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ABSTRACT

A study was conducted to determine the role of technology teacher education programs in preparing new and experienced teachers for teaching and managing programs for students at risk of dropping out of school. The first part of the study focused on the methods of data collection and preliminary findings. Data were gathered through a self-administered instrument designed to determine teachers' perceptions regarding students who may be at risk that was developed and disseminated to 522 technology teachers in 14 states with the highest high school dropout rates. Approximately 25 percent (133) of the instruments were returned. The questionnaire elicited demographic data about the teachers and asked them to identify from a list of 30 teaching strategies those strategies that they used regularly with students at risk and to rank the effectiveness of each strategy. The demographic data showed the average respondent to be a white male, 41-45 years of age, with advanced credit beyond a master's degree. Responses showed that all of the teaching strategies were used by 50 percent or more of the teachers on a regular basis and were also listed as effective strategies by 50 percent or more of the teachers. The study also found that: about 40 percent of the respondents felt that their students fell into a full range of variability of intelligence; most teachers thought that the students lacked motivation; and one-third thought the students lacked academic achievement. Teachers thought that there should be a common program but that teachers should be encouraged to deviate from the program to accommodate individual students. The teachers felt strongly that individualization was one of the best methods of reaching at-risk students. (Contains 14 references plus a bibliography of 37 items.) (KC)

Technology Education Teacher Preparation for Students At Risk

Preliminary Report of the Study

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presented by

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Introduction

The number of young people leaving school before graduation is staggering. Estimates of about 1 million dropouts per year in our Nations schools carry implications of great personal loss. Costs to society in terms of lost opportunity for employment and increased burdens on state and national welfare systems are just as great (National Foundation for the Improvement of Education, 1986). According to the National Center for Educational Statistics (1992), the national dropout rate for the 16-24 age group is 12.5 percent. In 1991, 3.9 million people between the ages of 16-24 neither enrolled in school nor had completed high school. The rate at which students drop out of school has become a national educational problem (Kaufman, McMillen, & Whitener, 1991). Many children are growing up in the United States today without a hope of enjoying the benefits that come with adulthood. They cannot become responsible parents because they have limited experience in family life and lack the resources to raise their own children. The gap between achievers and non achievers is expanding. Young people who are functionally illiterate, disconnected from school, depressed, prone to drug abuse and early criminal activity, and eventually, parents of unplanned babies are at high risk of never becoming responsible adults (Dryfoos,1990). Each year dropouts cost taxpayers an estimated $77 billion in welfare benefits and $70 billion in lost potential tax revenues.

As the demand for highly skilled and educated workers increases, the nation needs qualified workers prepared to enter the workforce. By the year 2000, 50% of all new jobs will require education beyond high school; 30% will require a college degree. By the year 2010, almost constant retraining will be necessary to either keep jobs or obtain new ones (Cetron, 1988). In A Nation at Risk, the National Commission on Excellence in Education (1983) explained that "learning is the indispensable investment required for success in the 'information age' we are entering" (p.7). Educators are giving increased attention to serving all the people who move through the education system. To do so requires development of effective programs for the maximum educational gains of all students. Institutions and educators must be mindful of the behaviors exhibit by the students they serve and prepared to identify and influence educational strategies and techniques to meet the needs of all students (Jones, 1976).

There is an educational problem in America because students do not learn the same way, at the same pace, or at the same time. Too many students are not experiencing success in school and therefore will experience defeat in life. Something needs to be done to curtail the problem before it becomes irreversible. Teacher behavior in the classroom is a key factor in helping all students reach their potential. Reform must occur with the interaction between teachers and students, the curriculum and attitudes toward the culturally different (Banks & Banks, 1989). Technology educators can play an important role in reducing the number of students at risk by providing an extremely effective learning environment for dropouts and potential dropouts. Without direct intervention, the percentage of students who complete high school may continue to decline.

Who's at risk?

Why are so many children and youth at risk for leaving school early? There are many contributing factors, including family-related and personal reasons, issues surrounding cultural and gender differences, and the structure of our schools (Nash, 1990). The Office of Educational Research (1989) reports that more than one-third of America's children live in at-risk circumstances before they even reach school age. In 1989, the proportion of children living in poverty was higher than it was in 1970. Poverty rates were highest among minority children-3 percent of all black children and 36 percent of all Hispanic children lived in poverty in 1989
(Duttweiler and Shirley, 1993). An estimated 49% of the families in poverty are headed by a female drop-out. Students from lower socioeconomic status are more at-risk to drop out of school today. The *America 2000* report released by the U.S. Department of Education in 1991 cited the following:

> Too many children do not have the kind of family that serves as protector, advocate and moral anchor.
>
> For too many children, neighborhoods are a place of menace, the street a place of violence.
>
> Too many children start school not ready to meet the challenges of learning

Many studies have offered descriptions of youth at risk. However, this list may not be an accurate picture of students at risk in many communities. Who is at risk varies from region to region, district to district, and even building to building. While there is no clear profile of a youth who will be at risk,

national averages show several characteristics of drop-outs. According to Nash (1990), students may be at risk if :

their families

are of low socioeconomic status

are African American, Hispanic, or Native American

are headed by a single-parent

have many children

or the students

get low grades

do poorly on tests

don't like school

have low self-esteem.

(Ekstrom, Goertz, Pollack & Rock, 1986).

Nash further states these characteristics are not true for all dropouts, however. While young people of color drop out at faster rates, most dropouts are white. While many dropouts have difficulty with schoolwork, others leave school because the work is not challenging enough. As many as 70 percent of dropouts scored average or above on standardized tests (Gastright, 1989).

For the purpose of this study the term "students at-risk" has been determined as those youth who have serious personal and/or academic problems that are likely to lead to dropping out of school. Students at-risk include:

•students with excessive absences;

•students who are overage in grade level;

•students with multiple failures;

•students with serious family problems;

•substance abusers.

(Lieberman, 1989)

Overview of the Study

Educators are giving increased attention to serving all the people who move through the education system. To do so requires development of effective programs for the maximum educational gains of all students. Institutions and educators must be mindful of the behaviors exhibit by the students they serve and prepared to identify and influence educational strategies and techniques to meet the needs of all students (Jones, 1976).

Teacher behavior in the classroom is a key factor in helping all students reach their potential. Through words and attitudes, teachers give clear messages to students about what is expected from them. Reform must occur with the interaction between teachers and students, the curriculum and attitudes toward the culturally different (Banks & Banks, 1989). Technology educators can play an important role in reducing the number of students at risk by providing an extremely effective learning environment for dropouts and potential dropouts.

In 1991 the Council on Technology Teacher Education issued a call for proposals in an attempt to improve teacher education by providing research funding to determine the role of technology teacher education programs in preparing new and experienced teachers for teaching and managing programs for students at risk of dropping out of school. The grant was awarded in 1992 to Texas A&M University. To accomplish the goal of this study the following operational objectives were established:

1. determine what knowledge about the characteristics of students at risk technology education teachers need to effectively meet the needs of students at risk in the classroom.
2. identify effective instructional methodologies and strategies for meeting the needs of students at risk.
3. identify attitudes and interpersonal skills needed by technology teachers to improve the effectiveness of the teacher-student relationship in meeting the needs of students at risk.
4. make recommendations to technology teacher educators for including successful methodologies and strategies in teacher preparation and in service courses.

The following discussion focuses on the accomplishment of the first three objectives- the methods used for data collection and the preliminary findings.

Methodology

A self-administered instrument designed to determine teachers' perceptions regarding students who may be at risk was developed and disseminated to 522 technology/industrial technology/industrial arts teachers. This sample represents teachers who are members of the ITEA and are in the following states: Alabama, Kentucky, Tennessee, Arkansas, Mississippi, West Virginia, South Carolina, Louisiana, Georgia, North Carolina, Rhode Island, Texas, Virginia, and New Mexico. These states were included as part of the sample because of their ranking among the states reporting the lowest percentage (less than 75%) of persons completing high school (U.S. Bureau of the Census, statistical Abstract of the United States: 1991).

The instrument selected for this study was adapted from the "Teacher Survey: A Study of Students At Risk (Phi Delta Kappa, 1988). The questionnaire was designed to collect information necessary to develop a profile of the typical technology education teacher, i.e., sex, age, ethnicity, education and experience. Teachers were asked to identify from a list of thirty teaching strategies which strategies they use regularly with students at risk and to rank the effectiveness of each strategy.

Summary of Data Analysis

The data collected from the survey were analyzed at Texas A&M University through use of the Statistical Analysis System Institute, Inc. (SAS) statistical application. The response rate for the study was 25% (133 of the initial 522 instruments mailed were returned). From demographic oriented questions, a profile of the respondent was ascertained: White, male, 41-45 years of age, has 15 credit hours towards an advanced degree above the master's degree, and teaches at a senior high school with an average class size between 21-25 students.

The respondents were asked to rate their students on ten factors/competencies. They were asked to respond to the following three posits concerning the ten factors/competencies: a) how responsible did they feel as teachers for the specific learning or behaviors of students as specified by the ten factors/competencies, b) how much influence they had over teaching these competencies, and c) which group, parents, teachers or students, should be most responsible for helping students acquire the learning or behavior specified by the factors/competencies. The ten factors/competencies concerning these posits were: reading comprehension, mathematics skills, writing skills listening

skills, daily attendance, general behavior in school, attitude toward school, completion of homework, attention in class, and higher order thinking skills. Analysis of the responses to the posits found that the teachers:

1. felt their students were average concerning the possession of the specified factors/competencies;
2. considered themselves to be somewhat responsible for teaching the competencies;
3. felt they had some influence over their students regarding the factors/competencies;
4. felt that the parents should be most responsible for their children's daily attendance, general behavior in school, attitude in class and completion of homework.

The survey presented the teacher with five problems confronting students outside of school: substance abuse; family discord; family instability; crime; and, alcohol abuse. The teachers were asked to responded, keeping in mind the aforementioned student problems, whether: a) their students were confronted more or confronted less than students at other schools with these problems, b) if it was possible for them, as teachers, to help the students cope with these problems, c) if as teachers they felt responsible for helping students cope with the problems, and d) which group parents, students, or teachers should be most responsible for helping students cope with the specified problems. Analysis of the data revealed that the teachers:

1. considered their students to be receiving the same amount of outside influence regarding these problems as students at other schools;
2. affirmed that it was not possible for them as teachers to help students cope with the problems;
3. felt that as teachers they had some responsibility for helping students cope with these problems confronting them outside of school; and
4. overwhelmingly supported the notion that the parents should be most responsible, not the teachers, for helping students cope with the specified problems.

The respondents were provided with 30 teaching strategies used with students at risk and were asked to indicate whether: a) they used these on a regular basis, and b) if these strategies were effective upon utilization. Analysis of the responses revealed that all of the strategies were used by 50% or more of the teachers on a regular basis and were also listed as effective strategies by 50% or

more of the teachers. Results indicated that the following strategies were utilized by less than 50% of the teachers on a regular basis, but were considered to be effective strategies by 50% or more of the teachers in enhancing the educational status of the students at risk: smaller classes, alternative school, special textbooks, flexible scheduling, home tutoring, restrict from sports, refer to social worker, teacher aides, before school programs, and before and after school programs.

The questionnaire required the respondents to rate the severity of five problems prominent among students at-risk: attendance, attitude toward school, completing assignments, arguments with teachers, and classroom discipline. Data analysis revealed that the teachers considered all five to be serious among their students; two of the problems, attitude toward school and completing assignments, were rated to be near the very serious stage.

Another section of the survey asked the teacher to best describe the range or diversity among the students concerning four attributes: intelligence, motivation, experience, and academic achievement. The results of the teacher survey revealed that:

1. 41% of the total respondents felt that a full-range of variability existed in intelligence among their students;
2. most teachers believed their students to possess a low level of motivation;
3. the students taught by these teachers needed more experience; and,
4. at least one-third of those responding affirmed that their students were lacking in the area of academic achievement.

Finally, between 13% and 15% of the teachers felt that a high range of these attributes existed among their students.

The last section of the instrument presented the teacher with four approaches to teaching students at risk. The respondents were required to identify which statement they perceived to be the best approach. The choices were as follows:

1. "each teacher should decide what to do with his or her students";
2. "there should be a common program, but each teacher should be encouraged to make variations for individual students";
3. "there should be a different but standard strategy for different types of students"; and,
4. "there should be a common program that each teacher is expected to follow".

Results of the responses revealed that 74% of the teachers agreed with having a common program, but that the teacher should be encouraged to deviate from the program to accommodate the individual student. Less that 20 % of the teachers perceived that the best approach in teaching students at risk would be to adhere to a common program.

Conclusions

It was no surprise to the researchers of this study that Technology Education teachers, like the majority of their colleagues in other education disciplines, felt that the parents should be most responsible for their children's' attendance, attitude and social behavior (ASCD Curriculum Update, 1991). What is revealing from the analysis of the teacher responses is that they, the teachers, indicated having some degree of responsibility for the specific learning of the aforementioned factors/competencies and some specific external problems such as drugs, alcohol and family oriented conflicts concerning their students at risk. It can not be disputed that the causes among scholastic failure of students at risk are vague and very complicated. However, research in the area of students at risk show that educational enhancement programs aimed at aiding these youths tend to be successful when the parents of the youths are responsible for factors/competencies that are beyond the teachers realm of expertise.

The analysis of data for the 30 strategies presented to the teachers reveal that some strategies considered as effective teaching strategies to use with students at-risk are not being employed by the teachers. These strategies tend to be individual oriented in regards to the student. The need for more funds, extended use of facilities and the commitment of students and parents to adhere to certain requirements perhaps are some reasons for the low utilization of these strategies. In addition, through the analysis of survey responses, teacher perceptions concerning the prominent problems facing their students and the range of motivation and academic achievement of these students was revealed. The fact that the teachers perceived the problems of the students to be serious, perhaps explains why the students are being perceived as having a low self-esteem and are low academic achievers.

In conclusion, the teachers strongly feel that the most fruitful approach to teaching students at-risk would be to have individualized programs. Through this approach, the teachers can better serve the needs of the individual student or a group of students with similar deficiencies and/or unique qualities. The question is not whether the teachers are willing to attempt individual or customized

programs, the study reveals that Technology teachers have made attempts to address the at-risk problem by implementing stategies based on the individualized approach.

No single entity, not the student, the parents, the teacher, the school, nor the community, can be blammed for a student's failure to graduate. No one strategy or program will resolve this problem. As Mann (1987) has stated, "If the problem is complex, so will be the solutions.

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