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ABSTRACT

A project was undertaken to enhance the basic skill levels of marketing and distributive education students identified as disadvantaged by using a tutorial approach. After determining the basic skill competencies needed for students to succeed in marketing and distributive education, project staff identified existing materials in the areas of math and English that could be used in working with disadvantaged students. Then researchers selected the junior marketing and distributive education class in five Jefferson County, Kentucky, high schools to serve as project sites. Using a non-equivalent control group design, researchers field tested the effectiveness of the tutorial approach of instruction in developing basic skill competencies. Among the tutorial strategies utilized were large group sessions, small group sessions, and individual assistance. Data from student pretest/post-test scores and from responses to a survey (completed by 63 students) indicated that those receiving math and English tutorial services experienced significant gains in mean post-test scores. Because students generally enjoyed working in the project and because the program seemed to give students more confidence in themselves, project staff recommended implementing similar programs in other areas. (MN)

FINAL REPORT

ENHANCING BASIC SKILL LEVELS OF MARKETING AND DISTRIBUTIVE EDUCATION STUDENTS IDENTIFIED AS DISADVANTAGED--

A TUTORIAL APPROACH

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June 30, 1981

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William Anderson	Fern Creek High School
William Childers	Jeffersontown High School
Susan Priddy	Moore High School
William Schneider	Moore High School
Helen Cloutier	Thomas Jefferson High School
Barbara Reece	Thomas Jefferson High School

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Project Number H288DR013F

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ABSTRACT

Title of Project: Enhancing Basic Skill Levels of Marketing and Distributive Education Students Identified As Disadvantaged--A Tutorial Approach

Project Duration: July 1, 1980 - June 30, 1981

Objectives: To identify basic skill competencies needed for students to succeed in marketing and distributive education.

To identify/develop materials and procedures to diagnose basic skill competence of disadvantaged students.

To develop strategies that can help disadvantaged students acquire basic skills necessary for success in their vocational program.

To field test strategies for basic skill training in high schools identified as having a relatively high portion of students scoring low on achievement or competency tests.

Procedure: Lists of basic skill competencies for marketing and distributive occupations compiled at the University of Kentucky were selected for project use. Materials were identified that were effective in diagnosing deficiencies and in tutoring disadvantaged students. The junior marketing and distributive education class in five Jefferson County high schools served as project sites. Students were administered a pretest and post-test in both math and English, and the non-equivalent control group design served as the basis for a quasi-experimental project. The tutorial approach to instruction was the strategy chosen for field testing.

Contribution to Education: Basic skill competencies for marketing and distributive occupations were identified that are necessary for success in that occupational program. Materials were identified which were effective in diagnosing deficiencies and in tutoring disadvantaged students who lack basic skill competence. The analysis of test data revealed significant growth for the treatment group who received assistance from the tutors either individually or in a small-group setting. Conclusions and recommendations are listed which relate to the project objectives.

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Chapter I

INTRODUCTION

During the past two decades, considerable emphasis has been placed on providing vocational education for all individuals. Certain legislative enactments have focused attention on those individuals with special needs who cannot succeed in regular programs. One group with special needs has been identified as the disadvantaged. The following description of the disadvantaged appeared in the Federal Register (1970):

> 'Disadvantaged persons' means persons who have academic, socioeconomic, cultural, or other handicaps that prevent them from succeeding in vocational or consumer and homemaking programs designed for persons without such handicaps, and who for that reason require specially designed educational programs or related services. The term includes persons whose needs for such programs or services result from poverty, neglect, delinquency, or cultural or linguistic isolation from the community at large, but does not include physically or mentally handicapped persons, unless such persons also suffer from the handicaps described in this paragraph.

Other descriptive definitions of the disadvantaged are included in local and state plans for vocational education. The Kentucky Five-Year Plan - Section 29D3 (1977) lists the following criteria for use in identifying the academically or economically disadvantaged person:

> Persons who are 'academically disadvantaged' may manifest one or more of the following: deficient in one or more of the basic skills such as reading, mathematics, English, or other cognitive skills as determined by standardized methods and performs below grade level as indicated by school records.
>
> Persons who are 'economically disadvantaged' are characterized by family income at or below poverty level (according to the latest available data from the

Department of Commerce); participant or parent(s) or guardian of the participant is unemployed; recipient of public assistance; or participant is institutionalized or under State guardianship.

A number of professionals are involved in the identification, recruitment, and referral of students having characteristics of the disadvantaged. Local schools in Kentucky maintain a file of profile sheets (See Appendix A) used by professionals to establish eligibility for funding. The information gained from this process should serve as the basis for an individualized education plan to meet the needs of each student.

Related Literature

The topic of identifying and serving the disadvantaged student has been the focus of legislation, the objective of projects and the theme of articles. An ongoing series entitled "It Isn't Easy Being Special" reflects the commitment of the National Center for Vocational Education to improve programs and services for special needs populations. Several publications exist that are helpful in planning effective vocational programs for special needs. Two of these are Let's Find the Special People: Identifying and Locating Special Needs Learners (1979) and Let's Help Special Needs Learners: A Resource Guide for Vocational Education Teachers (1979).

Watson (1980) identified the categories of special needs of the disadvantaged and then provided the teacher with a description of the special need as well as the behavior associated with the need (See Table 1). She further suggested techniques for meeting the special needs of these students (See Table 2).

TABLE 1

Identification, Description and Associated Behavior of Disadvantaged Students

DISADVANTAGED STUDENTS	DESCRIPTION OF SPECIAL NEED	BEHAVIOR ASSOCIATED WITH SPECIAL NEED
Ecomonically, socially culturally disadvantaged	Economically distressed background Limited social experiences	Frequent absences Punctuality problems Poor language development Short attention span Low motivation for education Self-consciousness Low self-concept Feeling of isolation Easy discouragement

TABLE 2

Techniques for Meeting Special Needs of Disadvantaged

SPECIAL NEEDS STUDENTS	MEETING SPECIAL NEEDS
Economically disadvantaged	Provide activities for vocabulary development. Emphasize importance of nutrition in food selection. Provide current magazines, newspapers, and paperback books. Encourage group participation. Promote positive attitude. Encourage strong self-concept. Offer praise & encouragement.
Socially disadvantaged	Encourage positive self-concept. Encourage group participation. Offer praise.
Culturally disadvantaged	Provide activities for vocabulary development. Encourage group participation. Provide current periodicals and newspapers.

Matthews (1976) cited the following labels which have been attached to the slow learner: poor reader, slow, special, deprived, low-achiever, culturally disadvantaged, academically unsuccessful, educationally handicapped. His survey of business programs in a community of 352,000 residents found that specialized methodologies for hard-core students were not evident. He further stated that slow learners usually have alert minds but somehow what teachers presented them has "tuned them out and not in."

The goal of one recent article (Sparks, 1980) was "to call to the attention of Distributive Education Teachers the real existence of disadvantagement of many students and to seek solutions affecting the core of the problem." Sparks suggested that a positive attitude be taken to deter the repercussions of the negative effects of disadvantagement and that the following procedures be practiced:

1. Modification of instruction to adequately meet the needs of all students.
2. A wide variety of learning activities should be implemented to maintain student interests and progress.
3. Individualize instruction so that it will relate to students' lives and cultures when possible.
4. Career clusters should be based on the areas of special interest of the individual student and utilized as an incentive for learning.

Legislation during the 1960's supported equal educational opportunities for the disadvantaged student and also established priority funding for programs. Specific attention is given to students with academic, socioeconomic or other handicaps in the 1963 Vocational Education Act, Section 4 (a) (4). Experimental and pilot programs to solve the problems of the disadvantaged are provided for in the 1963 Act.

The Vocational Education Amendments of 1968 continued to support the needs of the disadvantaged student. Provisions were that at least 15 percent of the basic state allotment be spent on vocational programs for the disadvantaged.

These two preceding pieces of legislation encouraged local school districts to plan and operate separate programs for the disadvantaged. This prompted the National Advisory Council on Vocational Education to address this concern in their Second Report (1969). This report recommended "directing the disadvantaged into the mainstream of vocational and technical education as career preparation, rather than into separate programs." The report further stated that counseling, tutoring and other support and assistance are essential.

Other acts of Congress have supported the development of training programs and special services for those identified as disadvantaged. The Manpower Development and Training Act of 1962 and the Comprehensive Employment and Training Act of 1973 served to reduce unemployment and underemployment of disadvantaged persons.

Along with the authorization and appropriation of funding must come plans to administer the provisions of the legislation. Individual states have established an office within the State Department of Education to serve the interests and needs of the disadvantaged. In addition to these offices for special programs, state staff in vocational program areas have been active in program planning for the disadvantaged.

In addition to the concern for students with special needs, the

lack of mastery of basic skills on the part of many students has become widespread. The need to teach basic skills along with vocational subject matter was addressed by the National Center for Research in Vocational Education at the Ohio State University. Two products, Basic Mathematics Skills and Vocational Education (1980) and Basic Reading Skills and Vocational Education (1980), have recently been completed and made available to educators. These publications are a response to the 1978 Basic Skills Improvement Act calling for the improvement of instruction so that all children and adults are able to master the basic skills of reading, mathematics, and effective communication, both written and oral.

The need for improvement in teaching basic skills was included in the National Advisory Council's Report (November, 1974) on Urban Vocational Education. During 1974, the National Advisory Council conducted hearings in five major cities to validate the statement they had received from many sources that vocational education in the cities was inferior to that of the rural and suburban areas. A number of problems were presented in these hearings. One problem frequently stated was that students were not adequately prepared in basic English and math. One of the Council's recommendations was:

> That the Office of Education, in fulfilling its legal obligation to monitor the State Plans and the expenditure of federal vocational education funds, insist that not only the provisions but also the intent of the law regarding set-asides for the disadvantaged and handicapped be met.

The need to assist the student who has been identified as disadvantaged has created action for legislation at the state level. Caldwell (1980) cited the requirement under the Educational

Improvement Act passed by the 1978 General Assembly for school systems "to provide remedial help for youngsters whose scores don't measure up." This act mandated standardized exams in "basic skills" in grades three, five, seven, and ten. Basic skills included the categories of reading, language mechanics, language expression, spelling, mathematics and reference skills. There is concern on the part of educators that this legislation only provided funds for testing and did not make provisions for the special help the law specifies.

Need for the Study

In its Eighth Annual Evaluation Report, the State Advisory Council on Vocational Education stated, "By far the greatest need in vocational education programs was found to be to teach more reading, communications and mathematics skills." (SACVE, 1977)

In establishing priorities for research for Fiscal Year 1981, the Bureau of Vocational Education, State Department of Education, issued a Request for Service for research of the basic skills needed for survival by these students identified as disadvantaged who are enrolled in selected vocational programs. These priorities had been recommended by a task force structure whose membership was intended to be representative of a delivery system. Final approval by the policy level staff in the Bureau of Vocational Education assured that all activities were within the Major Goals for Vocational Education in Kentucky (See Appendix B) and the Annual Plan for Vocational Education.

The following background information was presented in the

Fiscal Year 1981 Request for Service (Research-2) from the Bureau of Vocational Education:

> Title I funds are providing remedial reading and math programs for elementary schools. The Educational Improvement Act of 1978 mandates diagnostic testing of all elementary and secondary students and is resulting in remedial programs designed to overcome identified deficiencies. While these programs may help meet much of the need it may be several years before they can focus on those basic skills necessary for disadvantaged students to succeed in given vocational programs. The learning centers of state vocational technical schools have been effective in basic skills training, and assistance is available to students of area vocational education centers through their home high school. However, these efforts should be focused through diagnosis and creative approaches to remediation that recognizes the differences among students and programs.

The Objectives of the Study

This project being reported was directed toward assisting students in selected vocational programs who had been described as disadvantaged and who were in need of improved mastery of basic skills.

Project activities were designed around the following objectives:

1. To identify basic skill competencies needed for students to succeed in marketing and distributive education.
2. To identify/develop materials and procedures to diagnose basic skill competence of disadvantaged students.
3. To develop strategies that can help disadvantaged students acquire the basic skills necessary for success in their vocational programs.
4. To field test strategies for basic skills training in high schools identified as having a relatively high portion of students scoring low on achievement or competency tests.

Statement of the Problem

This research project was an attempt to identify basic skill competencies necessary for success in a marketing and distributive education program and to diagnose the level of competence of students identified as disadvantaged who were enrolled in the junior class. Materials were identified for testing and treatment in math and English. A tutorial program for assisting students was then developed and field tested with the junior class in five high schools.

Basic Assumptions

In conducting this research project, the assumption was made that the programs which were selected were assumed to be representative of marketing and distributive education programs throughout the Commonwealth of Kentucky and that the students in those programs would likely be representative of students with the characteristics of the disadvantaged.

Delimitations

The project was conducted only in the selected vocational program of marketing and distributive education. In providing basic skills to help disadvantaged students become successful in their program, junior-year students were used as the sample population. Due to the budget restraints and limited human resources on the project, the number of schools was limited to five high schools in Jefferson County and the student sample was set at 100.

Definition of Terms

Special Needs Students - Those who have been identified as being handicapped and/or disadvantaged.

Disadvantaged Students - Those who have academic or economic handicaps and require special services and assistance in order for them to be able to succeed in a regular vocational education program.

Marketing and Distributive Education - The mission of marketing and distributive education is to develop competent workers in and for major occupational areas within marketing and distribution, assist in the improvement of marketing techniques, and build understandings of the wide range of social and economic responsibilities which accompany the right to engage in marketing businesses in a free enterprise system. (1980 Vail Conference)

Basic Skills - Identified by the Bureau of Vocational Education for this project as reading, communications and mathematical skills.

high school marketing and distributive education programs with 27 teachers as potential sites. A preliminary commitment of interest was received from Mr. Lawrence Burden, Director of Marketing and Distributive Education for Jefferson County Schools when the proposal was being prepared.

Selection of School Sample. In an effort to involve school sites that offered the best opportunity for success, the selection of sites was accomplished by involving all marketing and distributive education teachers in the Jefferson County Schools system. On September 17, the Project Director attended the first countywide meeting for marketing and distributive education teachers and described the proposed activities. At that point, those teachers who wished to have their students participate were asked to express that interest to the Project Director. This request brought a positive response from teachers in eight schools. One indicated interest only if needed in order to have enough students for the project. The final selection of schools was an attempt to have geographic representation from among those schools indicating an interest as well as an effort to secure the student sample proposed. Junior marketing and distributive education students in the following five schools, along with seven teachers, participated in the project:

Atherton High School	Karen Foreman
Fern Creek High School	William Anderson
Jeffersontown High School	William Childers
Moore High School	Susan Priddy and William Schneider
Thomas Jefferson High School	Helen Cloutier and Barbara Reese

Selection of Student Sample. One of the project objectives was

to identify basic skill competencies needed for students to succeed in marketing and distributive education. The decision was made to work with junior students in an effort to improve basic skill performance which would be most helpful to them as they pursued the senior year of their program. An average of 20 students per school was planned so that about 100 students would be involved in the field testing of various strategies for acquiring improved levels of proficiency. This number was based on size of the proposed project staff and the anticipated number of personal contacts with students during the school year.

Since a major focus of the project was that of assisting students who had been identified as disadvantaged, the next step was to determine which students were to be included in the project activities. The Vocational Education Program Roster For School Year 1980-81 included this information in the Personal Data section of the form. Each student who had been professionally identified by school personnel as either academically and/or economically disadvantaged had the respective code listed under the heading "Disadvantaged." These rosters were received in the office of the Jefferson County Resource Teacher on October 24. After a review of the rosters from the project schools and a discussion concerning disadvantaged classificaion, it was determined that either all or the majority of students in each school qualified because they were below their grade level in math, English or both.

Rather than begin the project activities with any type of reference to being disadvantaged, the project staff met with all

marketing and distributive education students in the junior class at each of the five schools. During the first meeting at each school by the project staff, students were told that funding had been received from the Bureau of Vocational Education in the State Department of Education to assist students in basic skill areas where improvement was needed. The plan developed by the staff was to pretest all students in the junior marketing and distributive education classes, rank order the scores, and work with the top 100 students whose scores indicated the greatest need. A cut-off score was established for the math pretest. This score ranged from 18 to 22 incorrect responses to the pretest. The difference in the cutoff scores was necessary to maintain a better balance of students in the treatment group from all five schools. Based on this procedure, a student sample of 99 was identified as the treatment group. The remaining students in each class served as the control group for the project. Table 3 outlines both the treatment and control group samples.

TABLE 3
Treatment and Control Group Samples
By Project School (Math and English Pretest)

School	Treatment Group	Control Group
Atherton High School	13	5
Fern Creek High School	13	3
Jeffersontown High School	18	9
Moore High School	28	14
Thomas Jefferson High School	27	21
TOTAL	99	52 (151)

At the end of the project activities in May, the post-test was administered to only 123 due to a loss of 13 students from the treatment group and 15 from the control group. This decrease in numbers was caused mainly by students dropping out of school, moving to another school district or failing to take the pretest. The ending post-test sample is listed in Table 4.

TABLE 4
Treatment and Control Group Samples
By Project School (Math and English Post-test)

School	Treatment Group	Control Group	
Atherton High School	13	3	
Fern Creek High School	13	2	
Jeffersontown High School	16	6	
Moore High School	22	8	
Thomas Jefferson High School	22	18	
TOTAL	86	37	(123)

Design of Project Activities

The non-equivalent control group design (Campbell and Stanley, 1963) was used for the quasi-experimental activities in this project. In designing the project activities, steps were outlined to establish a systematic approach for identifying and working with disadvantaged students. The Kentucky Vocational Education Annual Program Plan Provision (1977) included a useful classification system for disadvantaged (See Appendix C). After the disadvantaged student had been identified, it was necessary to provide for their

special needs. Activities representing the various categories in Figure 1 were considered in developing the operational flow chart in Figure 2.

Identification of Basic Skill Competencies

The Request for Service for research issued by the Bureau of Vocational Education defined what was being considered basic skill competencies. This definition was cited in the need for this study by a statement from the Eighth Annual Evaluation Report indicating "the greatest need in vocational education was found to be to teach more reading, communications and mathematics skills."

During the process of identifying those basic skill competencies necessary for students to succeed in marketing and distributive education, the project staff chose to use material that had been compiled by Dr. Carolyn Litchfield, Marketing and Distributive Education Teacher Educator at the University of Kentucky (See Litchfield, Note 1). From the compilation of Identified Lists of Competencies for Marketing and Distributive Education Occupations, the areas of math and communications were drawn out and used as a basis for this project (See Appendices D & E).

Identification and Selection of Materials

A search was conducted at the beginning of the project to identify existing materials in the areas of math and English that could be used in working with disadvantaged students. During this process, an attempt was made to locate resources that were basic and

SUGGESTED CATEGORIES FOR USE IN PLANNING FOR NEEDS OR DISADVANTAGED STUDENT

Identification of Disadvantaged Student

By:

- Guidance counselors
- Past teachers
- Principals
- Professional support staff
- Student interviews
- School files & records (with permission)

Pre-Assessment of Student

Through:

- Observation
- Written tests
- Performance tests

Determination of Individual Student Needs

Based on:

- Observation
- Test scores
- Performance levels

Identification of Appropriate Materials

For:

- All topical areas
- Various levels of skill mastery

Individual Education Plan

Prepared from:

- Knowledge of student strengths and weaknesses
- List of prioritized goals for each student

Avenues For Achieving Goals

Via:

- Individualized instruction
- Self-paced instruction
- Small group setting
- Large group setting
- Variety of methods
- Audio-tutorial techniques
- Audio-visual techniques
- Competency-based instruction
- Programmed instruction
- Support services (i.e., material, tutors, etc.)

Student Assessment

Through:

- Observations
- Written tests
- Performance tests

Figure 1

OPERATIONAL FLOW CHART FOR TEACHER OF
DISADVANTAGED STUDENTS

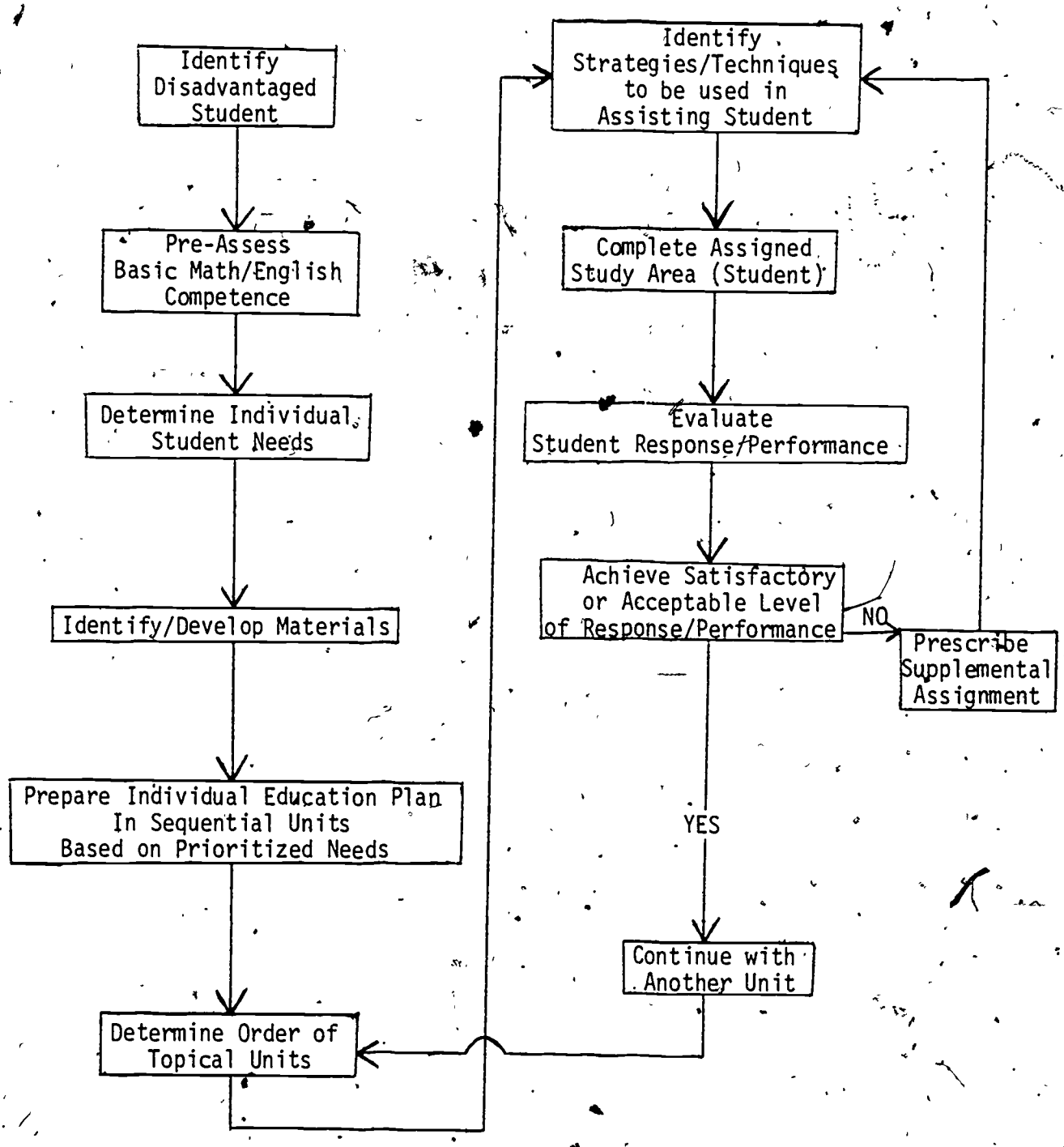

Figure 2

also related to marketing and distributive education. A number of sources of materials was identified; however, few directly addressed the needs of disadvantaged students for particular content areas. The identification process was further complicated by the need of the project staff to identify diagnostic instruments that could be applied to a pretest, post-test situation in addition to providing materials useful for treatment sessions throughout the project timeframe.

The resource listing provided in Appendix F was compiled after reviewing materials from the University library, Jefferson County Business and Office and Marketing and Distributive Education Resource Teachers' holdings, current catalogs from McGraw Hill Book Company and South-Western Publishing Company, The Center for Career Education and Vocational Teacher Education (Western Kentucky University) and The Center for Research in Vocational Education (The Ohio State University).

Members of the advisory group were consulted during the collection and selection process. Additional assistance was rendered in this process by individuals other than those in the advisory group.

Materials to be used in working with students in the area of math were decided upon first. Stein's Refresher Mathematics (1980) and Practical Applications in Mathematics (1980) were chosen. Competency tests were available which provided ease in administering a short exam of basic items for both the pretest and post-test (See Appendix G).

More difficulty was experienced in identifying materials suitable for testing and working in the area of English. Because of the many subdivisions within this comprehensive subject-matter area, no short multiple-item exam was identified that provided a quick, easy to administer pretest and post-test. The project staff chose the California Achievement Tests, Forms C & D (1977, 1978) as the pretest and post-test for the English topics.

Project Operation

Research Design Utilized. Project activities were developed around a non-equivalent control group design (Campbell and Stanley, 1963). This quasi-experimental design included a treatment group of students in each of the five schools who scored low on the pretest. Those students in each school whose scores were above the cutoff point served as the control group.

Selection of Strategies. One of the project objectives required that strategies be developed that could help disadvantaged students acquire the basic skills necessary for success in their program. These strategies were then to be field tested in the high school setting with students who had scored low on achievement or competency tests.

Because of the need to develop strategies that could help students acquire basic skills and the requirement to field test these strategies with students, the major activity within the project became the tutorial approach to instruction. This approach was most effective in meeting individual student needs and in scheduling sessions with the students during the school year.

The following techniques were used in varying the treatment sessions as the project staff and tutors worked with students in the five schools:

1. Large group sessions were planned when a large number of students needed assistance with the same problems.

2. Small group sessions (2-4 students) were planned to meet the needs of a lesser number having the same need.

3. Individual assistance was planned for those who required the one-on-one assistance for any reason.

Other arrangements were made within or in addition to the above work settings. Students were sometimes given work to be completed independently in preparation for the next session with a tutor. An evaluation of the completed material provided information for individual student needs. In some cases, students who grasped material quickly asked if they could assist others in their work group. Self-help was also encouraged for those who needed less individual attention than others.

Arranging Schedules for Tutoring Sessions. After the math and English deficiencies had been identified for the treatment group, the magnitude of the task of assisting those students was recognized. With the limited number of project staff and tutors, it was necessary to limit the scope of the tutoring activities and prioritize the areas to be covered. The decision was made to start with math and to schedule sessions with all students. These tutoring sessions were built around the different types of problems on the math pretest.

The math tutoring began in some schools late in the fall semester. Other schools were added in January, and the math tutoring continued toward the end of the spring semester. Only one school was selected as the English treatment group although all students in the five schools had been pretested. This plan gave the project staff a chance to include English in the tutoring program since time restraints did not permit tutors to be in all five schools.

The tutors prepared a monthly schedule of visits. Each classroom teacher involved was always aware of the days scheduled each week and the names of the students to be scheduled for assistance. Schedules were changed in a few cases to accommodate assemblies or other special school functions such as field trips. Work sessions were arranged so that usually no more than seven school days passed without a project tutor in a school. Scheduled visits were usually as frequent as once or twice a week. Although school visits were frequent, the student group assisted varied in order to control the number of interruptions per student within a week's time.

In addition to working with students during the time they were scheduled for their marketing and distributive education class, arrangements were made with students during study halls and during scheduled remedial classes for some.

The time arrangement for tutoring varied depending upon the work setting and the topic. For example, the session one day might have included three individuals for about 15-20 minutes each.

Another session might have been two groups of three students for half an hour per group, or two students for an hour. In some cases, more than one tutor might have been scheduled in a particular school on the same day to work with different students at different times.

An effort was made by the tutors to relate the material being presented to practical applications whenever possible, and in many cases the work session material already contained a practical business application. With all the material that was used, the approach was to teach for understanding of the process used and not just for the correct answer.

After working from three to five application problems correctly, students were directed toward other problem areas. When incorrect responses were given, the tutor assisted the student with the same problems on a step-by-step basis, making sure the student understood the correct procedures. Tutors assigned only a few problems of each type in determining whether or not the student was proficient with that type of computation or topic. This was to encourage the student to do the work and not consider it to be "busy work."

Paramount throughout the project was the continuous effort on the part of the project staff to praise each student for every accomplishment and to exhibit to each student a sincere concern for their well being and accomplishment.

Physical Arrangements for Tutoring. In every school, a special setting was available for sessions with the students. This facility was either adjacent to the marketing and distributive education

classroom or in close proximity. Desks or tables were always available and chalkboards were used in some sessions. Although calculators and adding machines were available in most schools, students were asked to compute problems without mechanical assistance.

Arranging Tutor Assistance. Tutors were arranged through several sources. Funding was provided within the project budget for a graduate assistant and a limited number of paid tutors. Assistance was also arranged from students in two teacher education classes with projects requiring either tutoring or working with special needs students. Students who volunteered from these classes were mostly business majors; however, both math and English majors assisted in the project schools.

Chapter III

ANALYSIS OF DATA

Introduction

In addition to the descriptive information from the student questionnaire and test data presented in the following sections of this report, there were other project activities which also merit mentioning. Although students in only one school formally participated in the English tutoring, all project students were constantly involved in communicating and using English skills. All students were active in verbalizing their problems in working toward solutions with the tutors. Questioning techniques used by the tutors required explanations or descriptions from students rather than single word responses. Another application of English skill was represented in the reading type math problems. These gave the tutors an opportunity to help the students with reading comprehension and following directions. The individual or small group work settings also made students feel more comfortable to participate in discussions or ask questions.

Data presented in this chapter were collected from two sources--student pretest and post-test scores and responses to a questionnaire. The test scores provided the necessary raw data required for determining the tests of significance. Other information that the project staff felt had bearing on the operation and outcome was solicited through an eighteen-item questionnaire. Test data are analyzed for both the treatment and control group; however, the questionnaire was administered only to the treatment

group. This was an attempt to get additional feedback from treatment group students relative to their feelings, opinions, and overall evaluation of the project activities.

Student Questionnaire

The scheduled project activities in the five high schools were concluded during the week ending May 15. After that date an appreciation party was held at each of the schools for students in both the treatment and control groups. At the beginning of each period in which the party was held, a survey instrument (See Appendix H) was administered only to the treatment group. Only 63 students responded to the survey due to increased absenteeism near the end of school and excused absences for other school related activities.

Students checked the subject areas (math or math and English) in which they participated during the project and whether or not their involvement caused them to miss other class assignments. Seven students stated they had missed other class work, and only three indicated they were not permitted to make up the work. The next question was, "Do you think the project helped you to understand the subject better than when you started?" Fifty-six students responded yes, six students were undecided, and no student thought the project did not help them.

When asked if the project helped them in other school work, 80 percent said that it did help. When asked how they felt about being taken out of class for remedial work, 22 (36 percent) of the students felt honored, 40 (64 percent) said that it did not bother

them, and no one felt it had embarrassed them.

The students were then asked if they would participate in the project again, and 95 percent gave an affirmitive reply. On the subject of how much time should be spent on the project, 30 students said there should be more time spent on the project, 30 more students were undecided; and the remaining three students said less time should be spent on the project. The next question to which the students responded addressed the interruptions from class and whether or not these interruptions bothered them. Ninety-one percent of the students said the interruptions did not bother them, six percent said they did, and only three percent were undecided.

The project staff was interested in determining how the students felt about the work in which they were assisted. When asked about their favorite work setting, 33 (52 percent) agreed that a small work group of 2-3 students was the most enjoyable. Twenty students (31 percent) enjoyed working in groups larger than three, and 10 students (17 percent) enjoyed working individually with the tutor. On the question of whether the project improved their performance in the Distributive Education class, only nine students (14 percent) gave a negative response.

The next question asked whether or not the students would recommend the project to others. Of the 63 responses, 56 students said they would, only one student checked no, and six were undecided on the question. The students were then placed in a situation in which they had no class time to participate in the project except during study halls and before and after school. Given these

conditions; sixty-one percent of the students said it would be worth the extra effort, and time to participate in the project, 12 percent were undecided on the question, and only 27 percent said they would not participate under these conditions.

In an effort to determine whether project activities caused the students to feel more confident, they were asked, "Do you feel more confident in your ability to do math and/or English because of your involvement in the project?" Fifty-eight of the 62 responses agreed that they felt more confident than before the project began.

Using the A through F grading system, the students were asked to grade the overall project. From the 63 responses, 24 gave the project an A, and 31 gave the project a B. Only 8 students gave the project a C, and there were no grades of D or F.

In three questions of the survey, one word responses were requested. In one question, the students were asked to describe what they enjoyed most about the project. Fifty-four of the 63 students responded to this question, and their responses are listed below with the frequency in parenthesis.

The tutor	(13)	The knowledge	(1)
The learning	(10)	The time spent	(1)
The help	(7)	Getting to know the material better	(1)
Getting out of class	(6)	The participation	(1)
The math	(4)	It was all good	(1)
One-on-one help	(2)	Going over stuff	(1)
Fractions	(2)	The party	(1)
Everything	(2)	The food	(1)

Pretest/Post-test Data

Several statistical tests were performed on the data. The results for the mathematics data were as follows.

The treatment group consisted of 86 subjects and the no-treatment control group had 37 subjects. It was found that the control group pretest mean of 37.0 significantly exceeded the experimental group pretest mean of 29.55 ($t = -9.54$ with 12df, $p < .001$). This is not surprising because subjects for the treatment group were chosen precisely because their performance was relatively low. The control group post-test mean of 37.36 also singificantly exceeded the treatment group post-test mean of 33.07 ($t = -4.49$, $df = 121$, $p < .001$). Although the control group post-test mean exceeded the treatment group post-test mean, some evidence was obtained that the treatment did have impact.

When a dependent t test was done for the control group, it was found that there was no significant growth from pretest to post-test (mean pretest was 37.00, mean post-test was 37.86, $df = 36$, $t = 1.65$, not significant at the .05 level of significance). However, there was significant growth for the treatment group (mean pretest was 29.55, mean post-test was 33.07, $t = -6.18$, $df = 85$, $p < .001$). Thus, while the control group experienced no significant growth from pretest to post-test, the treatment group did experience a gain.

Only 8 subjects had both pretest and post-test scores on the English test. All of these subjects were in a treatment group. The mean post-test of 16.38 was significantly higher than the mean pretest of 10.88 ($t = -5.50$, $df = 7$, $p < .001$). Thus, there is some evidence that significant growth occurred as a result of the treatment.

Chapter IV

FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Findings

Operating the tutorial instructional project in the five high schools for 99 junior marketing and distributive education students brought focus to a number of important activities necessary in helping disadvantaged students achieve improved levels of basic skills. The project findings are as follows:

1. Because of the number of personal contacts and the amount of individual assistance required, the tutorial approach was considered most suitable for the project.

2. The number of students in public schools who qualify for the classification of disadvantaged is surprisingly large. A majority of the junior marketing and distributive education students in the five project schools were eligible to participate.

3. Students in the math treatment group experienced a gain in the mean score from pretest to post-test. Control group students experienced no significant growth.

4. The students who had English pretest and post-test scores experienced significant growth in their mean score.

5. In addition to finding a large number of qualifying students, the level of competence in math and English tested as low as third and fourth grade for some.

6. A majority of the students had never received individual assistance with their school assignments, although some were enrolled in remedial classes where instruction, out of necessity,

short in duration and offer an opportunity for success.

5. The students enjoyed working in the project to a large degree because of the tutor.

6. A large number of students lack basic math and English skills and need special assistance.

7. In addition to improving their competence in the subject matter, students gain more confidence in themselves.

8. Scheduling time to work with students is one of the most important factors and requires a special effort.

9. Success and recognition turn into pride and increased efforts.

Recommendations

Based on the findings and conclusions of this project, the following recommendations are made:

1. Use existing diagnostic test data available through the school district rather than develop individual testing programs. This valuable time can be used in planning and assisting students.

2. Plan and schedule time during the year to review basic math and English competencies if outside assistance is not available. Begin with those which the majority of students need.

3. Contact teacher education departments in nearby colleges or universities to solicit assistance from students in classes where projects in human interaction, tutoring, or working with special needs students are required.

4. Recognize the value of each student as a human being and respond sincerely to the individual needs of each.

5. Praise each accomplishment and recognize all efforts being made by each student.

6. Generate practical applications of material that relate to job skills in teaching for understanding of concepts, formulas or principles.

7. Keep assignments and work sessions short to encourage positive student response and to foster success.

8. Arrange as much assistance as possible in meeting individual needs.

9. The tutorial approach provides the type of work setting that is effective in scheduling and working with special needs students. Tutoring sessions with individuals or groups of two or three are recommended.

10. Any plan for assisting students should begin early in the school year with a schedule to work toward improving as many dificiencies as possible within the timeframe.

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APPENDIX A

Student Profile

Confidential File

Disadvantaged
Revised 1/80

STUDENT PROFILE

Suggested student profile for proper identification of disadvantaged student. This profile should be filled in and kept by the instructor and/or counselor for fiscal accounting purposes.

School System:	Instructor:
Vocational Service Area:	School:
Date:	School Address:

Present program in which student is enrolled: _____

Name of Student _____ ☐ Male ☐ Female Social Security No. ___ - ___ - ____
Last First Middle

Present Address _____ Phone No. _____
Street City County State Zip Code

1. Is the family dependent on social agencies for economic assistance? ☐ Yes ☐ No
   If yes, please check:
   ☐ Public Assistance ☐ Social Security ☐ Others (Specify) _____

Father's Name _____ Occupation _____

Where Employed _____
(If Father is deceased or does not live with the family, please denote) _____

Mother's Name _____ Maiden Name _____

Occupation _____ Where Employed _____
(If Mother is deceased or does not live with the family, please denote)

Student does (does not) live with parents, please denote _____
(If not, with whom does the student live? _____

2. Condition of health of student: ☐ Good ☐ Fair ☐ Poor

Any physical defects? ☐ Yes ☐ No If yes, please list:

_____

_____

_____

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APPENDIX B

Major Goals for Vocational Education in Kentucky:

1980-81

MAJOR GOALS FOR VOCATIONAL EDUCATION IN KENTUCKY
1980-1981
(Adopted by Vocational Education Cabinet on October 29, 1979)

For purposes of program emphasis, resource allocation, and staff time, the Bureau of Vocational Education is establishing major goals for vocational education for FY 1981. It should be clear that these goals do not represent all of the activities to be accomplished during the fiscal year but are areas of major emphasis. (These goals are not in priority order; they have been numbered for identification purposes only.)

1. Implement employability skills program in all occupational areas with emphasis on work attitudes, work habits, work ethics, and basic skills.

2. Improve the management of vocational education services by developing an automated data system.

3. Implement in all vocational preparation programs Kentucky's system for placement and follow-up of students.

4. Increase the impact of competency based vocational education by improving the quality of existing programs and continue the implementation and supervision of new programs.

5. Improve the quality of vocational education programs by continuing Kentucky's plan for evaluating programs.

6. Improve the coordination between vocational education and the Comprehensive Employment and Training Act (CETA) prime sponsors by developing a better delivery system for education and training for CETA clients.

7. Continue developing articulation plans for vocational programs existing in state vocational schools and community colleges and universities.

8. Continue providing for special needs of learners who are handicapped or educationally and/or economically disadvantaged.

APPENDIX C

Classification System for Disadvantaged

CLASSIFICATION SYSTEM FOR DISADVANTAGED

CAUSE	EFFECT	CHARACTERISTICS
(1) Academic	Not succeeding or cannot be expected to succeed in a regional vocational education program because of at least one educational deficiency.	Poor speech, poor reading and writing ability, serious difficulty in comprehending computational concepts; retarded one or more years in academic achievement; low achievement records; irregular in school attendance; dropout or potential dropout.
(2) Socio-Economic or Non-Academic	Not succeeding or cannot be expected to succeed because of background or experience. Developed attitudes which severely limit their ability to perform successfully in a Vocational Educational Program.	Aggressive, anti-social, disruptive. Lack personal motivation; negative attitude toward learning; poor or negative self-image; higher incidence of involvement with juvenile court; underachiever; ill health; poor nutrition; unemployed or underemployed; geographically isolated; needs economic assistance to enter or stay in school.
(3) Culturally Disadvantaged	Not succeeding or cannot be expected to succeed because of cultural differences that limit their understanding of the educational and other everyday processes within the community.	Social class differences in values, behavior patterns, style of living, language patterns, mores; generally highly mobile (migrants); lack stability within the community; unfamiliar with customs.
(4) "Other"	Other effects of a disadvantagement not listed under the three (3) aforementioned categories; should be restricted to special situations of a local individual nature.	Migrants, individuals in institutional setting.

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APPENDIX D

Identified Lists of Competencies for

Marketing and Distributive Education Occupations

(Math)

COMPETENCY AREA: BASIC SKILLS--MATH

Specific Competency

1. Skill in multiplying and extending figures with facility.
2. Skill in adding columns of figures.
3. Perform mathematical computations applicable to marketing functions in the specific occupational area.
4. Use calculating equipment to perform mathematical computations applicable to marketing functions in the specific occupational area.
5. Utilize information from tables, graphs, and charts applicable to marketing functions in the specific occupational area.
6. Interpret computer output applicable to marketing functions in the specific occupational area.
7. Convert American standard measurements to Metric measurements when necessary in the specific occupational area.

APPENDIX E

Identified Lists of Competencies for

Marketing and Distributive Education Occupations

(Communications)

COMPETENCY AREA: COMMUNICATIONS

Specific Competency

1. Attitude that in marketing occupations the "spoken word" is an important tool of the trade.
2. Attitude that the ability to communicate skillfully in good English is essential to a person's business advancement.
3. A belief that the voice is an important medium through which sales and services are accomplished.
4. An awareness that the voice can be used to express conviction and convey confidence.
5. Attitude that the tone of voice can express sincere welcome and eagerness to be of service.
6. Skill in effective use of grammar.
7. Skill in effective use of speech and vocabulary.
8. Skill in using gestures which help convey meaning to spoken communications.
9. Skill in using correct enunciation and pronunciation.
10. Skill in using either technical language or commonly understood language at appropriate times.
11. Knowledge that since interpretations placed on the spoken word vary with different people, one must be careful to speak so that correct interpretation can be made by individual listeners.
12. An awareness that certain thoughtlessly used terms or words can be misinterpreted by the listener.
13. Knowledge of how to address other people in a business-like manner whether they are customers, fellow employees, supervisors or management.
14. Ability to talk clearly and pleasantly, conveying spirit and enthusiasm in one's speech.
15. An awareness that nothing is quite so important or contagious as enthusiasm--for the organization, for the customers, and for the merchandise or services offered.
16. Skill in communicating effectively with customers, co-workers and supervisors.

17. Ability to assist with training or teaching others.

18. Ability to use the telephone correctly and courteously.

19. Ability to use legible handwriting in preparing forms, messages, and reports.

20. Ability to read reports, forms, policies, product information, etc.

21. An awareness that product and service information plus business trends can be obtained by reading trade and business journals and publications.

22. Skill in listening to or following directions.

23. Attitude that attending meetings is a good way to keep informed of promotions, changing methods and operating pictures.

24. Knowledge of when to keep communications confidential.

25. Knowledge of how to suggest changes to others.

26. A realization that first impressions are important to the business and last impressions are longest remembered.

27. A realization that even in the most skillfully constructed communications, misinterpretations will develop.

APPENDIX F

Resource List

RESOURCE LIST

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APPENDIX G

Math Pretest and Post-test

Competency Check Test I

Multiple Choice—Choose the letter of the correct answer.

1. Add: 42,561
   97,183
   65,919
   76,240

   a. 281,902 b. 279,903 c. 281,903 d. 280,803

2. Subtract: 427,632
   268,549

   a. 159,083 b. 159,081 c. 159,183 d. 259,082

3. Multiply: 422
   968

   a. 408,490 b. 408,496 c. 418,492 d. 418,496

4. Divide: $28\overline{)10,276}$

   a. 376 b. 267 c. 367 d. 366

5. A floor is constructed of 17 boards, each 48 inches wide. About how wide is the floor?

   a. 10,000 inches b. 100 inches
   c. 10 feet d. 1,000 inches

6. The principal of Center School paid $368 for 12 chairs. Approximately how much did each chair cost?

   a. $100 b. $5 c. $30 d. $20

7. The Anderson family drives from their home in Cincinnati to visit relatives in Los Angeles. The trip log shows that they drive 2,295 miles in a total driving time of 50 hours. What speed, in miles per hour, did they average for their trip?

   a. 48 m.p.h. b. 40 m.p.h. c. 46 m.p.h. d. 42 m.p.h.

8. When listed in order from greatest to smallest, which number would be first?

   a. 36,845 b. 36,485 c. 36,854 d. 36,584

9. Change the improper fraction $\frac{28}{6}$ to a mixed number.

   a. $4\frac{5}{6}$ b. $4\frac{1}{2}$ c. $4\frac{1}{6}$ d. $4\frac{2}{3}$

10. Add: $5\frac{9}{10}$
    $3\frac{3}{5}$

    a. $8\frac{12}{15}$ b. $9\frac{2}{3}$ c. $9\frac{1}{2}$ d. $8\frac{7}{10}$

11. Subtract: 12
    $9\frac{3}{4}$

    a. $1\frac{3}{4}$ b. $2\frac{3}{4}$ c. $3\frac{1}{4}$ d. $2\frac{1}{4}$

12. Multiply: $\frac{5}{6} \times \frac{9}{10}$

    a. $\frac{2}{3}$ b. $\frac{3}{4}$ c. $\frac{1}{2}$ d. $\frac{14}{60}$

13. Divide: $36 \div 2\frac{1}{4}$

    a. 16 b. $18\frac{1}{4}$ c. 81 d. $17\frac{3}{4}$

14. There are three stacks of dimes on the table. One stack is $\frac{3}{4}$ inch high; the second is $\frac{11}{16}$ inch high, and the third is $\frac{5}{8}$ inch high. If all three stacks were placed one on top of the other, how high would that one stack be?

    a. $\frac{19}{28}$ b. $2\frac{1}{16}$ c. $2\frac{1}{2}$ d. $1\frac{3}{16}$

15. Round $72.568 to the nearest cent.
    a. $72.56 b. $72.57 c. $72.50 d. $72.58

16. Add: 87.2, .461, and 3.89
    a. 91.441 b. 91,371 c. 91.551 d. 95.7

17. Subtract: 6.87
    .6
    a. 6.81 b. 0.87 c. 6.27 d. .087

18. Multiply: .216 × .23
    a. .446 b. .05 c. 49.68 d. .5

19. Divide: .04 $\overline{).002}$
    a. 5 b. 50 c. .05 d. .5

20. What percent is equivalent to .3?
    a. .3% b. 3% c. 30% d. 300%

21. Find 20% of $72.25
    a. $1.445 b. $14.45 c. $144.50 d. $1,445

22. What percent of $56 is $35?
    a. $19\frac{1}{2}\%$ b. $62\frac{1}{2}\%$ c. 160% d. 21%

23. 6% of what amount is $23.40?
    a. $140.40 b. $256 c. $390 d. $39

24. When a tennis pro shop offers a 35% reduction on all tennis rackets, how much would you pay for a racket which regularly sells for $32?
    a. $112 b. $2.80 c. $11.20 d. $20.80

25. Find the rate of reduction allowed when a camera that regularly sells for $75 can be purchased for $60.
    a. 15% b. 20% c. $12\frac{1}{2}\%$ d. 2%

26. The school baseball team won 75% of the games it played. If it won 18 games, how many games did it lose?
    a. 4 b. 24 c. 6 d. 7

27. Jason wants to put a row of old bricks along the edge of the garden. Each brick is 20 cm long and the edge of the garden measures 10 m. How many bricks should Jason buy?
    a. 55 b. 5 c. [illegible] d. 500

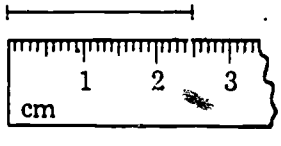
28. Lillian mixes 500 mL of frozen orange juice concentrate with 1,500 mL of water. How many liters of orange juice mixture results?
    a. 0.2 L b. 20 L c. 1 L d. 2 L

29. Clingmans Dome, a mountain in Tennessee, has an elevation of about 6,600 feet. How many miles high is Clingmans Dome?
    a. $1\frac{1}{4}$ miles b. $1\frac{1}{2}$ miles c. $1\frac{1}{3}$ miles d. $1\frac{1}{5}$ miles

30. Kathy left for a trip on Saturday at 9:45 AM and returned home the next day at 1:20 PM. How long was she away?
    a. 3 hours 35 minutes b. 15 hours 35 minutes
    c. 8 hours 25 minutes d. 27 hours 35 minutes

* 31. Which is the freezing point of water on the Celsius scale?
    a. −10°C b. 273°C c. 32°C d. 0°C

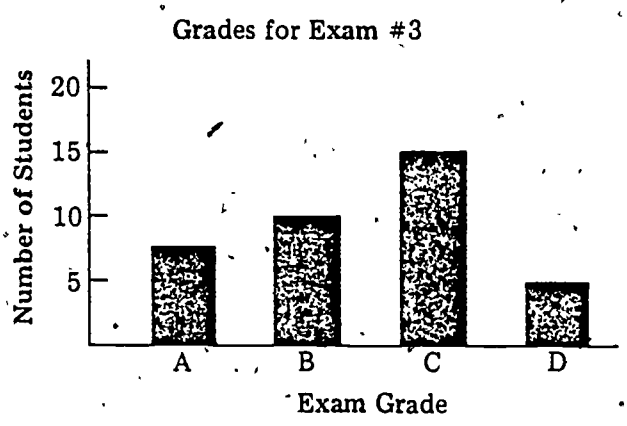
32. How many millimeters long is the line?



    a. .025 mm b. 25 mm c. 2.5 mm d. .25 mm

* 33. The distance on a map between Chicago and Cleveland is 9 inches. If the scale of the map is 1 inch = 10 miles, what is the actual distance between Chicago and Cleveland?
    a. 36 miles b. 900 miles c. 90 miles d. 360 miles

34. What is the best estimate of the width of this page?
    a. 20 mm b. 22 cm c. 25 dm d. 1 m
35. How many students received a grade of B?



    a. 10 b. 15 c. 7 d. 5
* 36. What is the perimeter of a square lamp table whose sides measure 30 inches?
    a. 90 inches b. 60 inches c. 120 inches d. 900 inches
37. In five different tests Carlo received grades of 80, 86, 75, 90 and 89. What is Carlo's average grade?
    a. 85 b. 84 c. 88 d. 83
* 38. Find the product of -5 and -3.
    a. -15 b. 8 c. 15 d. -8
* 39. Which of these equations has -4 as its solution?
    a. $7x = -14$ b. $x - 1 = 3$ c. $x + 9 = 5$ d. $\frac{x}{6} = 2$
40. How much change should you receive from $10 when your purchases cost $8.37?
    a. $2.63 b. $1.63 c. $1.73 d. $2.37
41. Tom worked 25 hours at $4.50 per hour. How much did he earn?
    a. $11.25 b. $112.50 c. $1,125 d. $25.
* 42. Find the value of A using the formula $A = \pi r^2$ when $\pi = 3.14$ and $r = 10$ cm.
    a. 31.4 cm^2 b. 314 cm^2 c. 314 cm d. 3,140 cm^2
43. Jim earns $278 a week. If the Federal Withholding Tax is $39.94 and the Social Security Tax is $17.04, what is his take home pay?
    a. $260.96 b. $238.06 c. $221.02 d. $255.10
44. Joan has a bank balance of $396.59. If she deposits a check in the amount of $25.86 what is her new balance?
    a. $370.73 b. $422.45 c. $655.19 d. $399.17
* 45. Find the volume of a rectangular box that is 15 cm long, 8 cm wide and 6 cm high.
    a. 7.20 m b. 720 cm^3 c. 29 cm^3 d. 7,200 cm^3
46. Which is the best buy: 10 pears for $.89, 12 pears for $1.00, or 8 pears for $.69?
    a. 8 pears for $.69 b. 12 pears for $1.00
    c. 10 pears for $.89 d. all the same price
* 47. Find the interest on $1,500 invested at $5\frac{1}{4}$ % for 2 years.
    a. $1.58 b. $157.50 c. $1,575 d. $15.75
48. Clara bought a skirt for $3.97. If the sales tax rate is 4%, how much altogether will Clara pay for the skirt?
    a. $.16 b. $.15 c. $4.13 d. $4.12

49. Lisa bought a stereo system paying $50 down and 12 monthly payments of $35. What was the total cost?
    a. $475 b. $420 c. $400 d. $470

50. Todd's father bought a house of $58,000. He paid 25% down and gave a mortgage for the remainder. What is the amount of the mortgage?
    a. $14,000 b. $14,500 c. $43,500 d. $4,350

*Items not used in determining basic competence score.

Competency Check Test II

Multiple Choice—Choose the letter of the correct answer.

1. Add: 7,126
   1,493
   2,057
   5,739
   9,814

   a. 26,238 b. 26,228 c. 25,229 d. 26,229

2. Subtract: 15,360 − 9,279

   a. 5,081 b. 6,081 c. 6,091 d. 6,181

3. Multiply: 783 × 506

   a. 396,198 b. 43,748 c. 395,198 d. 43,848

4. Divide: 22,848 ÷ 56

   a. 428 b. 448 c. 408 d. 418

5. The Brown family, on their vacation trip, drove 322 miles the first day, 462 miles the second day, 298 miles the third day, and 357 miles the fourth day. How many miles did they drive altogether?

   a. 1,439 miles b. 1,438 miles c. 1,429 miles d. 1,339 miles

6. Add: $3\frac{4}{5}$
   $2\frac{1}{6}$

   a. $1\frac{3}{6}$ b. 6 c. $5\frac{5}{6}$ d. $5\frac{29}{30}$

7. Subtract: $1\frac{2}{3} - \frac{3}{4}$

   a. $\frac{2}{3}$ b. $\frac{11}{12}$ c. $\frac{1}{2}$ d. $2\frac{5}{12}$

8. Which of the following imperfect fractions are equivalent to $2\frac{4}{5}$?

   a. $\frac{24}{5}$ b. $\frac{8}{5}$ c. $\frac{14}{5}$ d. $\frac{10}{4}$

9. Multiply: $\frac{5}{12} \times \frac{3}{8}$

   a. $\frac{15}{96}$ b. $\frac{15}{12}$ c. $\frac{8}{96}$ d. $\frac{8}{20}$

10. Divide $3\frac{1}{2} \div 4$

    a. 7 b. $\frac{7}{8}$ c. 14 d. $\frac{7}{4}$

11. If a piece $2\frac{3}{4}$ inches long is cut off a board measuring $15\frac{5}{8}$ inches, the remaining length of the board is:

    a. 13 b. $13\frac{1}{2}$ c. $12\frac{7}{8}$ d. $13\frac{2}{8}$

12. The number named twenty and seven tenths is represented by:

    a. .27 b. 20.7 c. 2.07 d. .207

13. Add: 5.92 + .318 + 74.3

    a. 83.4 b. 56.4 c. 1,653 d. 80.538

14. Subtract: 8.5 − 7.296

    a. 1.204 b. 12.04 c. 77.704 d. 7.7704

15. Multiply: .03 × .002

    a. .032 b. 6 c. .0006 d. .00006

16. Divide: $.08 \overline{)\$72}$

    a. $.09 b. $.90 c. $900 d. $9

17. If a taxi cab charges \$.75 for the first $\frac{1}{4}$ mile and \$.25 for each additional $\frac{1}{4}$ mile, the charge for a ride of 2 miles is:
a. \$1.25 b. \$2.75 c. \$2.50 d. \$1.00

18. The decimal equivalent of 45% is:
a. 45 b. 4.5 c. .045 d. .45

19. Find 87% of 560.
a. 4,872 b. 487.2 c. 48.72 d. 4.872

20. What percent of \$75 is \$27?
a. 36% b. 48% c. 54% d. 75.27%

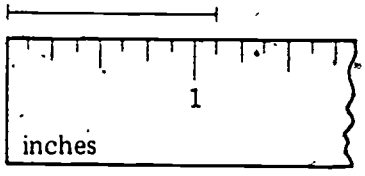
21. 4% of what number is 60?
a. 240 b. 1,500 c. 24 d. 150

22. A ski jacket that regularly sells for \$79 is reduced 15%. Its sale price is:
a. \$59.25 b. \$67.15 c. \$77.82 d. \$11.85

* 23. The number of grams of hamburger in 1.5 kilograms is:
a. 1,500 g b. 150 g c. 15 g d. 15,000 g

24. Kevin fell asleep at 10:40 P.M. and woke up the next morning at 7:10 A.M. How long did Kevin sleep?
a. 7 hr. 40 min. b. $8\frac{1}{2}$ hr. c. 8 hr. 10 min. d. 8 hr. 20 min.

25. How long is the line?



a. $1\frac{1}{2}$ inches b. $1\frac{1}{8}$ inches c. $1\frac{1}{4}$ inches d. $1\frac{1}{16}$ inches

26. If the scale is 1 cm = 50 km, what actual distance is represented by 4.2 cm?
a. 2,100 km b. 210 km c. 21 km d. .21 km

* 27. What is the surface area of a rectangular coffee table whose sides are 12 inches and 27 inches?
a. 324 square inches b. 78 square inches
c. 39 square inches d. 1,296 square inches

* 28. Find the circumference of a circle whose radius is 70 cm when $\pi = \frac{22}{7}$.
a. 22 cm b. 44 cm c. 220 cm d. 440 cm

* 29. The area of a triangle whose altitude is 18 mm and base is 21 mm is:
a. 37.8 mm^2 b. 189 mm^2 c. 39 mm^2 d. 378 mm^2

* 30. The volume of a cube whose side measures 4 m is:
a. 16 m^3 b. 128 m^3 c. 64 m^3 d. 256 m^3

* 31. The measure of the third angle of a triangle, when the other two angles measure 68° and 53°, is:
a. 239° b. 121° c. 59° d. 15°

32. Which number is smallest?
a. −9 b. +3 c. 0 d. −7

33. When −28 is divided by +7, the quotient is:
a. −21 b. +21 c. −4 d. +4

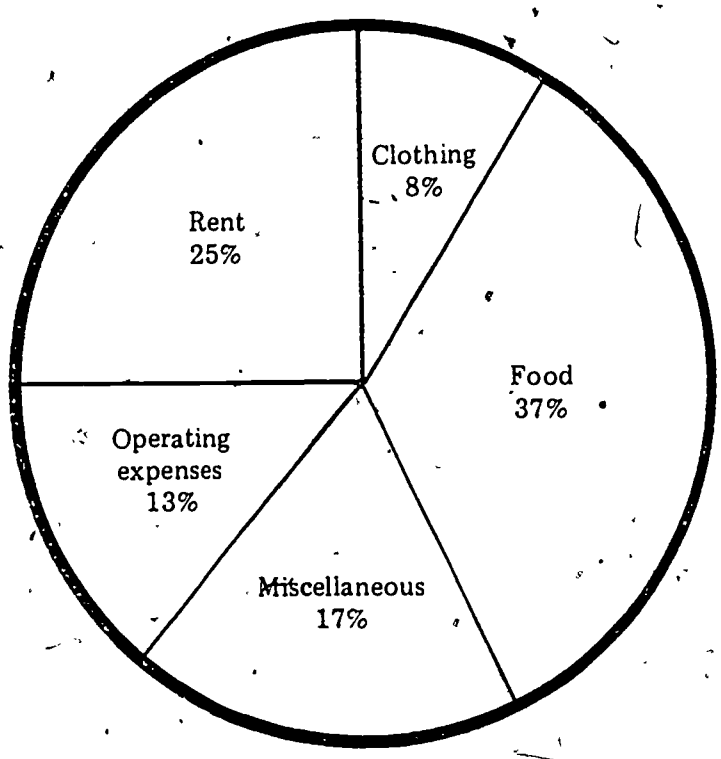
* 34. The value of $\frac{m^2 - n^2}{m + n}$ when $m = 6$ and $n = 4$ is:
a. 10. b. 2 c. 1 d. 5.2

35. Which of the following is the solution of the equation $N - 8 = 8$?
a. −16 b. 1 c. 0 d. 16

* 36. Find the value of V when $v = 143$, $g = 32$ and $t = 4$ using the formula $v = V + gt$:
a. 107 b. 271 c. 15 d. 179

*Items not used in determining basic competence score.

37. How much of the budget is allowed for food and rent?



a. 38% b. 37% c. 62% d. 57%

38. Find the average (arithmetic mean) of the following scores: 9, 10, 5, 8, 7, 9
a. 10 b. 8 c. 5 d. 9

39. There are 144 girls and 126 boys enrolled in a school. The ratio of the number of girls to the total enrollment is:
a. 8 to 7 b. 15 to 8 c. 7 to 8 d. 8 to 15

40. The probability of drawing at random on the first draw a white tennis ball from a box containing 10 white balls and 15 yellow balls is:
a. $\frac{2}{5}$ b. $\frac{1}{10}$ c. $\frac{1}{25}$ d. $\frac{3}{10}$

41. Which is the better buy: a dozen cookies for $1.29, a half-dozen cookies for $.69, or 8 cookies for $.88?
a. a half-dozen for $.69 b. all the same price
c. 8 for $.88 d. a dozen for $1.29

42. The Golden family had dinner at the local restaurant and the bill came to $22.50. If the meal tax rate is 5%, what was the total bill?
a. $23.63 b. $23.60 c. $33.75 d. $22.61

43. If the Federal Withholding Tax is $44.60, Social Security Tax is $19.92 and City Wage Tax is $7.15, when you earn $325 weekly, your take home pay is:
a. $243.33 b. $253.33 c. $273.25 d. $280.40

44. If the tax rate is $7.20 per $100, the property tax on a house costing $63,000 and assessed for $48,000 is:
a. $4,536 b. $453.60 c. $3,456 d. $345.60

45. Mrs. Carroll owns a $10,000 bond that pays an annual rate of $11\frac{1}{2}$% interest. She receives semi-annually:
a. $1,150 b. $57.50 c. $2,300 d. $575

46. If you borrow $3,500 for 30 months to buy a car and pay $131.25 per month, the finance charge is:
    a. $3,937.50 b. $437.50 c. $3,368.75 d. $306.25
47. Frank bought a basketball at a 30% reduction paying $22.40 for it. What was the regular price?
    a. $15.68 b. $52.40 c. $32.00 d. $67.20
48. Barbara's mother can purchase a refrigerator for the cash price of $599 or for $60 down and eight equal payments of $76.40. By paying cash she can save:
    a. $7.20 b. $61.12 c. $12.20 d. $72.20
49. The amount of money that must be invested at the annual rate of 12% to earn $18,000 per year is:
    a. $1,500,000 b. $150,000 c. $15,000 d. $1,500
50. Lisa Lieberman paid Jaffe Stores by check in the amount of $86.39 on June 29, 1980.

TRI-CITY NATIONAL BANK
Wonderville, NY 12037

NOT NEGOTIABLE No. _____

_____ 19 _____ 29-9/213

Pay to the
Order of _____ $ _____

_____ Dollars

For _____ (1) _____

⑆0213⑈0009⑆ 130⑈0099⑈9⑈12⑈

On line (1) should be written:

a. Jaffe Stores
b. June 29, 1980
c. Lisa Lieberman
d. Eighty-Six and 39/100

APPENDIX H

Student Questionnaire

67.

D.E. MATH AND ENGLISH PROJECT

1. I participated in the following: (Check only one)
   ___ Math
   ___ Math & English

2. The tutoring sessions caused me to miss other class work.
   ___ Yes
   ___ No

3. If you answered "No" to question 2, were you permitted to make-up the work?
   ___ Yes
   ___ No

4. I think the project helped me understand the subject I worked on better than when I started.
   ___ Yes
   ___ No
   ___ Undecided

5. I think the project work has helped me with other school work.
   ___ Yes
   ___ No

6. How do you feel about being taken out of class?
   ___ Honored to be in project
   ___ Embarrassed
   ___ Did not bother me
   ___ Other (explain) _____

7. Would you participate in such a project again?
   ___ Yes
   ___ No

8. How much time should be spent on project tutoring?
   ___ More than was spent
   ___ Less than was spent
   ___ Undecided

9. Did you mind the interruptions in your class schedule to be in the project?
   ___ Yes
   ___ No
   ___ Undecided

10. What type work setting did you enjoy most?
    ___ Working alone with turor
    ___ Working in groups of 2-3
    ___ Working in larger groups

(See Reverse Side)