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ABSTRACT

The study compared minimum competency test scores of approximately 1,000 learning disabled Florida tenth graders with those of regular class peers and surveyed 200 employers concerning the perceived importance of the competency test skills. Item performance, skill performance, and mastery scores on the State Student Assessment Test-II (SSAT-II) were tabulated. Analysis indicated that learning disabled students demonstrated competence on substantially fewer communication and mathematics skills than their peers. In general, learning disabled students performed better on skills requiring literal use of text and numbers and worse on skills requiring application of basic skill knowledge. Employers' ratings of the extent to which various skills were required in the world of work supported the importance of competency in basic skills but gave more importance to such skills as following directions, obtaining information from graphs or charts, writing accurate messages, and basic whole number computation skills. Learning disabled students did, however, perform better on reading skills (such as use of graphs, pictures, tables), writing skills (use of written forms), and mathematics skills (e.g. time, whole number operations) which were rated by employers as often used in the world of work. Also discussed is the importance of the job interview in obtaining employment. A sample of the Employers Survey of Basic Skills form is appended. (DB)

FINAL REPORT

Analysis of Basic Skill Competencies of Learning Disabled Adolescents

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United States Department of Education

Special Education Programs

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EXECUTIVE SUMMARY

PROJECT TITLE: Analysis of Basic Skill Competencies of Learning Disabled Adolescents

FUNDING DATES: June 1, 1984-December 31, 1985

SUMMARY OF PROCEDURES AND FINDINGS: The performance of tenth grade learning disabled (LD) students on a minimum competency test (State Student Assessment Test-II) of basic skills and functional literacy as well as the opinions of employers about the importance of the skills assessed on that test were illustrated and compared.

DEFINITIONS: Learning disabled students are those who evidence disorder in one or more of the basic psychological processes involved in understanding or using spoken or written language. These may be manifested in disorders of listening, thinking, talking, reading, writing, spelling, or arithmetic. They include conditions which have been referred to as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. They do not include learning problems which are due primarily to visual, hearing or motor handicaps, to mental retardation, emotional handicaps, or environmental disadvantage. In this research, specific criteria for eligibility included: (1)Evidence of a disorder in one or more of the basic psychological processes based on a student's expected level of functioning. A score of two standard deviations or less below the mean in one process area or a score of one and one-half standard deviations or less below the mean in three or more process areas; (2) Evidence of academic deficits based on a student's expected level of functioning.

SPECIFIC ACTIVITIES: The following general objectives guided the effort: (1) To describe the performance of learning disabled adolescents on item clusters (e.g., reading, writing, mathematics) of Florida's tenth grade State Student Assessment Test-II (SSAT-II); (2) to identify the number (and percentage) of learning disabled adolescents to correctly answer skill clusters (e.g., reading pictures, maps, graphs, or signs, completing common forms, doing basic math operations) on Florida's tenth grade competency test (SSAT-II); (3) to identify the number (and percentage) of learning disabled adolescents to demonstrate "mastery" of the skills included in the tenth grade SSAT-II; (4) to identify strengths and weaknesses in skill performance evidenced by learning disabled adolescents' performance on Florida's tenth grade SSAT-II; (5) to compare performances of learning disabled adolescents on the tenth grade SSAT-II to those of their regular class peers; and, (6) to identify the relationship between skills demonstrated on the SSAT-II and perceptions of professionals in the world of work relative to their importance on the job.

SPECIFIC HIGHLIGHTS: Minimum competency test scores for approximately 1000 learning disabled tenth graders were analyzed and compared to those of approximately 1000 of their regular class peers. Performance on 30 communication and mathematics skills was illustrated. Opinions of more than 200 employers relative to the importance of the competency test skills in the world of work were illustrated and relations between demonstrated competence and perceived importance of skills were identified.

FINDINGS: Special students demonstrated competence on less communication and mathematics skills than their peers. In general, learning disabled students performed better on skills requiring literal use of text and numbers and worse on skills requiring application of basic skills knowledge. Employers' ratings of the extent to which various skills were required in the world to work supported the importance of competency in basic skills and functional literacy.

TEACHING IMPLICATIONS: Information for teachers as well as other special education and rehabilitation personnel regarding the minimum competency skills of LD adolescents is useful in planning instructional programs and in describing this complex group of school students. Continued reliance on basic skill instructional targets for individual education programs of learning disabled adolescents seems appropriate based on their demonstrated lack of competence on the SSAT-II. Similarly, it would appear appropriate to develop instructional goals for more complex skills deemed useful by employers in the world of work and to develop instructional methods (e.g., peer teaching, direct instruction) within the classroom to maximize gains in competency skills.

POLICY IMPLICATIONS: Information on competency skill performance of learning disabled adolescents is also valuable as a measure of the effectiveness of educational programs and should provide administrators and other policy makers with targets for instructional improvement; it appears that continued emphasis on programming to narrow the gap between demonstrated skills of the learning disabled students and their regular class peers is clearly warranted. Similarly, providing policy makers with information about strengths and weaknesses of handicapped students and the perceived importance of those skills by professionals in the world of work should be a valuable benchmark for use in evaluating the content of special education programs and planning their curricula. Results from this work provide a useful basis for considerations of the distribution of items on minimum competency tests based on perceptions of employers as well.

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ABSTRACT

Minimum competency testing is currently a reality in American education; the practice presents a number of problems for regular and handicapped students. The state of Florida permits procedural modifications for testing minimum competence in exceptional students. In this research, the performance of learning disabled (LD) students and their peers on the State Student Assessment Test-II (SSAT-II) was evaluated and employers' opinions about the importance of skills assessed on the State Student Assessment Test-II were analyzed. Item performance, skill performance, and mastery scores were tabulated and compared for LD adolescents; the relative importance of various skills to employers was also tabulated and compared. Strengths and weaknesses in basic skill competence were identified and relations among these skill performances and employer opinions were identified. Professionals from the world of work were asked to evaluate the importance of the skills measured by the high school competency exam to provide as estimate of the congruence between competency skills and expected performance in selected jobs. An analysis of the performance of learning disabled and regular class tenth graders on the SSAT-II indicated that the special students demonstrated competence on less communication and mathematics skills than their peers. In general, learning disabled students performed better on skills requiring literal use of text and numbers and worse on skills requiring application of basic skills knowledge. Employers' ratings of the extent to which various skills were required in the world of work supported the importance of competency in basic skills.

BACKGROUND AND PERSPECTIVE

The assessment of minimum competence is a current educational rage. Dissatisfaction with the results of contemporary educational programs has stimulated the movement. As McCarthy (1980) indicated, "[t]he minimum competency testing (MCT) movement, nurtured by the growing public demand for educational accountablitiy, has resulted in competency testing legislation in over three-fourths of the states (Pipho, 1979). In 17 states, the passage of competency tests is required for high school graduation. In other states, local school districts are given the option of using the tests as graduation requirements, and in some states the tests are used solely to identify students' remediation needs" (p. 166). Issues have been identified and addressed by advocates and critics of "the movement" (cf. Jaeger & Tittle, 1980); they are generally more critical when the MCT of handicapped students is considered.

Minimum Competency Testing and Handicapped Students

Safer (1980) argued that MCT had serious implications for handicapped students relative to future job placements; she believed that "students who do not receive high school diplomas may be severely penalized in the job market" (p. 289). Fenton (1980) addressed legal concerns of competency testing of the handicapped. She pointed out that right of "equal opportunity" to receive an education and "protection of due process" have been guaranteed to handicapped persons by recent court decisions and legislation; she concluded that "schools encounter a Pandora's box of individual's rights when the results of competency testing determine an individual's educational status" (p. 187).

Both the Education for All Handicapped Children Act of 1975 (Public Law 94-142) and Section 504 of the Rehabilitation Act of 1973 (Public Law 93-112) assure all handicapped individuals the right to a free appropriate public

education. An assumption supporting this right is that handicapped young adults will have an opportunity to complete their education, graduate and receive a dipoloma signifying the achievement. Yet, differences exist among and within states regarding graduation requirements and minimum competency testing standards. Gains made by handicapped adolescents could be "washed out" by a lack of special consideration when minimum competence is tested. The state of Florida has taken steps to address the problems related to MCT and handicapped students.

As Grise (1980) indicated, "[n]o provisions were made for handicapped students until the law was amended in 1977" (p. 188). At that time, certain exceptional students (i.e., educable mentally retarded, trainable mentally retarded, emotionally handicapped, specific learning disabled, hearing impaired) were exempted from the testing program for graduation or promotion purposes; however, these students were not exempt from having to demonstrate mastery of the competency standards deemed appropriate. Of course, related to the exemption issue is the type of diploma awarded. Grise (1980) adds:

> Handicapped students who meet the regular student Minimum Student Performance Standards in Florida are awarded the same Standard Diploma as all graduating non-handicapped students. Handicapped students who master special standards receive a Special Diploma.... Indeed, Florida students with either a Standard or a Special Diploma are regarded in the state as bona fide high school graduates. Only students with no document (dropouts) and students with a Certificate of Completion (given upon program completion with failure to demonstrate mastery of minimum standards) are not considered high school graduates....(p. 190)

When large numbers of handicapped adolescents are "not considered high school graduates", the issues related to MCT become more obvious to educators and other professionals. Education specialists in Florida have addressed the problem of minimum competency testing of handicapped students directly. Current state statutes allow:

> appropriate modification of testing instruments and procedures for students with identified handicaps or disabilities in order to ensure that the results of the testing represent the student's achievement, rather than reflecting the student's impaired sensory, manual, speaking, or psychological process skills, except where such skills are the factors the test purports to measure (Florida Statutes, Chapter 232, Section 246).

According to the Florida Administrative Code, the following modifications are currently authorized for handicapped students:

1. Flexible scheduling--the student may be administered a test during several brief sessions, so long as all testing is completed by the final allowed test date specified by the Commissioner.
2. Flexible setting--the student may be administered a test individually or in small group setting by a proctor rather than in a classroom or auditorium setting.
3. Recording of answers--the student may mark answers in a test booklet, type the answer by machine, or indicate the selected answers to a test proctor. The proctor may then transcribe the students's responses onto a machine-scoreable answer sheet.
4. Revised format--the student may use a large print booklet, a Braille test booklet, or a magnifying device.
5. Auditory aids--the student may use auditory devices. A tape recorded

version of appropriate portions of the test may by used, along with printed copy. Appropriate portions of the test may also be read to the students by a narrator. However, no portion of a test which is specifically designed to measure reading skills may be tested through use of auditory aids. (State Board Rule, 6A-1.943, State of Florida, 1980)

The Florida test modifications are somewhat misleading. They are more general "procedural" modifications than changes in the type and kind of test items or formats. Salvia and Ysseldyke (1978) indicated that test items often measure the student's ability to "receive a stimulus and then express a response" (p. 25); they add that "common sense tells us that if a student cannot read the directions or write the responses, a test requiring these abilities is inappropriate" (p. 26). A handicapped student's performance on a minimum competency test may be as much a function of the nature and kind of test items as it is the student's "ability". This is not to suggest that particular item context is either appropriate or inappropriate for handicapped students; more, it argues for consideration of appropriate test (note: not procedural) modifications for handicapped students.

Until recently, no research on the effects of differential testing procedures or item modification had been completed. With support from the Student Assessment Section of the Florida Department of Education, Algozzine and the colleagues (Beattie, Grise, & Algozzine, 1983; Grise, Beattie, & Algozzine, 1982) have shown that simple test modifications (e.g., adding examples, hierarchical ordering of items) result in improved performance scores on competency test scores for third and fifth grade learning disabled students. Based on this work, assessment personnel in the State of Florida have incorporated the general modifications into the competency tests

administered to tenth graders. To date, research on the performance of LD adolescents on minimum competency tests has been minimal.

Statement of Objectives

The purpose of this research was to investigate the basic skill strengths and weaknesses of tenth grade learning disabled (LD) students as measured by their state's minimum competency test. The following objectives guided the effort:

1. To describe the performance of learning disabled adolescents on item clusters (e.g., reading, writing, mathematics) of Florida's tenth grade student assessment test (SSAT-II).
2. To identify the number (and percentage) of learning disabled adolescents to correctly answer skill clusters (e.g., reading, pictures, maps or signs, completing forms) on Florida's tenth grade SSAT-II.
3. To identify the number (and percentage) of learning disabled adolescents to demonstrate "mastery" of the skills included in the tenth grade SSAT-II.
4. To identify the strengths and weaknesses in skill performance evidenced by learning disabled adolescents' performance on Florida's tenth grade SSAT-II.
5. To compare performances of learning disabled adolescents on the tenth grade SSAT-II to those of their regular class peers.
6. To identify the relationship between skills demonstrated on the SSAT-II and perceptions of professionals in the world of work relative to their importance.

Method

The purpose of this research was to evaluate the performance of learning disabled (LD) adolescents on the high school version of their minimum competency test. The nature of older handicapped students' strengths and weaknesses in basic skills was of interest. Scores of LD adolescents and non-handicapped high school students were analyaed and compared. Additionally, congruence between the skills measured and those perceived as important by professionals in the world or work were evaluated.

Subjects

Tenth grade students in 67 school districts in Florida participated in this research. Approximately 106,000 students were tested during the statewide assessment of tenth graders; performance scores of 938 regular class students and 1098 learning disabled students were randomly selected as the sample in this study.

In Florida, the learning disabled classification is based on an operationalization of the current federal definition (cf. Lerner, 1981; Mercer, 1979). The specific criteria for eligibility include:

1. Evidence of a disorder in one or more of the basic psychological processes based on a student's expected level of functioning. A score of two standard deviations or less below the mean in one process area or a score of one and one-half standard deviations or less below the mean in three or more process areas.
2. Evidence of academic deficits based on a student's expected level of functioning. The levels are set at 65% expectancy age for students in tenth through twelth grade.

Test Administration

The latest version of the State Student Assessment Test (SSAT-II) for tenth grade students contained 150 items sampling 30 skill areas (see Figure 1). Each skill area was comprised of 5 specific items. A logical analysis of this content indicated that the SSAT-II (grade 10) is a valid measure of skills considered appropriate for high school students. All items were in multiple-choice format and generalization to skills typically requiring that answers by supplied in free format (e.g., spelling) should be limited.

Insert Figure 1 Here

Tenth grade testing took place during March and April of the school year. Packets containing sufficient numbers of tests were sent to testing coordinators in each school district in Florida. These professionals had participated in previous research of a similar nature with third and fifth grade students; in most instances, the coordinators arranged for the LD resource room teachers to administer the tests. Responses to the tests were coded on machine-scorable answer sheets and tallied together with all other tenth grade tests by the Westinghouse Testing Service. Performance scores (correct and incorrect responses for each item) were then tabulated from a computer tape provided by State Student Assessment Section personnel. A computer program was also written to score the tests relative to skill and mastery levels of performance.

Data Usage

Average percentages of students to correctly answer items based on skill areas were tabulated. These data provided a basis for comparing performance of LD adolescents to that of their peers on the SSAT-II (grade 10). Numbers (and percentages) of students to "master" skills (i.e., answer specified

numbers of items within a set correctly) were tabulated and compared. As appropriate, t-tests were used to determine significance of differences between groups and among items; the level of these tests was set at 0.01 and an additional criterion of at least a 10% unit difference between means was imposed due to the large sample size in each group (n = 1,000 approximately).

Employer Survey

A survey instrument was developed and administered to approximately 240 individuals selected from Florida Department of Employment personnel. The survey participants were selected based on their current employment position; individuals serving as personnel managers (or similarly titled positions) with corporations or businesses likely to hire recent high school graduates were sampled. Proportional representation, based on community size demographics (i.e., small, medium, large) determined the actual numbers of individuals initially selected from various areas in Florida. It was anticipated that such a procedure would produce responses from professionals representative of the 67 school districts in which the students participating in the study resided.

Materials. A thirty-four item survey (see Figure 2) was developed to obtain perceptions of the importance of selected basic skills. Employees were first asked to indicate if their employees were required to read on the job; and, if so, the extent to which the various reading skills (e.g., follow written directions, identify cause and effect) were required was obtained. The reading section was followed by two other sections relating to the use of writing and mathematics in the world of work. The survey was printed on both sides of an 8 1/2 x 14 inch sheet of paper and required approximately 15 minutes to complete.

Insert Figure 2 About Here

Procedures. Employers from local businesses were participants in the project. Local Chamber of Commerce Offices in several counties were initially contacted and asked to forward llists of local businesses likely to hire recent high school graduates. A mailing list of these employers was compiled and an initial contact letter (see Appendix A) was sent to each business on it. About two weeks later, a follow-up letter (see Appendix B) and the Employers Survey of Basic Skills was mailed. After approximately three weeks, 177 completed surveys were received; at that time, replacement copies of the follow-up letter and survey were sent to 200 of the nonrespondents. A total of 244 completed surveys was received as a result of this procedure and each of the respondents' participation was acknowledged (see Appendix C).

The relative importance of each skill on the SSAT-II (grade 10) as perceived by the professionals from the world of work was determined by ranking the means obtained when the survey data were summarized. Additional comparisons of the relative importance of the skills were completed.

Results

Approximately 106,000 tenth grade students participated in the statewide testing program during the school year. Ninety-six percent were in regular classes; of those remaining, seventy-two percent were classified as learning disabled, thirteen percent were classified as emotionally handicapped, ten percent were classified as educable mentally retarded and five percent were part of programs for student with other exceptionalities. Test performance scores of 1098 learning disabled students and 934 regular class students were randomly selected from those available for analysis in this research.

The learning disabled sample was comprised of 853 (78%) boys and 245 (22%) girls; these students were predominately white (68%), however, about one-third (29%) were black and 3% were Hispanic, American Indian or Asian. Approximately half (44%) of the regular sample was boys, seventy percent were white, 27% black and the remainder from other ethnic/cultural origins. For 97% of the learning disabled students, scores were obtained during their first exposure to the SSAT-II Communication Skills Examination. Approximately 90% of the learning disabled student were participating in the SSAT-II Mathematics Skills examination for the first time. About 14% of the regular students had previously participated in this part of the competency testing program. As was expected, the regular students demonstrated higher degrees of competence in communication (i.e., 91% mastery) and mathematics (i.e., 82%) than did their special class peers (i.e., 49% in communication and 50% in mathematics). Learning disabled adolescents performed better on communication items (mean = 67% correct) than mathematics items (mean = 60% correct) and a similar pattern of performance was evidenced by their regular class peers (89% and 79% correct respectively). Overall, regular students correctly answered 83% of the SSAT-II items, while learning disabled students answered 20% less.

Analysis of Communication Skills

Means and standard deviations for specific communication skills evaluated during the current tenth grade assessment are presented in Table 1. In general, regular class students performed better than their special class peers. Learning disabled students' performances on items involving recall of facts or literal recall were better than their performances on items involving drawing conclusions or analyzing passages of text. Regular class students performances on all items involving reading skills were higher than the performances of learning disabled students on any set of reading items.

Analysis of performance on items assessing skills related to writing indicated that learning disabled students' lowest scores were on those involving written communication using appropriate business letters and their highest scores were obtained when skills involved in using money orders and checks were assessed. Regular class students demonstrated high rates of performance on all writing skills assessed by the SSAT-II.

Insert Table 1 About Here

Mastery goals of performance for communication skills demonstrated by tenth grade students are presented in Table 2. Best rates of reading mastery for special students (i.e., greater than 60%) were evident for skills involving literal recall of facts. Learning disabled students demonstrated higher degrees of mastery in writing skills, but generally their performance was below their regular class peers on similar communication skills.

Insert Table 2 About Here

Analysis of Mathematics Skills

Means and standard deviations for specific mathematics skills evaluated during the current tenth grade assessment are presented in Table 3. In general, regular class students performed better than their special class peers. Learning disabled students' performances of items involving identifying monetary equivalents, whole number operations and using tables or graphs were better than their demonstrated skills in items requiring the application of mathematics in solving problems (e.g., measurement, fractions, interest). Although regular students consistently performed better than their

special class peers, they also demonstrated higher performance on items using basic facts rather than application of mathematics concepts.

Insert Table 3 About Here

Mastery levels of performance for mathematics skills demonstrated by tenth grade students are presented in Table 4. Highest rates (i.e., 60-70%) of mastery for special students were evident for skills involving simple recall of math facts and lowest rates (i.e., less than 25%) were demonstrated on items involving the use of various measurement principles. A similar pattern of mathematics competence was evident in scores of regular students, however, higher degrees of mastery (i.e., greater than 50%) were obtained on all but one skill area.

Insert Table 4 About Here

Analysis of Employers' Opinions

The relative importance of skills measured on the current version of the SSAT-II to individuals in the world of work was surveyed. Two hundred and seventy-nine employers completed the thirty-six item questionnaire; ninety-two percent indicated that reading, writing and solving number problems were important in the job(s) available for high school graduates with their business. In general, reading was considered slightly more important (mean = 3.52) than writing (mean = 3.37) which was rated as more important than doing math problems (mean = 3.12).

The distribution of employers' ratings of specific reading skills measured by the current version of the SSAT-II are presented in Table 5.

Following written directions and obtaining information from maps, pictures, graphs or tables were rated as more often used on the job by this group of employers. Writing accurate messages or requests and noting work assignments were important writing skills; ratings of the importance of specific writing skills are presented in Table 6.

Insert Table 5 and 6 About Here

The distribution of employers' ratings of specific mathematics skills measured by the current version of the SSAT-II are presented in Table 7. Using basic skills (e.g., addition, subtraction) was rated as more necessary than using measurement skills (e.g., figuring perimeters, solving problems using common weights) or applying complex mathematics skills (e.g., figuring interest, using the metric system).

Insert Table 7 About Here

To obtain rankings for the perceived importance of various communication and mathematics items, ratings of "very often" and "often" were combined as reflective of importance and rating of "very rarely" and "rarely" were combined to reflect a lack of importance to these employers. Following written directions, obtaining information from pictures or maps and obtaining information from graphs or tables were perceived as important on-the-job reading skills by more than 60% of the participating employers. Only one reading skill (i.e., obtaining information from directories) was perceived unimportant by more employers (44%) than perceived it as important (30%). The most important writing skills were those relating to writing messages and

completing forms; completing money orders or checks were rated as relatively unimportant on-the-job skills. The relative importance of all communication skills measured by the current SSAT-II is presented in Table 8.

Insert Table 8 About Here

The relative importance of mathematics skills is represented in Table 9. Using basic skills, computing hours of employment, and solving problems with decimals or fractions were perceived as important on-the-job skills by this group of employers. Using the metric system, figuring simple interest, and using measurement to solve problems were seen as less important mathematics skills.

Insert Table 9 About Here

Employers' perceptions of the extent to which various reading skills are used in the world of work are represented in Table 10. Following written directions was the reading skill rated as most often used and obtaining information from directories was rated as least often used.

Insert Table 10 About Here

Means and standard deviations for employers' perceptions of the extent to which various writing skills are used in the world of work are presented in Table 11. Writing accurate messages, writing requests, noting assignments and completing forms were rated as more frequently used than completing checks or money orders.

Insert Table 11 About Here

Means and standard deviations for employers' ratings of the extent to which various mathematics skills are used in the world of work are presented in Table 12. Adding, subtracting, multiplying and dividing were highly rated mathematics skills and solving problems using common weights, figuring perimeters and areas, solving problems using common measures, figuring simple interest, and solving problems using the metric system were seen as rarely used skills.

Insert Table 12 About Here

Relations between SSAT-II performance scores and employers' ratings of the importance of those skills in the world of work were evaluated. When communication and mathematics skills were grouped together, moderate (e.g., r=.30 - .50) relations with employers' opinions were evident; and, higher relations were indicated for comparisons of regular students' performances. Learning disabled students demonstrated higher levels (i.e., greater than 50%) of mastery on 80% of the skills employers believed were more commonly used on the job (e.g., following written directions, obtaining information from tables, graphs, or maps, completing forms, performing basic math operations). Similar patterns of performance were evident when relative degrees of mastery for learning disabled and regular students were compared; that is, although learning disabled students demonstrated lower degrees of mastery on all skills, they tended to do well on the same skills (e.g., money orders and

checks, reading pictures, maps or signs) on which regular class students demonstrated high degrees of competence.

Discussion

Minimum competency test performance of more than 2000 tenth graders was analyzed in this research; scores on fifteen communication and fifteen mathematics skills were described and relations between demonstrated competence and employers' opinions of the importance of the skills in the world-of-work were examined. In general, special students performed better on skills requiring literal use of text and numbers and worse on skills requiring application of basic skills knowledge. Employers' ratings of the extent to which various skills were required in a variety of jobs supported the importance of selected basic skills competencies.

The assessment of minimum competency is a controversial issue. General problems relative to the assessment of exceptional students have been identified; Florida statutes allow for modifications of testing instruments and procedures when assessing handicapped students. To date, most modifications have been incorporated into all versions of the State Student Assessment Tests. Limited research on the performance of handicapped students on competency tests has been conducted. The purpose of this research was to evaluate the performance of learning disabled students in tenth grade and to evaluate the relative importance of the basic skills measured on a competency test.

Knowledge of performance characteristics of learning disabled adolescents on a minimum competency test and employers' perceptions of the value of those skills were judged important components of the employment process. The decision-making process for hiring individuals for an employment position has been under investigation for some time and knowledge and skills of potential

employees are commonly identified as important variables in hiring activities. Major reviews of the literature on the interview and hiring process began with Wagner's (1949) work in which 106 related titles were identified and evaluated. More recently, Mayfield (1964), Ulrich and Trumbo (1965) and Wright (1969) have summarized research on selection interviews and Schmitt (1976) and Arvey (1979) identified and addressed factors influential in employment interviews. Clearly, topics related to employment decision-making have been addressed and a portion of that work pertains to handicapped students.

Employment Practices and Exceptional Students

Handicapped students have been involved in career-related education since just after the turn of the century. Initially, this experience simply took the form of a work-study program in which classroom and on-the-job activities were arranged in coordinated "units" (Cegelka, 1970; Sitlington, 1981). More recently, the need for more complete career education programs was evidenced by the results of research in which community and vocational adjustment of handicapped students were evaluated (Brolin, 1972; Brolin & D'Alonzo, 1979; Brolin, Durand, Kromer, & Muller, 1975; Brolin & Kokaska, 1979; Kidd, Cross, & Higgenbotham, 1967, Kokaska, 1968). Five components of the work experience sequence of such programs were discussed by Sitlington (1981); she included prevocational activities, job analysis, in-school work experiences, community placement and post-graduation experiences in the discussion. The emphasis in career education programs has been on simulating or actually participating in the "world-of-work." Specific research relative to employment decision-making and the handicapped has been conducted.

The effect of a physical handicap was evaluated in a field-based study conducted in Texas (Johnson & Heal, 1976). For half of her appearances at a

sample of private employment agencies, one of the researchers was in a wheelchair. The presumed handicap resulted in significantly fewer interviews; and, counselors' assessments of the wheelchair applicant were lower than the "non-handicapped" peer.

Studies of psychiatric disabilities tended to have consistent findings relative to employability of disturbed individuals. An analysis of that research indicated a fear on the part of employers to hire the emotionally handicapped (Florian, 1978; Nagi, McBroom, & Collette, 1972; Stone & Sawatzki, 1980). The fear of employers about emotionally handicapped individuals centers around the concern for an employee having good interpersonal relationship skills.

Sigelman and Davis (1978) studied the verbal and nonverbal behavior of 21 mildly and moderately retarded women living in a transitional cottage at a state institution. The raters were 15 college students who saw a short segment of an "interview" for all 21 clients. Sigelman and Davis concluded that nonverbal and verbal behavior were two independent skill sets in the interview and that both influenced ratings. The nonverbal behavior accounted for 56 percent of the comments by the raters.

Interviews are a critical component of the employment process; in fact, in many cases, the interview may be more important than work-related skills. A significant amount of research as been conducted relative to various aspects of the interview process (cf. Arvey, 1979; Mayfield, 1964; Schmitt, 1976; Ulrich & Trumbo, 1965; Wagner, 1949; Wright, 1969); however, very little research has involved the handicapped.

Factors influencing interviewer decisions. The decision making process for hiring individuals for a position has been under investigaton for some time. A major focus in the employment process has been the interview. As

noted by Mayfield (1964), research which addressed the interview and hiring decision was conducted by Scott in 1915. In that work, six personnel directors interviewed 36 applicants for sales positions. The personnel directors were asked to rank the 36 applicants from most likely to hire to least likely to hire; there was very little agreement among the six personnel directors (Mayfield, 1964). This early work suggests that a variety of factors may be influential in employment decision-making during interviews; in fact, a number of interpersonal and job-related factors have been studied.

The largest portion of the variance in ratings of applicants has been attributed to job qualifications; they account for 25 percent to 50 percent of the variance in ratings (Arvey, 1979). If candidates appear to be equally qualified, then other variables discussed below can be significant factors. An individual's qualifications account for the largest portion of an evaluation; however, decisions about equally qualified candidates are based on other factors.

The interview and employment process is a search for negative information. Kanouse and Hanson, as reviewed by Constanin (1976), gave four possible reasons for the interest in negative information. First, individuals tend to see the world as a positive place and negative information is seen as a contrast of the positive image of the world. The contrasting information is therefore given more weight. Second, negative information is considered more significant to the evaluation process. The third possible explanation is that in our culture people are quick to return negative feedback. Therefore, when an interviewer hires an individual who does not work out, he/she is quick to get feedback on the decision. The fourth possible reason is positive and negative information are two independent parts of the decision-making process which interact to make a final decision. In summary, negative information has

been shown to be a major factor in the final decision made in an employment interview (Constantin, 1976; Hamilton & Zanna, 1972; Holliman, 1972; Peters & Torborg, 1975; Richey, McClelland, & Shimkunas, 1967; Springbett, 1958; Webster, 1964).

Research related to employment interviews has been evaluated to identify critical, influential variables (see Table 13). A summary of the important findings includes the following:

1. The qualifications of the applicant are the most significant variables; however, other factors play an important part when two equally qualified applicants are processed.
2. The employment process has been characterized as a search for negative information. Negative information holds a great deal of value for an interviewer.
3. Initial decisions concerning hiring an applicant are made within four to nine minutes of the interview.
4. Nonverbal behavior tends to influence a rater as much as verbal responses. The notion of "not what you say, but how you say it," tends to be supported in the interview. Attractiveness also influences ratings of evaluators.
5. Stereotyping and discrimination have been found to influence raters. The effect of stereotyping and discrimination are difficult to substantiate. Recent inverstigations indicate women and minorities are faring well and at times better than white males.
6. The identification of the interviewer with the interviewee has been termed "similar to me"; the effect of this interpersonal identification has been shown to influence interviewer ratings.
7. The contrast effect operates in an interview relative to who comes

before or after the target individual.. For example, when a weak candidate is interviewed, the evaluation of a subsequent person will be higher because the applicant is compared to the preceeding weak candidate.

8. The employment process (i.e., interview) is influenced by the presence of a handicapping condition. Little research has addressed the importance of mental retardation.

Insert Table 13 About Here

Employment is an important part of the life of many handicapped individuals; training in specific pre-employment skills as well as knowledge of critical factors in successful interviewing should be components in the vocational and/or career education programs for exceptional students. The following suggestions are drawn from research related to the interview process:

1. Competence and qualifications are important. Perhaps, the most critical factor which must be made obvious in any interview is the qualification of the candidate relative the the position requirements. In this regard, it may be useful to obtain job descriptions for particular positions prior to having a formal interview. After reviewing the job requirements with a qualified student a direct contact with the potential employer emphasizing the match between the student's qualifications and the necessary skills may be beneficial; this contact can be made as a means of receiving an interview and it can set the stage for a "successful" interview.
2. When training "pre-vocational" skills, consideration should be given

to interview behaviors. It appears that the first 5-10 minutes of any interview is the critical period for decision-making. By training exceptional students in appropriate interpersonal skills for this time period, likelihood of success will be increased. Such training might include practice in various types of greetings, modeling of job-related "small talk" and/or discussion of the importance of first impressions.

3. The importance of the non-verbal aspects of interviewing should also be addressed in training special students career-related skills. Role-playing, modeling and practice interviews may be effective techniques for teaching appropriate postural behaviors, dress alternatives and non-verbal interpersonal skill.
4. When arranging interviews for students, teachers and other professionals should avoid sequencing the retarded exceptional into a string of applicants. If an independent, individual appointment can not be obtained, then being first to be interviewed would decrease the likelihood of negative contrast effects.
5. The reliability of interviewer decisions has been questioned in a significant amount of research. To facilitate a handicapped student's success in the interview process, multiple opinions are better than single judgements. The ratings of two or more independent interviews are more likely to result in employment. In this regard, students should be encouraged to practice interview skills for different "audiences."

Generalizations from Analysis of Basic Skills

The focus of this research was the level and importance of basic communication and mathematics skills competencies demonstrated by learning

disabled adolescents and their peers. The work provides information of a descriptive nature about an often neglected group of handicapped students; that is, learning disabled adolescents have only recently become the subjects of educational research and very little is known about their competency test performance. The results of this project provide valuable information for teachers as well as other education and rehabilitation personnel regarding the minimum competence skills of LD adolescents; this information will be useful in planning instructional programs as well as in describing this complex group of school students.

Knowledge about the skills demonstrated on competency tests is also valuable to professionals addressing public policy for several reasons. To some extent, such informaation is a measure of the effectiveness of educational programs; knowing that LD students fail to demonstrate certain skills enables school administrators to begin to evaluate reasons for that failure and to modify instruction appropriately. Providing policy makers with information about strengths and weaknesses of handicapped students and the perceived importance of those skills by professionals in the world of work also will be a valuable benchmark for use in evaluating the content of special education programs and planning curricula.

Toward the goal of providing information for use in planning, organizing and implementing improved programs for learning disabled and other handicapped adolescents, the following generalizations appear warranted:

1. Competence in basic communication (reading and writing) skills appears to have alluded a significant portion of students in some high school programs. Whereas 80-90% of students in regular tenth grade classes demonstrated mastery of reading skills (such as using reference materials, finding the main idea or appropriate conclusions in a passage, identifying

appropriate components of a money order or check), less learning disabled students (approximately 40-80%) demonstrate similar competence.

2. Competency test items for basic communication skills vary in overall levels of difficulty. Similar patterns of mastery were evident when relative rankings of reading skill performances for learning disabled and regular class students were compared. In general, items involving simple recall of facts from written passages or pictures, signs, and maps were easier than items involving interpretation and/or drawing conclusions. Similarly, items relating to money orders and checks were easier than items relating to formal, written letters and communication.

3. Learning disabled students performance was best on reading skills requiring literal use of textual material. Learning disabled students demonstrated higher degrees of performance on items involving simple recall of facts. For example, their best scores were obtained on reading comprehension items requiring identification of subjects, objects and action and on communication items requiring fact finding using maps, pictures or graphs.

4. Competence in basic mathematics skills appears to have alluded a significant portion of students in some high school programs. Whereas as many as 90% of students in regular tenth grade classes demonstrated mastery of some mathematics skills (e.g., whole number operation, dollar and coin equivalence) and at least 50% of these students demonstrated mastery on all mathematics skills, learning disabled students demonstrated high degrees of mastery on very few mathematics skills.

5. Competency test items for basic mathematics skills vary in overall levels of difficulty. Similar patterns of mastery were evident when relative ranking of mathematics skill performances for learning disabled and regular class students were compared. In general, items measuring whole number

operations, and use of money, averages or tables and graphs were easier than items involving measurement; in fact, less than 25% of the learning disabled tenth graders participating in this study demonstrated mastery of measurement skills.

6. Learning disabled students performance was best on mathematics skills requiring literal use of numbers rather than application of concepts in the solution of problems. Most learning disabled students demonstrated competence on mathematics items requiring use of basic facts (e.g., adding, aubstracting, find equivalent monetary values). Very few learning disabled students demonstrated competence on mathematics skills involving application of number facts and concepts to solve real-world mathematics problems.

7. Employers believe that basic communication and mathematics skills are differentiallly required in the world of work. Following directions, obtaining information from graphs, charts, tables or maps, writing accurate messages or notes and using basic mathematics skills (e.g., adding, subtracting, multiplying, and dividing) were highly rated skills by employers. High percentages of employers indicated that completing money orders, solving measurement problems or using the metric system were rarely used on the job.

8. Learning disabled student performed well on reading skills that were rated highly by employers. Learning disabled students demonstrated high degrees of competence on items involving the use of graphs, pictures, tables or maps and these reading skills were rated as often used in the world of work. Put another way, learning disabled students performance on reading skills that were highly ranked by employers was better than their performance on reading items that employers believed were rarely used in the world of work.

9. Learning disabled students performed well on writing skills that were rated highly by employers. Learning disabled students demonstrated high degrees of competence on items involving use of written forms and accurate messages; these writing skills were rated as often used in the world of work. Learning disabled students performed well on only one writing skill that was rated as rarely used on the job.

10. Learning disabled students performed well on mathematics skills that were rated highly by employers. Learning disabled students demonstrated high degrees of competence on items involving use of basic math skills (e.g., whole number operation, time) which were rated as often used in the world of work.

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Figure 1
Communication and Mathematics Skill Areas
Measured By Current Version Of State Student
Assessment Test (SSAT-II)

Reading

Main Idea (stated)
Who, What, When
Cause and Effect
Written Directions
Main Idea (implied)
Paragraph Conclusion
Facts and Opinions
Pictures, Maps, Signs
Diagrams and Tables
Indexes/Dictionary
Identify Informed Sources

Writing

Request Information/Messages
Letters
Complete Forms
Money Orders and Checks

Mathematics

Averages Numbers
Whole Number Operations
Add/Subtract Proper Fractions
Decimals and Percents
Equivalent Dollars and Coins
Comparison Shopping
Simple Interest
Purchases and Sales Tax
Rate of Discount
Time
Perimeter
Length, Width and Height
Capacity and Measurement
Mass/Weight Measurement
Graphs and Tables

Figure 2
Content Of Survey Used To Measure
Employers' Perceptions Of Importance
Of Various Basic Skill Competencies

EMPLOYERS SURVEY OF BASIC SKILLS

Please answer all questions by putting a check in the appropriate column under the word that best describes the amount of time your employees are required to use the skill in question.

ARE YOUR EMPLOYEES REQUIRED TO READ ON THE JOB? YES ____ NO ____

IN NO GO TO QUESTION 9.
IF YES, MUST YOUR EMPLOYEES:

1. Follow written directions	1	2	3	4	5
2. Obtain information from graphs or tables	1	2	3	4	5
3. Obtain information from pictures or maps	1	2	3	4	5
4. Determine main idea	1	2	3	4	5
5. Identify cause and effect	1	2	3	4	5
6. Obtain information from references	1	2	3	4	5
7. Distinguish facts and opinions	1	2	3	4	5
8. Obtain information from directories	1	2	3	4	5

9. ARE YOUR EMPLOYEES REQUIRED TO WRITE ON THE JOB? YES ____ NO ____

IF NO GO TO QUESTION 17.
IF YES, MUST YOUR EMPLOYEES:

10. Write accurate messages	1	2	3	4	5
11. Write requests	1	2	3	4	5
12. Note an assignment	1	2	3	4	5
13. Complete forms	1	2	3	4	5
14. Write formal letters	1	2	3	4	5
15. Complete check and stub	1	2	3	4	5
16. Complete money order	1	2	3	4	5

(Figure continues)

Figure 2
(continued)

17. ARE YOUR EMPLOYEES REQUIRED TO SOLVE NUMBER PROBLEMS ON THE JOB? YES ____ NO ____

IF NO YOU HAVE COMPLETED THE SURVEY.
IF YES, MUST YOUR EMPLOYEES:

18. Add numbers	1	2	3	4	5
19. Subtract numbers	1	2	3	4	5
20. Multiply numvers	1	2	3	4	5
21. Divide numbers	1	2	3	4	5
22. Compute hours on the job	1	2	3	4	5
23. Solve problems with decimals & percents	1	2	3	4	5
24. Solve problems with fractions	1	2	3	4	5
25. Average numbers	1	2	3	4	5
26. Make change up to $100	1	2	3	4	5
27. Figure sales tax	1	2	3	4	5
28. Comparison shop	1	2	3	4	5
29. Solve problems using common weights	1	2	3	4	5
30. Figure perimeters and areas	1	2	3	4	5
31. Solve problems using common measures	1	2	3	4	5
32. Figure simple interest	1	2	3	4	5
33. Solve problems using metric system	1	2	3	4	5

Note. 1=very rarely, 2=rarely, 3=sometimes, 4=often, 5=very often.

Table 1
Means and Standard Deviations For
Communication Skills Of Tenth Grade Students

Communication Skill Area	Special Class Mean	Special Class SD	Regular Class Mean	Regular Class SD
Reading				
Who, What, When	3.76	1.55	4.74	0.73
Pictures, Maps, Signs	3.67	1.48	4.41	0.95
Identify Informed Sources	3.43	1.65	4.54	0.90
Indexes/Dictionary	3.39	1.50	4.46	0.94
Cause and Effect	3.31	1.61	4.55	0.95
Written Directions	3.31	1.70	4.55	0.97
Diagrams and Tables	3.19	1.51	4.16	1.12
Main Idea (implied)	3.06	1.70	4.48	1.00
Paragraph Conclusion	3.06	1.57	4.35	1.08
Main Idea (stated)	2.87	1.61	4.32	1.08
Facts and Opinions	2.78	1.71	4.32	1.22
Writing				
Money Orders and Checks	4.12	1.34	4.76	0.68
Request Information/Messages	3.71	1.63	4.64	0.87
Complete Forms	3.57	1.47	4.44	0.92
Letters	3.01	1.61	4.12	1.14

Note. Number of special students participating was 1098.
Number of regular students participating was 934.
Score range was 0-5.

Table 2
Mastery Performance For
Communication Skills Demonstrated
By Tenth Grade Students

Communication Skill Area	Special Class		Regular Class	
	Number	Percent	Number	Percent
Reading				
Who, What, When	735	67%	888	95%
Pictures, Maps, Signs	724	66%	809	87%
Identify Informed Sources	677	62%	856	92%
Written Directions	617	56%	836	90%
Indexes/Dictionary	614	53%	814	87%
Cause and Effect	581	49%	842	90%
Diagrams and Tables	540	48%	724	78%
Main Idea(implied)	529	46%	821	88%
Paragraph Conclusion	500	46%	769	82%
Main Idea (stated)	439	40%	768	82%
Facts and Opinions	430	39%	768	82%
Writing				
Money Orders and Checks	865	79%	892	96%
Request Information/Messages	742	68%	870	93%
Complete Forms	700	64%	833	89%
Letters	493	45%	724	78%

Note. Number of special students participating was 1098.
Number of regular students participating was 934.

Table 3
Means And Standard Deviations For
Mathematics Skills of Tenth Grade Students

Mathematics Skill Area	Special Class Mean	Special Class SD	Regular Class Mean	Regular Class SD
Equivalent Dollars and Coins	4.10	1.26	4.57	0.82
Whole Number Operations	3.60	1.61	4.54	0.98
Graphs and Tables	3.53	1.40	4.42	0.93
Decimals and Percents	3.42	1.42	4.24	1.01
Time	3.28	1.50	4.08	1.19
Averages Numbers	3.25	1.72	4.38	1.11
Purchases and Sales Tax	3.13	1.56	3.93	1.21
Simple Interest	2.91	1.53	3.73	1.43
Comparison Shopping	2.81	1.33	3.75	1.22
Rate of Discount	2.79	1.56	3.70	1.41
Add/Subtract Proper Fractions	2.76	1.71	4.06	1.31
Perimeter	2.43	1.46	3.27	1.44
Capacity and Measurement	2.28	1.30	3.35	1.29
Mass/Weight Measurement	2.23	1.54	3.48	1.57
Length, Width and Height	2.21	1.36	3.22	1.34

Note. Number of special students participating was 1098.
Number of regular students participating was 934.
Score range was 0-5.

Table 4
Mastery Performance For
Mathematics Skills Demonstrated
By Tenth Grade Students

Mathematics Skill Area	Special Class Number	Special Class Percent	Regular Class Number	Regular Class Percent
Equivalent Dollars and Coins	841	77%	856	92%
Whole Number Operations	696	63%	839	90%
Graphs and Tables	649	59%	816	87%
Decimals and Percents	601	55%	755	81%
Averages Numbers	594	54%	788	84%
Time	569	52%	699	75%
Purchases and Sales Tax	536	49%	681	73%
Add/Subtract Proper Fractions	471	43%	726	78%
Simple Interest	418	38%	587	63%
Rate of Discount	412	31%	592	63%
Comparison Shopping	343	27%	590	63%
Perimeter	292	27%	449	48%
Mass/Weight Measurement	261	24%	537	58%
Length, Width and Height	211	19%	462	50%
Capacity and Measurement	208	19%	496	53%

Note. Number of special students participating was 1098.
Number of regular students participating was 934.

Table 5
Employers' Responses Reflecting Importance Of
Reading Skills In The World Of Work

Reading Skill	Extent of Use 1	2	3	4	5
Determine main idea	14%	10%	25%	23%	28%
Identify cause and effect	14%	11%	25%	25%	25%
Distinguish facts and opinions	18%	16%	27%	13%	26%
Follow written directions	3%	3%	9%	24%	61%
Obtain information from pictures or maps	9%	8%	21%	20%	42%
Obtain information from graphs or tables	9%	6%	16%	25%	41%
Obtain information from references	16%	16%	23%	19%	26%
Obtain information from directories	25%	19%	26%	12%	18%

Note. 1=very rarely used on the job, 5=very often used on the job.
Number of employers indicating reading was required was 244.

Table 6
Employers' Responses Reflecting Importance Of
Writing Skills In The World Of Work

Writing Skill	Extent of Use 1	2	3	4	5
Write accurate messages	2%	3%	15%	25%	55%
Write requests	4%	6%	23%	21%	46%
Note an assignment	8%	7%	22%	13%	38%
Write formal letters	20%	17%	22%	13%	28%
Complete forms	12%	10%	23%	21%	34%
Complete money order	59%	16%	13%	4%	8%

Note. 1=very rarely used on the job, 5=very often used on the job.
Number of employers indicating writing was required was 244.

Table 7
Employers' Responses Reflecting Importance Of
Mathematics Skills In The World Of Work

Mathematics Skill	Extent of Use 1	2	3	4	5
Average numbers	19%	8%	35%	19%	19%
Add numbers	1%	1%	10%	23%	65%
Subtract numbers	1%	2%	12%	24%	61%
Multiply numbers	3%	3%	16%	25%	53%
Divide numbers	6%	6%	16%	25%	47%
Solve problems with fractions	18%	12%	29%	18%	23%
Make change up to $100	35%	9%	16%	12%	28%
Solve decimal and percent problems	15%	8%	24%	20%	33%
Comparison shop	34%	12%	24%	14%	16%
Figure simple interest	50%	17%	16%	7%	10%
Figure sales tax	35%	12%	13%	10%	30%
Compute hours on the job	13%	7%	14%	24%	42%
Solve problems using metric system	61%	15%	12%	7%	5%
Figure perimeters and area	48%	10%	20%	8%	14%
Solve problems using common measures	49%	11%	13%	13%	14%
Solve problems using common weights	41%	11%	19%	12%	17%

Note. 1=very rarely used on the job, 5=very often used on the job.
Number of employers indicating mathematics was required was 244.

Table 8
Relative Importance Of
Communication Skills In The World Of Work

Communication Skill	NVI	VI	Ranking
Reading			
Follow written direction	6%	85%	1
Obtain information from graphs or tables	18%	66%	2
Obtain information from pictures or maps	17%	62%	3
Determine main idea	24%	51%	4
Identify cause and effect	25%	50%	5
Obtain information from references	32%	45%	6
Distinguish facts and opinions	34%	39%	7
Obtain information from directories	44%	30%	8
Writing			
Write accurate messages	5%	80%	1
Write requests	10%	67%	2
Note an assignment	15%	63%	3
Complete forms	22%	55%	4
Write formal letters	37%	41%	5
Complete check and stub	52%	30%	6
Complete money order	75%	12%	7

Note. NVI-Not very important, VI=very important.

Table 9
Relative Importance Of
Mathematics Skills In The World Of Work

Mathematics Skill	NVI	VI	Ranking
Add numbers	2%	88%	1
Subtract numbers	3%	85%	2
Multiply numbers	6%	78%	3
Divide numbers	12%	72%	4
Compute hours on the job	20%	66%	5
Solve problems with decimals and percents	23%	53%	6
Solve problems with fractions	30%	41%	7
Figure sales tax	47%	40%	8
Make change up to $100	44%	40%	8
Average numbers	27%	38%	10
Comparison shop	46%	30%	11
Solve problems using common weights	52%	29%	12
Solve problems using common measures	60%	27%	13
Figure perimeters and areas	58%	22%	14
Figure simple interest	67%	17%	15
Solve problems using metric system	76%	12%	16

Note. NVI=Not very important, VI=very important.

Table 10
Means and Standard Deviations For
Employers' Perceptions Of Extent
Various Reading Skills Are
Used In The World Of Work

Reading Skill	Mean	SD
Follow written directions	4.35	1.00
Obtain information from graphs or tables	3.80	1.32
Obtain information from pictures or maps	3.76	1.32
Determine main idea	3.40	1.36
Identify cause and effect	3.35	1.34
Obtain information from references	3.22	1.41
Distinguish facts and opinions	3.11	1.43
Obtain information from directories	2.80	1.40

Note. Score range was 1=very rarely to 5=very often.
Number of employers indicating reading was required was 244.

Table 11
Means and Standard Deviations For
Employers' Perceptions Of Extent
Various Writing Skills Are
Used In the World Of Work

Writing Skill	Mean	SD
Write accurate messages	4.28	0.96
Write requests	4.00	1.13
Note an assignment	3.79	1.25
Complete forms	3.56	1.35
Write formal letters	3.12	1.49
Complete check and stub	2.61	1.58
Complete money order	1.88	1.27

Note. Score range was 1=very rarely to 5=very often.
Number of employers indicating writing was required was 244.

Table 12
Means and Standard Deviations For
Employers' Perceptions Of Extent
Various Mathematics Skills Are
Used In The World Of Work

Mathematics Skill	Mean	SD
Add numbers	4.50	0.80
Subtract numbers	4.42	0.85
Multiply numbers	4.22	1.02
Divide numbers	3.99	1.20
Compute hours on the job	3.74	1.39
Solve problems with decimals and percents	3.47	1.41
Solve problems with fractions	3.15	1.39
Average numbers	3.12	1.34
Make change up to $100	2.90	1.65
Figure sales tax	2.88	1.68
Comparison shop	2.67	1.47
Solve problems using common weights	2.52	1.53
Figure perimeters and areas	2.30	1.48
Solve problems using common measures	2.30	1.51
Figure simple interest	2.09	1.35
Solve problems using metric system	1.83	1.23

Note. Score range was 1=very rarely to 5=very often.
Number of employers indicating mathematics was required was 244.

Table 13

FACTORS IN THE EMPLOYMENT PROCESS

	Variables	Studies	Conclusions
1.	Validity and reliability	Arvey, 1979 Mayfield, 1964 Carlson, 1968	Validity has been poor. Predictive validity has proven to be very poor for the interview process. The problem appears to be identifying factors which are predictive of a good employee. Reliability has also been poor. Intra-reliability has been better than inter-reliability. Ways of improving reliability have been the structured interview and a detailed job description or task analysis.
2.	Qualification	Dipboye, Fromkin, & Wiback, 1975 Hackel, Dobmeyer, & Dunnette, 1970 Haefner, 1977	The qualifications of an individual have been the most significant factor in in the employment process. Problems arise with perceptions of what constitutes a qualified candidate.
3.	Negative Information	Constantin, 1976 Peters & Terborg, 1975 Hamilton & Zanna, 1972 Hollmann, 1972 Miller & Rowe, 1967 Richey, McCelland, & Schimkunas, 1967 Mayfield & Carlson, 1966 Webster, 1964	The employment process is a search for negative information. Negative informations receives far greater weight than positive information. The interviewer is searching for factors which would indicate that the candidate would not make a good employee.

Table 13 - Continued

	Variables	Studies	Conclusions
4.	Time and the decision process	Tucker & Rowe, 1977 Webster, 1964	The initial decision which is a high predictor of the outcome is made within four to nine minutes of the interview.
5.	Differential behavior and stereotyping	Arvey, 1979 Webster, 1964	An interviewer may observe behaviors or traits which he/she associates meaning which may have positive or negative connotations. The interviewer begins to associate the behaviors or traits with a set of stereotypes he/she possesses. Membership to a stereotype is then established.
6.	Race	Haefner, 1977 Rand & Wexley, 1975 Hamner, Kim, Baird, & Bigoness, 1974 Humphreys, 1973 Lopez, 1966	In the 1960's and early 1970's evidence indicated significant discrimination existed. Recent studies indicate race has become less of a discrimination factor. The testing issue has also been explored in the employment process literature. It has resulted in inconclusive findings. Much of the problem stems back to finding valid predictors of job success.
7.	Sex	Kryger & Shikiar, 1978 Sterrett, 1978 Dipboye, Arvey, & Terpstra, 1977 Dipboye & Wiley, 1977 Haefner, 1977 Dipboye, Fromkin, & Wiback, 1975 Schein, 1973, 1975 Hamner, Kim, Baird, & Bigoness, 1974 Rosen & Jerdee, 1974 Britton & Thomas, 1973	Sex discrimination has a similar pattern as race. There has been evidence of discrimination but in recent studies women with like qualifications of a male applicant have higher than the male applicant.

Table 13 - Continued

Variables	Studies	Conclusions
8. Age	Arvey, 1979 Britton & Thomas, 1973	Very little research in this area. Preliminary investigations indicate employers find the 25 or 35 year old most favored and the age of 18 and 50 least desirable. Age choices 18, 25, 35, 50.
9. Non-Verbal behavior	Sigelman & Davis, 1978 Sterrett, 1978 Dipboye & Wiley, 1977 Imada & Hakel, 1977	The majority of research indicates non-verbal behavior to be a major factor in evaluation, particularly with the handicapped. Any behaviors which are considered not within the norm give a negative impression.
10. Attractiveness	Dipboye, Arvey, & Terpstra, 1977 Dipboye, Fromkin, & Wiback, 1975 Carlson, 1967 Springbett, 1958	Attractiveness can be a significant factor. When given a choice of equally qualified applicants the attractive applicant does better.
11. "Similar to me"	Rand & Wexley, 1975 Drake, Kaplan, & Stone, 1973 Griffitt & Jackson, 1970	Shared values can be a significant factor. It had a greater influence than race and sex. An interviewer tends to favor an applicant who shares similar values.
12. Contrast effect	Peters & Terborg, 1975 Wexley, Sanders, & Yukl, 1973 Hollman, 1972 Carlson, 1968 Richey, McCelland, & Shimkunas, 1967	The number of applicants who are reviewed or interviewed before (or after) you can have a significant bearing on your evaluation as an applicant.

Table 13 - Continued

Variables	Studies	Conclusions
13. Application	Tucker & Rowe, 1977 Pate & Harwood, 1974 Smith, Mitchel, & Rollo, 1974	The application is a major factor in the employment process. Little advantage was found in not allowing the the interviewer access to the application. If the interviewer did not see the application he spent much of his time in the interview going over information contained in the application, yet his initial decisions were made as early as the interveiwer with the application.
14. Speech	Hooper & Williams 1973	Standard English was rated higher for white collar positions. For blue collar positions speech patterns were not significant.

Appendices

A. Initial contact letter for employers

B. Letter accompanying survey

C. Acknowledgement letter for employer

D. Example of Employers Survey of Basic Skill form

UF COLLEGE OF EDUCATION

University of Florida
Gainesville, Fla. 32611

This letter is to request your assistance in a research effort of the faculty from the Department of Special Education at the University of Florida. This project is a field-initiated study sponsored by the United States Office of Education. The purpose is to analyze the basic skill competencies measured by the State Student Assessment Test as they relate to employers' views of necessary academic skills for success on the job. Employers will be asked about particular academic requirements for specific jobs.

Data collection will include the use of brief mailed surveys. This survey will take approximately fifteen (15) minutes to complete and all the information will be treated as confidential. Copies of the results from the study will be distributed upon request.

Thank you for your time and consideration. You should be receiving your survey and self-addressed return envelope in a week or so. If you have any questions, suggestions, or concerns, please feel free to call any of the grant personnel at the University of Florida (904) 392-0755. Your efforts will assure the success of this project.

Sincerely,

Bob Algozzine
Project Director

W. Bee Crews
Project Coordinator

Kim Stoddard
Research Assistant

BA/WBC/KS:lrc

UF COLLEGE OF EDUCATION
University of Florida
Gainesville, Fla. 32611

Dear Employer:

Thank you for completing the enclosed survey sponsored by the United States Office of Education and the University of Florida. Through your efforts future high school graduates will be better prepared to meet the demands of the working world. We, at the University, would not be able to complete this type of important research without the support of community minded people like you.

If, by chance, you do not have employees, please feel free to fill out the survey with your opinions. If you do not with to complete the survey, please return the form (survey) in the enclosed self-addressed stamped envelope.

Thank you again for your time and consideration. If you have any questions, suggestions, or concerns, please feel free to contact any of the grant personnel at the University of Florida, (904) 392-0755.

Sincerely,

Bob Algozzine
Project Director

W. Bee Crews
Project Coordinator

Kim Stoddard
Research Assistant

BA/WBC/KS:lsk

UF COLLEGE OF EDUCATION

University of Florida
Gainesville, Fla. 32611

THANK YOU

We have received your survey and appreciate your taking time out of your busy schedule to assist our research efforts. It is civic minded people like you that enable the University of Florida to complete research directed toward improving education for all high school students in Florida.

The results of our combined efforts should be available by July 1, 1985. Please feel free to contact us if you wish to receive a report of the data collection.

Thank you again for your time and consideration. Your efforts have assured the success of this project.

Sincerely,

Bob Algozzine
Project Director

W. Bee Crews
Project Coordinator

Kim Stoddard
Research Assistant

BA/cam

UF COLLEGE OF EDUCATION
University of Florida
Gainesville, Fla. 32611

EMPLOYERS SURVEY OF BASIC SKILLS

Please answer all questions by putting a check in the appropriate column under the word that best describes the amount of time your employees are required to use the skill in question.

	very rarely	rarely	sometimes	very often	very often
ARE YOUR EMPLOYEES REQUIRED TO READ ON THE JOB? YES____ NO____					
IF NO GO TO QUESTION 9.					
IF YES:					
1. must your employees determine the main idea of a paragraph?					
Mark one (1) column.					
2. must your employees identify the cause and effect stated in a paragraph?					
Mark one (1) column.					
3. must your employees distinguish between facts and opinions in a paragraph?					
Mark one (1) column.					
4. must your employees follow written directions?					
Mark one (1) column.					
5. must your employees obtain information from pictures, maps, or signs?					
Mark one (1) column.					
6. must your employees obtain information from diagrams, tables, graphs, and schedules?					
Mark one (1) column.					
7. must your employees obtain information from indexes, tables of contents, or dictionary entries?					
Mark one (1) column.					
8. must your employees use dictionaries, encyclopedias, atlases, directories, and/or newspapers to obtain information?					
Mark one (1) column.					
9. ARE YOUR EMPLOYEES REQUIRED TO WRITE ON THE JOB? YES____ NO____					
IF NO GO TO QUESTION 17.					
IF YES:					
10. must your employees be able to write accurate messages?					
Mark one (1) column.					
11. must your employees be able to write requests?					
Mark one (1) column.					
12. must your employees be able to note an assignment?					
Mark one (1) column.					
13. must your employees be able to write letters of adjustment, complaint, application, or opinion which contain accurate information?					
Mark one (1) column.					
14. must your employees be able to complete forms (Social Security)?					
Mark one (1) column.					

(continued on back)

	Very rarely	Rarely	Sometimes	Often	Very often
15. must your employees be able to complete a money order? Mark one (1) column.					
16. must your employees be able to complete a check and its stub? Mark one (1) column.					
17. ARE YOUR EMPLOYEES REQUIRED TO SOLVE NUMBER PROBLEMS ON THE JOB? YES_____ NO_ IF NO YOU HAVE COMPLETED THE SURVEY IF YES:					
18. must your employees average numbers? Mark one (1) column.					
19. must your employees add numbers? Mark one (1) column.					
20. must your employees subtract numbers? Mark one (1) column.					
21. must your employees multiply numbers? Mark one (1) column.					
22. must your employees divide numbers? Mark one (1) column.					
23. must your employees solve problems involving fractions? Mark one (1) column.					
24. must your employees make change up to $100.00? Mark one (1) column.					
25. must your employees solve number problems involving decimals and percents? Mark one (1) column.					
26. must your employees comparison shop for work supplies? Mark one (1) column.					
27. must your employees figure simple interest? Mark one (1) column.					
28. must your employees figure sales tax? Mark one (1) column.					
29 must your employees be able to compute hours on the job? Mark one (1) column.					
30. must your employees solve problems using the metric system? Mark one (1) column.					
31. must your employees figure perimeters or areas? Mark one (1) column.					
32. must your employees solve problems involving cups, pints, quarts, and gallons? Mark one (1) column.					
33. must your employees solve problems involving weight (pounds, ounces, or grams)? Mark one (1) column.					

END

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DATE FILMED

JUNE 10, 1987