEL MANAGEMENT	147	55.1	42.2	0.9	1.8	0.0
490205	TRUCK AND BUS DRIVING	145	4.4	83.0	0.0	0.7	11.8
480590	METAL TRADES	142	73.5	17.7	2.7	4.4	1.8
460102	BRICK, BLOCK AND STONE MASONRY	127	46.0	29.0	9.0	9.0	7.0
470390	INDUSTRIAL MTNC	103	28.7	64.4	1.4	2.7	2.7
80102	FASHION MERCHANDISING	98	69.8	25.3	0.0	2.4	2.4
261	BASIC VOC AGRICULTURE	96	88.7	11.3	0.0	0.0	0.0
10201	AGRICULTURE MECHANICS	93	59.9	25.7	5.7	7.1	1.4
470103	COMMUNICATIONS ELECT	90	65.5	25.9	1.7	1.7	5.2
470602	AIRCRAFT MECHANICS	90	71.0	23.7	0.0	2.6	2.6
170690	HEALTH CLUSTER	89	78.7	15.1	4.5	1.5	0.0
460390	ELECTRICITY/ELECTRONICS	82	82.2	11.2	3.2	3.2	0.0
150991	DIVERSIFIED TECHNOLOGY	78	72.7	12.1	12.1	1.5	1.5
480507	TOOL AND DIE MAKING	76	49.2	47.5	0.0	0.0	3.4

Table 13
Percentage of Postsecondary Enrollment in Occupationally Specific Vocational Education Programs (Excluding Co-op), by Follow-up Outcome by Program: 1988-1989
(continued)

CIP Code	Program	Unduplicated Enrollment	Percentage of Students: In Further Education	Working	In Military	Unemployed	Other
480203	COMMERCIAL ART	75	79.9	15.4	0.0	1.5	3.1
460501	PLUMBING/STEAM FITTING	70	44.8	44.8	6.9	0.0	3.4
70201	BANKING AND REL FINANCIAL	64	46.0	42.0	0.0	4.0	8.0
480208	PRINT PRESS OPERATIONS	62	51.0	41.1	0.0	5.9	2.0
120301	FUNERAL SERVICES	61	59.6	34.0	2.1	0.0	4.3
150201	CIVIL TECHNOLOGY	61	70.0	24.0	2.0	0.0	4.0
170101	DENTAL ASSISTING	59	28.5	65.3	0.0	2.0	4.1
470690	AUTO MACHINIST	57	68.7	28.5	0.0	0.0	2.9
170506	MEDICAL RECORDS TECH	55	37.8	62.2	0.0	0.0	0.0
10104	FARM AND RANCH MGMT	54	75.0	22.8	0.0	2.3	0.0
200301	CLOTHING/APPAREL/TEXT	54	75.0	12.5	0.0	2.5	10.0
170211	SURGICAL TECHNOLOGY	51	34.2	55.2	0.0	5.3	5.3
10601	HORTICULTURE, GENERAL	49	42.9	53.6	0.0	0.0	3.6
150604	MANUFACTURING TECH	47	72.1	23.3	0.0	4.7	0.0
100104	RADIO AND TV BROADCAST	46	51.3	38.5	2.6	2.6	5.1
70705	GENERAL OFFICE CLERK	45	31.8	63.7	0.0	2.3	2.3
10402	FOOD PRODUCTS (MEAT)	44	13.0	0.0	0.0	8.7	0.0
10302	ANIMAL PRODUCTION	43	61.6	29.4	0.0	2.9	5.9
150402	COMPUTER SERVICING TECH	41	78.6	7.1	3.6	3.6	7.1
150101	ARCHITECTURAL DESIGN	39	80.7	19.4	0.0	0.0	0.0
10605	LANDSCAPING	37	50.0	46.9	0.0	0.0	3.1
170503	MEDICAL ASSISTING	37	78.1	18.7	0.0	3.1	0.0
70102	ACCOUNTING	35	48.3	42.0	0.0	3.2	6.5
10301	AGRICULTURAL PRODUCTION	33	90.0	5.0	5.0	0.0	0.0
10501	AGRICULTURAL SERVICES	31	73.0	26.9	0.0	0.0	0.0
470102	BUSINESS MACHINE REPAIR	30	71.5	14.3	0.0	0.0	14.3
470502	CONVENTIONAL ELEC POWER GEN	30	0.0	100.0	0.0	0.0	0.0
	OTHER*	551	44.3	47.6	0.7	2.3	5.1
	TOTALS	16,174	56.0	35.1	1.2	3.5	4.0

*Includes all programs with fewer than thirty students enrolled.

Table 14
Percentage of Postsecondary Enrollment in Occupationally Specific Vocational Education Programs (Excluding Co-op), by Unemployment Status by Program: 1988-1989

CIP Code	Program	Unduplicated Enrollment	Percent African American	Unemployed	Adjusted Unemployment Rate
200301	CLOTHING/APPAREL/TEXTILES	54	90.7	2.5	16.7
460102	BRICK, BLOCK AND STONE MASONRY	127	87.4	9.0	23.7
200401	FOOD PRODUCTION, MGT AND SERV	254	70.9	4.8	12.2
460201	CARPENTRY	303	62.7	2.9	9.8
480208	PRINTING PRESS OPERATIONS	62	59.7	5.9	12.6
200201	CHILD CARE AND GUID MGT AND SERV	427	58.8	2.4	7.9
70705	GENERAL OFFICE CLERK	45	55.6	2.3	3.5
10402	FOOD PRODUCTS (MEAT)	44	54.5	8.7	100.0
470102	BUSINESS MACHINE REPAIR	30	53.3	0.0	0.0
460490	BUILDING TRADES, GENERAL	155	51.0	4.4	12.1
10201	AGRICULTURAL MECHANICS	93	50.5	7.1	21.6
470603	AUTOMOTIVE BODY REPAIR	377	50.1	5.1	15.0
120403	COSMETOLOGY	444	50.0	8.8	16.2
120402	BARBERING	153	49.7	9.7	21.5
480508	WELDING, BRAZING AND SOLDER	636	49.2	3.5	6.5
470690	AUTO MACHINIST	57	49.1	0.0	0.0
150402	COMPUTER SERVICING TECHNOLOGY	41	48.8	3.6	33.6
470390	INDUSTRIAL MAINTENANCE	103	48.5	2.7	4.0
470605	DIESEL ENGINE MECHANICS	210	47.1	1.4	3.6
261	BASIC VOCATIONAL AGRICULTURE	96	44.8	0.0	0.0
100104	RADIO AND TV PROD AND BROADCAST	46	43.5	2.6	6.3
70601	SECRETARIAL AND RELATED	2,358	43.3	5.1	12.3
10104	FARM AND RANCH MANAGEMENT	54	42.6	2.3	9.2
70201	BANKING AND REL. FINANCIAL	64	42.2	4.0	8.7
120301	FUNERAL SERVICES	61	41.0	0.0	0.0
470203	HEATING AND AIR CONDITIONING	292	40.8	2.6	6.3
170690	HEALTH CLUSTER	89	40.4	1.5	9.0
170211	SURGICAL TECHNOLOGY	51	39.2	5.3	8.8
460302	ELECTRICIAN	440	39.1	3.4	8.6
470604	AUTOMOTIVE MECHANICS	671	37.1	4.2	11.4
80705	MARKETING AND RETAILING	180	36.7	1.3	4.1
480503	MACHINE TOOL OPERATION/MACH	368	35.3	3.5	9.4
170506	MEDICAL RECORDS TECHNOLOGY	55	34.5	0.0	0.0
170605	PRACTICAL NURSING	1,123	34.2	1.5	3.0
470103	COMMUNICATION ELECTRONICS	90	32.2	1.7	6.2
70301	BUSINESS DATA PROCESSING	1,043	30.2	6.7	19.0
60701	HOTEL AND MOTEL MANAGEMENT	147	29.3	1.8	4.1
10501	AGRIC SERVICES AND SUPPLIES	31	29.0	0.0	0.0
150101	ARCHITECTURAL DESIGN AND CONSTR	39	28.2	0.0	0.0
170309	MEDICAL LABORATORY TECHNOLOGY	200	28.0	1.3	3.6
490205	TRUCK AND BUS DRIVING	145	26.9	0.7	0.8

Table 14
Percentage of Postsecondary Enrollment in Occupationally Specific Vocational Education Programs (Excluding Co-op), by Unemployment Status by Program: 1988-1989
(continued)

CIP Code	Program	Unduplicated Enrollment	Percent African American	Unemployed	Adjusted Unemployment Rate
70701	TYPING, GENERAL OFFICE	458	25.1	6.4	24.2
460501	PLUMBER/PIPEFITTER/STEAMFIT	70	24.3	0.0	0.0
61401	MARKETING MANAGEMENT	468	22.0	2.7	7.2
170818	RESPIRATORY THERAPY	274	21.9	0.0	0.0
150303	ELECTRONIC TECHNOLOGY	684	19.9	1.0	3.8
480590	METAL TRADES	142	19.7	4.4	19.9
70604	LEGAL SECRETARIAL	172	19.2	1.6	5.5
10301	AGRICULTURAL PRODUCTION	33	18.2	0.0	0.0
150991	DIVERSIFIED TECHNOLOGY	78	17.9	1.5	11.0
150202	DRAFTING AND DESIGN TECHNOLOGY	662	17.2	3.2	9.9
460390	ELECTRICITY/ELECTRONICS	82	17.1	3.2	22.2
170101	DENTAL ASSISTING	59	16.9	2.0	3.0
470502	CONVENTIONAL ELEC POWER GEN	30	16.7	0.0	0.0
80102	FASHION MERCHANDISING	98	14.3	2.4	8.7
480101	DRAFTING, GENERAL	171	14.0	2.3	11.3
10302	ANIMAL PRODUCTION	43	11.6	2.9	9.0
150201	CIVIL TECHNOLOGY	61	11.5	0.0	0.0
70102	ACCOUNTING AND COMPUTING	35	11.4	3.2	7.1
170503	MEDICAL ASSISTING	37	10.8	3.1	14.2
480507	TOOL AND DIE MAKING	76	10.5	0.0	0.0
470602	AIRCRAFT MECHANICS	90	10.0	2.6	9.9
170209	RADIOGRAPH MEDICAL TECHNOLOGY	148	8.8	0.0	0.0
10605	LANDSCAPING	37	8.1	0.0	0.0
480203	COMMERCIAL ART	75	8.0	1.5	8.9
30401	FORESTRY PRODUCTION	186	4.3	0.8	2.7
150604	MANUFACTURING TECHNOLOGY	47	4.3	4.7	16.8
10601	HORTICULTURE, GENERAL	49	4.1	0.0	0.0
	OTHER*	551	28.1	2.3	4.6
	TOTALS	16,174	35.7	3.5	9.1

*Includes all programs with fewer than thirty students enrolled.

the unemployment rate was twenty-four percent for typing and general office programs, nineteen percent for business data processing, and twelve percent for secretarial and related programs. These were relatively large postsecondary programs, and the reasons for these high rates need some investigation.

As with secondary programs, there was a tendency for programs with high concentrations of African American students to exhibit higher unemployment rates. However, many of these programs were relatively small.

Why is there so much variation in the outcomes of vocational education programs? Part of the explanation lies in the varying skill content of different programs. Thus, it would be expected that a much higher percentage of students enrolled in Diversified Technology than in waiter/waitress programs would continue on to pursue further education. The skill requirements of being a waiter or waitress simply do not require extended education. In contrast, Diversified Technology is explicitly designed to link the secondary curriculum to more advanced training in community colleges.

Differences in curriculum objectives, however, cannot explain the great variation among programs in the unemployment rates of those who leave programs to enter the work force. Unemployment rates in excess of twenty percent were common in both secondary and postsecondary vocational education programs. Why did these occur? A possible explanation is that statewide or local economic conditions temporarily depressed the demand for certain types of labor. Such depression in the construction industry, for example, may make it difficult for students in many trades programs to find work. If such decreases in demand are, in fact, temporary, they probably do not warrant contracting or eliminating the program. If, however, large unemployment rates in certain programs persist—over a period of three years, for example—some action to modify or eliminate the program should be taken.

Another explanation is that, although demand existed, students leaving certain programs were not well enough prepared to obtain work. In such instances, students probably lacked academic as well as job-specific skills, since many employers will provide job-specific training if students have the basic general knowledge, skills, and abilities. Students may also have lacked such basic employability skills as proper work attitudes or good grooming.

It was beyond the scope of this study to determine which of these or other explanations account for the high unemployment rates of students in many secondary and postsecondary vocational education programs. Mississippi could, however, make much more effective use of this follow-up data to better inform students, parents, counselors, and school administrators about the likely employment prospects following participation in particular programs. Similarly, this data could figure much more prominently in program evaluation. Programs that persistently display high rates of unemployment should be closely scrutinized to determine why they do so.

It should be stressed that this follow-up data is most effective when used as *indicators* of program effectiveness rather than as determinants of program success or failure. On the one hand, programs with low unemployment rates are not necessarily imparting high levels of either occupational or academic skills. They may merely serve high demand occupations. For example, in 1988-1989, the secondary waiter/waitress program had an unemployment rate of 5.6%. On the other hand, programs with high unemployment rates are not necessarily providing poor education and training. Rather, they may need to build better relations with employers or encourage their students to seek more advanced postsecondary training. For example, 29.9% of Diversified Technology students in the labor force in 1989 were unemployed. This outcome suggests that students seeking work in more technical fields are not likely to be successful without further postsecondary education. Consequently, while good quantitative data on student outcomes can provide important indications for both success and failure of particular programs, the information must be supplemented with more in-depth investigation.

Recommendation 7:	The State Board of Education and the State Board of Community and Junior Colleges should prepare an annual report on the outcomes of vocational education programs including unemployment rates. This report should be aimed at students, parents, and counselors.
Recommendation 8:	Programs with unemployment rates that for three consecutive years exceed by more than twenty-five percent the state averages for all secondary and postsecondary programs should be evaluated to determine the causes and actions needed to reduce the unemployment rates.

In summary, there was substantial variation in the offerings, participation patterns, and outcomes of secondary and postsecondary vocational education programs in Mississippi. Generally, at the secondary level, students were much more heavily concentrated in less technical programs than at the postsecondary level. At both levels, stereotyping by race and gender was pervasive. On the average, the postsecondary programs outperformed the secondary programs with respect to unemployment rates among program participants. However, this outcome is to be expected because postsecondary students are, on the average, more mature and better skilled. At both levels, some programs were successful at enabling students to secure employment, whereas others appeared to have performed rather poorly. The record of secondary co-op programs was especially impressive, although this success was tarnished by the relatively low participation of African American students. Finally, the majority of secondary students in vocational education pursued some form of postsecondary education, underscoring the need for strong occupational and academic preparation and for effective articulation between secondary and postsecondary offerings.

PROGRAM QUALITY, ARTICULATION, ACCOUNTABILITY, AND GOVERNANCE

The quantitative data maintained by the state provides an excellent profile of the range of program offerings, student participation patterns, and student outcomes for secondary and postsecondary vocational education. To round out this profile, study staff conducted a series of state-level interviews and local site visits to develop more qualitative information on the condition of vocational education in Mississippi. Of particular interest were issues of program quality including the extent of integration of vocational and academic curriculum; articulation between secondary and postsecondary vocational education; program accountability; and governance. This section discusses each of these issues.

Program Quality

The "quality" of a program means different things to different people. For the purposes of this study, staff were primarily interested in seeing the condition of facilities

and equipment, observing the content of both the vocational and academic curriculum, discussing the expectations of faculty and administrators, and assessing the degree of understanding about different approaches to better "integrating" vocational and academic education.

Facilities and Equipment

Mississippi is a poor state, spending less per student than most other states nationwide by a substantial margin. One might expect, therefore, to see run-down buildings, poorly equipped and crowded classrooms, insufficient or nonexistent student services, and a generally inadequate atmosphere for learning. To be sure, these conditions exist in Mississippi, as they do in all states. However, on the whole, the condition of the facilities and equipment observed in the course of the study appeared to be average or above average.

Many of the high schools visited were housed in old buildings, some visibly in need of repair. Nevertheless, they were clean and orderly (at least as much as high schools can be). Most of the area schools were relatively new buildings, built within the last twenty to thirty years. Similarly, the community colleges appeared to have been built during the same time period. Although they were by no means lavish, they provided sufficient space. Typically, classrooms were located adjacent to shops or labs, allowing easy transitions between classroom instruction and hands-on, applied learning. In the area schools and most of the community college programs, class size was quite small—classes of ten to fifteen students were frequently observed.

Equipment generally appeared adequate, especially if one considers the primary objective of vocational education to be teaching general principles rather than the nuances of operating the latest piece of complex machinery. Computers were found everywhere, and, probably most importantly, teachers and students were using them. In one school, there was an extraordinary display of interactive television linking a remote rural classroom where every student sat before a computer, with an instructor at Mississippi State University.

These findings should not be interpreted as meaning that there are no problems with physical facilities or equipment, nor as suggesting that nothing more needs to be done to

improve or update them. An inadequate physical plant, however, is by no means the problem one might expect it to be. Improving facilities and equipment should continue to be a priority for Mississippi, but there are other issues requiring more attention.

One feature of the physical arrangement at the secondary level, however, does pose a problem. The geographic distance of the area schools from the high schools, even when it amounts to little more than a quarter of a mile, tends to separate the curriculum and the faculty of the two institutions. This physical separation has important implications for efforts to better integrate vocational and academic curricula, an issue discussed in the next section.

Curriculum Content

Curriculum reform poses one of Mississippi's greatest challenges. Although there were notable exceptions, the curriculum taught to students in vocational education in most high schools and community colleges (especially in the vocational programs as opposed to the technical programs) did not challenge students. It contained almost no advanced math or scientific content and demanded little complicated reading and writing.

At the secondary level, with the exception of the relatively small number of students who participated in Diversified Technology and a few more technical programs, the overwhelming majority of students were exposed to a rather conventional, narrowly vocational set of offerings. These programs emphasized job-specific skills, learned by rote, with little understanding of underlying general principles and concepts. For example, a high school health class observed at one site had devoted the morning to teaching fewer than a dozen girls, all African American, how to give a patient a sponge bath. It is not this job-specific skill *per se* that is objectionable; without question, a nurse's aide needs to know how to bathe a patient, and there is no substitute for hands-on (literally) instruction. Rather, it is the exclusive focus on *how* to do it, rather than on *why* it is necessary and *where* it fits in the larger context of hygiene and hospital care. Had this hands-on experience been used to introduce more general biological, anatomical, or hygienic concepts, it would have been so much more powerful—potentially transferable and longer lasting. However, it was not, and this lack of more general academic content is typical of much vocational education in Mississippi, as it is in the rest of the country.

The problem has not gone unrecognized. Mississippi has devoted considerable effort to developing a standardized curriculum that spells out what students are expected to learn in rather lengthy detail. The state's attention to standards is laudable and well ahead of efforts in many other states. However, in the process, the need for standards has been mistaken for the need for standardization. It is indeed important to establish what students should know; it is a mistake to suggest that there is only one way to learn it. The Mississippi curriculum purports only to establish standards, not to dictate how to teach them. However, the curriculum has become so detailed and prescriptive that it pre-empts much local initiative. This kind of standardization discourages creativity, sensitivity to students' needs, and innovation in teaching and curriculum.

Mississippi should not abandon its efforts to develop curriculum. Some of the instructors interviewed found the standardized curriculum quite useful. Many, however, complained that it was inflexible and did not allow them sufficient latitude to tailor their teaching to maximize their own strengths and respond to the particular needs of their students. The state curriculum, therefore, might be more useful as a guide rather than a mandated requirement for all to follow.

Standardization is especially problematic at the postsecondary level, where students enter the colleges with a wide variety of previous vocational and academic education. There can be no one best way to serve all of these students, and procedures that insist on [illegible] in certain types of courses, rather than competency testing and other forms of [illegible]ent, will be counterproductive.

Recommendation 9:	State policy should emphasize the development and refinement of performance measures and standards, holding local secondary and postsecondary educators accountable for obtaining desired results; while policy can encourage adoption of certain methods and curricula, it should remain permissive and nonintrusive with respect to the means.
Recommendation 10:	For secondary students completing vocational education programs, the State Department of Education, in consultation with employers, should develop a system of certification based on mastery of occupational and academic competencies necessary for success in the labor market.

Expectations of Faculty and Administrators

The problem of curriculum that lacks rigor and challenge is closely related to another problem—the generally low level of expectations that most faculty and administrators have for students participating in vocational education. Although there were exceptions, most of the people interviewed simply did not believe that the typical student taking vocational education could master advanced academic concepts or use learning of occupational skills to develop more generalizable and transferable insights. Moreover, even within vocational education, there was a hierarchy of expectations and demands. Thus, Diversified Technology was often described as a Tech Prep program for a different "quality" of student.

At the secondary level, the belief that most students who participate in vocational education will not go on to college was widespread. If pressed, most would acknowledge that some would go on to community college, but community college was viewed as considerably less demanding. Moreover, the unspoken implication was "yes, they may try community college, but they are not likely to stick with it." There were exceptions. In one secondary district visited, administrators enthusiastically marketed vocational education to students and parents as an alternative path to postsecondary education. They stressed academic rigor in vocational classes and were gradually eliminating the general curriculum.

At the postsecondary level, expectations were more mixed. Students who could master the more technical programs in health, engineering, and other fields were perceived to have bright futures, and faculty demanded much of them. Expectations were much lower, however, for students in the more traditional vocational programs. Furthermore, most of those interviewed stressed getting students in the vocational and technical programs into the labor force rather than encouraging them to pursue opportunities in four-year colleges and universities.

Without question, students come to secondary and postsecondary vocational programs with varying abilities and aptitudes. Many have serious problems—physical handicaps, learning disabilities, unstable home conditions, and acute economic and psychological stresses—that interfere with learning. It would be naive to pretend that all students can be easily taught. Nevertheless, there is growing evidence that educators have set their sights too low and that low expectations become self-fulfilling prophecies. However, raising expectations, demanding more of all students, and ensuring that they

achieve higher levels of occupational and academic skills will require, among other things, new strategies for education—vocational as well as academic.

Recommendation 11: Over four years, beginning with the ninth grade, Mississippi should phase out the general curriculum in secondary schools. The state should require that all students participating in vocational education develop—with parents, teachers, and counselors—a planned sequence of rigorous vocational and academic education studies that will prepare the student for further postsecondary education and success in the labor force.

Integrating Vocational and Academic Education: Toward a New Paradigm

The primary problem in Mississippi with secondary and postsecondary education, vocational as well as academic, can be stated simply: Too many students are leaving high school and postsecondary institutions without adequate skills for sustained, productive success on the job or in further education. The problem is especially acute for African American students, but many white students are also not sufficiently prepared. Many factors contribute to this problem—low expectations, racism, class consciousness, poverty, poorly prepared teachers, inattentive parents, lack of employer involvement and understanding, and bureaucratic requirements, to name a few. However, even if all of those causes could be eliminated, a major problem would remain: Most secondary schools and postsecondary institutions are not designed and organized to impart a high level of occupational and academic skills to *all* students.

Historically, vocational educators have tended to minimize their responsibilities for teaching academic skills, maintaining that this function is primarily the responsibility of academic teachers—usually before students enter the more advanced vocational courses. At the same time, academic teachers have had little responsibility for relating their subject matter to the world of work or providing another context that would help students understand how to apply academic knowledge and skills. This division of labor has had two unfortunate consequences. First, the insistence that students acquire the necessary academic skills before they enter the vocational laboratory or classroom means that many students fail to see the relevance of the academics they are asked to learn. They either forget the material quickly or do not learn it at all. Second, because these students find it hard to learn and retain academic knowledge and skills in the absence of some real world

context, schools have developed a large array of English, math, and science courses that are substantially less rigorous than those expected of students bound for four-year colleges and universities. This is the general track, which in most schools is a vast wasteland of "dumbed down" courses no more interesting than the more rigorous academic courses, but considerably easier to pass.

To help change this state of affairs, a number of efforts began in the early 1980s to infuse more rigorous academic content into the vocational education curriculum. Additionally, curriculum developers began to look for ways to make academic subjects more relevant, leading to such courses as Principles of Technology (applied physics), Applied Mathematics, Applied Communications, and Applied Biology and Chemistry—now generally known as "Applied Academics." More recently, concern about the academic preparation of students in vocational education has led to an assault on the general track and a call for higher expectations for all students. The Vocational Education Consortium of the Southern Regional Education Board, for example, has called for eliminating all general courses and requiring all students to take a program of more rigorous and relevant vocational and academic studies.

Most people seeking to increase the occupational and academic skills of students taking vocational education applaud efforts to strengthen the academic content of vocational courses, to develop applied academic courses, and to eliminate "watered down" general courses. For many, however, these efforts fall well short of realizing the potential for increased learning that would result from a more thorough integration of the vocational and academic curricula and from major changes in the ways vocational and academic classes are typically taught. Theirs is a vision of schools in which opportunities to apply academic knowledge and skills pervade all vocational and academic courses in a coherent, coordinated way.

Consider, for example, a class about to study a play by Shakespeare. In most high schools, such an undertaking would probably first be limited to the academic English class, on the presumption that those students in General English cannot be interested in this subject, the time being long ago and the work of art too subtle and stylized for the unsophisticated. The academic students go off and read the play, write their essays, participate in a few recitations, and may even memorize a few passages. They are as bored as the general track students would have been had they been subjected to the bard in this

fashion, but they are blessed or cursed with the ability to learn in spite of the curriculum rather than because of it. Meanwhile, life goes on in the rest of the school, unaware and untouched by the experience of a select few with great literature.

There are rare high schools, however, that take a very different approach. In such a high school, all students are expected to learn about Shakespeare and other aspects of the Elizabethan era, but the subject is approached very differently. In this school, all students will not simply read the play, they will produce it! Students will build the sets, design and make the costumes, determine a production budget and business plan, develop the advertising campaign, design and print posters, and operate the box office. As best they can, the students will adhere to the authenticity of the period. In History, the costume makers will research the clothing of the time, and the set builders will investigate the stage (they will later visit a contemporary theater and analyze the similarities and differences with theater in Shakespeare's day). In Chemistry, students will try to figure out how best to create some of the special effects—a puff of smoke, the semblance of fog. In Physics or Principles of Technology, they will study and make the pulleys that will lower characters from the sky. Business students will develop and carry out a business plan for producing the play. Graphics arts students will, as true to the times as possible, design the posters and other announcements (they will later study how printing has evolved from Elizabethan times to modern day). Prior to opening night, the school will kick off the first performance with an Elizabethan dinner prepared by students in food services. In this school, every student quite literally has a part, and most will remember it and what they learned for years to come.

As another example, consider an approach taken at Hodgson High School in Wilmington, Delaware. At Hodgson, every senior undertakes a senior project under the supervision of a three-person advisory committee consisting of a vocational teacher, an academic teacher, and someone from industry. The project incorporates student-centered research with the development of a career-related product and a final public oral presentation. A student in cabinetmaking elected to build a reproduction of a nineteenth century Pennsylvania Dutch hutch. He began his research by visiting a furniture museum in Philadelphia, where he measured and photographed the piece he intended to build. This visit was the first time in his life he had ever been in a museum. From his visit, he developed the scale drawings he would use to build the hutch. Simultaneously, he began his research on furniture and cabinetmaking tools of the period for a term paper in his

senior English class. He also studied the dress of the period and, on the day of his oral presentation, wore the costume of a nineteenth century Pennsylvania Dutch cabinetmaker.

As this example illustrates, integrated vocational and academic education makes mastery of academic skills easier for students who otherwise have difficulty with the abstractions of the conventional academic curriculum. Research, writing, and math skills assumed new importance for this student as he was able to relate them to his cabinetmaking. Moreover, not only did the experience make him a better academic student—more able to develop his academic skills in the future—but also the acquisition of those skills made him a better craftsman. He learned how to use museums, libraries, and other resources to advance his abilities as a designer and maker of furniture. This is the great promise of integrated education properly conceived—better access by more students to academic concepts and tools that when properly understood will have widespread application regardless of students' future education and career goals.

In the integrated high school, then, what goes on in one class is carefully linked to what is going on in many others. Moreover, there is an emphasis on learning in teams and on applying knowledge to real, concrete problems. There are schools like this; they are not simply in the imaginations of naive scholars. Schools like Aviation High School in New York City or Chicago's High School of Agricultural Science and Technology know how to make learning come alive for all students. There are postsecondary examples as well, probably epitomized by the Fashion Institute of Technology, a four-year college in the State University of New York.

Although it is certainly possible to integrate vocational and academic education, it is not easy, and relatively few schools have accomplished comprehensive integration. Stereotypical thinking about vocational education, the rigidity of academic disciplines, comfort with old styles of teaching and curriculum, insufficient time for planning and coordinating, and rigid postsecondary requirements are but a few of the obstacles.

Mississippi has made some progress in these directions. The development and implementation of Diversified Technology is an important effort to introduce applied science at the secondary level. As noted earlier, however, the program to date has served relatively few students. Moreover, it serves as an alternative for participating in other occupationally specific programs, but is not a widely available alternative for mastering

principles of science and technology. Consequently, what is learned in Diversified Technology cannot be applied in other programs. Many states teach Principles of Technology in the ninth and tenth grades, as a precursor for entry into occupationally specific programs in the eleventh and twelfth grades. Mississippi consciously decided to locate Diversified Technology in the later grades, but it may be time to revisit this and other decisions with an assessment of how well Diversified Technology is working.

Additionally, Mississippi has made considerable progress with the development of related studies courses targeted at students with special needs. Most of the teachers and administrators interviewed indicated that related studies provided a valuable support for students who lacked the academic preparation needed for success in a vocational program. Related studies courses, however, are a rather limited attempt at integration. As currently conceived, this effort suffers from four shortcomings: (1) it is a remedial program only; (2) contact between vocational and academic teachers is minimal; (3) related academic work is done outside the vocational classroom, often in a traditional academic setting using traditional academic curricula; and (4) cooperation usually does not extend back to the sending high school.

Finally, Mississippi has been participating in the Vocational Education Consortium of the Southern Regional Education Board. Three pilot sites have begun long-term efforts to restructure their high schools by raising expectations, increasing requirements for advanced math and science for students taking vocational education, and developing integrated sequences of vocational and academic studies.

As important as these three efforts are, most of the faculty and administrators interviewed had little or no knowledge of different approaches to curriculum integration. Nor did they clearly understand the potential benefits of better integrating vocational and academic education. In almost all of the high schools and colleges visited, vocational education operated in isolation from academic education. Vocational and academic faculty rarely, if ever, communicated with one another. With a few exceptions, there was no joint planning of curriculum or less formal efforts at coordinating teaching.

In short, to promote better integration of vocational and academic education, a major development effort will be needed at both the secondary and postsecondary levels. For such an effort to be successful, the leadership and support for integration cannot be the

responsibility of vocational educators alone. On the contrary, the commitment of the entire secondary and postsecondary enterprise will be required.

Recommendation 12: The State Department of Education and the State Board of Community and Junior Colleges should articulate more clearly and more forcefully the objectives of integrating vocational and academic education and the different models of integration schools can employ. Integration should be a major topic in state efforts at staff development and curriculum support.

Articulated Curriculum

Integration is but one strategy for increasing the skill levels of students. Another closely related approach is better articulation between secondary and postsecondary offerings. Articulation involves the development of Tech Prep programs that offer a well-coordinated curriculum beginning with the last two years of high school, continuing with the first two years of community college, and ending with a successful transition into the labor market or transfer to a four-year college or university. Sometimes called "2+2" or "2+2+2" programs, these efforts are aimed at students who do not plan to enter four-year colleges immediately following graduation from high school and who would benefit from continued education and training. The articulated programs provide a clear path of study from high school to college that can serve as an alternative to the conventional academic curriculum. They are also intended to reduce the "milling around" that occurs in many community colleges, as students seek to clarify their occupational objectives and develop a sensible program of study.

An essential feature of Tech Prep is its concentration on students who make a more or less immediate transition from high school to community college. However, Tech Prep programs are not especially well-suited for students entering or returning to community colleges after a long hiatus between high school and postsecondary education. This distinction is an important one that seems to have been missed in the state's efforts to develop better articulation.

That effort to date has concentrated primarily on developing a standardized curriculum for both secondary and postsecondary vocational education programs. Secondary programs have already implemented the standardized curriculum. In the interviews conducted as part of this study, reactions to the curriculum varied from school to school and from teacher to teacher. The benefits teachers cited included

- Comparability across schools that facilitates transfers and student assessment.
- Program improvement, especially in substandard programs.
- Local flexibility that allows teachers to tailor up to twenty-five percent of the curriculum to local circumstances.

Among the disadvantages claimed were

- Local inflexibility because seventy-five percent of the curriculum is dictated by th state.
- Curriculum can quickly become outdated, with the state slow to make revisions.
- New program development is inhibited because no standardized curriculum exists.

To some extent, whether one saw the standardized curriculum as a positive or negative depended on teaching style. The more independent and creative teachers tended to bristle under the curriculum, either bending it to fit their needs or ignoring it altogether. Others felt compelled to follow, or even welcomed, the state's organization of what they were expected to teach.

Although at the secondary level the standardized curriculum does detail *what* students are expected to know, it does not directly specify *how* teachers are to teach. At the postsecondary level, however, the call for standardized curriculum seemed to have crossed this border and was seeking to dictate how the curriculum was to be organized. Thus, in addition to specifying what students needed to know, the curriculum sought to establish a required system of prerequisites, remediation, and regular programs. Rightly or wrongly, many postsecondary faculty and administrators perceived these requirements as telling them how to organize their programs instead of simply stating what students are expected to know upon program completion. They stressed that a large number of their students do not

enter community college directly from high school. In fact, for many students, more than ten to twenty years may have passed since high school, and a rigid system of prerequisites is inappropriate for them.

The most common complaint from postsecondary educators was that, as presently conceived, the standardized curriculum would require remediation to acquire missing "essential skills" before entry into a vocational or technical program. In some instances, these requirements, it was claimed, could delay entry into a vocational program for as much as three semesters, virtually assuring that a student would not matriculate or that the student would drop out well before completing the program.

In this controversy, it is difficult to disentangle reality from perception. Precisely what was being required by the standardized curriculum was difficult to determine, and there appeared to be a substantial amount of misinformation generated by both proponents and opponents of the plan. At one point, for example, proponents were asserting that standardized curriculum was a requirement of the recently enacted federal Carl D. Perkins Vocational and Applied Technology Education Act—it is not. On the other hand, opponents seemed prone to overstate the rigidity that the system would have imposed.

To a large extent, the controversy was probably not so much a product of the ideas themselves as it was the consequence of the existing governance system. Since the standardized curriculum was being promoted by the State Department of Education, responsible primarily for K-12 education, many postsecondary educators felt they lacked control over the decision making and that promoters of the proposal lacked a sufficient understanding of the mission and daily [illegible]ons of community colleges. This issue will be addressed again in the section on governance later in this report.

In summary, Mississippi has taken some tentative steps toward strengthening articulation between secondary and postsecondary vocational education. However, much is left to be accomplished, and there is not likely to be much progress on this front until some fundamental governance issues between secondary and postsecondary education have been resolved.

Accountability and Program Planning

Accountability is a major theme of the new Carl D. Perkins Vocational and Applied Technology Education Act passed by Congress in September, 1990. The legislation requires the states to develop accountability systems that include core performance measures and standards for assessing the effectiveness of secondary and postsecondary vocational education. States are to develop and implement these systems by September, 1992.

Even prior to these new requirements in federal law, Mississippi had taken some important steps toward strengthening program accountability. For example, Mississippi does a better job than most other states in tracking what happens to students after participating in vocational education. While study staff did not have the time or resources to validate the data maintained by the state, the quality of the follow-up data seemed unusually good. Response rates were high, and there was relatively little missing data. Furthermore, the state uses the follow-up data to evaluate programs through a system of weighted student outcomes.

As noted above, using follow-up data to evaluate programs is appropriate and useful. Presently, Mississippi uses this data to score programs based on student outcomes, and programs are ranked based on these scores. However, there are several problems with the way in which this scoring is done.

First, the determination of the scores appears arbitrary and irrational. For example, a student leaving a secondary vocational course and enrolling in a postsecondary vocational program related to the secondary vocational program receives a score of five; this same student enrolling in a four-year college (postsecondary, academic nonrelated) receives a score of one (a lower score). Hence, other things being equal, programs with high rates of four-year college attendance will receive lower scores than programs with high rates of enrollment in related postsecondary vocational programs. There is, therefore, a built-in incentive for programs to promote enrolling in vocational education at community colleges rather than to encourage students to attend four-year colleges or universities.

Second, the evaluation system appears to make no adjustments among schools or programs for differences in students' abilities and economic circumstances. Outcomes for

students with special needs are scored the same as outcomes for students with no special needs. Hence, to the extent that certain outcomes are more difficult to achieve for special needs students, the evaluation system reflects unfairly on programs with high concentrations of special needs students. Additionally, the system may create incentives to exclude special needs students from programs in order to improve program evaluation scores.

Third, the current evaluation places undue emphasis, especially for secondary programs, on the value of employment in the field trained. Thus, a student employed in the field trained receives a score of five, while a student employed in an unrelated field receives a score of two. Curiously, a student who is unemployed receives a s ore of one, the same score as a student who is enrolled in a four-year college.

Fourth, the accountability procedures currently in place pay no attention to student gains; outcomes are defined strictly in terms of absolute measures. This practice favors programs with better students rather than programs with better methods.

Recommendation 13: The existing weighting system used for program evaluation should be reviewed and redesigned to include clearly justified weights and measures of student gains over time.

Additionally, data suitable for monitoring program accessibility could be better used. As was shown earlier in this report, substantial stereotyping by race and gender is present in both secondary and postsecondary vocational education in Mississippi. This data has been available for many years. Nevertheless, in the study's review of various state documents, no mention of this problem was found. Indeed, in the study's early inquiries about available data, there was confusion in the Division of Vocational and Technical Education about whether information on program enrollment by race and sex was maintained. As demonstrated, the information does exist, but apparently it has never been routinely monitored and analyzed.

Finally, with respect to program planning at the local level, study staff could find few instances of state data figuring prominently in decisions to add, expand, contract, or eliminate vocational education programs. On the whole, state-generated labor market data

was neither timely enough nor sufficiently specific geographically to be of much aid to program planning. Where program planning appeared effective—that is, responsive to changing labor market conditions—planning seemed to rely on aggressive communication with local employers about changing requirements. Where planning was poor or at best perfunctory, program changes were based more on the availability of particular faculty rather than on any demonstrated need for training.

One source of more timely data on student outcomes is the state's unemployment insurance data system, which maintains quarterly information on earnings and industry classifications for most everyone employed in Mississippi. Several states use this data to track the employment status and earnings of participants in vocational education and employment training programs. Using the data requires that the states obtain students' social security numbers for matching with the unemployment insurance data.

Recommendation 14: The state should explore supplementing existing follow-up activities with the use of state unemployment insurance data to monitor labor market outcomes more accurately and for longer periods of time.

Governance

As presently constituted, the governance structure of vocational education in Mississippi is not well-suited to promote the integration of vocational and academic education or better articulation between secondary and postsecondary education. Under current state law, Mississippi designates the State Board of Education as the sole state agency responsible for administering federal vocational education funds.[11] This arrangement is no different from that in most other states. What is unique, however, is that state law has effectively created two state departments of education, one for vocational education and one for the rest of K-12 education.

[11]Federal law requires that each state receiving federal funds under the Carl D. Perkins Vocational and Applied Technology Education Act designate a sole state agency to administer the federal funds.

Although the Division of Vocational and Technical Education is supposedly part of the State Department of Education, the Director of the Division of Vocational and Technical Education is appointed by the Board of Education, serves at the discretion of the Board, and is responsible to the Board for the administration of vocational education. The director also has authority over employing, compensating, terminating, promoting, demoting, transferring, and reprimanding employees of the Division. In short, state law allows the Division to operate independently of the State Superintendent and the rest of the State Department of Education. As a consequence, the State Superintendent lacks the authority to direct and manage a comprehensive program of elementary and secondary education. Moreover, the Division's isolation from the rest of the State Department is likely to significantly impede efforts to integrate vocational and academic education.

State law also gives the Division of Vocational and Technical Education extraordinary powers over postsecondary vocational education. These powers include program review and approval, the authority to set standards and dictate curriculum, the control of state and federal funding, and prescribing the qualifications of faculty. All of these powers may be exercised independently of local community college boards, local administration, and the state Community and Junior College Board. Effectively, the community colleges have little administrative or programmatic control over postsecondary vocational education.

This approach to governing postsecondary vocational education has several problems. First, it isolates postsecondary vocational education from the rest of community college operations, severely diminishing opportunities for better integration and coordination. Second, it tends to impose a secondary view of education on postsecondary education with insufficient attention to differences between secondary and postsecondary education with respect to mission, clientele, curriculum, student services, and personnel requirements. Third, it subordinates a major part of the community colleges' operations to the K-12 Board of Education and State Department, creating postsecondary resentment and encouraging battles over turf. As a consequence, relations between secondary and postsecondary education have become quite strained, greatly impeding efforts at effective articulation and coordination.

There are historical reasons for these arrangements. At one time, Mississippi had a separate state board for vocation education. While this practice is not common, it does

exist in other states. However, when Mississippi reverted to designating the State Board of Education as the sole state agency, it neglected to alter the governance structure that had established the separate state board. The result is a mishmash of governance arrangements that make no programmatic sense and that fuel interagency rivalries and battles over turf.

Recommendation 15: State law should be modified to give responsibility for secondary vocational education to the State Department of Education and responsibility for postsecondary vocational education to the Community and Junior College State Board. A joint committee of the State Department and Community College Board should be established to address issues of articulation and the administration of federal funds for vocational education and employment training.

Recommendation 16: To improve postsecondary programs and their articulation with secondary offerings, the Community and Junior College Board should be adequately staffed to permit it to administer state policy on community colleges including the development of performance measures and standards, curriculum support, staff development efforts, student services, and planning and evaluation.

Recommendation 17: State law should be changed to give the State Superintendent of Public Instruction complete and direct authority over all divisions of the State Department of Education including the appointment of personnel.

Recommendation 18: The State Superintendent should undertake a reorganization of the State Department of Education to end the isolation of the Division of Vocational and Technical Education from the rest of the State Department. Such reorganization should seek a structure that promotes the integration of vocational and academic education and recognizes that all teachers, vocational and academic, share responsibility for ensuring that students have the necessary job-specific and academic skills to succeed in the work world.

CONCLUSION

In 1990, the Report of the Commission on the Skills of the American Work Force stated,

> The choice that America faces is a choice between high skills and low wages. Gradually, silently, we are choosing low wages. We still have time to make the other choice—one that will lead us to a more prosperous future. To make this choice, we must fundamentally change our approach to work and education. (National Center on Education and the Economy, 1990, p. 5)

America's choice is also Mississippi's, and opting for high skills will require major changes in the existing secondary and postsecondary systems in the state.

While this report has focused on *vocational* education, it is essential to understand that concentrating solely on reforming vocational education is not likely to appreciably improve the work readiness of young people in Mississippi. On the average, vocational education accounts for only twenty percent of the total coursework undertaken by high school students, and only half of that twenty percent represents coursework in occupationally specific programs. Consequently, the fact that so many young people emerge from high schools and community colleges without adequate skills is a result of deficiencies not only in the vocational curriculum, but also in the academic courses. Reform that seeks large increases in the skills people need for success in the workplace will need to make major changes in the academic curriculum, as well as in the vocational offerings.

Moreover, it is not simply the relatively small amount of time spent in vocational education that demands attention to the rest of curriculum. The great unrealized potential of vocational education lies in its power to make academic knowledge and skills more accessible to more students, especially those who find the conventional academic curriculum difficult to master. Realizing this potential cannot be achieved if changes are made only in vocational education. Rather, changes in vocational education must be accompanied by changes in academic education to fashion a more integrated curriculum and new ways of teaching that both dramatically increase students' skills and improve their ability to apply these skills to real world problems and situations.

Making these changes in Mississippi will not be easy. As this report has documented, there are major problems that require attention. Undoubtedly, solving them will require additional resources. As poor as Mississippi is, however, additional resources alone cannot bring about reform that will markedly improve students' opportunities for success in the workplace and future education. Equally important are expectations and commitment. It is time to recognize that we can and must expect much higher levels of performance from *all* students. They can master difficult vocational and academic skills if we as parents, educators, employers, policymakers, and concerned citizens communicate clearly that we know they can do it and expect high performance. This is not to say that the problem can be solved simply by positive thinking. Many of the recommendations proposed here will take time and hard work to implement, and even more time will pass before any benefits from these changes will be observed. Consequently, a strong, sustained commitment to reforming vocational and academic education will be essential. With that commitment, the benefits will come.

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APPENDIX

STUDY METHODOLOGY

STUDY METHODOLOGY

To conduct its evaluation of secondary and postsecondary vocational education in Mississippi, staff of the National Center for Research in Vocational Education (NCRVE) relied primarily on two types of analysis: (1) examining existing state data on enrollments in vocational education, completion, retention, and follow-up; and (2) conducting a series of case studies to assess the condition of secondary and postsecondary vocational education in Mississippi. Data on enrollment and follow-up collected by the State Department of Education was used to develop a statistical profile of vocational education in Mississippi including analysis of rates of program completion and placement in employment or further education.

The case studies consisted of visits to secondary and postsecondary facilities in twelve counties. This field work was conducted between March 1 and April 15, 1991. This appendix describes the objectives of the field work, methodology, and site selection; the procedures for conducting the case studies; the people who were interviewed; and the kinds of questions that were asked.

Objectives

This study's primary goal was to determine the current condition of secondary and postsecondary education in Mississippi and its role in the larger context of education reform. Specifically, the evaluation focused its inquiry on four major areas: (1) program planning and evaluation, (2) learning outcomes, (3) labor market outcomes, and (4) articulation between secondary and postsecondary education. Specific questions addressed in each of these four areas were as follows.

Program Planning and Evaluation

What data on labor markets are used to plan and evaluate programs?

- Does this data provide sufficient detail by industry, occupation, and required skills?
- Does this data provide sufficient geographic specificity?

- Is this data timely enough?
- How accessible is the data for state and local planners and evaluators?

What data is available on secondary and postsecondary enrollment and completions?

- Does this data provide sufficient detail by type of vocational program and on students with special needs?
- Is data comparable across schools, school districts, and postsecondary institutions?
- Can the course-taking patterns of students be monitored?

What, if any, measures of student, program, or institutional performance have been adopted?

- How are measures and standards defined?
- How are business and industry involved?
- How are these measured and how often?

How is planning and evaluation conducted at the state and local level?

- What types of activities occur and how often?
- Who participates?
- Is there coordination with the Job Training Partnership Act (JTPA) and other agencies responsible for training and economic development?
- What data is used and how?
- What evidence is there that planning and evaluation affect program offerings and student outcomes?

Learning Outcomes

What kinds of occupational skills do students acquire?

- What kinds of vocational education programs are offered?
- What types of aptitude and skill assessment occurs, and how often?
- What programs, if any, use competency-based curricula and testing?
- Are basic employability skills—letter writing, résumé preparation, dress, behavior, and interviewing—taught?

- What is the condition of equipment and facilities?
- How do educators keep apprised of changing skills and techniques in their industry?
- What kinds of opportunities exist for co-op and other types of work experience?

What kinds of academic skills do students taking vocational education acquire—in the nonvocational as well as the vocational curriculum?

- What evidence exists that academic concepts and principles are emphasized in vocational education programs?
- What academic requirements are students in vocational education expected to satisfy?
- Are applied courses available in mathematics, science, and communications?
- What kinds of tests are administered to monitor academic achievement, and how often?
- What kind of remediation is available, and how is this related to the rest of the curriculum?

How well is the vocational education curriculum integrated with the academic curriculum?

- Are students required to develop and follow a planned sequence of related vocational and academic studies?
- Do vocational and academic teachers meet to plan and integrate curriculum, and, if so, how often and for how much time?
- How extensive is the integration of vocational and academic education—for example, is it limited to a few courses of applied academics or is there comprehensive integration throughout all aspects of the curriculum?
- What kind of staff development has occurred to improve integration of curriculum?

How have students with special needs fared in learning occupational and academic skills?

- How is the achievement of students with special needs monitored at the state and local levels?
- What special programs and services are available for students with special needs?
- What is the extent of mainstreaming of handicapped students in regular vocational education programs?

Labor Market Outcomes

How do the state and localities monitor the labor market participation of secondary and postsecondary students who took vocational education?

- What kind of follow-up is done, for whom, and over what period of time?
- Is there any systematic feedback from employers about the preparedness of students participating in vocational education?

What role does counseling play?

- What kind of career education exists, and for whom is it required?
- What are counselors' expectations about the future labor market and postsecondary education opportunities for students taking vocational education?
- What role do counselors play in job placement?

Secondary/Postsecondary Articulation

Is there any coordination between secondary and postsecondary vocational education?

- What kinds of Tech Prep programs are in place or planned?
- Who is involved in the planning and operating of Tech Prep?
- Can secondary school students take courses in community colleges while still in high school?
- What kinds of support services—for example, day care, transportation—are available for students participating in Tech Prep and vocational education generally?
- What opportunities exist for students to pursue further study in four-year colleges, and how many students do so?

What kinds of accommodations have been made for older adults returning for further education after long absences from school?

- Does the scheduling of registration, assessment, counseling services, and classes recognize the needs of adults who are unable to attend full-time day classes?
- What provision has been made for remediation?

Methodology and Site Selection

Two criteria guided the selection of twelve counties for site visits. First, counties were chosen to provide significant variation on economic conditions, needs for human services, and resources and funding for elementary and secondary education. Additionally, a mix of urban and rural areas was sought. Second, as a group, the twelve counties were to be as representative of the entire state as possible.

To construct a sample of twelve counties satisfying these criteria, study staff used data on social and economic conditions issued by the Mississippi Department of Finance and Administration (Mokry, 1990). The Department constructed separate indices describing conditions for different aspects of community life. Three of these indices—economic, human services, and education—were used to construct the case study sample. Table A-1 on the next page lists the twelve counties in the sample and displays the score for each county on each index. Counties with negative values were more distressed than counties with positive values.

The sample provided substantial variation on all three indices. Scores on the economic index ranged from a low of -4.0 in Noxubee to a high of 6.4 in Hinds. The human services index ranged from a low of -5.9 in Noxubee to a high of 5.7 in Lee. The education index ranged from a low of -2.0 in Hinds to a high of 2.0 in Oktibbeha. A summary index, which also included scores for housing and health, ranged from a low of -14.8 in Noxubee to a high of 13.8 in Jackson. Overall, the twelve counties scored near the state average of 0.0 on all three indices, as well as on the summary. In short, the twelve counties display a range of social and economic conditions, while also as a group they closely represent conditions throughout the state.

Within each county, staff visited the secondary vocational-technical complex, its nearest sending high school, and the county's community college. In counties with more than one secondary vocational-technical complex, one facility was chosen at random. In the event that no postsecondary facility in the county had been selected, study staff visited the facility in a neighboring county that was the institution normally attended by students graduating from the secondary site. At the secondary level, staff interviewed the local superintendent, the district administrators in charge of vocational and academic education, principals of the vocational-technical complex and one of its sending schools, and up to

three teachers at each school. Staff generally observed one math or science class at the sending school and one vocational class in the vocational-technical complex. Finally, staff toured the vocational-technical complex.

At the postsecondary level, staff interviewed the college president, the administrators in charge of vocational and academic education, and up to six faculty members. Whenever time permitted, one vocational and one academic class were observed for approximately forty-five minutes each. Finally, staff toured the facility.

Table A-1

Index of Economic and Social Indicators for Twelve Case Study Counties

County	Economic Index	Human Services Index	Education Index	Summary Index
Adams	1.6	0.2	0.0	0.8
Harrison	3.2	3.7	-0.5	5.5
Hinds	6.4	3.4	-2.0	9.3
Jackson	3.2	4.9	0.6	13.8
Jefferson Davis	-2.8	-1.8	0.7	-5.1
Lauderdale	4.2	2.7	-0.5	5.5
Lee	3.9	5.7	0.8	9.8
Jones	2.4	3.2	0.0	9.4
Noxubee	-4.0	-5.9	-0.3	-14.8
Oktibbeha	1.7	1.8	2.0	7.0
Coahoma	-1.2	-4.0	0.2	-13.9
Washington	-0.3	-2.3	-1.1	-8.6
Average:	1.5	1.0	0.0	1.6