

SPINOFFS

The spinoffs of a project like this can be surprising. At the end of the semester, the local newspaper reported on the projects in the business section. Pictures of the projects and the students were included in the news article. This provided positive publicity for ABC and Illinois State University, and a director of another agency in an adjoining county noticed the article and requested similar work.

Since the first set of projects were completed, ABC has hired three industrial technology graduates. One was the graduate assistant who helped with the projects.

Companies with which ABC contracts have seen the positive results of the students' work and this resulted in additional projects for the class.

Finally, a 1995 presentation about this project at a state conference for rehabilitation facilities received an overwhelming response. Directors and managers of similar agencies from all over the state requested involvement with the university and provided additional opportunities for internships and other forms of student involvement.

The enactment of the ADA has caused profound changes in the workplace and our society. Faculty can help remove attitudinal barriers and support the implementation of ADA legislation by involving students in projects that are focused on the disabled. Through a close working relationship with disabled people, students can begin to experience the difficulties and barriers that prevent individuals from developing to their full potential. They also

discover how adaptive technology can help individuals overcome their disability and lead normal, productive lives.

This paper describes one successful approach to create a learning environment that fosters the goal of understanding the change that is occurring in industry as a result of the ADA legislation. As a result our graduates can make a positive contribution to society through their ability to use technology to help disabled workers develop to their full potential in the companies where they are employed. In the beneficial results of this project lies a challenge to industrial technology faculty to adapt the strategy described here or other strategies to ensure that graduates will have the opportunity to confront and overcome the workplace challenges of ADA in a positive, constructive way.

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3. Tech Prep and Enrollment of African American Males

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Hull and Parnell (1991) have presented Tech Prep as a "win/win situation" for all: the community, employer, student, and school. Originally an educational innovation, this program is fairly well established and articulates secondary and higher education and has the potential of producing well-trained workers for industry and competent candidates for two-year colleges. This

article uses a pilot study of African American males in a Tech Prep program in Ohio as a basis to discuss relevant challenges and issues. The goal of the study was to identify factors contributing to enrollment attraction for this population group. It may have a unique social status related to joblessness, alcoholism, drug abuse, and inadequate educational opportunities (The

Governor's Commission on Socially Disadvantaged Black Males [GCSDBM], 1990) to which Tech Prep should respond.

Because this addresses the unique situation of African American young male students in specific areas such as recruiting, prior preparation, motivation to succeed in the program, and the perception of Tech Prep, readers may

better understand the struggles of these students. The increasing demand for highly skilled workers as a concern of technical preparation for minorities was a motivator for the study as was the need to show diversity during Tech Prep implementation (Kwasny, 1992).

MOTIVATING AFRICAN AMERICAN MALES

The career training of African American males has been linked with economic necessities of the old South in antebellum America. Before 1860, enslaved African Americans were trained in skilled crafts as carpenters, mechanics, and draftsmen (Joint Center for Political Studies, 1989). From 1865 to 1935, the history of Black education in general was dominated by the activities of missionary societies, industrial philanthropists from the North, and leaders such as W. E. B. Dubois and Booker T. Washington. Both favored higher education for the African American. Dubois wanted the best of his race to develop and lead their own under the concept of the "talented tenth" whereas Washington saw industrial training as the supreme need for African Americans at that time (Anderson, 1989; Perlmann, 1990).

Though some African American students have higher levels of achievement in education, a significant number of them continue to fail academically. Nationally, African American students drop out of school every 46 seconds. Only 66.7% and 11.5% of African American males have completed high school and a four-year college, respectively (Ohio Commission on African American Males [OCAAM], 1994). This high dropout rate is attributed to several factors such as the lack of motivation, poor grades, student-teacher incompatibility, low socioeconomic status, and early pregnancy (Kunjufu, 1986). This is puzzling because many of them enter the schooling process with adequate levels of motivational and cognitive skills (Ford et al., 1995).

Public schools as they exist today are not meeting the needs of the majority of African Americans in general and the aspirations of African American young males in particular. They seem to be at a greater risk of failure and have emotional and other difficulties within the school system. In addition, they have a

shorter attention span, are less cooperative, are more influenced by their peer group, are louder, and have a more sensitive and larger ego (Kunjufu, 1986).

In addition, African American children in public institutions do not enjoy equal educational opportunities partly because school reforms have failed to improve the social climate in the classroom (Ford et al., 1995). Consequently, African American males have limited job opportunities because they do not have skills required by the new global and technically driven economy. Traditionally, they have viewed vocational education as a tracking system designed to keep them from pursuing a college education (GCSDBM, 1990).

Research shows that having high expectations for all students and consistently communicating these expectations to parents motivate African Americans. The school must also provide both intrinsic and extrinsic motivators, set challenging standards within reach of the students, make the curriculum relevant to the future lives of students by integrating academic and vocational skills, and offer an equal learning environment (Kruger, 1990; Reglin, 1993; Rossi, 1994; Sagor, 1993). The preceding review yielded external factors relating to the school, home, community, program, and student characteristics.

The School

1. The school must have a professionally trained, multicultural, equity-oriented, and high-quality staff. The school personnel must provide equal opportunity for African American youth in quality programs (Ford et al., 1995; Locke & Parker, 1991; Rossi, 1994; Sue & Sue, 1991).
2. Teachers in school must set high goals and expectations for all students and offer equality of learning opportunities (GCSDBM, 1990; Locke & Parker, 1991; Reglin, 1993).
3. The school must have a nurturing atmosphere in which students have easy access to teachers, counselors, and support programs (Barnes-Bell, 1992; GCSDBM, 1990; Hill, 1993; Kunjufu, 1986; Thompkins, 1989).

The Home

1. The student must come from a stable home (GCSDBM, 1990).
2. The home must be involved in the educational process of the student (Ford et al., 1995; Griggs et al., 1992).
3. Parents or guardians must have a respectable socioeconomic status (Rossi, 1994; Sue & Sue, 1991).
4. There must be a social supportive network that includes the home (Jennings, 1992).

The Community

1. There must be community involvement with the school to provide hope for the future (Hawks & Muha, 1991).
2. The community must offer opportunities and provide important resources for developing young talents and jobs (Reglin, 1993; Rossi, 1994).

The Program

1. The curriculum of the program must be integrative and capable of achieving stated goals (program integrity) in a context-based learning environment (Ford et al., 1995; Hull & Parnell, 1991; Thompkins, 1989).
2. The program must be multicultural in its components and staffing (GCSDBM, 1990; Rossi, 1994; Sue & Sue, 1991).
3. The program must keep academic and vocational options open (GCSDBM, 1990) and articulate with higher education (Hill, 1993).
4. The program must be relevant to the student's interest (GCSDBM, 1990; Kunjufu, 1989; Rojewski & Sheng, 1993).

The literature also uncovered several intrinsic factors relating to student characteristics such as attitude, cognition, and career maturity.

Student Characteristics

- Attitude*
1. The student must have a positive self-perception and high aspirations (D'Andrea & Daniels, 1992; Ford et al., 1995; GCSDBM, 1990; Jennings, 1992; Williams & Haynes, 1993).
 2. The student must want to participate in the program and abide by existing rules (Brown, 1988; Reglin, 1993).
 3. The student must have realistic aspirations, be motivated, and be will-

to reach set goals (Hawks & Muha, 1991; Kunjufu, 1986).

Cognition 1. The student must have adequate prior preparation, suitable problem-solving skills, and appropriate reading ability (GCSDBM, 1990; Wilcox & Haynes, 1993).

2. The student must have a good foundation in mathematics and language skills with a high school GPA of 2.5 (GCSDBM, 1990).

Career Maturity 1. The student must possess a certain degree of career maturity and know the area of interest (Locke & Arker, 1991; Rojewski & Sheng, 1993).

3. The student must be able to function in a multicultural setting (Bowman & Ansley, 1991; Rojewski, 1993b).

THE QUESTIONS

Based on the factors that influence academic and vocational development of African American males presented above, six categories of questions were developed. These were asked in five different questionnaires targeting the local Tech Prep coordinators, counselors, teachers, students, and parents. Participants did not have to answer all the questions. The data were collected during audiotaped 30-minute interviews for each participant in four phases: (a) involved information from two persons at the Ohio Department of Education; (b) involved interviews with seven Tech Prep program staff; (c) involved interviews with five students; and (d) involved interviews with 10 students.

AFRICAN AMERICAN STUDENTS AND TECH PREP

Tech Prep has grown to the fourth year of implementation in Ohio. For the 1994-95 school year, Tech Prep programs in Ohio involved about 30,000 students in 24 consortia and offered curricula in electronics, engineering, manufacturing, computer, and health technologies (Ohio Department of Education, 1994). Of the 24 consortia, 10 programs in Grades 11 and 12. Of 10 consortia, two had African American male populations. The selected consortium had 10 African American males enrolled in two high schools. Both high schools participated in the study. The consortium was one of six

first-round consortia. It was working in partnership with 68 high schools, three joint vocational schools, two community colleges, one private university, and two public universities. The programs implemented included computer, electronics, health, and automotive technologies.

The first school had 55 students enrolled in the automotive, health, and electronics technology programs. This number included five African American males and one female. The five participants included four in electronics and one in automotive technology. Program selections were based on economic data in the area and the level of interest in the school districts. The second school had 12 students in the lone first-year computer technology program, which was selected on the basis of staff qualifications in the district. This number included five African American males and five African American females. These Tech Prep programs seemed to follow the national trend where four career clusters have emerged: engineering and industrial, business and information, health and human services, and arts and humanities (Hull, 1992).

Tech Prep Implementation

Tech Prep implementation with emphasis on continuity in learning, context-based teaching, competency, communication between learning institutions, and completion of the program offers students an alternative in educational excellence (Hull & Parnell, 1991). The implementation of Tech Prep at both schools followed the goals of continuity to higher education and preparation for future technical careers required by the new economic realities. The hands-on application or applied academics was the cornerstone of the programs. Articulation with area colleges and businesses was ongoing. All students participating in the study expressed their desire to continue their education beyond high school. One student did not feel confident about a college career, but was considering some form of postsecondary education. It should be noted that the automotive technology program was the only curriculum leading to less than a college degree in this study.

Recruitment of African American Males into Tech Prep

The major mode of recruiting in the first school extended from the Individual Career Planning (ICP) model instituted in the eight feeder school districts in the ninth grade. A counselor visited schools to present all technical education programs with emphasis on Tech Prep to all tenth-grade English classes. Students with a C or better in algebra were encouraged to start Tech Prep programs regardless of ethnic background or school district affiliation. Teachers, counselors, parents, and friends also informed African American males about the programs. In the second school, the program coordinator had distributed brochures and recruited students who were recommended by the tenth-grade mathematics teachers. A job fair was organized to expose the candidates to various careers in the area. Both schools seemed to use the first of two recommended approaches to promote or recruit students into Tech Prep: public relations campaign and paid advertising (Hull & Parnell, 1991). Most consortia have avoided the more expensive paid advertising choice. Besides the videotape and pamphlets from the Ohio Department of Education and brochures from the consortium coordinator, each school also has produced recruiting materials with accent on the district needs. The four groups targeted in this campaign include students, parents, businesses, and educators as suggested by Hull and Parnell (1991). The recruiting effort was not aimed at any particular ethnic or gender group.

Prior Academic Preparation

Lack of proper academic preparation has been cited as one of the primary factors for poor academic performance by African American students in public schools (GCSDBM, 1990). African American male students in this study seemed to have had adequate academic preparation and were meeting program requirements. The background received in English and in mathematics enabled them to do well in their respective programs. These students were interested in various technology fields from childhood in spite of the relatively low socioeconomic status of their families. Even though they did

not know their specific future career, their desire to work with motors, computers, and electronics preceded their involvement with Tech Prep.

Motivating Factors

Williams and Haynes (1993) have argued that attitudinal factors such as low or poor self-esteem and lack of motivation have been associated with academic deficiencies of African American students. Five categories of factors appeared to motivate African American males to be in the programs. These motivators may not be unique to African Americans. However, they could lay the foundation for success in Tech Prep.

Attitudinal Factors

The students appeared to have a positive self-image and the confidence to complete program requirements. They were determined to disregard peer pressure. Kunjufu (1984) has argued that it was the peer group that dictated who was "good" or "popular" with significant negative consequences on academic performance at times. Some of these students stayed after school to seek additional assistance from some of their teachers in order to improve their grades. They did not fit the highly predictive model of dropping out of school (Reglin, 1993). In addition, they did not view Tech Prep as a system designed to track them down (GCSDBM, 1990). They wanted to be in the program (Reglin, 1993).

Cognitive Factors

The students had adequate prior preparation that should enable them to achieve acceptable performance in the classroom (GCSDBM, 1990). Applied mathematics and physics were reinforcing their thinking, computer, problem-solving, and electronic skills. Their grade point average remained a concern to most of them. However, teachers and some parents stated that even during the first year in the program, grades were already showing significant improvement.

Supportive Network Factors

The students had a social supportive network that motivated them (Jennings, 1992). This included parents, teachers, friends, counselors, and relatives. The

influence of informal educational experiences received from the home was noted (Griggs et al., 1992) in spite of the fact that many of their parents were divorced and only a few held technical positions. Students also mentioned their need to see successful adult African American men who are willing to share their success stories.

Program Integrity Factors

The programs were relevant to their desire to learn about electronics, automotive mechanics, and computers (GCSDBM, 1990; Rojewski & Sheng, 1993). The hands-on applications and the promise of field trips were strong motivators. Thompkins (1989) has identified that programs with professional integrity and in which students received individual attention and access to instructors were attractive to African Americans. Some students related their enthusiasm when industry representatives addressed their class.

Career Development Factors

The students were excited about future jobs possibilities and the financial rewards that follow. They perceived that Tech Prep was the key to their future career with a college option. They demonstrated a high level of career maturity beyond the exploration stage (Rojewski, 1993b) and were very positive about the relevance of vocational education that was preparing them for work (Rojewski & Sheng, 1993).

Perception of African American Males

African American young males have been described as an educationally disadvantaged population group because they may lack the home and community resources to benefit from conventional schooling practices (National School Boards Association, 1989). They have been viewed as part of the "neglected majority" (Parnell, 1985) and associated with a high dropout rate and low academic achievement due to differential treatment in the classroom (Ford et al., 1995). They have been described as poorly motivated and without proper academic preparation for college or the workplace (GCSDBM, 1990).

African American males in the study lived with at least one parent, had siblings, were not married, and did not

have children. Their grade point average (GPA) varied from 2.0 to 2.7 at one school and 1.8 to 2.8 at another for a mean of 2.34 and 2.48, respectively. Of the 10 students, six had jobs and worked 19 to 22 hours per week. They averaged one to six tardy or absent days during the first school semester.

The Tech Prep staff perceived African American males in the programs to be bright, interested in learning, and capable of succeeding. The classroom environment did not seem to hinder or encourage these students. Based on comments from teachers and students in this study, there appeared to be equality of opportunity to learn for those who were serious about their education. Differential treatment in the classroom did not seem to exist (Ford et al., 1995). Students stated that they had equal chance to use computers, work on automobile engines, and repair transmitters. Teachers had high expectations for everyone in the class (Reglin, 1993) and gave equal attention to all students.

LEARN FROM THE PILOT STUDY

The factors that authorities claim have been successful in the academic and career development of African American students are consistent with what the study found.

1. The school had a professionally trained high-quality staff that viewed African American students positively (Ford et al., 1995).
2. The staff set high goals and expectations for all students and provided a nurturing atmosphere in which the African American students had easy access to teachers, counselors, and support programs (Thompkins, 1989).
3. The African American students had the support of a stable home in which parents or guardians had a respectable socioeconomic status and were involved in their child's educational process (Rossi, 1994).
4. The community identified resources that provided genuine opportunities for developing young talents and job skills (Reglin, 1993).
5. The academic and career development program was multicultural in its components and staffing, was capable of achieving stated goals, and was relevant to the interest of African American students

(GCSDBM, 1990).

6. The African American student had a positive self-perception, wanted to be in the program, and respected the established rules of the program (Brown, 1988).
7. The African American student had a sound foundation in mathematics and language skills and had adequate prior preparation (GCSDBM, 1990).
8. The African American student had a certain degree of career awareness and was able to fulfil both academic and career aspirations simultaneously (GCSDBM, 1990).

African American males participating in the study matched these factors in the following ways:

1. They stated that both schools were fun places with nice people who worked and learned well together. Their teachers and counselors motivated them.
2. The Tech Prep program staff stressed equal expectations for all students. African American male students were not targeted to be in the programs and they did not receive special or differential treatment.
3. The biggest motivator for African American male students appeared to be the home. All students came from homes where either the mother, the father, or both were employed.
4. The use of community resources such as local area businesses, in-

ternship programs, and minority support groups was essential to the viability of Tech Prep programs.

5. The Tech Prep programs appeared to be achieving their stated objectives as a contextual and competency-based curriculum. The programs advocated academic continuity and were preparing students for future careers simultaneously.
6. African American male students in Tech Prep were perceived as marketable. They were interested in the programs and they wanted to succeed.
7. African American male students in the Tech Prep programs were well-prepared academically and vocationally.

Finally, the results suggest that it is possible to attract more at-risk students in general and African American males in particular by doing the following:

1. Consortium coordinators should collaborate with agencies such as the Ohio Commission on African American Males (OCAAM), which already has programs and projects designed to assist this population group.
2. Consortium coordinators must provide more program understanding to the home, the community, and businesses by using the media and African American entities such as churches, fraternities, sororities, and civil rights groups.
3. School district superintendents must

support Tech Prep, continue present efforts to improve the overall curriculum, and provide leadership in multiculturalism.

4. School districts must collaborate with industry and business in implementing Tech Prep programs.
5. Local Tech Prep staffs must collaborate with the home. Parents or guardians must take a genuine interest in the education of their children by helping them improve attendance and homework and by setting an upright example with regards to the problems of drugs and immorality.
6. African American male students must take ownership of their self-image and earnestly seek to use resources available to him. Tech Prep programs do not need to target any section of the population. However, precautions must be taken to avail it only to those who are willing to succeed academically and vocationally.

It is hoped that this will produce success stories and will continue to generate commitment from top secondary and college educators. This can be done through advisory, curriculum, promotion, administrative, and evaluation committees, which should include a cross section of the community. The first school seemed to be ahead. The second school coordinator was overworked and desperately needed additional recruiting help.

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